

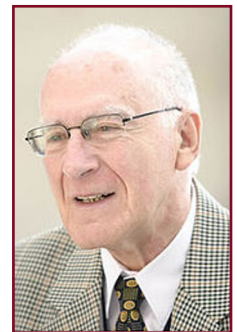


WAAS Newsletter

Trieste became a Third Centre of WAAS



More than 50 years ago, **Abdus Salam**, Nobel Laureate and Fellow of WAAS, initiated the process of making Trieste an international centre of excellence. WAAS organised an international conference on the "Impact of Science and Technology on Society and Economy," which was held at The Abdus Salam International Centre for Theoretical Physics (ICTP) at Trieste on March 4-7, 2013. The Forum was co-organized by The Academy of Sciences for the Developing World (TWAS), The Trieste International Foundation for the Progress and Freedom of Sciences, The International Centre for Genetic Engineering and Biotechnology (ICGEB), The Risk Institute and The Mother's Service Society. 31 Fellows actively participated in the Academy's General Assembly held on March 5, 2013.



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WAAS inaugurated its new centre in Trieste at the time of the conference — the initiative of **Orio Giarini** and the outstanding endeavour of **Domenico Romeo, Enrico Tongiorgi, Andrea Vacchi** and **Mauro Giacca** — in collaboration with institutions in Trieste: TWAS, ICTP, IAP (The Inter Academy Panel), IAMP (The Inter Academy Medical Panel) and ICGEB. The Trieste WAAS centre will create a remarkable impact for WAAS through cooperation between TWAS and WAAS, membership in and collaboration of WAAS with the Inter Academy Panel and Inter Academy Medical Panel, and through all institutions created in Trieste by **Abdus Salam**.

The Trieste Forum did much more. It highlighted the constant and remarkable activities and projects WAAS has initiated in the last two years, the consilience and integration of several of these projects, e.g. Anthropocene, New Economic Theory and Individuality in an encompassing program on Human Capital. It proved an active and constantly increasing Fellowship of the Academy. Fellows are the true wealth of the Academy and they constantly demonstrate that through nominating new Fellows, participating in the Academy's conferences (about half of over 70 participants at the Trieste Forum were Fellows of WAAS), by initiating and participating in projects, by participating in Plenums (the third Plenum in less than two years was held during the Trieste Forum). It is appropriate that the place where **Abdus Salam** forged links between science and the UN was the first occasion in which the General Assembly was greeted by the President of the UNESCO General Assembly and by the representative of the UN Office in Geneva — signalling institutional cooperation between WAAS and UN organizations.

Ivo Šlaus
President



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International Conference on Opportunities & Challenges for the 21st Century: Search for a New Paradigm

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At Palais des Nations, UN Headquarters, Geneva, June 3, 2013

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New Paradigm for Human Development



Opening Session: Sandro Scandolo (ICTP), Mauro Giacca (ICGEB), Katalin Bogay (UNESCO), Ivo Šlaus (WAAS), Peter McGrath (TWAS) and David A. Chikvaidze (UNO Geneva)

The Trieste Forum in March 2013 marked a significant milestone in the effort of the World Academy to evolve a comprehensive, integrated, trans-disciplinary perspective for addressing global challenges. An initial presentation on the physics of Dark Matter aptly illustrated the need for new thinking in the social sciences. If the most mathematically rigorous of physical sciences is compelled to postulate the existence of an unknown, invisible substance representing 84% of the total mass in the universe, how much more true is it that the fundamental factors responsible for the development of society are subtle, imperceptible by the senses and beyond comprehension by the present concepts of social science. In comparison to Dark Matter, the magnitude and complexity of Human Capital might well be likened to a parallel universe.

There was a time not long ago when human labor was valued primarily as a factor of production measurable in horsepower equivalents and substitutable by machinery. Today our conception of the human resource is far more sophisticated. Like visible matter, the physical dimension of human capital referred to as labor is only the tip of the iceberg. Our modern economic system is predicated on the principle that human beings can express their full potential only in an atmosphere of freedom where their energies can be fully released and channeled into productive, entrepreneurial and creative activities.

The 20th Century has unequivocally demonstrated the power of ideas to change the world. The human mind is our most powerful and productive resource. The marriage of scientific thinking and research with technological innovation spurred the second and third industrial revolutions that have radically altered the way human beings move, communicate, work and live. The emergence of universal human values has transformed our conceptions about our humanity and our relationships to one another.

Human Capital is an infinitely complex microcosm capable of unlimited development. Social Capital constitutes a macrocosm of equally great complexity and potential. Human history represents a continuous social experiment to

harness the remarkable powers of social organization for human welfare. The modern knowledge-based service economy is founded on human relationships and powered by sophisticated social organizations. The emergence of democratic forms of governance at the national and international level; modern systems of education, healthcare and social welfare; global networks for scientific research, communication and transportation

constitutes essential infrastructure for the evolution of global society. The recent development of the Internet as the first truly global social organization has brought us full circle back to the most fundamental principle of our development – our relationships with one another. The fabric of society is an ever-expanding, continuously evolving, increasingly complex and effective social network. The quest to discover the most effective relationship between Human Capital and Social Capital promises to unleash creative powers for human welfare and well-being with momentous consequences for the future of humanity. The individual human being is the unknown link between these two universes. The individual is the catalytic source of the ideas, the energy and the values that drive human progress. The most important quest of the social sciences must be for a greater understanding and practical knowledge of how to most effectively fashion social institutions to unleash and channel the creative powers of its individual members for the welfare and well-being of all. The knowledge most needed today is the framework for a comprehensive science of social evolution, a science founded

“The quest to discover the most effective relationship between Human Capital and Social Capital promises to unleash creative powers for human welfare and well-being with momentous consequences for the future of humanity. The individual human being is the unknown link between these two universes.”

on an understanding of human nature as we observe it, but also on the realization that this potential is not a fixed constant. Humanity's destiny is a matter of choice, not material determinism.

Extending basic human rights to all human beings within a framework of democracy and rule of law is an essential requirement. In modern society, access to employment is the economic equivalent of the right to vote in democracy. Human security, human welfare and well-being go hand in hand. Democracy must also be extended from the national to the international sphere. The prevailing concept of national sovereignty, which is claimed by all states regardless of their mode of domestic governance, is itself a denial of the sovereign rights of the global human collective.

Education is the instrument humanity has fashioned for conscious social evolution, the means for endowing each individual member of future generations with the essential knowledge accumulated by the collective experience of countless past generations. Education as a social science has achieved the capacity for mass production, not the capacity for customization adapted to the unique endowments and potential of each individual, so that rare geniuses in enterprise, invention, science, thought and the arts may now become commonplace.

Foremost among the dominant tendencies of the human mind is the propensity to divide reality into smaller and smaller components, while losing sight of the whole which is more than the sum of its parts. Finance needs to be reintegrated with economy. Markets need to subserve human

welfare. The narrow boundaries of economy need to be extended to reflect continuously evolving relations with the non-monetarized sector, its fundamental dependence on law and government, the ecological continent on which it is based, and the social context in which it functions. Like the advocates of neoliberalism, we often mistake theoretical constructs for practical truths or misapply concepts of the physical sciences to the human sciences. Future social science must encompass all the dimensions of human life – political, economic, organizational, technological, social, psychological, cultural and ecological – as aspects of a single integral reality. The quest of social science is the power to realize the welfare and well-being of all human beings. For that it must become a purposeful and value-based body of knowledge reintegrating science with philosophy, ethics and spiritual values.

The dream of unlimited material production and consumption confronts an impenetrable wall resulting from the depletion of precious, non-renewable material resources and the destructive impact of unbridled, wasteful human activity on the biosphere. Economic value must also reflect ecological value. So also, human security cannot be assured so long as both humanity and the ecosphere are threatened by the calamitous prospect of accidental or intentional nuclear detonations. The very existence of nuclear weapons on earth represents an existential threat to civilization.

The really confining limits are not material or technological, but rather the limits imposed by prevailing ideas and values. We are unwitting and unknowing prisoners of our own conceptions. The greatest need of humanity today is for creative leadership in thought that challenges the conventional wisdom and dogma which often masquerade as scientific knowledge. Courageous leadership in thought must precede effective leadership in action.

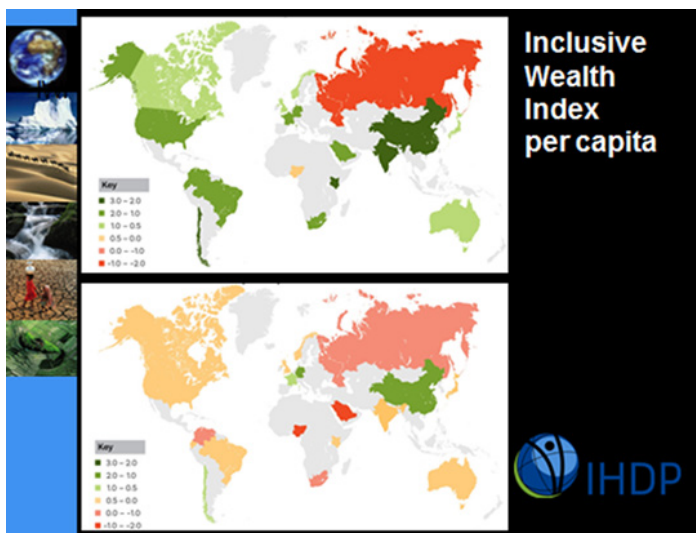
Uncertainty poses ever new challenges to our knowing and our security. Yet it is also the source of the new ideas, inspiring values, marvelous innovations, more abundant wealth and richer creative potential that are the product of evolving human consciousness. Our evolutionary conception needs also to embrace this limitless, indefinable source of human potential.

Viewed from this emerging perspective, the multiple individual lines of the World Academy's programmatic activity imaged coalesce to form the first vague outlines of an integrated intellectual framework for understanding and addressing the opportunities and challenges facing humanity in the new century.



Garry Jacobs, Orio Giarini and Ivo Šlaus

Human Capital



Human Capital, a central theme of the Academy's work, was the first session at the Trieste Forum. The session focused on the development of a human-centered economic theory that recognizes the key role of the individual in social change. A Human-Capital-intensive approach lays emphasis on original thinking, creativity and inventiveness, freedom and human rights, entrepreneurship, education, training and development of social networks and other social institutions (Social Capital) needed for the full development and expression of individual capacities. Human centered theory counters the mechanistic and reductionist approach to social science with one that recognizes the unlimited potential of the human being. The Academy's work underlines the necessity of formulating a comprehensive trans-disciplinary approach to global issues.



Andrea Vacchi

The initial presentation by **Andrea Vacchi** on Dark Matter served as an apt metaphor for the unexplored potentialities of human capacities waiting to be discovered and developed. **Anantha Duraiappah's** presentation on the Inclusive Wealth Index focused on the central importance of human capital in the wealth of nations, the need to base new metrics on a more comprehensive conception of human welfare and sustainable well-being, the challenges involved in devising effective metrics to reflect development of the human dimension, and the need to evolve novel ways to increase the accumulation of human capital – innovation, creativity, quality.

Ana Stavljenić-Rukavina focused on the challenges of an aging society and stressed the relationship between economic growth, ageing and the decline of fertility and the resulting social consequences.

Alberto Zucconi stressed the need for a systematic understanding of economics in its relationship to bio-psycho-social aspects of society and for the development of the types of intelligence needed to acquire the new competencies required.



Ana Stavljenić-Rukavina

The Trieste Forum built on themes explored earlier in the Academy's project on 'The Emerging Individual' at the international conference on "Humanities and the contemporary world" at Montenegro last June and articles published in *Eruditio* and *Cadmus*.

Moderator: Ivo Šlaus
Alberto Zucconi



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Paradigm Shift in Economics



Orio Giarini

The Academy made significant progress at Trieste in advancing the discussion beyond the level of critiquing the deficiencies in current economic theories. It became clear that the current failures and apparent limitations of our economic system are the result of faulty, limiting dogmas, which all too often pass for rational scientific theory.

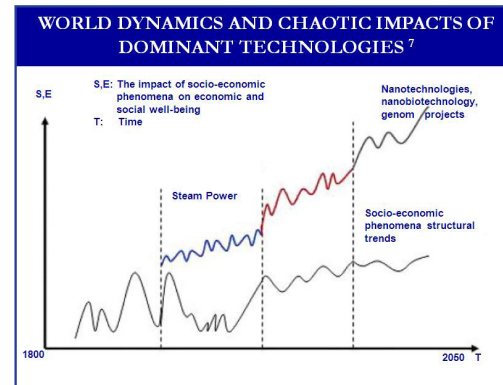
Therefore, the first requirement is a willingness to re-examine premises to determine whether they arise from inherited notions, power structures and prevailing values or from economic fundamentals. Liberating our thought from past conventions is the most important step toward founding a true science of economics.

Orio Giarini began by challenging several such premises, especially the notion of market equilibrium, which he described as a tautology rather than a real market phenomenon. He stressed that economy is in a constant process of evolution and the equilibrium dynamics could at most be applied to a particular moment in time. Moreover, current economic doctrine evolved in the context of the Industrial Revolution when transactions involved discrete products sold at a specific point in space and time. Today, three-quarters of all transactions involve the delivery of services, most of which are consistent of vast delivery systems such as education and healthcare, where the cost incurred over the entire life cycle of the system often cannot be accurately known until long after the actual point of delivery.



This raises fundamental questions relating to the notion of economic value. **Robert Hoffman** pointed out that there is no intrinsic relationship between price and value. Value cannot be measured monetarily. Price is what we make of it. The market is particularly poor at capturing the value of natural resources and the value to future generations. In the modern knowledge-based service economy, the notion of value must be extended to take into account utilization value over time.

The boundaries of economics need to be extended in several directions to encompass new dimensions. First, the boundary between the monetarized and non-monetarized sectors is constantly shifting. We arbitrarily assign value to that alone which involves monetary exchange. Second, the boundary between politics and economics is purely arbitrary, for there would be no such thing as market were it not for the legal and regulatory framework within which exchange takes place. Therefore, to talk of 'free markets' is mere dogma, which Adam Smith would have been the first to repudiate. Third is the paradoxical boundary posed by uncertainty. Ostensibly, the role of economy is to manage risk and reduce uncertainty. Yet, the uncertain is also the source of all human creativity, new invention, and future potential.



Orhan Güvenen emphasized the inherent uncertainty of technological evolution. Like the Internet, all future discovery and wealth creation will emerge from the uncharted unknown. Fourth, valid economic science must fully take into account the relationship between production, social welfare, ecology and ethics.



The discussion focused on the need for a human-capital-intensive theory of economics. **Božidar Matić** emphasized on the central role of knowledge, technological innovation, entrepreneurship, education, and scientific research. **Gerald Gutenschwager** challenged the very notion of a separate science of economy. "We need a science of the whole society." In support of this view, **Ian Johnson** said, "We need a trans-disciplinary theory of social change and social evolution within which economy is only a part, sustainability is a dynamic concept."



Finally, there was an overriding consensus that unlike physical science, social science must be goal-oriented and value-based. It is worth noting that Adam Smith considered himself a moral philosopher with a global perspective dedicated to promoting social welfare for all people and all nations. Indeed, the term 'economist' did not even exist at the time. Financial systems are intended as a means to support the real economy and promote human welfare. **Graeme Maxton** argued that speculative investment is unnecessary and destructive of the real economy. "Progress is not about growth or wealth creation, but about well-being". **Walther Zimmerli** called for a return to Aristotle's idea that economy is a part of ethics. We've lost sight of the fact that economics is a set of tools to serve a purpose. The laws of society are a question of choice, of values. We have to counter the inherent human tendency to create marvelous instruments such as money and markets and then enslave ourselves to our creations. Our task is not to discover immutable natural laws of society but to learn how to fashion society to meet social objectives.

Full Employment



Mirjana Radović-Marković, Azita Berar Awad, Ian Johnson, Garry Jacobs, Antonio Sfiligoj

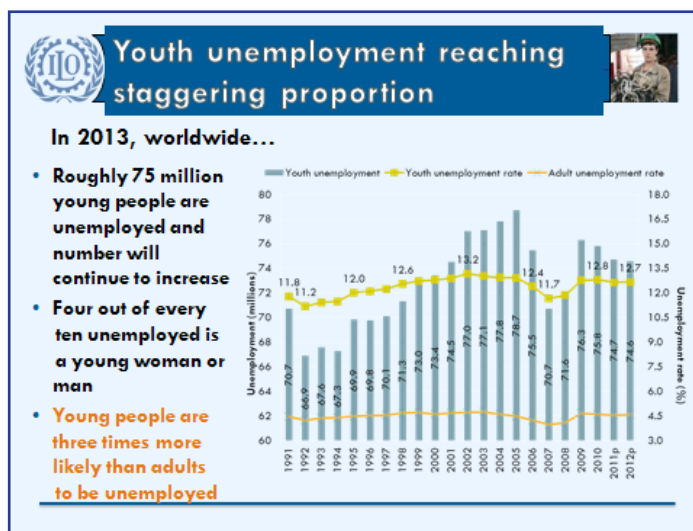
The Trieste Forum carried forward the Academy's on-going inquiry into strategies to address the Global Employment Challenge. As **Ian Johnson** pointed out in his introductory remarks, employment has become a pressing issue that calls for a better understanding of the factors affecting job creation and retention, including trade and investment policies and practice, including outsourcing; demography, including changes in age structure and migrations; technological development, including Internet and ICT; governmental policies, including tax incentives, education and training; and finally environmental endowment, including resource depletion.

Immediate action is needed to resolve the youth unemployment crisis, which affects about 75 million young people around the world. **Azita Berar Awad** of ILO recommended a policy package emphasizing pre-employment macroeconomic policies, education and training, integration of the labor market, encouragement of self-employment and entrepreneurship and gender equality at work.

Citing historical evidence since 1950 to show that global full employment is an achievable goal, **Garry Jacobs** appealed for abandoning conventional thinking that prevents us from recognizing the potential and implementing effective employment policies. To resolve the employment challenge we need to move away from nation-centric theories and models to a human-centered global perspective complemented by new economic theory and performance indicators. Employment must be recognized as a fundamental human right essential for maintaining social stability. There is urgent need to develop a new Social Theory of Employment.

The global problem of an aging workforce, particularly the increasing share of those over 50 years of age, was the focus for recommendations by **Mirjana Radović-Marković**. Those over 50 are often discriminated on the labor market in governmental policies and by the existing stereotypes. This leads to significant economic losses of unemployed experienced workforce. To avoid those negative consequences of age discrimination and establish equal opportunity rights, she recommends that the existing economic theory of employment be revised to include employment for aging people.

Antonio Sfiligoj highlighted the importance of a practice-based collaborative entrepreneurial model of employment. He called for investment in coaching entrepreneurs in newly created, small innovative firms, which is essential for reaching full employment. He advocated "democratizing innovation" by focusing on innovations that change how already existing technologies and processes work. In addition to financing from governmental funds, business angels and venture capital, crowdsourcing is becoming an increasingly common means to finance innovative projects. A critical factor is the speed with which new needs are identified and new products/services/processes are designed, prototyped, tested, and brought to market.



The session concluded that Global Full Employment is an achievable goal provided we can move away from conventional notions and view employment in a wider context based on a social theory of employment. The age problems at both ends – youth and over 50 – should be addressed by non-discriminatory policies and offering equal opportunity rights for all ages, gender, and races. The current inefficient market structure should be transformed to treat all forms of capital in a balanced manner. Changes in incentive structure are needed to reward human-capital-intensive job creation over capital-intensive technologies.

Moderator: Ian Johnson

Based on a report by Zbigniew Bochniarz

Revaluing Nature



Ian Burton

The economic, ecological, social, political and security crises that humanity confronts today can be traced back to common factors and root causes and can only be successfully addressed by instituting fundamental changes in the values, policies and institutions that underpin the global economic system. Addressing the multi-dimensional global crisis requires that we embrace an integral perspective which recognizes that the ecological crisis is driven by an inefficient economic system that grossly undervalues and underutilizes human capital. The WAAS project on New Economic Theory strives to develop a comprehensive perspective that calls for integrating sound ecological principles within the science of economics.



The session on 'Revaluing Nature' at the Trieste Forum re-examined the concept of economic value and its role in promoting sustainable human welfare and well-being and the potential for new and alternative energy sources. The presentations highlighted the need for a critical introspection of the way we collectively and individually value nature's goods and services.

The focus on monetary values must be broadened to reflect the full gamut of social, economic, ecological, cultural and spiritual values. The predominant use of economic rational decision making must be broadened to determine how variables such as culture, world beliefs, knowledge, information, social status, and economic conditions might affect the way individuals and communities value nature.



Carlo Poloni highlighted the way economic values of achieving an environmental target are achieved through optimization exercises. Optimization techniques therefore can be used to inform the plurality of values and broaden the present hegemony of monetary use-values of nature.



Appropriate value must also be assigned to what is now regarded as wastes generated by human activity. **Dusan Bakos** and **Emo Chiellini** reinforced the case for incorporating social and environmental values in social decision-making, illustrating how individuals should make decisions to substitute plastics with biodegradable plastics. Decision making should be based on a systems perspective and cradle to cradle analysis spanning the whole production, recyclable and degradation process. They also high-



lighted potential synergies in the form of co-benefits that might arise from producing biodegradable plastics that affect the value of bio-based plastics.



In a similar manner, **Stanislav Miertus** analyzed the potential for substitution between fossil fuel and bio-fuels, factoring the potential environmental damage through climate change which a fossil-fuel based approach would have in comparison with a biofuels strategy.

The session concluded that there are a plurality of values underpinning human behavior and activities with regard to nature. These values range from use and non-use values cutting across



Anantha Duraipappah

the ecological, social and economic spheres and could be represented by both monetary and/or non-monetary units. Traditional informal value articulating institutions formed to oversee the access and use of nature's goods and services have been ignored or superseded by the market.

The ethics, morals and justice overseeing the access and use of nature's goods and services by value articulating institutions are the key for sustainable human wellbeing.

Moderator: Ian Burton
Anantha Kumar Duraipappah

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At Library of Alexandria, Egypt, June 5-6, 2013

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The Network Society



Zbigniew Bochniarz, Peter Johnston & Jüri Engelbrecht

Social Capital and Human Capital play complementary roles in social development. As a follow-up to the Academy's e-seminar in November 2012, **Jüri Engelbrecht** introduced a special session during the Trieste Forum exploring the rising importance of networks in modern society as well as emerging theories and major discoveries regarding the Science of Networks. The session examined opportunities to utilize innovative organizational models and delivery systems in the industrial sector, collaborative entrepreneurship, understanding of climate systems, sustainable development in education, scientific research and governance along with some philosophical aspects of network behavior.

The central problem in economics is efficient allocation of resources to meet the population needs. In a presentation on Networking Science and Industrial Clusters, **Zbigniew Bochniarz** examined recent applications of network science to promote entrepreneurship and industrial development as an alternative to the two traditional competing models of coordination – self-regulating markets and centralized planning – which have failed to produce optimal efficiency for society as a whole. Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions that cooperate and compete in particular fields. More than a traditional supply chain, these clusters include academic institutions providing training, research and consulting services, governmental agencies influencing cluster activities, and non-governmental organizations providing important services.

Today, the ability of firms to innovate is restricted by barriers limiting knowledge utilization and innovations. **Antonio Sfiligoj** discussed Collaborative Entrepreneurship, a holistic approach involving new models for business networks where firms act like organic ecosystems rather than traditional supply chain partners. This new competitive strategy of continuous innovation fulfills the need for efficient provision of a constant stream of new products, services, and markets, especially important for countries such as Italy with a large number of SMEs and few larger corporations. In Europe, new legislation and policies are being adopted

to foster the creation of collaborative entrepreneurial communities within which SMEs can share in the creation of wealth through innovation and growth. At the same time, traditional financing through venture capital is being surpassed by new forms of informal investors, i.e. crowdsourcing and business angels.

Networks dominate our lives. **Peter Johnston** explored the role of Networks for Innovation, Growth and Sustainable Development. New scientific findings are now being applied to provide insights into the nature of evolution in economics, ecology, biology and medicine. Social and economic systems have most of the characteristics of scale-free, "small-world" networks, namely, a power-law (n^x) relationship between nodes (people, businesses etc.) and the number of links between them and a power-law distribution of other key parameters (wealth, influence, and also fluctuations around dynamic equilibriums etc.), which have profound implications for achieving social equity. Climate change is already beginning to disrupt regional climate systems and has increased the frequency of disruptive extremes, threatening societal stability and imposing huge costs on our economies. To reduce the rising world energy demand, rising concentrations of atmospheric CO₂, rising average global temperatures and worsening air pollution, the OECD report recommends environmental taxes and emissions trading; valuing and pricing natural assets and ecosystem services. Recent assessments by the International Futures system indicate that a combination of accelerated deployment of "network innovations" (broadband communications and smart-grids) together with a global market price for carbon-emissions could cut global emissions after 2025 and stabilize CO₂ concentrations at about 500ppm by 2050. Self-organizing character of social networks is reflected in our technology networks. Replicating the evolution of social networks by computer simulations enables us to better assess how to deal with the greatest challenges facing us in the next few decades.

Walther Zimmerli examined the impact of networks on the concept of the Individual in Social Philosophy and individual identity in modern society. Evolution is a chain with a network of chains with many missing links. Networks are enabling us to externalise our storage capacity of knowledge in such a way that individuals can now accomplish more than ever before with less knowledge. 'Thinking' remains a uniquely human capacity. As participants in huge social networks, we act both as nodes in the network and users of these nodes.



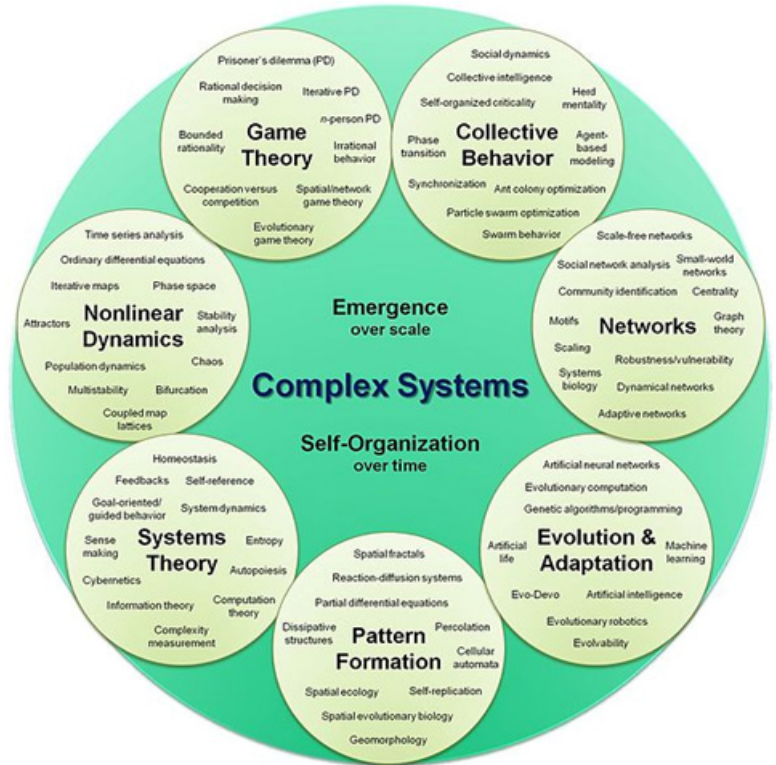
Walther Zimmerli



Raoul Weiler

As the virtual world expands, traditional sources of individual identity based on membership in groups, regions and countries are being replaced by multiple identities and increasing opportunities for universalism.

In his concluding remarks, **Raoul Weiler** pointed out that the Science of Networks has emerged in recent decades as part of a new set of knowledge tools with a very strong mathematical basis as excellently depicted in this [Wikipedia diagram on Complexity](#). The new Sciences of Networks and Complexity have opened new horizons in the understanding of how natural as well as human and social 'complex' systems behave with application to economy, industry, innovation, management, and sustainability, as well as, for example, the worldwide money & banking system, political decision making processes, etc. This science provides tools to analyze and quantify relationships between actors in different domains. A new sociology is emerging, opening up new horizons for managing our society.



Jüri Engelbrecht and Raoul Weiler

Web Seminar on the New Sciences II

“The Science of Complexity”

A transdisciplinary exploration of Theory and Applications

June 18, 2013

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Recognizing Talents & Genius



Ullica Segerstrale, Morley Lipsett, Decio Ripandelli, Emil Constantinescu

A human-capital intensive approach to social development must necessarily give a central place to the role of education and training in preparing youth for productive engagement in a rapidly changing and increasingly complex and sophisticated world. In addition to imparting general knowledge and productive skill, it should also strive to release and develop the unique talents and capacities of each individual.

In their [discussion paper](#), **Ivo Šlaus** and **Garry Jacobs** highlighted eight characteristics of unrecognized genius that can be applied to both identify and foster original thinking and creativity among youth. Educational systems should strive to develop the capacity to transcend the limits of conventional thinking, unify apparently disparate phenomena, see the whole which is greater than the sum of its parts, perceive deeper levels of causality than the current conventional thinking, and to see opportunities where the canonic thinking sees nothing but risks, i.e. to develop women and men endowed with the capacity to see life in its profundity and totality.

Jan Dobrowolski focused on the importance of intergenerational integration based on life-long learning. The old and wise are not to be in competition with the young and bold. Rather, they complete one another. The elderly may not react as quickly as their younger contemporaries, but their reactions are the result of a more complex process of thinking, using comparatively more networks of their brain, and a more reflexive mind.



Bob Berg, Jan Dobrowolski, Aleksander Zidanšek

Morley Lipsett and **Aleksander Zidanšek** reflected on the role of education today and the urgent need to re-humanize education. Both questioned the efficacy of the current paradigm based on generating answers and certainty, stressing the need for a new model of learning focused on questions and wonder. Recall Pascal's praise for Montaigne *for disabusing those who cling to their opinions and who believe that they have found unshakeable truths in the sciences*.

Democratizing education to encompass everyone raises the real danger of massification. In his report on assisting developing countries develop their own scientific and industrial capabilities, **Decio Ripandelli** offers an antidote to massification.

The new paradigm may seem rather utopian, more adapted to the Houyhnhnm society so highly praised by Gulliver, or to the Rabelaisian Abbey of Thélème, than to our bleak and so insufficient answers to the global crisis. Education costs. Did anyone ever measure how much the lack of education costs society? The cost resulting from drop outs, low productivity, juvenile delinquency and crime, boredom and frustration, is immense. Allowed to run its course, the current trend toward massification threatens to invade the whole world of our schools and universities, undermining the benefits which democratization of the educational process has offered humanity in the last two centuries.

Moderators: Bob Berg and Emil Constantinescu

Based on a report by Emil Constantinescu

Web Seminar on Global Challenges & Opportunities

“The Role of Crises in Social Evolution: Lessons from History”

Preparatory to the WAAS meetings in Geneva & Alexandria

May 13, 2013

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Sharing Knowledge, Innovation & Creativity

This session addressed the broad issue of how to make available to industrial applications the existing large amount of scientific knowledge and technical innovations. Particular emphasis was given to the development of a sustainable human welfare, including the field of health care, which is one of the world's fastest growing industries, accounting for more than ten percent of the economy in most developed nations. The general awareness is increasing on this topic, but the management of S&T needs to develop instruments and a consensus to promote data sharing and economic exploitation in developing countries.

The session also focused on the role of creativity and innovation as essential factors for economic development and how the available knowledge can be more effectively disseminated and utilized to effectively address current social problems.



Nebojša Nešković, Nicola Pangher, Giuliano Panza, Enrico Tongiorgi, Domenico Romeo, Giorgio Fassina, Donatella Verbanac and Furio Suggi Liverani

Speakers:

Panel 1: Creativity and Innovation as essential factors for Economic Development

- **Furio Suggi Liverani**, Rethinking the Product in the Light of Sustainability and Consumer Wellness
- **Giuliano Panza**, Preventive Tools for a Disaster Resilient Society
- **Andrea Vacchi**, Bridging the Gap between Technology and Innovation

Panel 2: How can the available knowledge be more effectively disseminated and utilized to effectively address current social problems?

- **Nicola Pangher**, Healthcare at the Bottom of the Pyramid: Innovation Makes a Difference
- **Donatella Verbanac**, Translational Research and the P4 Approach in the Service of Sustainable Health Care
- **Nebojša Nešković**, TESLA Accelerator Installation: Generation of Knowledge and Innovations for Health Care
- **Giorgio Fassina**, Reducing the Burden of Cancer in the Ageing Society

Moderator/Rapporteur: Domenico Romeo/ Enrico Tongiorgi

Web Seminar on Global Rule of Law II

“The Evolution of Sovereignty”

A transdisciplinary discussion of issues related to Global Governance

May 20, 2013

CALL FOR SPEAKERS AND PARTICIPANTS

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Castle Duino Workshop

Global Challenges & Opportunities: Strategy for the 21st Century

The Issue

The world faces an unprecedented dilemma. Ever expanding opportunities are emerging side by side with ever intensifying problems. The proliferation of money, technology, education and global interdependence which have been the main drivers of global development are accompanied by rising levels of financial instability, pollution, unemployment, inequality, arms proliferation and social unrest. Humanity seems driven by mutually exclusive, contradictory goals leading to apparently insoluble problems. Piecemeal sectoral solutions are transparently inadequate.

Today the world faces multiple crises of unprecedented scale and seriousness. These crises share common attributes. They all transcend narrow disciplinary boundaries, thus defying solution by partial, sectoral approaches. They are all global in nature and cannot be fully addressed without coordinated actions by the international community. Approaches to resolving the challenges are subject to conflicting claims, priorities and interests. The lack of significant progress on addressing these issues in recent years has raised doubts about the collective capacity of the human community to effectively address them. There is presently no consensus as to whether real, effective solutions are possible and what those solutions should be. *Is there any way in which apparently mutually exclusive goals of prosperity, security, sustainability and social justice can all be realized?*

Castle Duino Discussion

Following up on recent articles on this topic in [Cadmus Journal](#), an exploratory discussion was held on March 7 at Castle Duino near Trieste.

In an effort to incorporate multiple perspectives and generate an effective platform for future action, participants examined the first of these questions relating to important trends. Among many valuable insights, discussants identified limitations imposed by the present social construction of knowledge, i.e. the way we perceive and frame the issues, and the tendency to examine complex interconnected issues as if they can be understood in isolation as serious impediment. Stress was placed on the need for new thinking and new integrated, value-based theory in the social sciences. Uncertainty was identified as the source of both new challenges and new opportunities, reflecting a greater capacity for learning and growth, and underlining the need for efforts to unify the Sciences and Humanities. A culture of peace, global governance and shared values is essential for future progress of humanity. Ecology must be viewed as an integral component of economics. It is necessary to integrate thinking on ecology, economics and ethics.



The main challenge is transition to the new society in which past experience is no longer valid and technology plays a major role in a world driven by power and power of money. Technological development has outpaced the development of institutions and culture. Technological advance is rapid. Cultural change is slow. The challenge is to make the right technological choices, to govern the development and use of technology, to accommodate to radical advances in technologies, and apply technologies through consensus to avoid misuse. The obstacles posed by the current system of international institutions founded on the principle of national sovereignty, the absence of institutional mechanisms for humanity to exercise legitimate rights, extreme inequalities and the challenge of balancing knowledge, ecology, economy, and ethics were also recognized as serious impediments.

Increasing mobility, greater social integration between cultures and ever improving communications will generate new opportunities. There are also signs of an emerging shift toward a human-capital-intensive theory and approach based on education that imparts both knowledge and a sense of responsibility and supports the full development and expression of the creative potentials of each individual. Growing understanding of the science of networks is enhancing our capacity to leverage the power of social capital to promote human development. Solutions are unlikely to come from the nation-states. Real solutions are more likely to come from the NGOs representing global civil society and from individuals with global consciousness of the problems.

The Castle Duino meeting will be followed by a **Conference at the UN headquarters in Geneva on June 3, 2013**, followed by a **Workshop in Alexandria on June 5 & 6th** and additional events in late 2013 and 2014.

Garry Jacobs

WAAS Programs

The Anthropocene Epoch: A new WAAS Program Begins this Year



The word “anthropocene” went public in 2000, in a magazine article co-authored by **Paul Crutzen** and **Eugene Stoermer**. **Prof. Crutzen** is a Nobel Laureate (and WAAS Fellow) honored for his contribution to the discovery that man-made gases – basis of an enormously profitable refrigeration industry – were depleting the life-protecting layer of ozone in Earth’s atmosphere. **Prof. Stoermer** (deceased February 2012) had invented the word and used it in some of his own writing. It served as a compact statement of something that many scientists had already realized, which was that humans had become not just another species struggling to survive, but a new geological force changing Earth’s climate, altering the atmosphere, the oceans and the land, leading to the extinction of other life forms.

The word began to turn up in newspapers and scientific articles. It became the theme of the Academy’s 2008 General Assembly, “The Anthropocene Crisis: Perils and Promises of the 21st Century,” held in Hyderabad, India.

It now becomes the theme of a new and different WAAS effort, a website called Anthropocene Times, which will be launched this summer.

Some of the projects in the works:

What shall we tell the children – and when? Children are often traumatized by disasters – predicted, real or imaginary – and are often at the mercy of parents or other authority figures who are frightened and/or uninformed themselves.

Earth System Science: research and education in a hyperconnected world. As the world becomes more interconnected, so do centers of research – and often the boundaries between one science and another become virtually invisible. But many universities thrive on this, and develop popular programs on ESS. These (a) focus on Earth as a single system and (b) recognize humans as an active element in the system.

Denial: the (quiet) madness of crowds. We tend to think of denial as a problem associated with individuals – neurotics or people suffering from substance abuse. But current research points more toward the view of denial as a behavior prevalent among people who are knowledgeable about the severity of problems such as climate change but simply don’t talk about them because their friends and neighbors don’t talk about them.

New blue planet. One of the remarkable things about Earth is its abundance of water, which appears to be either scarce or non-existent in other planets. The predictions of rising oceans are terrifying to many, but WAAS Fellow **Carl Hodges**, founder of the Seawater Foundation, is an enthusiastic promoter of agricultural development projects based on seawater plants such as salicornia who discusses the idea of pumping ocean water inland to create new arable lands and counter rising sea levels.

Walter Truett Anderson
Project Director

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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View from the Chair



The Board of Trustees conducted a marathon meeting in Trieste starting on March 4 with a follow up meeting at the scenic Castle Duino on the 7th. We are very pleased to welcome the five newly elected Trustees to the Board – **Momir Đurović, Jüri Engelbrecht, Heitor Gurgulino de Souza, Nebojša Nešković, Daniel Visser.**

The first half of the meeting was devoted to evolving a smooth succession plan for the management of the Academy when **Ivo Šlaus** and I retire as Trustees in November 2013 at the end of our second four year terms. A consensus has emerged to expand the number of officers in order to strengthen the Academy's leadership and involve more people in its management. We hope to finalize the new management team by early Fall.

The Board's first significant decision was the unanimous election of **Zbigniew Bochniarz** to fill the position of Treasurer left vacant since **Bob Berg's** second term as Trustee ended last November. Bob has since been elected as Co-Chair of the Fundraising Committee and non-voting member of the Board. Second was the unanimous election of **Nebojša Nešković** as the new Secretary General to fill the vacancy created by Zbig's change of position with immediate effect. Nebojša has done an outstanding job as Chair of the Nominations Committee and we are all confident he will bring significant new capabilities to the management

team. The Board also elected Associate Fellow **Mikel Vanry** to the new position of Assistant Treasurer, which he will hold in addition to his place on the Fundraising Committee.

Later this Spring or in early Fall, General Elections will be held to select the next President of the World Academy to succeed Ivo. According to our Bylaws, the new President will be chosen from among the present members of the Board of Trustees. Fellows are invited to send in their nominations for the position to the [Elections Committee](#).

The remainder of the meeting focused on strategies to more actively involve Fellows in the work of the Academy. We now have upwards of 350 active Fellows, a record number at least twice the level of two years ago. Unlike many traditional academies in which membership is an honor and activity is purely optional, the founders of WAAS specifically created this Academy with the intention of actively working together to address important global issues. Therefore, mere election of distinguished individuals is not enough. We recognize that most of our members have other important obligations and commitments, but we hope that we can devise effective means for many more to participate more actively than ever before. There are numerous ways in which Fellows can actively contribute to the work of the Academy, such as nomination of new members, contributions to our journals and newsletters, payment of dues, participation in conferences and e-conferences, building links and bridges with other organizations, solicitation of donations, networking with other Fellows and maintaining up to date directory entries. We invite all Fellows to work with us to achieve the mission of WAAS.

Garry Jacobs
Chairman, Board of Trustees

Nominations Committee Report



Last Fall, the Nominations Committee proposed to the Board of Trustees changes to the Academy's nomination procedure, which were approved by the Board and are now in effect. These changes are intended to streamline the work of the Committee and ensure proper evaluation of all nominations. The Committee also obtained approval to expand its membership from five to nine. On recommendation of the Committee, the Board approved a proposal to increase the number of Associate and Junior Fellows from 20 to 100 each, which was included among the amendments to the Bylaws approved by Fellows in the recent General Election.

The nominations of candidates for Fellowship in the Academy were completed on November 30, 2012. In the period between December 1 and 20, 2012, NC (**Nebojša Nešković, Saulo Bahia, Giuseppe Caglioti and Chandana Chakrabarti**) evaluated the candidates and passed on to BoT for further consideration 20 candidates for Fellowship all of whom were approved by the BoT and elected during the General Election. In addition, upon the Committee's recommendation, the Board elected two Associate Fellows and one Junior Fellow. The profiles of all newly elected members are listed on pages 17-19.

Nebojša Nešković
Chair, Nominations Committee

Program Committee Report



The Program Committee invites Fellows to submit ideas and proposals for new programs and events that fall within the [Program Framework](#) of the Academy, which defines an inter-disciplinary or trans-disciplinary approach to addressing global issues based on the criteria for reliable knowing and key thrust areas. These include global governance, sus-

tainable development, human welfare, and integral knowledge. The Academy has a number of ongoing programs and new initiatives that are in the pipeline for the immediate future. The most important ongoing programs include the issue of the abolition of nuclear weapons, the global employment challenge project, revolution in human affairs, evolution of individuality, challenges and opportunities for the 21st century, limits to rationality, new economic theory, global rule of law, network science and other new science initiatives, and a major project soon to be launched on climate change.

The rule of law initiative is an important new focus which was launched in May last year with a webcast on May 15th. The rule of law has implications that touch on many of the major problems of global order. This initiative was preceded by a challenging paper published in [Cadmus](#) by **Garry Jacobs** and **Winston Nagan** titled "New Paradigm for Global Rule of Law." Several new webcasts are planned for later this year on different aspects of global rule of law. A major emphasis will be on rethinking the idea of sovereignty itself

to humanity as a whole, empowering the people of the entire earth space community to express themselves on key questions of global concern such as the legality of nuclear weapons. We work on the assumption that the key decisions about nuclear weapons and the speed of their abolition are vested with decision structures that are narrow and indeed, lack the authority of the peoples' imprimatur on a global basis. Several other themes relating to the rule of law are also under consideration for future webcasts and also for generating scholarship in the Academy's journals.

The Network Science webcast last November organized by **Raoul Weiler** was well-attended and generated considerable excitement. It has already been followed by a very interesting session at the Trieste Forum and the [first of a series of articles](#) on social networks appearing in *Eruditio*. Plans are in process for two more New Science e-seminars later this year on Complexity Theory and Self-organization or Autopoiesis.

Most recently, the Board has approved a timely new project on climate change led by former WAAS President **Walter Truett Anderson**. It is now notorious that global elites can no longer impugn science to avoid the reality of climate change. We believe that the Academy can play an important role in providing authoritative information to decision-makers on this issue.

Fellows are encouraged to submit proposals to the Program committee for consideration.

Winston Nagan
Chair, Program Committee

Membership Communications Committee Report



A hearty welcome to our new Fellows and greetings to all on behalf of the Membership Communications Committee! As many of you know, the purpose of this committee is to improve two-way communications among members of the Academy and between members and WAAS management. One important objective is to learn more about the background, expertise, interests and work of each of our current members so that we can better involve you in the work of the Academy and facilitate networking between Fellows with similar interests.

Unlike many traditional academies, the founders of WAAS established the World Academy as a collaborative effort to address pressing global issues, rather than as a means of bestowing honors on themselves or other members. WAAS is an organization with an inspiring mission which depends on the active involvement and creative leadership of its members to make an original intellectual contribution to world affairs.

The Membership Communications Committee has begun to brainstorm ways in which we can actively involve our Fellows in achieving the objectives of the Academy and we welcome your ideas and suggestions. We encourage each of you to share your ideas with other Fellows by contributing articles to WAAS publications, participating in upcoming Academy events, and involving WAAS as a co-sponsor in meetings and conferences of societal significance which you organize. You can help grow the Academy by identifying and nominating new members, especially those coming from under-represented regions and disciplines. Please update the information in your WAAS directory entry, including a profile of your current work, interests and publications. Tell us also how WAAS can assist you in the success of your own activities. You can reach us through admin@worldacademy.org

Nancy Flournoy
Chair, Membership Communications Committee

Fundraising Committee Report



2012 was a year of financial recovery for the Academy enabled by a fine cooperative effort of the Fellows and key donors. Last year we launched a cultural change in the Academy by instituting dues, as is done in many other academies. A larger than anticipated number of Fellows sent in dues during the six months since they were first announced. Payment of

regular dues will ensure the Academy the core operating finance that is so hard to otherwise obtain from project-based donors. And it will add stability and predictability to the Academy's operations. In addition, a number of Fellows made additional donations ranging in size from \$300 to \$5000.

The Academy benefitted from numerous grants and donations. The Mother's Service Society lent WAAS the administrative costs of the Academy last year and has agreed to convert the full amount into a donation. The Montenegrin Academy of Sciences and Arts met the full local costs of the conference it organized with WAAS last June. NATO and several other donors funded 80% of the cost of the Dubrovnik conference on Nuclear Security last September. About 75% of the cost of this month's Trieste Forum was met with donations by **Orio Giarini** and local scientific institutions in Trieste. Several other institutions have funded travel by WAAS officers in addition to significant contributions by the officers themselves. All in all, we ended the year in surplus.

For 2013, we anticipate a growth in dues receipts and we will have the benefit of a one time grant of \$50,000 from

a Trustee that will provide both restricted and unrestricted funds. This will give the Academy an additional year to put together project finance proposals and to seek such help from friends in the Academy and foundations. Our projections are that **even with expanded programs this year**, 2013 will be another year of modest surplus.



All of this is enabling a great increase in the range and frequency of WAAS activities, publications and other services to Fellows. Indeed, we believe the Academy now has a real value proposition with its Fellows: dues for real services. So we encourage you to use the Academy's website to pay your 2013 dues and we thank you for your valued collaboration.

We'd like also to encourage all Fellows to think of ways to help with the Academy's finances, such as approaching individuals or organizations they know to make modest contributions to the Academy or suggesting such sources to us to make an approach for funding.

Finally, a couple of cases were raised with the Treasurer by individuals who indicated hardship in meeting the new 100 euros/year annual dues. The treasurer (treasurer@worldacademy.org) has been given the authority to modify or waive dues under such circumstances. In this way there is encouragement for everyone to be involved in the Academy's work.

Alberto Zucconi and Bob Berg
Co-Chairs, Fundraising Committee

Call for Nominations

Fellows are invited to submit nominations for Fellows, Associate Fellows and Junior Fellows as described in the [Nominations Policy and Procedure](#).

For more information, contact nominations@worldacademy.org

News from Fellows



World Academy of Art & Science Fellow **Dr. Riane Eisler** headlined a U.S. Congressional briefing on March 20th sponsored by the [Center for Partnership Studies' Caring Economy Campaign](#) on [The Economic Return from Investing in Care Work and Early Childhood Education](#).

The briefing highlighted the CPS/Urban Institute report [National Indicators and Social Wealth](#) on going beyond GDP to measure national economic success.

Newly Elected Fellows

17

January Election 2013

Fellows



Francisco E. Baralle: Director-General, International Centre for Genetic Engineering and Biotechnology (ICGEB); Member, European Molecular Biology Organisation (EMBO); Member, Argentine Academy of Sciences.

Katalin Bogay: President of the General Conference of UNESCO; Permanent Delegate of Hungary to UNESCO; Honorary Member, London-based Imago-International Psychoanalytical Society; Co-founder, Liszt Academy Network; International Advisory Board Member, Budapest Philharmonic Orchestra, the Global Round Table, ISES-Corvinus University UNESCO Chair.



Desmond Henry Browne: British Labour Party politician; Convenor, Top Level Group of Parliamentarians for Multi-Lateral Nuclear Disarmament and Non-proliferation; Convenor, European Leadership Network.

Hikmet Çetin: Turkish politician; Former Deputy Prime Minister of Turkey; Former Speaker of the Parliament of Turkey; NATO Senior Civilian Representative (SCR) for Afghanistan.



Neven Duić: Head of Power Engineering and Energy Management Chair at the Department of Energy, Power Engineering and Environment, FSB, University of Zagreb; Full professor, Department of Energy, Power Engineering and Environment, FSB, University of Zagreb; President, Centre for Sustainable Development of Energy, Water and Environment Systems (SDEWES Centre); President, The Combustion Institute – Croatian Section; Croatian national coordinator for researchers mobility.

Lorenzo Gascón: Professor, Economic Geography, University Of Barcelona; Academician and Vice Chairman, Royal Academy of Economic and Financial Sciences of the Kingdom of Spain; Academician, International Academy of Management, Washington D.C., USA.; Member, Chartered Accountants Institute of Spain.



Grinberg Ruslan Semenovich: Director and Head of the Department of Economic Theory, Institute of Economics RAS; Chairman, Department of Social and Economic Problems at the Faculty of Economics of Lomonosov Moscow State University; Professor, Bratislava School of Law; Professor, Moscow School of Economics of Lomonosov Moscow State University and at the Faculty of Management of Moscow Theater Art School.

Ravi Bhushan Grover: Principal Advisor, Strategic Planning Group (SPG), Atomic Energy Commission of India, Department of Atomic Energy, Government of India; Director, Homi Bhabha National Institute.



Sigmund Grønmo: Rector, Professor of Sociology, University of Bergen; Chair of the Council of the Inter-University Center, Dubrovnik, Croatia; Member of the Board Steering Group, Worldwide Universities Network (WUN); Member, Regional Committee for Economic Development, The County of Hordaland.

Stanislav Miertus: Director General, International Centre for Applied Research and Sustainable Technology, Bratislava, Slovakia & Trieste, Italy; Inventor of composite (solid binding matrix) biosensors (1995); Honorary Member, Scientific Council of the FCHPT STU Bratislava; Honorary Member, Scientific Council of the FPV UCM Trnava; Member, Knight Order of the Saint Lazarus of Jerusalem.



Remus Pricopie: Rector, National University for Political Studies and Public Administration (SNSPA); President of the Board of Directors, Romanian-US Fulbright Commission; Chair, Task Force on Fostering and Building Human Capital (FBHC) of the Regional Cooperation Council (RCC); Member, Romanian Association of the Club of Rome.

Mutaz M. Qafisheh: Professor of International Law, Hebron University, Hebron, Palestine; Director, Legal Clinic, UNDP and USAID-funded project, Palestine; Legal Advisor for the PLO, United Nations, and Terre des homes Lausanne; Member, Palestine Bar Association.



Franz Josef Radermacher: Director of FAW (Research Institute for Applied Knowledge Processing); Faculty, Data Bases / Artificial Intelligence at the University of Ulm; Member, Club of Rome; President, Senat der Wirtschaft e.V., Bonn; President, Global Economic Network (GEN), Vienna, and Vice President, Ecosocial Forum Europe, Vienna.

J. Martin Ramirez: Head, Research Group on Sociopsychobiology of Aggression, Institute for Biofunctional Studies and the Department of Psychobiology of the Universidad Complutense Madrid; Member, ISRA (International Society for Research on Aggression); Chairman of the CICAs (International Colloquia on Conflict and Aggression); The Universal Peace Federation (UPF) Ambassador for Peace.



Yuri Scherbak: Ambassador Extraordinary and Plenipotentiary of Ukraine; Writer; Former Political Activist; President, Institute for Sustainable Development of Ukraine; Honorable Member, Scientific Studies Institute of Harvard University; Member, Ukraine's Writers' Union and Cinematographers' Union.

Tatiana V. Tchouvileva: Co-President, Coordination Committee of the Russian Communities (KSARSI) and Member of the Board of Directors, International Council of Russian Compatriots; Collaborator, Musicolor Project.



Marija S. Todorovic: Founder and Head of the Laboratory for Thermodynamics and Thermotechnics at the Department of Food Technology and Agricultural Engineering, University of Belgrade; Founder and Head of DERES (Division for Energy Efficiency and Renewable Energy); Owner and Director of the VEA-INVI Ltd. (Virtual Engineering & Art-Investment Vision); Research Professor, Kyung Hee University, Korea.

Dragan K Vukčević: Professor, Law Faculty of the University of Montenegro, Podgorica; Founder and Dean of the Faculty of Law Science, "Donja Gorica", Private University; Secretary, MASA Division of Social Sciences; Extraordinary member of the Montenegrin Academy of Sciences and Arts.





Walther Ch. Zimmerli: President, Brandenburg University of Technology (BTU), Cottbus; Habilitated professor (Privatdozent) at the University of Zürich; Permanent Senate Visiting Professor, University of Stellenbosch, South Africa.

Mariya Zubrytska: Vice-Rector, Academic Affairs, Lviv National University, Ukraine; Associate Professor, Department of Literary Theory & Comparative Studies, Lviv National University; Member, Supervisory Board, City Institute, Lviv.



Associate Fellows



An Krumberger: Chairman and Co-Founder, World 2033 Forum; Director, Council One.

Ulric Fayl von Hentaller: Personal Adviser to the Chairman, The Hares Group; Former Director, The Global Round Table; Invited Lecturer throughout EU Member States.



Junior Fellows



Maria Kononov: Painter, sculptor, fashion designer; applies art to help sick children.

Benjamin Vanry: Teach Vancouver; English Literature and Philosophy.



What is it like to be a scientific genius? **Ullica Segerstrale's** *Nature's Oracle* (Oxford University Press, 2013) explores the life of W. D. (Bill) Hamilton, "Darwin of the 20th century". Hamilton solved Darwin's outstanding problem of explaining how self-sacrificing behavior can ever make evolutionary sense: altruistic behavior will be able to evolve as long as the benefit falls on a recipient that is genetically related to the donor. This was his famous theory of "inclusive fitness" or "kin selection" and he developed many more. Hamilton was an intrepid idea generator, explorer, and risk-taker — be it in the realm of theory or in the Amazon — and extraordinarily creative. He was also an uncompromising truth-seeker concerned about life on earth and the future of humankind.

For more information, visit
<http://ukcatalogue.oup.com/product/9780198607274.do>

