



PROMOTING LEADERSHIP IN THOUGHT  
THAT LEADS TO ACTION

*THE WEALTH OF NATIONS REVISITED*

# CADMUS

NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

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### *The CADMUS Journal*

*The acronym of the South-East European Division of The World Academy of Art and Science – SEED—prompted us to initiate a journal devoted to seed ideas—to leadership in thought that leads to action. Cadmus (or Kadmos in Greek and Phoenician mythology) was a son of King Agenor and Queen Telephassa of Tyre, and brother of Cilix, Phoenix and Europa. Cadmus is credited with introducing the original alphabet—the Phoenician alphabet, with “the invention” of agriculture, and with founding the city of Thebes. His marriage to Harmonia represents the symbolic coupling of Eastern learning and Western love of beauty. The youngest son of Cadmus and Harmonia was Illyrius. The city of Zagreb, which is the formal seat of SEED, was once part of Illyria, a region in what is today referred to as the Western Balkans. Cadmus will be a journal for fresh thinking and new perspectives that integrates knowledge from all fields of science, arts and humanities to address real-life issues, inform policy and decision-making, and enhance our collective response to the challenges and opportunities facing the world today.*

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NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

**Volume 3, Issue 1**

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## CADMUS VISION

*The world is in need of guiding ideas, a vision, to more effectively direct our intellectual, moral and scientific capabilities for world peace, global security, human dignity and social justice. Today we face myriad challenges. Unprecedented material and technological achievements co-exist with unconscionable and in some cases increasing poverty, inequality and injustice. Advances in science have unleashed remarkable powers, yet these very powers as presently wielded threaten to undermine the very future of our planet. Rapidly rising expectations have increased frustrations and tensions that threaten the fabric of global society. Prosperity itself has become a source of instability and destruction when wantonly pursued without organizational safeguards for our collective well-being. No longer able to afford the luxury of competition and strife based primarily on national, ethnic or religious interests and prejudices, we need urgently to acquire the knowledge and fashion the institutions required for free, fair and effective global governance.*

*In recent centuries the world has been propelled by the battle cry of revolutionary ideas—freedom, equality, fraternity, universal education, workers of the world unite. Past revolutions have always brought vast upheaval and destruction in their wake, tumultuous and violent change that has torn societies asunder and precipitated devastating wars. Today the world needs evolutionary ideas that can spur our collective progress without the wake of destructive violence that threatens to undermine the huge but fragile political, social, financial and ecological infrastructures on which we depend and strive to build a better world.*

*Until recently, history has recorded the acts of creative individual thinkers and dynamic leaders who altered the path of human progress and left a lasting mark on society. Over the past half century, the role of pioneering individuals is increasingly being replaced by that of new and progressive organizations, including the international organizations of the UN system and NGOs such as the Club of Rome, Pugwash and the International Physicians for the Prevention of Nuclear War. These organizations stand out because they are inspired by high values and committed to the achievement of practical, but far-reaching goals. This was, no doubt, the intention of the founders of the World Academy of Art & Science when they established this institution in 1960 as a transnational association to explore the major concerns of humanity in a non-governmental context.*

*The founders of WAAS were motivated by a deep emotional commitment and sense of responsibility to work for the betterment of all humankind. Their overriding conviction was on the need for a united global effort to control the forces of science and technology and govern the peaceful evolution of human society. Inhibiting conditions limited their ability to translate these powerful motives into action, but they still retain their original power for realization. Today circumstances are more conducive, the international environment is more developed. No single organization can by itself harness the motive force needed to change the world, but a group of like-minded organizations founded with such powerful intentions can become a magnet and focal point to project creative ideas that possess the inherent dynamism for self-fulfillment.*

Ivo Šlaus

Orio Giarini

Garry Jacobs

**CADMUS**  
**New Perspectives on Major Global Issues**  
*Volume 3, Issue 1, October 2016*

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## Inside this Issue

The 20<sup>th</sup> century is a record of momentous, multidimensional challenges, remarkable achievements and unprecedented missed opportunities. The world community missed a unique opportunity at the end of WWII to abolish war between nation-states. Instead the peace degenerated into a nuclear arms race and a Cold War. At the end of the Cold War it missed the opportunity to abolish nuclear weapons and build a truly democratic institution for global governance. Instead the number of nuclear weapon states has proliferated, neoliberalism has triumphed and the world has been transformed into a global casino. Today humanity confronts daunting challenges. Once again these challenges have generated an unprecedented opportunity for rapid and radical transformation founded on new ideas, values, centers of power, institutions and policies. This issue of *Cadmus* explores these multidimensional challenges and the unprecedented opportunities now before us.

Part 1 of this issue contains a selection of papers by WAAS Fellows presented at an international colloquium on “New Paradigm and Planetary Engagement: A Call for Responsibility” at Kyung Hee University in Seoul on September 21-23, 2016. The negative conception of peace as merely the absence of war and the conception of security in narrow military terms provide inadequate and inappropriate direction for human development in the 21<sup>st</sup> century. This part contains articles that examine essential components of a positive, comprehensive and integrated approach to human security. **Alberto Zucconi** calls for radical changes in higher education to meet the needs of the fourth Industrial Revolution. **Winston Nagan** examines the concept, basis and implications of a human-centered approach to development. **Neantro Saavedra-Rivano** stresses the central role of human capital in social advancement and proposes a novel strategy for financing massive investments to develop the potential of human beings.

Part 2 of this issue focuses on social power—the invisible elephant in the room that which energizes, directs, shapes and determines the results of all human activities. For decades the effort to formulate universal, positivistic, value-free principles in the social sciences led to neglect of this all-pervasive, all-important issue. Social power is the underlying source of humanity’s creative social energies and unlimited potential, which social organization channels and converts into myriad different forms of effective power. The patterns of distribution of that power politically, economically, socially, intellectually and culturally determine the overall vibrancy and creativity of society and its capacity to generate freedom, security, welfare and well-being for its members. This issue contains a selection of articles prepared for the upcoming WAAS-WUC colloquium and PG level course on Social Power to be held at the Inter-University Centre, Dubrovnik and live online from October 31 to November 2, 2016. **Garry Jacobs** traces the historical evolution of diplomacy from military and political negotiations to mutually beneficial economic, social and cultural relations and calls for establishment of an international institution on human security for further thinking and policy formation from the new

perspective. **Emil Constantinescu** explains how time warp is affecting our lives at the level of values and how a change in the way we think is necessary so humanity may march forward without the unnecessary stumbles that usually accompany ignorance. Human connectivity is the main theme of **Janani Harish**'s paper. She looks to history as a guide to trace historical precedents and explains how effective logistics can accelerate human progress. **Herwig Schopper** emphasizes the necessity for the common citizen to be aware of scientific knowledge and raises an important question: What role can international scientific institutions like WAAS play in addressing global issues? **Murugesan Chandrasekaran** makes an insightful remark on the nature of reality and the mind's tendency for dualistic thinking and explains that the subjective and objective dimensions of reality are interdependent and inseparable. **Saulo Casali Bahia** questions the origin of social power and how legal power is generated by the society.

Part 3 of this issue presents a selection of articles by members of the New Economic Theory Working Group reflecting the efforts of WAAS to develop a framework for human-centered, integrated theory of economy and social science. These articles are based on presentations made at the XIII International Colloquium at the University of Lisbon in May 2016. **Augusto Santos Silva** explores the fundamental characteristics of globalization, and offers a solution for rebalancing the globalization process: he suggests redistribution of powers and resources in order to reduce inequality and stresses the need for metanarratives which should be centered on democracy, law and development. **Joachim Spangenberg** calls for a transdisciplinary approach in natural and social sciences. No single discipline, he points out, can capture reality fully or claim to have the complete knowledge. **Orio Giarini** emphasizes the very important role of insurance in the modern service economy, which has been largely ignored or dismissed by contemporary economists. Drawing on extensive experience in the insurance industry, he argues that new economic theory need to take into account risk and uncertainty, elements of complexity associated with the modern Service Economy. The debt-based approach to economic development followed by conventional economics, **Dimitrios Kyriakou** explains, keeps the losses public while keeping the benefits private. He proposes making finance less attractive by introducing regulations, taxations and other claw back schemes that organize the financial market. **Robert Hoffman**'s article takes the concept of "deep thinking" as its frame of reference and stresses the need for an awareness of complex global systems, for without an inherent understanding of complexity, there will be little hope to solve global challenges that humanity faces today.

We hope you enjoy this issue and invite reader comments and responses on the articles for publication in the next issue.

**The Editors**



## The Need for Person-Centered Education

**Alberto Zuconi**

President, Person-Centered Approach Institute (IACP);  
Member, Board of Trustees, World Academy of Art & Science

### Abstract

*We, the children of the Anthropocene Era, are entering the 4<sup>th</sup> industrial revolution and the impact is going to be pervasive and of greater magnitude compared to the previous industrial revolutions. The incoming changes, approaching at an accelerating speed, will be impacting everything and everybody and blurring the lines between the physical, digital, and biological spheres; they will affect the bio-psycho-social dimensions, our narratives and even what it means to be human. If we are not farsighted and do not plan effectively, the results could be very problematic for all life forms on Earth. If we manage the 4<sup>th</sup> industrial revolution with the same blindness and forms of denial with which we managed the previous industrial revolutions, the negative effects will be exponential. But we are not impotent; we can manage this revolution wisely, increase the positive effects and mitigate the negative ones since technology is designed, made and managed by us. We cannot afford to be naïve and just hope that technology will automatically improve our lives; new and effective tools for understanding and governing such epochal changes are needed apart from the need for facilitating awareness in all stakeholders about the dangers and opportunities offered by the incoming changes. Effective forms of education are crucial. The fourth revolution could be an unprecedented success if we are able to manage complex processes and at the same time assure that each innovation will not only bring change but also foster a more humane, sustainable, peaceful and prosperous future for all. For effective governance, we need effective tools. One much-needed tool is the clear understanding of the crucial role played by the processes by which we humans construe experiences of ourselves, of others and other life forms. In other words, most of us still think we live in a unidimensional reality, but we live in a socially construed consensus reality, ignoring which may create crucial blind spots, diminish our coping capacities and resilience, thereby generating humongous self-inflicted damages. To meet these challenges, effective and scientifically validated person- and people-centered educational approaches are necessary. They will play a crucial role in enabling us to stop wasting our best resources—human and natural capital—and will facilitate us to achieve effective and sustainable governance.*

### 1. The Problems we must face

*“The trouble with our times is that the future is not what it used to be.”*

**– Paul Valéry**

There is a large amount of scientific evidence that our present relationship with ourselves, others and the planet we live in is the main variable influencing all life forms and the planet itself, a dramatic epochal change referred to by scientists as the Anthropocene (Crutzen and Stoermer, 2000).

The human population's exponential increase favored by the first, second and third industrial revolutions in numbers, production and consumption behaviors has produced such dramatic and exorbitant costs to ourselves and all life forms. The United Nations estimates that at the present pace, the number of people on the planet is set to rise to 9.7 billion in 2050 with 2 billion aged over 60 (United Nations Department of Economic and Social Affairs, Population Division, 2015).

According to the recent *The Living Planet Report*, the problems are getting worse as populations and consumption keep growing faster than technology's ability to find new ways of expanding what can be produced from the natural world. This led the report to predict that by 2030, if nothing changes, mankind would need two planets to sustain its present lifestyle.

The World Health Organization (WHO, 2012) reminds us that the destruction and pollution of the environment have dire consequences on people's health: globally, 23% of all deaths and 22% of disability-adjusted life years (DALYs) are estimated to be attributed to the environment.

In total, the number of deaths linked to the environment amounts to 12.6 million per year (based on 2012 data). This burden could be lessened significantly by reducing risks (WHO 2016a). Unfortunately, the risks and their impact are rising, the latest WHO report in 2016 dramatically shows that 92% of the world's population lives in places where air quality levels exceed WHO safety limits, which means that 9 out of 10 people live in countries with excessive air pollution. Every year, 3 million deaths are associated with exposure to outdoor air pollution. Over 4 million people die prematurely from illness due to household air pollution (WHO 2016c; WHO 2016d).

There are also other kinds of mounting problems around the world and in particular in the most prosperous countries. Paradoxically, on the one hand the world has had since the Second World War an exponential increase in the availability of material goods, services and connectivity, and on the other hand, an equally significant increase in the number of people that feel disconnected, depressed or burdened by narcissism, consumerism, self-exploitation and lack of meaning (Han, 2014).

There is scientific evidence that depression predisposes people to myocardial infarction (heart attack) and diabetes, both of which conversely increase the likelihood of depression. Many risk factors such as low socioeconomic status, alcohol abuse and stress are common to both mental disorders and other non-communicable diseases. There is also substantial concurrence of mental disorders and substance use disorders. Taken together, mental, neurological and substance use disorders exact a high toll; they accounted for 13% of the total global burden of disease in the year 2004. Depression alone accounts for 4.3% of the global

burden of disease and is the single largest cause of disability worldwide, 11% of all years lived with disability globally, particularly considering women. The economic consequences of these health losses are equally large (WHO, 2013).

The WHO reminds us that every year more than 800,000 people end their own lives and there are many more people who attempt suicide. Every suicide is a tragedy that affects families, communities and entire countries. Globally, it was the second leading cause of death among 15-29 year-olds in 2012. The number of suicides increases during moments of crisis with a breakdown in the ability to deal with life stresses, such as financial problems. In addition, experiencing conflict, disaster, violence, abuse, loss and a sense of isolation is strongly associated with suicidal behavior. Suicide rates are also high amongst vulnerable groups who experience discrimination, such as refugees, migrants, indigenous peoples, LGBTI persons and prisoners (WHO 2016b).

To make things worse, the effects of climate change, such as the acidification of the oceans, the desertification of large parts of the planet, the increasing deforestation and destruction of biodiversity, interact with other explosive realities. There are still an enormous number of people suffering from hunger, ill health, wars, terrorism, violence, unequal access to resources and opportunities, racism and many forms of discrimination and injustice. Many people are forced to leave their homes and countries due to warfare and ethnic or religious fanaticism that enlarge the growing numbers of refugees and migrants, which in turn creates an escalating spiral whereby they become the innocent targets of fear and bigotry in nations where they seek refuge.

A mounting number of scientists warn us that we are fast reaching the tipping point, where mitigation and/or reversal of trends will not be within our reach if we do not act promptly and effectively (IPCC, 2007, 2013, 2014).

The fourth industrial revolution could help us exit from this human-produced quagmire, only if we are capable of effective planning and governance.

For sure the fourth industrial revolution will create new problems. It is estimated that massive unemployment of unskilled workers and the disappearance of some jobs becoming automated by computerized machines will be one of the effects of the changes looming ahead that we will need to deal with: The International Labour Organization (ILO) has estimated that in the next 10-20 years, the number of jobs threatened by new technologies will be around 47% of the total jobs in the United States and between 40% and 60% in Europe (Degryse, 2016).

Rising inequalities is another big problem. According to Credit Suisse's *Global Wealth Report 2015*, the richest 1% of the population now owns half of all household wealth. Oxfam's new report states that 62 individuals control more assets than the poorer half of the world's population. Researchers such as Richard Wilkinson and Kate Pickett have found that unequal societies tend to be more violent, have higher numbers of people in prison, experience greater levels of mental illness, have lower life expectancies and lower levels of trust. These inequalities will create even more fears and backlash against change. The rise

in interconnectedness will bring rising dangers on security, cyber terrorism and likely create a 1984-like scenario; there is also the risk that the cyber revolution may deprive us of our privacy right, creating some planetary Big Brother effect (Maynard, 2015).

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*“Our relationship with ourselves, others and the world is an important determinant of our mental, physical, and social health.”*

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All these smart machines and smart customized services can become self-inflicted forms of destruction of human capital if we do not plan the Internet of Things wisely or design smart machines to be not only smart, but also wise and people-centered.

Of course we all enjoy the new opportunities of being connected, having access to connect to people and services—undreamed of until a few years ago—that the technological multinationals are offering us for free. At the same time these new opportunities go hand in hand with profound changes that may also bring about some boomerang effects: Various nations have lost technological sovereignty without which their economic and cultural sovereignty have been greatly reduced. The artificial intelligence power that some multinationals are acquiring simply by sucking up the data of millions of people that are using their free services does not have equals, but this kind of innovation, for some new media sociologist like Evgeny Morozov, brings a risk of democracy being replaced by a futuristic scenario of technological Big Data feudalism (Morozov 2013). It is obvious that in all these scenarios, prevention is far more feasible and less costly than to wait and see and eventually being forced to do emergency repair jobs when it is too late.

## 2. What to do

We can do several things for planning and governing the fourth industrial revolution in a people-centered and sustainable way; they all have a common denominator: to ensure that the planned changes are person-, people- and community-centered and sustainable. It is imperative to identify the barriers, to achieve these goals and work effectively to identify, remove or reduce the barriers (Norgaard, 2011); (Zucconi, 2013, 2016).

*“You know, the principle of empathy gives broader meaning, by the way, to Dr. King’s philosophy of nonviolence...”*

*It seems like we got an empathy shortage, an empathy deficit. More serious than the federal budget deficit. We’ve become so cynical that it almost seems naive to believe that we can understand each other across the gulf of race, or class or region or religion...”*

**Barack Obama**, *Martin Luther King Day, Chicago IL, Rockefeller Memorial Chapel, January 21, 2002*

I strongly believe that some of the variables that will effectively foster a more humane and sustainable future are:

- More awareness
- More empathy
- More capacity for respecting oneself, others and the world
- More responsibility (in the sense of the ability to respond)

Since reality is socially construed, in order to have a fourth industrial revolution that will protect and promote human and natural capital, we need to educate and empower everybody to make their contribution to achieve this goal.

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*“Person-centered Approach focuses on health and not on illness, on capacities rather than on limitations; empowers and promotes learning, well-being and resilience by facilitating the development of the potentialities of individuals, groups and organizations.”*

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### **3. Create and Use Effective Tools to Promote Sustainable Change**

Our relationship with ourselves, others and the world is an important determinant of our mental, physical, and social health. When people and societies are alienated from parts of themselves, they relate to others and the planet in alienated and distorted ways.

For example, at present, profit is calculated in a mechanistic reductionist way, the so called “bottom line”; at the national level we still use the Gross National Product, whose standards completely ignore the destruction of human and natural capital. With a more realistic and sustainable approach there are at least 3 variables that account for the so-called Triple Bottom Line (TBL) which measures economic, ecological and social results. The Quadruple Bottom Line (QBL) also takes into consideration cultural aspects like governance (Zuconni, 2013).

Recently, an Inclusive Wealth Index (IWI) has been formulated. It has a broader way of measuring natural capital, such as forests; produced capital, such as roads and factories; and human capital, which includes levels of education, knowledge, and creativity. Preliminary findings indicate that it is possible to trace changes in the components of wealth by country and link these to economic growth, and the impact of declines or increases in natural capital as an economic productive base (UNU-IHDP, 2012). Effective economic growth can be attained only through ecologically conscious green or blue economy (Pauli, 2010).

We need to apply effective metrics and create new ones. We need to use in future planning and project management some effective human capital and environmental impact assessment scales, or use tools already available like the Health Impact Assessment (HIA) to measure and predict health consequences (WHO 2016a). If such assessments are performed at the

planning stage, we can have projects with a focus on sustainability, people-centeredness, quality, vulnerability and resilience factors.

#### 4. Use Scientifically Validated People-Centered Tools

To better manage the present situation, we do not need to start from scratch, many effective tools are already in existence and they have ample scientific validation for their efficacy and efficiency. Here is a partial list of some of them:

- **The Person-Centered Approach** is a scientifically proven effective way to create solutions on a win-win basis. The Person-Centered Approach (PCA) is a systemic, holistic approach applied successfully in interpersonal relationships including conflict resolution. PCA focuses on health and not on illness, on capacities rather than on limitations; empowers and promotes learning, well-being and resilience by facilitating the development of the potentialities of individuals, groups and organizations. PCA helps people to grow, learn self-regulation and take responsibility for what they do rather than fostering dependency.
- **The Person-Centered Planning** (PCP) is another scientifically sound and process-oriented approach designed to empower people. It focuses on the people and their needs by putting them in charge of defining the direction of their lives. PCP is being applied successfully in many settings and in particular in the design and management of health and special needs facilities.
- **The People-Centered Approach** (PeCA) is a scientifically validated, interdisciplinary and intersectoral approach designed to be employed in large scale projects focused on fostering the maximum level of effectiveness in protecting and promoting human ecologies and natural ecosystems and promoting sustainable change. The People-Centered Approach (PeCA) is a values-oriented approach based on equal rights, deep respect for all forms of life, cultures and traditions. Lately, even the International Labour Organization is recommending the use of People-Centered Approaches (Kiniger-Passigli and Biondi, 2015). The PeCA promotes empathic understanding, mutual respect and effective communication and collaboration among different stakeholders through actions of empowerment and resilience.

#### 5. Identifying the Barriers to Sustainable Person-Centered Change

Notwithstanding the seriousness of the threats, and the urgency to deal with them, many obstacles remain in the way of effective and sustainable governance at the local, national and international levels. The lack of awareness of the magnitude of the problems and the changes needed in the behaviors of all the stakeholders to manage the serious mounting challenges facing humanity is in part due to barriers of a sociological and psychological nature that impede effective coordinated actions of various stakeholders. The underlying mechanism at work in the promotion or resistance to change or the denial of threats like climate warming varies from culture to culture: how reality is socially construed and how individuals and organizations construe their experiences and narratives are relevant for the understanding of

the promotion of change needed to promote sustainable governance and to deal effectively with the barriers to change (Zucconi, 2013, 2016).

## 6. Reality

*“Reality isn’t what it used to be”*

– **Walter Truett Anderson** (1990)

In the age of globalization and of growing complexity, in order to meet the challenges of our present and future, we need new and effective ways to facilitate the capacity of awareness and integration in our ways of knowing and behaving. We need to foster a new socio-psychological literacy for billions of people; a socio-psychological compass and a holistic/systemic way of being in relationship with ourselves, others and the planet, to enable us to navigate the rippling currents of change.

Nowadays, decision makers and experts seem not to take notice in their blueprints of the governance of how individuals, communities, societies and cultures are fully immersed in the ways they call reality and perceive it, which in effect is not quite what they intend—reality as an objective fact. What they call reality is the way individuals construe their experiences of the so called reality at the personal and societal levels.

The ways individuals and communities construe their experiences can be very useful in helping them cope effectively with their circumstances, but only if they foster a clear understanding of how problems are generated and how they can be effectively resolved or mitigated.

As the history of humankind amply shows, the construction of experience mistakenly taken for objective reality can, even with the best intentions, create destructive boomerang effects, immense sufferings and has even resulted in the downfall of some empires and civilizations in the past.

The way we still use some dysfunctional metrics to measure growth is one of the many examples of how we make ourselves blind to the obvious: We can still read in the daily news that the economy is growing even when society is bent on effectively destroying its human and natural capital, impacting present and future generations negatively and behaving like cancerous cells multiplying in a living organism.

Drawing national borders with a ruler might look neat in a geo-political map of post-colonial nations but that blindness to reality will provoke chaos and immense suffering for generations and spread to larger areas, as the present social pandemic of violence seems to indicate. Only blindness can explain the recent behaviors that some of the most advanced nations have adopted in Iraq, Syria, Libya, and the Middle East. Only blindness can explain the lack of preparation for the consequences from the dislocation of immense numbers of people running away for life from their war torn countries, risking their lives to have a chance in more safe and prosperous countries, but who in turn experience a rise in fear of insecurity, which generates the rise of populist politics, racism and violence.

*“The world of everyday life is not only taken for granted as reality by the ordinary members of society in the subjectively meaningful conduct of their lives. It is a world that originates in their thoughts and actions, and is maintained as real by these.”*

**– Berger & Luckmann, 1966, page 19**

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*“We need to foster at every level of society an awareness of the social construction of reality, of our powers and responsibilities for the present and the future of humankind and the whole planet.”*

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What is perceived as real varies from society to society and is produced, transmitted and conserved through social processes. Our perception of reality is largely modeled from beliefs and assumptions that are typical of the society and culture to which we belong. What we know, what we consider true and right, the behaviors we adopt, all are influenced by the social/cultural environment in which we live. This process happens through the internalization of “reality” that occurs during the socialization process.

We need new and effective ways of coping with our rapidly changing realities. A way to become aware of how we construe our experiences of what we call reality, the relationship with ourselves, the others, the world. We need to foster at every level of society an awareness of the social construction of reality, of our powers and responsibilities for the present and the future of humankind and the whole planet (Anderson, 1990, 1997, 2016).

Socio-cultural and personal constructs are the ways in which communities and individuals construe their experiences at the emotional and cognitive levels. The social and personal constructs are interacting with and influencing the social and individual dimensions all the time.

Some of the variables influencing us are:

- Our relationships with significant others—parents, siblings etc., by the roles that they give us and by the ways of being (constructs) we introject which become part of our personality, influencing how we relate with ourselves, others and the world.
- The social environment through the imposition of societal norms.
- The narratives we absorb from kids’ fables, cartoons, movies, TV, social media, popular heroes.
- The formal and informal education we receive.

For all the above reasons, we need to educate everybody to understand the social and individual processes that lie at the base of the construction of narratives that we call reality. What we call reality is a consensus reality and is largely shaped by our beliefs. If our socially construed and personally construed beliefs are made conscious and their values made explicit,



we can examine them and verify if some of our beliefs are obsolete or dysfunctional, so we can update and replace dysfunctional ways of thinking and feeling with more functional ones, a process that is characteristic of fully functioning persons (Rogers, 1965); (Zucconi, 2013).

## 7. Effective Education

No other institution in the world is as powerful in shaping our future as education, since it is only during the educational process that much of the social construction of reality occurs. Education is the process by which the minds of the new generation are shaped about what is real (Dewey, 1897, 1924); (Rogers, 1969, 1983); (Freire, 1970); (Foucault, 1980); (Zimring, 1994); (Morin, 2001, 2007a, 2007b); (Rogers, Lyon & Tausch, 2014); (Zucconi, 2013, 2016).

Francis Bacon stated that knowledge is power. Most people will agree with that, but for many, it is still not automatically self-evident that to have faulty knowledge is to lose power and is a lethally effective form of socially self-inflicted harm. Present traditional education often stifles our natural learning abilities unintentionally.

All lifeforms' survival depends on effective and rapid learning as to how to adapt their behaviors to environmental changes. We need to retool and upgrade all levels of our education. Formal and informal education at any level needs to offer us the knowledge, skills and attitudes that will enable us to survive and even prosper in the present period of change by learning the needed skills for coping and governing in peaceful and sustainable ways through the turbulent scenarios of the Anthropocene Era.

*“Education and health go hand in hand.  
The evidence demonstrating the links is overwhelming.”*

**– Margaret Chan**

Director-General of the World Health Organization (WHO), *MDG Summit: Remarks at Roundtable 2: Meeting the Goals for Health & Education, New York, September 20, 2010*

Education is the wellspring of our wellbeing, prosperity and resilience; it is through education that we human beings can transcend some of the physical limits of biological evolution. There is ample scientific evidence of the connection between health and education, education and prosperity (KPMG Foundation, 2006); (Cutler & Lleras-Muney, 2006); (Every Child a Chance Trust 2009); (OECD, 2010); (WHO, 2013, 2016a, 2016b).

## 8. The Effects of Education on Health

Cutler & Lleras-Muney report that an additional four years of education lowers five-year mortality by 1.8 percentage points; it also reduces the risk of heart disease by 2.16 percentage points, and the risk of diabetes by 1.3 percentage points. The significant association between education and health has been observed in many countries and time periods, and in a wide variety of health measures. The differences between educational inequalities are significant: in the U.S. in 1999, the age-adjusted mortality rate of high school dropouts aged 25 to 64 was more than twice as large as the mortality rate of those with some college education (Cutler & Lleras-Muney, 2006).

Not only is education an important social determinant of health, but higher levels of education help to create healthier, more cohesive, prosperous and resilient communities and nations. The benefits of education include better levels of social engagement, an important variable of cohesive, safer and healthier societies. At the individual level, the knowledge, personal and social skills provided through education better equip individuals to access and use information and services to maintain and improve their own health and their family's (Feinstein et al. 2003).

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*“Effective education needs to protect and promote the enhancement and actualization of the natural qualities of empathy, respect, deep contact, creativity and resilience.”*

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To be more effective, education needs to be people-centered and empower people to be in contact with themselves, others and the world, instead of stifling the natural human capital as often is the case with traditional education. Effective education needs to protect and promote the enhancement and actualization of values like empathy, respect, deep contact, creativity and resilience (Rogers, 1969, 1983); (Gershon & Vincow, 1997); (Lambert & McCombs; 1997); (Catalano & Catalano 1999); (Thorkildsen, 2011); (Zucconi, 2008, 2011, 2013, 2016); (Costa, 2014).

If I am able to relate to myself with respect and empathy, then it is much easier and natural for me to relate to other human beings with respect and empathy, even those with different beliefs and customs. This is not mere wishful thinking, there is ample scientific evidence that shows that people who are able to relate to themselves with respect and empathy are not only able to relate to other human beings with respect and empathy, but they are better capable of being in touch, of perceiving life around them and attuning themselves empathically with all other life forms. This way of being is not exceptional, it is typical of mentally healthy human beings (Rogers, 1951, 1961, 1969, 1977, 1983); (Zucconi, 2008, 2011, 2013, 2016); (Silani, Zucconi & Lamm, 2013).

Unfortunately centuries of spreading alienation have made lack of contact and chronic reification “normal”. Those alienated individuals that relate to themselves, others and the world, like something that can be turned into a commodity and sold for monetary gain, are considered smart and successful by many other equally alienated human beings. The results are irresponsible environmental exploitation, social injustice and the destruction of our planet. It is encouraging to see what Pope Francis has pronounced in his encyclical ‘*Laudato Si*’, an effective call for an ‘ecological conversion’ of every good Christian, a person who in his/her feelings and behaviors respects every human being and living creature irrespective of differences. If spiritual and political leaders and opinion makers offer a congruent narrative of the vital importance of establishing relationships based on respect and empathy with all life forms, this message would be an excellent teaching and such motivational narratives, if introjected, will have significant positive results.

Education at its best is a bio-psycho-social-spiritual learning experience that promotes our capacities to live a significant existence and develop our potentialities to become creative, resilient and productive citizens.

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*“We need to create a new paradigm in education in order to enable education to serve people’s needs and to have relevance in public service, social responsibility and sustainable governance and development.”*

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How we reorganize education is very important for our present and future, since learning is for our species an empowering and adaptive way to accelerate change. Human educational activities and organizations may represent the most important way for humans to ensure our own survival and to save our planet. The World Academy of Art & Science (WAAS) has launched a project with its sister institution, the World University Consortium (WUC), to create a space open to all the stakeholders to brainstorm and retool education to serve people’s urgent needs and to better cope with present emergencies.\*

An effective people-centered education is needed to create more aware and resilient citizens who will integrate knowledge, promote collective wisdom, build a sustainable society in which duties and responsibilities are equally important as rights and equal opportunities.

## **9. Person-Centered, Student-Centered Education**

Education, apart from family and culture, is one of the fundamental building blocks of the social construction of reality; it is more and more evident that we need a paradigm change in traditional education in order to enable people to deal effectively with the mounting challenges facing humanity.

This retooling needs to start with our frames of reference.

We need to create a new paradigm in education in order to enable education to serve people’s needs and to have relevance in public service, social responsibility, sustainable governance and development.

Education is one of the main narratives to prepare new generations to be an active and constructive part of society and is one of the main carriers of values. Values can be implicit or explicit.

Theorists like John Dewey, Jean Piaget, and Lev Vygotsky, whose collective work focused on how students learn, have laid the groundwork for student-centered learning. Carl Rogers’ ideas and research on the functioning of human beings have contributed significantly to person-centered education, promoting student-centered and lifelong learning throughout

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\* See <http://wunicon.org>

one's lifespan, underlining the importance of teachers to become more effective by helping them become facilitators of learning. In order to be effective facilitators of learning, teachers need to learn and be capable of creating with the learners a facilitative empowering environment based on trust, empathy and respect.

Of course an exhaustive illustration of this topic would require my mentioning many more authors, a task impossible to accomplish in this paper. I just want to add that the world famous pedagogist Maria Montessori was a forerunner of student-centered learning, facilitating preschool children to learn through independent self-directed activities. Malcolm Knowles is also one of the major figures in student-centered adult education who has applied Rogers' ideas (1975, 1984a, 1984b, 1990).

*“Traditional education ignores or suppresses learner responsibility.”*

**– Armstrong (2012)**

Self-determination theory focuses on how an individual's behavior is self-motivated and self-determined. When students are given the opportunity to evaluate their learning, learning becomes an incentive.

In the traditional teacher-centered teaching, teachers have been the primary source of knowledge. In a student-centered classroom, self-regulation, empowerment and active learning are facilitated.

## 10. Student-Centered Assessment

*“I believe that the testing of the student's achievements in order to see if he meets some criterion held by the teacher, is directly contrary to the implications of therapy for significant learning.”* – **Carl Rogers**

*“I never teach my pupils; I only attempt to provide the conditions in which they can learn.”* – **Albert Einstein**

One of the most crucial differences between student-centered learning and teacher-centered learning is the assessment. In student-centered learning, students actively participate in the evaluation of their learning. Having an assessment process that involves the entire learning community in a sort of *action research* to measure the learning outcomes is an important aspect of student-centered education and a significant way to support learning and motivation and an essential variable for assuring the success of the application of student-centered approaches.

*“Talk to me ... and I will forget  
Show me ... and I will remember  
Involve me ... and I will understand  
Step back ... and I will act.”*

**– Confucius**

Student-centered education fosters transferable skills such as problem-solving, critical thinking, and reflective thinking. The revised *European Standards and Guidelines for Quality Assurance* states: “Institutions should ensure that programmes are delivered in a way that encourages students to take an active role in creating the learning process and that the assessment of students reflects this approach.”

In Europe, student-centred learning has increased in prominence over the past few decades. The Leuven/Louvain-la-Neuve Ministerial Communiqué (Bologna Process 2009) underlines the relevance of student-centered education for effectively coping with the present societal changes (Geven & Attard, 2012).

“European higher education also faces the major challenge and the ensuing opportunities of globalization and accelerated technological developments with new providers, new learners and new types of learning. Student-centred learning and mobility will help students develop the competencies they need in a changing labour market and will empower them to become active and responsible citizens” (Bologna Process 2009, p. 1).

## 11. The Issue of Power Redistribution

Existing research clearly shows the effectiveness of person-/student-centered education at every level and grade but there are some barriers that have slowed down the application of this approach; the major obstacles are the so called power issues. Student-centered learning is a process that requires power sharing and responsibilities sharing at the policy level, administrative level, curriculum development level, assessment and evaluation level, classroom management and relational level. Another important issue determining success or failure is the obvious fact that change has to be facilitated effectively by competent professionals in a systemic way. In the past there have been easily predictable and preventable failures, since one cannot just wish to change a school or an university by calling it student-centered; the staff and the teachers need to be retrained and motivated and in the retooling of the educational institution, the students/learners and all the stakeholders need to be actively involved in the process.

### **Teacher-Centered Learning**

Teacher has the power

Student has less choice

Students have a passive role

### **Person-/Student-Centered Learning**

Empowerment of students

Student has more choice

Students have an active role

In order to be effective, projects aimed to facilitate change in an educational institution have to involve actively all the stakeholders, carry out a force field analysis, a feasibility study and promote change on a win-win for all base. Never forget that it is not only students that become better learners if they are understood, respected and empowered, but administrators and teachers are human too; they will be better administrators and teachers if their needs, ambivalence and fears are understood, respected and taken seriously into consideration. In other words, a student-centered learning project, in order to succeed, needs to be person-

centered, involve the whole educational community, thereby becoming a sustainable people-centered project (Zucconi, 2008, 2011, 2013, 2015, 2016).

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*“The central hypothesis of the Person-Centered Approach is that individuals have within themselves vast resources for self-understanding and for changing their self-concepts, basic attitudes and self-directed behavior, and these resources can be tapped if a climate of facilitative psychological conditions is provided.”*

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In Person-Centered Education (PCE), also called student-centered education, values are made explicit to facilitate students to have a critical and proactive role, an effective training to make them become fully functioning members of the Polis.

The Person-Centered Approach (PCA) was originated by the late Dr. Carl Rogers. PCA is a scientifically validated systemic, holistic approach with applications in all the helping professions: Psychology, Education, Medicine, Social Work, Management, Intercultural communication, conflict prevention, etc.

The central hypothesis of the Person-Centered Approach is that individuals have within themselves vast resources for self-understanding and for changing their self-concepts, basic attitudes and self-directed behavior, and these resources can be tapped if a climate of facilitative psychological conditions is provided. PCA focuses on health, not illness; on learning, not on teaching; on solutions, not on problems. PCA empowers, rather than cures; promotes the development of potentialities of individuals, groups and organizations through safe and growth-promoting interpersonal relationships characterized by respect, trust, empathic understanding and authenticity. It focuses on supporting people’s creativity and resilience, and makes them feel responsible for what they do rather than encouraging dependency (Barrett-Lennard, 1998); (Zucconi, 2008, 2011, 2013); (Rogers, Lyon & Tausch, 2014).

*“So while I still hate to readjust my thinking, still hate to give up old ways of perceiving and conceptualizing, yet at some deeper level I have, to a considerable degree, come to realize that these painful reorganizations are what is known as learning.” – **Carl Rogers**, *On Becoming a Person*, 1961*

*“The only person who is educated is the one who has learned how to learn and change.” – **Carl Rogers***

Carl Rogers has identified some core conditions present in teachers that are effective facilitators of learning and relational capabilities.

*“Over the years, however, the research evidence keeps piling up, and it points strongly to the conclusion that a high degree of empathy in a relationship is possibly the most potent and certainly one of the most potent factors in bringing about change and learning.” – Carl Rogers*

For Rogers there are 3 core conditions or capacities or relational attitudes that facilitate the process of student-centered learning, and they all converge on the capacity to be centered on the student in a facilitative way: Being genuine, real or congruent; being nonjudgmental and able to deeply trust and respect the student and believing in their potentialities; and being capable of understanding them with empathy, which create a facilitating climate in the classroom and promote effective learning.

**Realness and capacity of contact in the facilitator of learning.** When the facilitator/teacher relates to the students as real persons, and maintains a close relationship with the learners without presenting a front or a facade, she/he is much more likely to be effective. This means that the facilitator of learning is congruent, meaning that she/he is in contact with his/her own inner experience, without distorting or negating it in a defensive way: The feelings that she/he is experiencing are available to her/him and she/he is able to live these feelings, be them, and able to communicate them if appropriate in the learning context. It means real capacity for contact and encounter with oneself and the learner on a person-to-person basis. It means that the facilitator of learning has the capacity and the courage to be honest, real and transparent, it also means that the facilitator of learning has a good capacity of contact with himself/herself, others and the world, which indicates a good level of mental health.

**A nonjudgmental attitude**, acceptance, trust, deep respect for the learner are other core attitudes needed in effective facilitators of learning. It is an attitude of sincere interest and appreciation for the learner, her or his opinions and feelings, a non-possessive caring for the learner, with real acceptance of the other. It is a basic trust, a belief that human nature and the learner are fundamentally trustworthy: so this is for the teacher not just a theory but also her/his existential stance about human beings.

**Empathic understanding** is the third core competency; the capacity of the teacher to understand the student’s inner experiences, feelings, thoughts and behaviors deeply and to communicate to the learner such empathic understanding in a clear, simple, direct and delicate way.

*“... [Students feel deeply appreciative] when they are simply understood—not evaluated, not judged, simply understood from their own point of view, not the teacher’s.” – Rogers 1967 304-311*

The strength of Rogers’ approach lies in part in his focus on facilitative relationships. He explored the notion of student-centred teaching in Client-Centered Therapy (1951: 384-429). There, as Barrett-Lennard (1998: 184) notes, he offers several general principles. These include:

1. We cannot teach another person directly; we can only facilitate his learning.
2. The structure and organization of the self appear to become more rigid under threat.
3. The educational climate which most effectively promotes significant learning is one in which:
  - a. threat to the self of the learner is reduced to a minimum, and
  - b. differentiated perception of the field of experience is facilitated.

All those who had the experience of being a student of Carl Rogers, including myself, deem Carl a gifted teacher. His way of being was always congruent with his theories, he was always candid with us, openly admitting his limitations and mistakes. His paper 'The interpersonal relationship in the facilitation of learning' is an important statement of this orientation (Kirschenbaum and Henderson 1990).

The purpose of Person-Centered Education is to protect and promote a student's innate creative capacities for learning from their experiences, to promote wholeness and integration in the individual by focusing on the student's personal growth and development of creative and competent members of society, who are able to contribute effectively to the life of their community.

The role of the student-centered teacher is a professional commitment to facilitate learning and to embrace effective, democratic and value-based education. The teacher should also have the capacity to share her/his passion about learning, and relate to students with respect, empathy and congruence.

The teacher needs to be capable of being in touch with herself, her students, the members of her community and the world and have the needed skills and attitudes and motivations to be a facilitator of learning, an effective mentor promoting creativity and autonomy, capable of helping students develop their personal and social skills and not just absorb notions.

Person/Student-Centered educated learners learn much more and better when compared to those who are traditionally educated. They take responsibility for their own personal development, for development of social, personal and problem-solving skills, for learning to learn, for learning from mistakes, for contributing to a cooperative and tolerant school ethos and for learning how to relate to herself/himself and others with respect, empathy and congruence. Student-Centered education promotes self-regulation, by helping students to understand and manage their own learning and to choose worthy and attainable goals (Pintrich, 2000).

David Aspy and Flora Roebuck carried out the largest field study ever done in 42 U.S. states and 7 countries, in the 1970s and 80s, over a 12-year period, focusing on what led students to achievement, creativity, more critical thinking and interactivity, less violence, and more teacher and student satisfaction. Their research supported the earlier findings of Carl Rogers': the most effective teachers were empathic, caring or prizing their students, and were authentic or genuine in their classroom (Aspy and Roebuck, 1977, 1983).



Reinhard and Anne Marie Taush replicated the research in large numbers of classrooms in Germany and showed similar positive findings (Tausch & Tausch 1963/1998).

In 2007 Cornelius-White and in 2010 Jeffrey Cornelius-White and Adam Harbaugh published a very large meta-analysis on learner-centered education including in their analysis the studies on person-centered or humanistic education done since 1948. Their findings also corroborated the earlier findings of Carl Rogers and of Aspy and Roebuck, underlining the fact that a student-centered education that fosters learner-centered instructions works better than traditional education, facilitates positive results with students of different gender, ethnicity and cultures. Further research has confirmed the positive results (Cornelius-White, 2007); (Cornelius-White & Harbaugh, 2010); (Anyanwu & Iwuamadi, 2015); (Requena-Carrion, et al. 2010).

Among the positive results are, better achievement of educational goals, better attendance, more student satisfaction, better morale, better self-image, more critical thinking, better problem solving, better relationships between students in the classroom and also outside school hours and less destructive behaviors or dropouts. (Cornelius-White & Harbaugh, 2010). What is relevant is that person/student-centered education has positive effects on all levels and grades of education (Kember, 2009), and also shows excellent results when applied to so called “dry” technical fields like molecular biology, biochemistry, pharmacology etc. (Knight & Wood, 2005); (Kemmm & Dantas, 2007); (Costa, 2014), or when one is using the new computer assisted hybrid or e-learning forms of educational offerings (Motschnig-Pitrik & Derntl, 2002).

Of no secondary importance are the facts that ineffective education imposes serious costs to individual citizens, their families, communities and nations and that more and more of these relevant socio-economic costs as well as the gains derived from improving education are scientifically assessed (KPMG Foundation, 2006); (OECD 2010).

The need to redesign policies and practices in education and better train the teachers has been underlined by many authors for a long time: (Dewey, 1897, 1924); (Montessori, 1912, 1914, 1936); (Freire, 1970); (Rogers, 1965, 1969, 1977, 1980, 1983); (Foucault, 1980); (Lambert & McCombs, 1997); (Morin, 2001, 2007a, 2007b); (Levine, 2002); (Armstrong, 2012); (McCombs, 2013).

The student-centered approach requires a willingness from teachers to share their power and have more trust in their students’ innate capacity and motivation for learning.

## **12. Person/Student-Centered Adult Education**

*“Significant learning combines the logical and the intuitive, the intellect and the feelings, the concept and the experience, the idea and the meaning. When we learn in that way, we are whole.” – Rogers 1983 p.20*

Research confirms that the person-/student-centered approach is more effective than traditional education even in the case of adult education.

Malcolm Knowles is one of the outstanding figures of adult education who was influenced by the work of Carl Rogers.

Knowles called his approach to adult education “Andragogy”. He was influenced by the ideas and work of Carl Rogers at the University of Chicago, where he was doing his Master’s at the time Rogers was a very popular professor; Knowles enrolled in a seminar under Arthur Shedlin, an associate of Rogers, where he had a significant experience:

*“It was exhilarating. I began to sense what it means to get turned on to learning. I began to think about what it means to be a facilitator of learning rather than a teacher” (Knowles, 1984 pp.14).*

Jarvis has compiled a comparison of the assumptions of traditional pedagogy and andragogy as formulated by Malcolm Knowles (Jarvis, 1987).

**Traditional Pedagogy:** The learner is dependent, the teacher directs what, when and how a subject is learned and tests what has been learned.

- The learner’s experience has very little worth. Hence, teaching methods are didactic.
- Readiness to learn: students should learn what society expects them to learn; for this reason the curriculum is standardized.
- Orientation to learning: geared towards the acquisition of subject matter; the curriculum is organized by subjects.

**Andragogy:** promotes independence, self-direction; the teacher encourages and facilitates self-regulation.

- The learner’s experience is a rich resource for learning. Teaching methods include discussion, brainstorming, problem-solving etc.
- Readiness to learn: People learn what they need to know, so that learning programmes are organized around real life application.
- Orientation to learning: Learning should be based on experiences, since people are performance-centered in their learning.

Knowles based his work on Carl Rogers’ ideas but he was also influenced by Kurt Lewin and others. The following assumptions show how strong the influence of Rogers was on his work:

1. Self-concept: As a person matures his/her self-concept moves from one of being a dependent personality toward one of being a self-directed human being.
2. Adult Learner Experience: As a person matures he/she accumulates a growing amount of experience that becomes a continuously increasing resource for learning.
3. Readiness to Learn: As a person matures his/her readiness to learn becomes oriented increasingly to the developmental tasks of his/her social roles.

4. Orientation to Learning: As a person matures his/her time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his/her orientation toward learning shifts from being centered on the topic to being centered on problem solving.
5. Motivation to Learn: As a person matures the motivation to learn becomes internal (Knowles 1984:12).

### **13. Knowles' 4 Principles of Andragogy**

In 1984, Knowles suggested 4 principles of adult learning:

1. Adults need to be involved in the planning and evaluation of instruction received.
2. Experience which includes learning from mistakes, provides the basis for learning activities.
3. Adults are most interested in learning subjects that have immediate relevance and impact on their job or personal life.
4. Adult learning is problem-centered rather than content-oriented.

### **14. Application of Andragogy in Personal Computer Training**

Knowles' (1984) contributions include andragogy principles for the design of personal computer training:

1. We need to explain the reasons why specific things are being taught.
2. Instruction should be task-oriented instead of promoting learning by rote; learning activities should be in the context of common tasks to be performed.
3. Instruction should take into account the wide range of different backgrounds of learners; learning materials and activities should allow for different levels/types of previous experience with computers.
4. Since adults are self-directed, instruction should allow learners to discover knowledge for themselves without depending on other people; guidance and help will be provided if the learner makes mistakes and asks for help.

Knowles considered adult education as an excellent setting for civic learning, as occasions where people relate to and interact with each other and become useful laboratories of democracy and cooperation.

Knowles stressed that adults need:

- a mature understanding of themselves, their needs, motivations, interests, capacities, and goals. They need to accept and respect themselves for what and who they are, while striving to grow.
- an attitude of acceptance, love, and respect toward themselves and others.

- to learn to distinguish between people and ideas, and to challenge ideas without judging the person.
- to learn to live in the here and now, accepting the fact that change is the ever present reality and develop awareness and the capacity for learning from every experience.
- to learn to react to the causes, and not the symptoms of behavior. Have an understanding that solutions to problems lie in their causes, not in their symptoms.
- to learn how to facilitate their growth and develop their potentialities. This will contribute to their wellbeing and benefit society.
- to actualize one's own potentials requires various relational skills, social, vocational, civic, artistic, and the like. Effective education aims to facilitate learners' potentialities at the bio-psycho-social-spiritual levels.

Furthermore, adults need to understand the essential values of human experience and be familiar with the heritage of knowledge, the great traditions of the world in which they live. They should understand and respect the values that bind communities together.

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*“It is no longer realistic to define the purpose of education as a mere transmission of what is known to new generations. The main purpose of education must now be to develop the skills of inquiry to learn how to learn.”*

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Adults need to understand social realities, be aware of them and be an active and mature agent of social change.

Knowles stated that there is ample evidence that self-directed learning offers several advantages: people who are proactive learners learn more and better than reactive learners; people who passively wait to be taught “enter into learning more purposefully and with greater motivation. They also tend to retain and make use of what they learn better and longer than do the reactive learners” (Knowles 1975: 14).

Self-directed learning is more in tune with the natural processes of psychological development. “An essential aspect of maturing is developing the ability to take increasing responsibility for our own lives—to become increasingly self-directed” (Knowles 1975: 15).

Thirdly, more and more educational programs have placed more responsibility on the learners to be active learners: “Students entering into these programs without having learned the skills of self-directed inquiry will experience anxiety, frustration, and often failure, and so will their teachers” (Knowles 1975: 15).

Furthermore, social reality has been changing at an accelerating pace; it is no longer realistic to define the purpose of education as a mere transmission of what is known to new

generations. The main purpose of education must now be to develop the skills of inquiry to learn how to learn.

Malcolm Knowles proposed a five step model to promote student-centered adult learning:

1. diagnosing learning needs.
2. formulating learning needs.
3. identifying human resources for learning.
4. choosing and implementing appropriate learning strategies.
5. evaluating learning outcomes.

Knowles was the first to chart the rise of the adult education movement in the United States, the first to develop a statement of informal adult education practice and the first to attempt a comprehensive theory of adult education. He was an innovator and a key figure in adult education throughout the Western world in the XX century (Jarvis 1987: 185).

There are several barriers to the restructuring of the field of traditional education and those barriers are to be identified, understood and resolved if the efforts to promote a more effective education are to be successful.

The goal is to improve our education system in order to be able to offer a more effective education, an education based on reality, and which is scientifically grounded on how people learn and develop their potentialities. We need to understand the obstacles and defense mechanisms that impede change and why the factual politics of education are often incongruent with the declared educational goals. Do we have the political will to change obsolete education?

John Dewey eloquently stated that the problem with education is that there are too many teachers and very few facilitators of learning.

The teachers' skills are socially construed, so to promote change effectively it is counterproductive just to criticize teachers for being teacher-centered educators, since society trained them to be so. We need to retool teachers' education and promote change and undertake the training of traditional educators to make them motivated enough to become effective student-centered educators. This process needs to be a promotion of change on a win-win basis. It would be quite incongruent not to consider educators as persons who need to be respected, understood and facilitated in their learning new skills as educators.

We need to understand how effectively learning of educators can be facilitated and how decision makers can become part of the solution, not part of the problem as in obsolete education.

Another way to be person/student-centered is to apply to the field of education the knowledge that is emerging from the advancement of research in neuroscience (Goswami, 2004); (Blakemore & Frith, 2005); (Caine and Caine, 2011); (Brunnhuber, 2016). The emerging field of educational neuroscience is helping us better understand why person/student-centered education is effective; neuroscience research confirms that learning

outcomes are not solely determined by the environment, and that personal/biological factors are also significant variables. Therefore, in order to be effective, education needs to be person-centered, respecting and valorizing individual differences.

Taking the Person-Centered Approach Institute (IACP) as an example, the post-graduate courses there are organized as a learning community where professors and students intentionally create a facilitative climate of learning and collaboratively strive to achieve common goals. Every day there is an encounter group and students can call for a community meeting if they want to address any specific problem or issue.

Exams and assessments are not of the traditional kind: the students orally share in the classroom their written self-evaluation focused on 3 levels of their learning experience: to know, to learn to do and to be. They receive their peers' and the professors' feedback orally. In addition, each professor and tutor receives feedback from the students. The secretaries and the facilities are also evaluated by the students with the use of anonymous questionnaires that the students are asked every time to improve or modify. Suggestions for improvements are given to each professor, tutor and secretary as well as to each facility. The feedback of the students is discussed in a staff meeting after which the course director and the local IACP branch director communicate to the students the changes and improvements that they are willing and able to implement with the students' active involvement.

During written exams, the questions are distributed and at the end of the allotted time the students are asked not to turn in their papers as is done in traditional education, but to take them home and correct them by consulting the literature and then edit their answers if necessary and send their papers to their tutor and professor.

Promoting change cannot be done in a mechanistic reductionist way as Jasanoff (2011) reminds us. Different civic epistemologies shape different responses to anthropogenic changes (Norgaard, 2011): the construction of public knowledge varies from culture to culture and from community to community, different epistemologies and different hermeneutics need to be kept in mind for the promotion of change because what may work in a community may not be automatically effective in another.

In order to be effective, the new paradigm of education should avoid becoming a one way worldview. As it is important to protect the planet's biodiversity, it is also important to protect human creativity and the plurality of narratives and cultures, all united in their common goal and effort to protect and respect all life forms.

*Author Contact Information*

Email: [alberto.zucconi@iacpedu.org](mailto:alberto.zucconi@iacpedu.org)

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## The Concept, Basis and Implications of Human-Centered Development

Winston P. Nagan\*

Chairman of the Board of Trustees, World Academy of Art & Science;  
Sam T. Dell Research Scholar of Law, University of Florida, Gainesville, USA

### Abstract

*Our contemporary era has a critical focus on globalization. However, notwithstanding the necessary interdependence and interdetermination of the forces of globalization, these forces are deeply influenced by an economic theory, a theory known as “economic neoliberalism.” To date, this theory has not been seriously challenged. Fellows of the World Academy of Art and Science have evolved their thinking about the future of globalization. This approach stresses the centrality of human development in any economic theory that seeks to sustain globalization. The human-centered approach is an aspect of the contested theory that development needs to be human-centered and justified by a contemporary theory of human rights and development. The contemporary scene has contested the idea of a human right to development, but this idea has reemerged as a central foundation of the theory of sustainable development. Sustainable development has an important documentary foundation in socio-economic human rights. The ascendancy of neoliberalism was built around the idea of the inviolability of property rights. To the extent that economic neoliberalism has tended to dominate globalization, the consequences of this economic theory have led to a global crisis of unemployment and a radical development of extreme global inequality. The article provides an introduction to economic theory founded on the salience of human capital. It examines unemployment and radical inequality in terms of the fundamentals of a human-centered economic theory. Unemployment destroys opportunity freedom. Radical inequality significantly undermines opportunity freedoms and capacity freedoms and consequently radically undermines human capital as a foundation of community prosperity. The article makes the argument of the imperative of a bill of rights based on socio-economic rights. The article concludes with the draft bill of socio economic rights that President Roosevelt believed would be necessary to ensure the universalization of freedom for all.*

The idea of human-centered development implies that the normative priority given to economic development should have a specific focus on human beings directly and not on abstractions such as the glorification of state sovereignty, the deification of private property or the exclusion of human interests from the vast aggregates of global capital accumulation. In a broad sense, this implies that there is a normative global imperative that requires the acknowledgment and adoption of a human right to development. This is contested; not

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\* This article was written with the assistance of Megan E. Weeren, Junior Fellow of the Institute for Human Rights and Peace, University of Florida.

only is the human rights side of it contested, but the notion of development itself is not unchallenged. At the back of an economic theory concerning the human right to development is the centrality to that theory of the vital importance of human capital. An economic theory that does not acknowledge the salience of human capital for rational and efficient economic development is a theory that is misguided and dangerous.

A realistic look at the social process of humanity will disclose that human beings are energized to interact with each other in pursuit of desired needs and values. In this enterprise virtually every human being is a repository of energized enterprise.

This energy is the generator of fundamental value important to the self and important to non-self-others. For economic theory to ignore or avoid the human energized potentials as economically meaningless is extremely myopic.

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*“For economic theory to ignore or avoid the human energized potentials as economically meaningless is extremely myopic.”*

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*“Society is a teeming ocean of human energies and capacities, unorganized but latent with unlimited productive potential. The organization of social energies and capacities converts social potential into Social Capital. Each member of society is a microcosm of human potential—an unorganized reservoir of energies, aspirations, and capacities. The organization of the energies and capacities of each member of society converts human potential into Human Capital. The formed Individual is the summit of social evolution where Human Capital and Social Capital intersect and become infinitely productive. The Individual is a product of the past evolution of society who internalizes its accumulated knowledge and capacities, attunes himself to the emerging aspirations and potentials of society, and applies his energies at critical points for personal accomplishment and collective progress. Thus, we find repeatedly in history that one individual can change the world.”<sup>1</sup>*

In our time, the emergent “new normal” of economics has been described as the political economy of neoliberalism. Neoliberalism emerged from a meeting of several right-wing intellectuals in the village of Mont Pèlerin, Switzerland. From these deliberations, they considered that the most important global threat to freedom came from Stalinism and the extinction of private property. They saw the extinction of private property as the extinction of freedom. A further concern was the success and emergence of the social democratic New Deal state, led by the U.S., and which they saw as a form of creeping socialism and a creeping threat to private property and freedom. In contrast to this perspective, there emerged an initiative in United Nations (UN) circles around the idea of a new economic order. This was reflected in legal instruments such as the International Covenant on Economic, Social and Cultural Rights,<sup>\*</sup> the Charter of Economic Rights and Duties of States,<sup>†</sup> the UN Resolution

<sup>\*</sup> UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 16 December 1966, United Nations, Treaty Series, vol. 993, p. 3, available at: <http://www.refworld.org/docid/3ae6b36c0.html>.

<sup>†</sup> UN General Assembly, Charter of Economic Rights and Duties of States: resolution / adopted by the General Assembly., 17 December 1984, A/RES/39/163, available at: <http://www.refworld.org/docid/3b00eff474.html>.

on Permanent Sovereignty of National Resources, and the Declaration of the Right to Development. These UN initiatives were inspired by the war aims of the allies, and reflected in the Atlantic Charter. Included in these war aims was the principle of implied economic justice, the freedom from want. These initiatives were matters that, in effect, pitted the major capitalist states against the newly decolonized states of the world. From this intellectual and diplomatic conflict there were no clear winners but there was a clear ascendancy of economic neoliberalism, which was largely embraced by the western powers and which became to make inroads in the rest of the world. Today, the discourse about the human right to development is muted, but it is not dead. The environmental crisis has raised the question of the importance of global sustainable development. This is contested and important. With regard to neoliberalism, it received a severe jolt in 2008 when its fundamental policy agenda of radical privatization, deregulation, emphasis on the minimal state, and a non-regulatory regime of global finance led to a massive economic meltdown. The meltdown created a severe crisis of unemployment which underscored the broader legacy of a radical global distribution of economic inequality.

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*“Unemployment can be eliminated by wise judicious policymaking with a concern for the full utilization of human capital. Unemployment is neither inevitable nor necessary.”*

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## 1. Unemployment

The central issue for conventional neoliberalism appears to be that unemployment is a necessary byproduct of generating higher profits in the commercial sector; it is natural and inevitable. What is ignored is that unemployment radically undermines the capacity of human beings to be energized and contribute to economic prosperity. What unemployment does is that it extinguishes opportunity freedoms and without opportunity freedoms, no capability freedoms can be exercised, thus guaranteeing a wastage of human energy. There are innumerable theories that show that unemployment can be eliminated by wise judicious policymaking with a concern for the full utilization of human capital. Unemployment is neither inevitable nor necessary.

If we conceptualize the right to employment and labor as encapsulated in the value of skill, it is possible to briefly map the way in which skill is a base of power for securing other articulate human rights values. For example, skill in terms of access to power is a base that is critical to the shaping and sharing of power. In this sense, skill is a critical value for protecting human rights interests tied up with the exercise of political power. Similarly, skill is an important base to acquire wealth and related economic values and is therefore critical for economic justice. Skill is also a base for access to education and enlightenment which is central to human development. Skill is also a base for access to health and well-being as well as to the institutions of social rectitude. Thus, employment rights including access and performance influence every other human rights value. Similarly, every other

human rights value will influence the shaping and the sharing of labor and skill values. With this in mind, we examine the problem of full employment as a human right. It may be at the outset, better to see this in terms of the political will and articulate ideology of the state and state responsibility. From this perspective it is self-evident that governments routinely intervene in matters that directly affect the economic status of the individual. Such interventions may well influence both quantity of employment opportunities available as well as the nature of these opportunities. Some obvious examples of governmental policy influencing these issues are its role in setting interest rates, its approach to budget deficits, the expansive or restrictive nature of its import and export policy, its tax policies, its military expenditure, its immigration policies, its approach to industrial development, its investment in the society, its licensing policies, its environmental regulations, and a good deal more. One illustration of the way in which an ostensibly neutral tax policy could influence employment patterns is the regulation that provides incentives for capital investment in the form of depreciation while providing disincentives to employment in the payroll tax. This suggests a partiality to investing in technology rather than labor. To the extent that employment is one of the most important mechanisms for the allocation of purchasing power to the individual, the right to employment may be seen as the critical foundation of economic democracy. If society cannot assure the survival of all citizens through employment access, it may be that the state has a special obligation to provide employment opportunities for all. In short, the right to employment is not a privilege, it is a right. To the extent that economic survival is critically sustained by employment it could be argued that the right to employment has the character of a fundamental human right. The critical question then is: How strategically should the state act to secure this fundamental right to economic survival? The International Commission on Peace and Food provided a report to the UN on this matter in 1994. Its principal point was that there had to be a universal affirmation of and commitment to, the delivery of fundamental economic rights to all. According to the International Commission there should be an approach which recognizes:

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*“The right to employment is not a privilege, it is a right.”*

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*“.. [t]he right of every citizen to employment is the essential basis and the most effective strategy for generating the necessary political will to provide jobs for all. What is needed is not another job generation program, but a change in social values that will accelerate the natural and inevitable evolution of society, from one in which labor is regarded as a dispensable resource to one based on full human rights and the enormous productive potential of the human being. The type and magnitude of change needed today is comparable to that embodied in President Roosevelt's New Deal for the American people during the Great Depression at a time when 25 percent of the work force was unemployed, to the Indian Government's decision to launch the Green Revolution in the mid-1960s to achieve self-sufficiency in food grains at a time when the country was highly dependent on imported food to stave off famine, and to Mikhail Gorbachev's initiatives late in the 1980s to end the Cold War and transform Soviet society.”<sup>2</sup>*

There are many skeptics in political circles as well as academic and scientific circles who genuinely believe that full employment is simply an unfeasible policy. It is very possible that this outlook has a corrosive effect which initiates this discourse with an assumption of futility. Thus, a critical part of initiating this dialogue is the assumption that a full employment society is a realistic prediction if there is a plausible and wide-spread acceptance of the necessity of this in economic terms as well as the importance of this commitment in juridical and moral terms. In this sense, more may be required to fully explore all the ramifications of the notion of employment itself. This could include not simply the market value of labor but other components of labor that deal with the very nature of human development. An approach is suggested in the Human Development Report of 1990 which stresses that a significant element of the dynamic of employment is embedded in the “capability approach.” This approach suggests that economic measures of labor value are insufficient. For example, a measure like the GDP may unintentionally distort our view of the critical value of employment to individual and social well-being. It may be that the notion of employment seen through the lens of capability would emphasize the production and distribution of freedom as a better indication of human value. According to the Human Development Report, “the basic objective of development is to create an enabling environment for people to enjoy long healthy and creative lives. This may appear to be simple truth but it is often forgotten in the immediate concern with accumulation of commodities and financial wealth.” Central to the capability approach is the insight that social and economic arrangements should have as a key objective the expansion of human capability. This includes the freedom to defend and enhance valuable activity. Central therefore to the stress on capability is the expansion of human freedom in the aggregate in the economic sector. It also permits a clearer link to the fundamental human rights standards which are now the foundation of modern social organization. In short, what is central then to human rights approach to employment is the recognition of “opportunity freedom” (capability) and “process freedom.” These freedoms are then cornerstones of the dynamic of employment both in terms of the conditions of access and performance. The challenge that a focused human rights approach generates is that it compels a discourse about the values which implicate human rights and are part of the culture of labor, skill and employment. This carries a further implication that these values must in turn provide compelling normative guidance for a newer approach to the problem of a commitment to full employment. It may be assumed that the current flavor of dominant economic policy is one that either tolerates or may even tacitly encourage unemployment as an economically efficient mechanism for stabilizing the market, and the dominant business values of self-interest behind it. This means that we must generate a change in the discourse of our values and then look toward a process of those changes being reflected in a wide framework of decision making at all levels for the promotion of full employment. This view is also taken by the International Commission as follows:

*“We must recognize that the present status and functioning of our economies is the result of specific choices that have been made in the past, based on priorities and values that were relevant or dominant at the time, but which we certainly are not obliged to live with indefinitely, and, in fact, are continuously in the*

*process of discarding in favor of new values and priorities. The rapid adoption of environmentally-friendly policies around the world is positive proof of how quickly the rules, even economic rules, can change when there is a concerted will for a breakthrough.”<sup>3</sup>*

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*“When we depreciate human resources we are attacking the recipe, which was at the heart of American genius.”*

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## **2. Inequality**

### **2.1. The Neoliberal Aspects of the American Economy**

The most notorious fact about the American economy is that for decades we have experienced an inexorable drive to move the overwhelming majority of American citizens to the bottom of the economic system. In short, the expansion of inequality has been an extraordinary fact of the politically inspired economic policies of the neoliberal economists. Radical inequality has the consequence of diminishing opportunity freedoms, thus undermining human capital. By undermining opportunity freedoms, we correspondingly undermine capability freedoms, which further diminish the value of human capital economy.

*“The success and the genius of American civilization has been its belief in human capacity and the critical importance of human resources for national prosperity.”<sup>4</sup>*

Let us start at the top. Reputable economists tell us that one percent of the American population takes one quarter of the United States’ income. One percent of the American population controls forty percent of the nation’s wealth. One percent of the American population has seen their incomes rise by over eighteen percent. The central political question is whether this kind of outcome is desirable and in the national interest of the United States. If this is desirable, is there a sound reason to justify it? There have been marginal economic theories, which suggest that the one percent who have benefited so mightily are simply better than the rest of the nation. Many people whom we consider talented and who have made enormous contributions and inventions to modern society have not necessarily benefited from this. The financial wizards who almost destroyed the United States’ economy were in fact rewarded with performance bonuses. Although to their credit, they saw the irony in this and changed the label to retention bonuses. Meanwhile, those at the bottom of the economic ladder were not candidates for any form of retention. They were candidates for pink slips. One of the assumptions of neoliberal economists is that if there exists a bigger economic pie there will be more to go around. Unfortunately, the arithmetic is the other way around. The bigger the pie, the less the American citizens share in its bounty. It would seem that American economic growth is essentially a growth that is downwards in the direction of inequality. This means there exists an exponential growth in lost opportunity for the American people. The extinction of opportunity for the people is a major social and economic loss because the success and the genius of American civilization has been its belief in human capacity and



the critical importance of human resources for national prosperity.\* This means that when we depreciate human resources we are attacking the recipe, which was at the heart of American genius. There is of course enough blame here for everyone.

However, I think most of the blame must lie with the neoliberal apologists. They have historically been the most frenetic defenders of economic monopoly. Additionally, they have been successful in hijacking rational tax policy debate. No new taxes means that the weaker members of the body politic still pay while the special interests, which fund the neoliberals, the well-healed financial oligarchs prevail with outrageous tax holidays. Indeed, a recent survey about the fairness of the tax system showed only twelve percent believing it was fair and eighty eight percent believing it was unfair. The consequence of these outrageous benefits to those who already have an excess of resources is that they also promote the idea that national investment in education and human resources, investment in technical innovation and sound infrastructure are a waste of scarce resources. Their version of appropriate national incentives is driven by an intense desire to discourage investment in the future based on basic research and the central importance of our transportation and infrastructure system. Essentially, neoliberal policies have hugely empowered the financial oligarchs while undermining the participation of the overwhelming majority of citizen stakeholders in the process. They promote no version of a national common interest and see only the vista of narrow special selfish interests. Greed is king. They attack labor unions, promote the replacement of labor with technology and export jobs abroad because foreign labor is cheap. American labor is a liability. It is too expensive for the oligarchs. Hence, their mantra about jobs is “send jobs abroad.” The government is the problem, is the enemy because it is the critical restraint on the unfettered power of economic oligarchs. Now the present agenda appears to be clearer: do what we need to do to keep our wealth and get more of it. Demonize the government as a moderator between extremism and the people; extinguish the opposition such as the labor unions and the independent media and most critical of all, no taxes on the rich. Probably the most impressive victory of the financial oligarchs was their promotion of the economic theories of neo-liberalism. The center point of this approach was to oppose any and all government regulation. The great success was the deregulation of the financial sector. With the financial benefits, which they acquired through a non-regulatory state, they could use their bounty of wealth as a base of power to control a good deal of law making, and they did. Their successes have permitted a huge scale of financial manipulation in a no-financial rules context—the context they in effect purchased. This was a good financial investment. After the Citizens United case, a major Supreme Court blunder, the corporate sector could now begin the process of purchasing the government without spending limits. In short, the Supreme Court solidified the nexus between wealth concentration and its capacity to control the government in an almost complete form. One illustration of many will suffice. Big Pharma was able to squeeze a trillion dollar boondoggle out of the government by the neoliberal drive to block the government from bargaining with Pharma about the price of drugs. The neoliberals have their eyes on other temptations such as Medicare, Medicaid

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\*On the issue of political economy, human rights values, and the idea of justice, see, Winston P. Nagan, “Human Rights, Liberty & Socio-Economic Justice: Economic Theory and the Ascent of Private Property Values,” *Cadmus* 1, no. 2 (2011): 35-54.

and Social Security. What is it that drives the neoliberals to destroy highly popular social safety nets? The answer to the above question is to be found in the longstanding neoliberal nightmare called the New Deal. The New Deal produced popular policies and its political success was reflected in Roosevelt being elected four times. After his death neoliberals considered that the New Deal was popular and an important base of power for the Democrats. The problem they confronted was that the New Deal programs were popular and could not be directly attacked. Their agenda focused on foreign fears and anti-communism. However, the lingering fear of New Deal institutions was finally frontally assaulted by the brilliant Ronald Reagan. The critical neoliberal strategy would now be to run up huge deficits so that there would be no funds to pay for New Deal programs. Moreover, if the Democrats came back to power, they would find that there is no money in the state bank to fund their programs. So fiscal conservatives ran up huge deficits, and borrowed billions, which they could now distribute as governmental socialism to neoliberal business and defense interests. This left us with a deficit nightmare and a mighty recession. With a great deal of political amnesia neoliberals now proclaim the morality of living within our economic means. You cannot spend funds if your bank account has no funds in it. They are the architects of this approach and the creators of the monumental deficit. Few heard from the deficit hawks during the Bush spending spree, fueled with money borrowed from China. We still do not hear the neoliberals willing to acknowledge their budgetary scam. Meanwhile, the United States is in a spiral towards radical inequality and diminishing of our national values. Perhaps national economic oligarchs should be reminded of the wisdom of Alexis de Tocqueville who saw the key idea behind the American genius as “self-interest properly understood.” By this he meant that by taking care of your own self-interests you simultaneously express a concern for the other person’s self-interest as well.

Currently the United States is in a presidential electoral cycle. One of the candidates has effectually embraced a radical repudiation of economic neoliberalism. At this point, there is strong popular endorsement of this position. A change here could have global implications for the evolution of a political economy whose foundations are rooted in human capital and human rights. It should be noted that President Roosevelt insisted that economic deprivation meant the extinction of human liberty.

President Roosevelt commissioned a draft of fundamental economic rights. This was precocious and came long before we had the foundations of an economic bill of rights at the global level. Certainly, the rights indicated in this draft are rights that could be adopted and amplified to meet the current needs for fully utilizing human capital on a global basis:

- The right to work, usefully and creatively through the productive years;
- The right to fair play, adequate to command the necessities and amenities of life in exchange for work, ideas, thrift and other socially valuable services;
- The right to adequate food, clothing, shelter and medical care;
- The right to security, with freedom from fear of old age, want, dependency, sickness, unemployment and accident;

- The right to live in a system of free enterprise, free from compulsory labor, irresponsible state power, arbitrary public authority and unregulated monopolies;
- The right to come and go, to speak or to be silent, free from the spying of secret political police;
- The right to equality before the law, with equal access to justice in fact;
- The right to education, for work, for citizenship and for personal growth and happiness; and
- The right to rest, recreation and adventure, the opportunity to enjoy life and take part in advancing civilization

*Author Contact Information*

Email: [nagan@law.ufl.edu](mailto:nagan@law.ufl.edu)

## Notes

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3. ICPF, Uncommon Opportunities.
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# Financing Human Capital: Families and Society

**Neantro Saavedra-Rivano**

Professor Emeritus, University of Tsukuba, Japan

## Abstract

*The Organization for Economic Cooperation and Development (OECD) describes human capital as “knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic wellbeing.”\* It follows from this interpretation that investment in human capital includes the sum of all costs that allow a new being to reach economic autonomy. In this paper we analyze the family and social dimensions of human capital and discuss how decisions on human capital formation are taken and how its associated costs are shared. The discussion leads us to identify an important paradox underlying human capital formation, namely the fact that while families are its main contributors the benefits of such investment go primarily to society as a whole. This paradox and its consequences are central to two very important current issues. The first issue, one that is common to many developed countries, is low female fertility which is the source, in particular, of population aging. The second issue, affecting chiefly developing countries, is the inequality of opportunities, a problem lying at the root of underdevelopment. Two options are discussed to respond to this dilemma, one based on redistributive programs and another on market solutions. The paper discusses the limits inherent to redistributive programs and goes on to present at length the alternative market solution. In a nutshell this consists of securitizing the human capital of individuals so as to finance the expenses leading to their upbringing, from birth to adulthood. In addition to describing this scheme the paper analyzes its advantages as well as the difficulties associated with its implementation. It concludes by exploring possible interpretations of the scheme and feasible routes for its adoption.*

## 1. The Multiple Dimensions of Human Capital

We all know the importance of children for families, not just for the happiness they bring to their parents but for the role unwittingly played by them in the consolidation and stability of the family unit. In this sense children, enriched by education and other care devoted to them, are not just important for their own families but for the *family* as a social institution. At this point, it is important to make a crucial observation, which is to be developed later: namely, that important decisions on the formation of human capital, more precisely procreation and investment in new beings, take place predominantly in the realm of the family.

In this line of analysis, we cannot ignore the social dimension of human capital. In fact, far beyond giving continuity to a name, a clan or a dynasty, new generations are the thread that ensures the continuity and permanence of the society and civilization to which they

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\* Organization for Economic Cooperation and Development (2007a)

belong. Especially in the modern world, with an ever increasing mobility of individuals, it is possible to argue that the benefits that society derives from the generation of new beings, endowed with the human capital they receive, are greater than those obtained by families who made their existence possible in the first place.

Let us adopt now an economic approach, narrow perhaps but nonetheless extremely important. It is commonly accepted that human capital plays a central role in defining the state of development of nations. Just to give an example, human capital, the object of attention of economists for a long time, had a central position in the analysis of the development experience of East Asian countries of the last fifty years. We can say that, nowadays, there is a consensus\* that the main source of wealth of a nation lies in its accumulation of human capital. Increasingly, human capital is what distinguishes one country from others and what defines their relative level of economic and social development. Deficiencies of developing countries in this field are the main obstacle for them to finally take a steady route to sustainable development. Not only is investment in human capital by families in those countries limited by poverty but existing income and wealth inequalities imply that, in general, only a fraction of all families are able to make such an investment. This paper intends to discuss concrete steps to initiate a systematic program of reconstruction of human capital, in principle applicable to all developing countries.

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*“The main source of wealth of a nation lies in its accumulation of human capital.”*

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## 2. Decisions on the Formation of Human Capital

It is important to distinguish among two types of decisions, in principle independent of each other. One is the decision on the generation of new beings and the other, the decisions that will be taken on how much will be invested in the formation of human capital. In a way we could say that these decisions relate respectively to the quantity and quality of the new generations. As to the first decision, this is usually the exclusive domain of the family. The family power over these decisions can be affected by policies to control or stimulate births but, with rare exceptions, the effect of these policies is limited. This paper will turn its attention mainly to the second type of decision, which refers to the expenditure or investment in the human capital of those already born, and less to the decisions that led to their birth.

We can observe in the first place, regarding the second type of decision, that decision-making capacity is shared between the family and, through the state, society. Indeed, the state can provide, among other services, education and health at no cost or at a subsidized cost. In many cases some of these benefits have a mandatory character so that the option that families might have, say, to deprive their children of education, is barred from the legal context. Thus society not only contributes to investment in human capital but limits family decisions and, indeed, begins a process of appropriation and assimilation of new individuals. This is undeniably the meaning of, for example, basic education programs established at the level of a Ministry of Education. Despite the existence of social participation in decisions and expenses

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\* See, for a comprehensive elaboration on this theme, World Bank (2006)

relating to the formation of human capital, and the fact that they tend to take an increasing importance, the fact is that most of the spending that makes it possible for a newborn to join the adult and social life is still borne by the families. This happens for several reasons. First, spending on education and health is, in the broad interpretation of human capital presented at the beginning of this paper, only a portion of total spending. Second, even in countries with high levels of social development, education subsidies mainly cover the direct expenditures on education and not the indirect costs associated with this activity. Anyway, most of the world's population lives in countries whose governments do not have economic or political conditions to contribute significantly to spending on human capital formation.

The above discussion leads us to identify what is arguably one of the great paradoxes of society. We have just seen that most of the cost and associated decisions with the formation of human capital are borne by families. On the other hand, we also saw that the benefits of human capital are received to a larger extent by society than by the families. This paradox is not just a curious fact but presents us with a dilemma of undeniable importance. On the one hand, the growing awareness by families of insufficient returns on their investments leads inevitably to diminished incentives to make this investment, a phenomenon that results in decreased fertility entailing the well-known demographic and economic consequences. On the other hand, investment decisions in human capital follow a family logic or, more precisely, a "dynastic" rather than a social logic. Especially in societies with high economic inequalities and acute social stratification this logic considerably impairs the efficiency of investment in human capital.

### 3. Answers to the Dilemma of Human Capital

One answer to this dilemma that might seem obvious, even though the same cannot be said about its implementation, is the *socialization* of human capital formation. In its extreme version this would involve social control of all decisions and expenditures on the human capital formation of already born human beings (for simplicity I will not include here decisions on the creation of new individuals). A less extreme version could be formulated leading to control over most decisions and expenses relating to the formation of human capital. This type of transfer of decision-making power from the family to the social realm would naturally generate more efficient investment in human capital and, therefore, establish a social order with equal opportunities for young people. At the same time, removal of the burden of the cost of investment in human capital from families has the potential to correct current demographic trends.

When it comes to *socialization* of human capital formation it is natural to immediately think of the use of the state apparatus to cover the associated costs. There is no doubt that concerns about deficiencies in human capital formation are not new and many governments, both in developing and developed countries, have established programs that directly or indirectly aim to improve this situation. And the vast majority of these programs are funded by public resources which, in turn, come from tax revenues. Ultimately we deal with programs based on income transfers. We should note, however, that transfers based programs, even if they are an indispensable component of the arsenal of government policies, are limited as a

result of political and economic factors. Politically, the natural resistance of the privileged segments of society to subsidize the needs of the disadvantaged increases along with the expansion of transfer programs and may eventually lead to a rupture of the political fabric of society. Economically, the rise in levels of taxation resulting from ever costlier transfer programs can lead to a contraction in investment and thus to a reduction in economic growth. In the case of countries with large needs we must confront the reality that transfer programs may not even meet modest goals for the development of their human capital without exceeding these limits. This is certainly the lesson we can draw as we observe the limited success ongoing programs so far have had.

There is yet another option, so far largely ignored by decision makers. This option comes from the financial markets, which handle large volumes of resources and are guided by the criteria of profitability of their investments. Investment in human capital is undeniably one of the most profitable and this raises the question of how to attract investment flows from the financial markets. The key to successfully face this challenge is a combination of non-reimbursable programs (transfers) and reimbursable programs. The latter would be directed to finance the formation of those elements of human capital that directly increase the potential of their holders to generate wealth, such as education and the acquisition of other productive capacities. The simplest method to finance this investment involves the issuance of impersonal (anonymous) securities by the beneficiaries. These titles would be centralized by a public body responsible for the administration and supervision of the system created for this purpose, traded in financial markets, and rescued by the beneficiaries themselves once the investment begins to pay off. The advantages that this option offers are manifold. First, the impersonal nature of the securities, in addition to the dissemination of risk among a universe of beneficiaries, allows any individual, regardless of their family status, to have access to this type of financing. It thus generates an equity environment highly positive in economic and social terms. Second, investment in human capital through these human capital (HC) securities responds to the interests both of investors and beneficiaries, thereby eliminating resistance from the most privileged sectors of society to development programs on human capital. Third, the development of human capital of the population has a powerful effect on economic and social growth: in the short term, the expansion in demand for goods and services; in the medium and long term, full realization of the potential of the country.

#### **4. More on the Securitization Option**

Let us present now in some more detail the option just outlined. In a nutshell this section is about securitizing the human capital of individuals so as to finance the expenses leading to their upbringing from birth to adulthood. The first step in this direction is the creation of a personal account for each individual at the moment of their birth. In the *full* or ideal model of the scheme all expenses related to each and every new individual, say from age 0 to age 22, automatically generate liabilities to the account and assets for the provider of goods or services. The individual must later repay the accumulated debt over a sub-period of his/her working life. An important characteristic of the full scheme is its universality (within a country). Another necessary feature, especially needed for the full version, is that although

mainly private financial institutions would carry out trading in the securities that the scheme is bound to generate, the entire system needs to be overseen by the state in order for its soundness to be ensured.

The proposed scheme is based on three principal tenets: first, a comprehensive interpretation of the meaning of human capital; second, a reliance on the use of modern financial instruments and markets, and; third, the assignment to central government of a coordinating and supervisory role. About the first, and as explained before, we adhere to the broadest definition of human capital, not limited to the expenses associated with the obviously marketable skills and abilities acquired through vocational education, but instead covering the total expenses required to take an individual from birth to the labor market. This is, of course, an ideal definition, from which it might be convenient to deviate for practical purposes. But the point to be stressed is that the comprehensive definition of human capital is a better reference than the limited definition comprising only investment in vocational education.

The second tenet relies on the notion of “securitization”, which means that investment in human capital would result in the issuance of *negotiable* claims on the future stream of earnings of its beneficiaries. These claims would be bundled into financial products of convenient sizes and maturities, which we will call “human capital” securities, or *HC securities*, with the potential to become one of the main staples of the financial system.

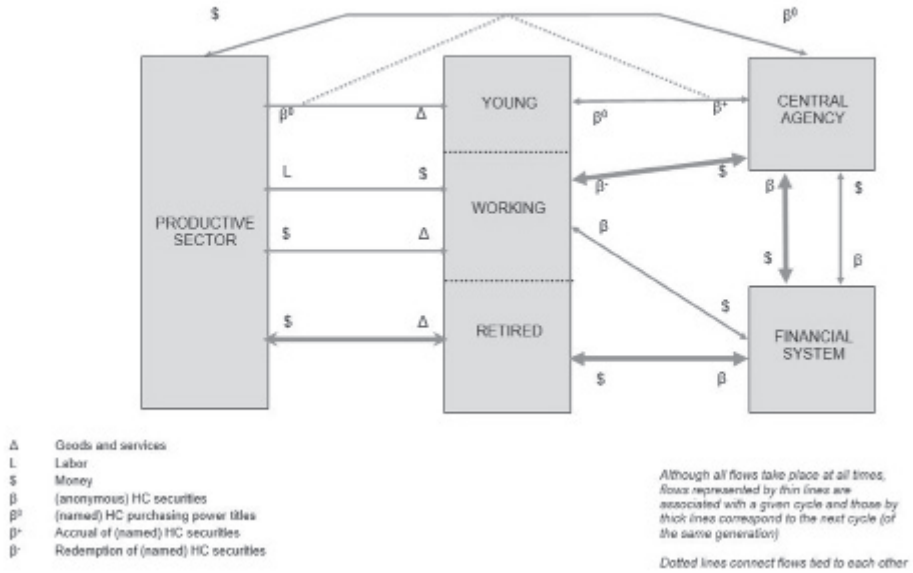
The third tenet is provided by the role assigned to the central government playing the key functions of coordination and supervision of the entire scheme. The case for a government role is strengthened by the obvious need to build public trust in the scheme and by the requirement of universality that is central to its social purpose. Important tasks executed by the central government, through a specially designated entity, would include the *anonymization* of HC securities (with the consequent socialization of their associated risk), and the enforcement of payments of interest and principal by their beneficiaries.

In the context of the discussion of the previous section, the proposed scheme has the effect of eliminating most if not the entire burden of investment (grants) by families. Although at the operational level the financial markets would manage this investment, in the end it will of course be the public who will undertake it. The novelty is that the investors are now set to receive the return (and principal) on their investment.

Figure 1 provides a graphical illustration of the economic flows associated with the scheme. The population is broken down into three functional groups or cohorts: young, working adults and retired. The other boxes represent the productive sector, the financial sector and the central agency (CRR). Earnings of the working population, consisting in this simplified model entirely of wage income, are spent in one of three ways: their own consumption, repayment of their own debt to the CRR, and purchase of HC securities issued as a result of the consumption of the young (investment in human capital). The consumption of retired people is financed by the proceedings of the sale of the HC securities they had purchased while they were of working age. The diagram also shows the transactions between the CRR and the financial system, both creation of HC securities and their redemption, and the triangular transactions associated with purchases of goods and services by the young.



Fig 1: Flows Associated with the Creation and Circulation of Human Capital Securities



Several interesting sub-diagrams or circuits deserve special notice. The first is the circuit of flows between the productive sector, the young population and the CRR that correspond to the triangular transactions previously mentioned. A second circuit is that between the productive sector, the working population, and the financial sector (including the CRR), comprising the flows associated with the financing of the consumption of the young. This circuit highlights the fact that the working-age population finances *collectively* the (human capital) expenditures of the young. This feature of the proposed scheme is in stark contrast with the characteristics of the existing system whereby the funding of those expenditures takes place at the level of the family unit. The collective nature of this financing is, however, not imposed by the state but is rather the result of rational saving decisions taken at the level of the individuals or families.

While these two circuits are synchronous, relating different contemporaneous cohorts, the next two noteworthy circuits are inter-temporal and involve single cohorts through their lifecycle. The first of them represents the acquisition of debt by the young and their later redemption while working, thus comprising flows between the people at those two moments in their lives and the CRR. And the last involves the purchase of HC securities by working adults and their sale for the sake of consumption after reaching retirement age, thus comprising flows between the population and the financial system. In terms of the mathematical model that this diagram suggests, which will not be developed here, these circuits correspond to some of its equations.

## 5. Advantages of Securitization

The most obvious advantage of the proposed scheme and also one of its primary justifications is its promise to bring about equality of opportunities for all newly born individuals. Milton Friedman had already noted this effect as a consequence of his proposal\* to have the central government take equity stakes in individuals through the financing of their vocational education. It should be easy to appreciate, however, that a scheme limited to higher education will afford equality of opportunities only to those individuals who have reached a level of social development preparing them for access to such institutions. The current scheme, relying on the broader definition of human capital, has the potential to extend equality of opportunities to all newborn individuals. This distinction is especially important in the case of developing countries where, typically, only individuals born in the middle and higher classes will be properly qualified when they are ready for vocational education. In the case of least developed countries or regions within a country, realizing equality of opportunities at birth may well signify the difference between life and death. A related benefit of the scheme is the effect it is bound to have on the distribution of wealth and income. This effect would be less immediate than the effect on the equality of opportunities but, clearly, income and wealth disparities would be progressively reduced.

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*“A scheme with the capacity to unleash the full potential of human capital is poised to become an essential element of development policies everywhere.”*

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A second powerful advantage of the scheme is that it enables a country to realize its full economic potential. As it has been realized by development economists, particularly through the experience of East Asian countries during the latter part of the past century, human capital is the most important component of the wealth of nations.† A scheme with the capacity to unleash the full potential of human capital is poised to become an essential element of development policies everywhere. In addition, as noted and thoroughly developed in the recent writings of James Heckman,‡ investment in human capital at earlier ages is significantly more cost effective than at later periods of life. The latter constitutes an additional and powerful argument in favor of the adoption of a broad definition of human capital and of the universal application of this scheme.

To the extent that HC securities are traded internationally, the scheme can open the way for the participation of international financial markets in development aid while creating a new role, as intermediaries and guarantors, for multilateral development agencies. This internationalization of the scheme is of particular interest for those countries whose financial systems are little developed. It also points towards its use in designing innovative

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\* Friedman (1955), p. 143

† See, for instance, the World Bank (1993) report on The East Asian Miracle

‡ Representative works include Heckman (2006), and Cunha and Heckman (2007)

and integrated programs of international development assistance that would channel funds directly to beneficiaries, thus diminishing the perils of corruption.

There is another potential effect of this scheme, which is of a quite different nature. This effect has to do with demographics and can be understood by an examination of the factors behind fertility. Several factors help to explain female fertility and the size of families, some of them being economic, others of a social, cultural, even religious nature. We will not attempt to offer here a thorough explanation of this complex subject, but it is undeniable that by removing the purely financial constraints on families to have children, the scheme has the potential to reverse the demographic trends that negatively affect an increasing number of countries. While many other factors have an adverse effect on the fertility rate, the purely economic factor remains a powerful one.

## 6. Relationship with Other Existing Schemes

It is interesting to note that there have been some recent trends having the effect of families transferring to governments, investment in the growth of their children's human capital. The first trend relevant to this inquiry is the increased use of *family policies* by governments to promote child development, gender equality, income stability, and balanced population growth. Although these objectives do not explicitly include human capital development, the end result is that family policies effectively increase the share of state and local governments in total investment in human capital. In some instances, this happens through the substitution of investment by families, while in others, it leads to investment that would have not taken place otherwise. European countries, particularly France and most Scandinavian countries, have led the way in the expansion of family policies during recent decades.\*

*Education policies* have had a similar impact in reducing the burden upon families of the investment in the human capital of their offspring. In some cases, as it may happen with educational loans, that burden is shifted to the individuals who are benefitting from them. In other cases, the burden is (partially) shifted from families to central or local governments. As it was the case with family policies, part of the investment (in education) will be "new" investment, and will thus result in an increase in total investment in human capital.

A third interesting trend is a relatively recent set of innovative social programs that channel resources from governments to families through a combination of education and family policies. A prime example is the "Bolsa Familia" program that has been implemented over the last few years by the Government of Brazil. This program makes cash payments to poor families (or rather to mothers) on the condition that children will regularly attend school and submit to health tests. Mexico's "Oportunidades" program is another similar and successful example that has existed for several years. These are examples of *conditional cash transfer* (CCT) programs, a new trend in human capital investment.† All these three trends contribute to the increase in total investment in human capital and have to do with a shift of the shares in total investment away from families and (mostly) towards governments.

\* See Organization for Economic Co-operation and Development (2007b) and Damon (2005)

† The World Bank (2009) has analyzed extensively CCTs, in particular their effect on human capital investment.

It must be noted that they are all based on redistributive transfers rather than, as is the case with the currently discussed option, on markets. In real-life situations both types of instruments will need to complement each other. This is particularly true for countries with large income disparities. Transfers have a clear limitation, not in the least political, as a tool to solve critical social issues in such a context. Likewise, financial tools like the one being proposed here need to be complemented by transfers, at least during the transition period. An example will help to clarify this point. This has to do with the application of the scheme to children living in extremely poor households. It is easy to imagine the awkwardness and flawed character of a situation when children have the ability to automatically fund all of their basic needs while their parents live in extreme poverty. The tensions generated by this scenario have the potential of rendering the scheme ultimately unsustainable, at least for poor families. A possible way of dealing with this situation, during the transitional period, would be the combination of the scheme with conditional cash transfer programs addressed to families and associated with observance of the scheme.

## **7. Practical Issues and Implications**

This is clearly a scheme of such magnitude that it will have a massive and profound impact on all spheres of social life. As such it is bound to raise a host of issues, some of which we will discuss briefly in what follows. These issues can be categorized as being of a systemic, economic, political, or social nature.

As for systemic issues, the most important have to do with size and complexity. The universality of the (full) scheme, one of its defining characteristics, implies that its management will require the processing of huge amounts of data whose integrity needs to be protected throughout the lifetime of individuals. The generation of claims by individuals, that of corresponding credits by the providers of goods and services to them, the recording of these transactions by the designated government entity, and so on up to the withholding of debt service payments from workers' earnings and to the settling of their debts, all of these operations need to be handled by large information systems functioning smoothly, in a coordinated manner, and without fault. Although these requirements are not trivial, similarly massive systems are successfully handled in other contexts. In that sense, they are not beyond the current state of the art information and communication technology. Related systemic issues have to do with the need to control which individual expenses are entitled to the generation of claims, and with the prevention of fraudulent use.

Among the economic issues, two are of the highest importance: they have to do with macroeconomic adjustment to the scheme and its financial implications. It is easy to see that implementation of the full scheme would give rise to a large spike in demand for goods and services that were previously inaccessible to poor segments of the population. No economic system would be able to adjust timely to such a surge in demand that would require, in addition to an accommodation of the provision of goods and of the facilities needed to raise their production, the availability of personnel able to offer specialized services in health and education among others. In addition, and perversely, the less developed the country, the higher the potential surge in demand that would be observed. This is an issue that, though not

fatal, makes evident the need for careful adjustment of the scheme to the particular situation of each country, a theme that will also be raised in the following section. The second economic issue is the impact that the generation of claims by individuals and, in consequence, of HC securities has on the financial system. Assuming that the scheme is implemented in its most complete form, the accumulated stock of HC securities may reach an amount equivalent to between four and five times the Gross Domestic Product of the country. These are quite large, although not unmanageable, amounts. They would, however, have an important effect on financial markets and investment in HC securities which might crowd out other less sound forms of investment. Once again, there is good reason to examine ways in which the scheme could be shaped to suit particular national situations.

There are other important issues that deserve notice, although we will only briefly touch them. First, implementation of such a system deepens the bond between the individual and society to an extent that might be considered extreme by some. Whereas in the current social system individuals have at most a moral debt towards their parents for having provided to their needs during an early age, in the proposed system individuals would instead have an actual debt and the associated legal obligation to service and repay it. Such a new situation would require the adaptation of social institutions and attitudes as well as the creation of additional government institutions.

A second related issue is the ethical objection that some might have towards the perceived constraints on individual freedom that the system implies. Although it would be hard to associate this system with slavery, given that eventually everybody would be an investor as well as a debtor, the fact is that it would become more difficult for anybody to break away from the social system.

The third issue that needs to be mentioned has to do with intra-family relations. At least in Western societies, the decay of the family as an institution is a well-recognized and an often lamented fact. The transfer of the economic costs of the upbringing of an individual from the parents to the individual proper has a clear potential for a further weakening of parental authority. These are all difficult issues for which it would be presumptuous to claim proper answers at this moment. We could perhaps say that society has been evolving through the ages and that, whenever faced with choices that combine higher welfare with deeper forms of social organization and control, it has generally adopted them.

## 8. Scalability of the Scheme and its Parameters

Many of the difficult issues just reviewed are related to the magnitude of the scheme. Downsized versions of the *full* or ideal scheme, while retaining some of the benefits of the full scheme, will be more amenable to implementation. In what follows we will discuss some of the main axes along which this scheme can be redimensioned and adjusted along with the corresponding parameters that need to be considered. These axes are related to the population covered, the age of coverage, the goods and services coverage, and the depth of coverage.

On *population coverage*, the ideal model assumes universal coverage. It is possible, however, to envisage coverage initially limited to disadvantaged sectors of the population.

Such limited coverage would still go a long way towards fulfilling the main objectives of the scheme and, in addition, leave open the possibility of a progressive extension of coverage to larger sectors of the population. The *age of the covered population* can also be adjusted so as to facilitate the implementation of the scheme. Both the goal of the equalization of opportunities and the previously mentioned Heckman argument on an inverse relationship between returns to human capital investment and age of beneficiaries, advise towards beginning coverage from birth. On the other hand, the choice of an upper limit age of coverage is related to the degree of economic development of the country, to its educational system, and to labor market regulations and practices. When

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*“The real wealth of a nation, developed or developing, resides in its people and their ability to innovate.”*

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examining the *coverage of expenditures on goods and services* it will be useful to proceed to a categorization of those goods and services and to distinguish among them by a degree of necessity. Arguably, coverage should include basic services such as health and education, although even within these some scaling may take place. Finally, the *depth of coverage* refers to the percentage of expenditures that is to be financed by HC securities. While the ideal scheme corresponds to a 100 percent depth of coverage, practical considerations and the specificity of each national or regional context may impose the choice of lower rates and the definition of depth schedules according to income levels. For all axes being considered, coverage can be extended gradually through time.

This brief discussion makes clear that there are multiple ways in which the proposed scheme can be downsized so as to make feasible an initial implementation. Such a constrained implementation does not preclude a progressively more complete application of the scheme over time. It also appears that the scheme can be of use as an inspiration for much more specific programs aiming at particular aspects of human capital formation. The key to the success of such specific programs is their impact on the overall productivity of labor and the practicality of repayment of the debt incurred by beneficiaries. Finally, the discussion also shows that some existing programs, that make use of financial tools in order to fund social needs, may be seen as potential precursors of the scheme being discussed.

## 9. Final Thoughts

There are at least two possible interpretations of the securitization option just discussed. As a complete scheme, it is an ambitious proposition whose implementation, albeit in a reduced version, presents many obstacles. Some of them are of a technical or logistical nature and, in principle, could be handled. Others are related to the natural difficulty of accepting radical ideas and to the legitimate ideological differences about the organization of society and the respective roles of families and government. The second interpretation is that of an ideal concept which suggests concrete ways of using financial markets to address development issues that have persistently challenged policies.

The scheme should also be seen in the context of the evolution of the ideological environment of adjustment to the current economic crisis and its consequences. First, there

is a growing awareness that the real wealth of a nation, developed or developing, resides in its people and their ability to innovate. Nations should be assessed not by their endowment in natural resources, nor the amount of foreign reserves in its vaults, but by the knowledge and skills embodied in their people. Secondly, there is great disappointment with a financial system that has grown on weak foundations. As the financial system is reconstructed, the proposed securities (human capital) may appear as an attractive new asset type, backed by the safest of all investments, our population.

*Author Contact Information*

*Email:* [neantro@sk.tsukuba.ac.jp](mailto:neantro@sk.tsukuba.ac.jp)

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## **Integrated Approach to Peace & Human Security in the 21<sup>st</sup> Century\***

**Garry Jacobs**

Chief Executive Officer, World Academy of Art & Science;  
Vice President, The Mother's Service Society, India

### **Abstract**

*Humanity has made remarkable progress during the past two centuries in advancing peace, democracy, human rights, economic development and social equality. The evolution of human relations has progressed far from the time when physical violence, war and conquest were the predominant form of international relations. Diplomacy has evolved from political negotiations at the conference table to mutually beneficial economic exchange and creative cultural integration. But the ideal of peace and human security for all human beings remains elusive, distant and utopian. Violence and insecurity persist and social harmony is threatened by the competition for political supremacy, markets, jobs and scarce resources. Thousands of nuclear weapons remain armed and on alert. Existential ecological threats increase daily. The roots of war and violence remain intact, even if their most horrendous expressions have receded from view. The permanent abolition of war and achievement of human security for all cannot be attained by narrowly conceived political alliances or collective security agreements. The negative concept of peace as the absence of war needs to be replaced by a positive conception of peace as the essential condition for the fullest development of human potential. The narrow concept of security in military and political terms needs to be replaced by an inclusive conception that views security as an emergent property of effective and harmonious social organization founded on the ultimate value of the human being. Peace and security are fundamental attributes of society as a whole. They can only be achieved by a comprehensive, integrated approach that addresses the roots of violence and disharmony in all forms—political, military, economic, social, cultural and ecological. This will require radical democratization of international institutions, establishment of an effective global legal process, abandonment of outmoded conceptions of national sovereignty, regulation of the global casino, recognition of the fundamental right to employment and economic security, and a realization of the essential role that cultural diversity plays in the evolution of the human race. New theory is needed to unify the disparate fields of social science by development of a transdisciplinary, human-centered perspective of society and social evolution. Formulation of a unifying social theory requires a radical shift from reductionist analytic thinking and mechanistic systems thinking to a more organic, integrated form of thinking that views society as a living organism and regards peace and security as emergent properties of harmonious social organization. These objectives can be significantly advanced by establishment of a*

\* Based on a speech delivered by the author at The Inter Parliamentary Coalition for Global Ethics at United Nations Headquarters in New York on September 14, 2016.



*new type of international center for human security dedicated to combining new thinking on these issues with practical political initiatives for their implementation.*

## **1. Missed Opportunities**

The history of the 20<sup>th</sup> century is a record of unprecedented challenges, remarkable achievements and missed opportunities. The world community missed a unique opportunity at the end of WWII to abolish war between nation-states. After centuries of military confrontation under the rubric ‘balance of power’ culminated in two world wars, in 1945 representatives of 51 countries founded the United Nations as a global political assembly embodying the principles of peace, cooperative security, democracy, and universal human rights. Indian independence in 1947 was followed by the collapse of colonial empires around the world and independence for dozens of other countries. The post-war period became one of unprecedented prosperity. Europe, which had been the epicenter and motor for global conflict for centuries, was transformed into a model of peaceful political, economic and social relationships and collaboration. Peace was cemented by the emergence of European Economic Community and NATO, forging an unprecedented economic and military alliance that effectively ended the threat of warfare between its member countries.

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*“The rapid globalization of economy in the absence of effective international institutions converted international financial markets into a global casino and enabled multinationals to operate increasingly free of regulatory constraints.”*

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But the world community utterly failed to capitalize on the political opportunity envisioned by the founders of the UN and made possible by the positive post-war atmosphere. Instead, the new institution quickly degenerated into a forum for political confrontation between competing global military alliances. Instead of global disarmament, international relationships quickly degenerated into intensive military and political competition between two opposing military blocs. The peace of 1945 was followed by 45 years of nuclear confrontation. World war on the battlefield was replaced by Cold War tensions and proxy-wars, a frantic arms race that produced 70,000 nuclear weapons, and the constant imminent threat of total mutually assured destruction (MAD). Deeply concerned by the rising danger resulting from post-war political and military developments, the World Academy of Art & Science was established in 1960 by eminent scientists and intellectuals committed to cooperative international efforts to address pressing global problems. Its founders included Albert Einstein, Robert Oppenheimer, Bertrand Russell, Joseph Rotblat and many others deeply concerned about the growing threat posed by the proliferation of nuclear weapons and the fast-deteriorating atmosphere of political confrontation.

In 1990 humanity missed another unprecedented opportunity. The end of the Cold War, the decline of communism, and breakup of the Soviet Union created the possibility

of permanently eradicating nuclear weapons and establishing a truly inclusive, cooperative security system that could abolish the threat of future international conflicts. Initial progress was achieved on several fronts. The fall of the Berlin Wall, the spread of democracy and human rights in Eastern Europe, the dissolution of the forced union of Soviet Republics, the breakup of the Warsaw Pact and expansion of NATO, and the seventy percent reduction in the total number of nuclear weapons were dramatic achievements. The founding of WTO ushered in a new era of global trade. The founding and rapid expansion of the European Union solidified cooperative relations in Europe. The Internet evolved into the first truly global social network, promoting transnational and cross cultural exchanges between hundreds of millions of human beings from all over the world.

But the initial euphoria that accompanied the end of the Cold War soon dissipated and the positive momentum reversed. Instead of progressive reduction of nuclear stockpiles leading to complete abolition as mandated by the Nuclear Non-Proliferation Treaty, production and possession of nuclear weapons spread to four more nations and prompted other countries to consider acquiring them. Space weaponry and cyber warfare gradually gained legitimacy. The expansion of NATO stopped far short of transforming it into a truly global cooperative security system, failing to take into account the legitimate security concerns of Russia and other regions. The peaceful breakup of the Soviet Union was interpreted by many as the total collapse of Russian power, leading eventually to an assertion of unilateral American power in Afghanistan and Iraq. The fall of communism in Eastern Europe was misinterpreted as a victory for extreme neoliberalism, breeding arrogance in international affairs, promoting the wholesale adoption of flawed economic doctrines and breeding oligarchy in former communist countries, while dismantling decades of economic and social progress in the West. The field of global confrontation shifted from war and politics to intense economic competition. The rapid globalization of economy in the absence of effective international institutions converted international financial markets into a global casino and enabled multinationals to operate increasingly free of regulatory constraints. The result has been rising levels of financial instability, unemployment, economic inequality, social tension, political instability, cultural conflict, terrorism, competition for scarce resources and ecological destruction.

All of these threats to peace and human security persist and continue to grow. The urgent compelling need for radical change and the growing danger of continued inaction are indicated by the lack of a compelling vision of the future, the loss of confidence in traditional institutions, rising cynicism regarding prevailing economic theory and policies, growing hostility to business and financial institutions, the backlash against globalization, the sense of helplessness to combat climate change, the inward turning of nations, rising disillusionment with established parties and policies, and growing resentment, alienation and violence among the youth. The social compact for peace, freedom and prosperity for all so enthusiastically embraced in the early 1990s has been replaced by a growing sense of uncertainty and insecurity regarding the future of the human community.

This trend is not inevitable. Crises can be converted into opportunities. History confirms that it often requires the intensity and urgency of serious crisis to generate the willingness for radical change. The growing disenchantment with national politics is a negative sign of a

positive opportunity. The loss of faith in conventional social theories and policies is a demand for urgently needed new thinking. The failure of international institutions to fill the vacuum created at the end of the Cold War is an invitation for radical reform. Circumstances are now ripe for bold international political action to promote new thinking, strategies and policies. Opportunity knocks for an international coalition of nations, institutions and individuals dedicated to establishing a new paradigm for global peace and human security.

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*“We need a conception based on the realization that peace and harmony represent positive conditions or statuses of society, closely related to the overall organization and functioning of the society, not merely the absence of negative disturbances.”*

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## **2. Evolving Concept of Human Security**

Traditionally, peace and human security have been viewed in narrow, negative terms. Peace has been defined as the absence of war or conflict. Security is still being conceived in terms of protection against threats and use of physical force in violation of the sovereign rights of a nation and the self-determination of its people. These narrow, negative conceptions are incomplete and inadequate. They merely describe but do not point to the underlying causes or remedies. Nor do they reflect the positive human condition of harmony and social organization that is the only real and effective deterrent to war and conflict. In their place, we need a conception of peace that is founded on positive values and conditions, rather than the mere absence of violence. We need a broader conception of human security that encompasses the entire spectrum of human needs for survival, growth and development, and not merely the need for physical protection from aggression. We need a conception based on the realization that peace and harmony represent positive conditions or statuses of society, closely related to the overall organization and functioning of the society, not merely the absence of negative disturbances.\*

The prospects for world war have receded. War between nation-states is increasingly infrequent and unlikely, although threats of military action continue. Even civil wars have become a cause for international concern, evoking strong pressure and intervention to ensure they are resolved rapidly. But real threats to peace and security persist and even increase. These threats are political, economic, social and ecological. The rights of sovereign nations continue to be threatened by the unilateral acts of other states. Authoritarian regimes still deprive huge numbers of people of freedom and fundamental legal and human rights. Even in many so-called democratic countries, the rights of individuals and minorities are in constant jeopardy. The threat of famine and persistent poverty still undermines the security

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\* A positive conception of peace is found in the ancient Indian Sanskrit term for peace, “shanti”, which refers to a positive condition founded on spiritual foundations of inner strength and harmony which are immune to all disturbances. The application of this concept to international relations was explored and developed in discussions with Robert van Harten and Mark Spetter, in 2006-7 during preparation of their joint PhD proposal for research on a theory of peace.

of a few billion people. Over 200 million workers, including more than 80 million youth, are unemployed, leaving many of them with little prospect of a steady job, which is the essential condition for economic security. Global financial instability recently demonstrated its capacity to imperil the livelihoods and security of people all over the world and that danger persists. The unregulated and corrupt actions of multinational corporations' pervert public policies for private benefit; the illegal use of money power perverts democratic forms of government into oligarchies and plutocracies. Social tensions, intercultural conflict and terrorism are on the rise. And on top of them all is the existential threat to all humanity posed by climate change.

A positive and comprehensive concept of peace and human security can only be founded on a wider conception of society and social organization. Society is an indivisible and integrated whole. War, peace and social unrest are not attributes of any part of society. They are characteristics of the society as a whole, expressions of its viability, stability and integrity. An imbalance or disturbance in any one aspect can destabilize the whole. So also, any single factor or combination of factors that strengthen that social foundation or provides a constructive outlet for frustrated or pent up social energies can defuse social tensions and remove the underlying source of discontent from which it rises. Viewed from a social, rather than merely a political or military perspective, the progress of humanity in spreading democracy, rule of law, human rights, economic development, education, medical care and other social welfare measures offers valuable insights into the positive foundations on which lasting peace and security can be achieved.<sup>1</sup>

Society is an organization that promotes cooperative interactions and relationships between individuals to enhance the welfare and well-being of all its members. It is an integrated, living organism. The prevailing conception of peace is akin to the negative conception of health as the absence of disease. Disease is narrowly conceived as the breakdown of a component organ or system. Treatment focusing on alleviating the symptoms or on measures to repair a malfunctioning part. By contrast, in traditional systems of medicine such as Ayurveda, health is viewed in wider terms as a property or status of the body as a whole. Health is fostered through measures that strengthen the general organization and harmonious equilibrium of the whole organism. Like the body, society strives to maintain a balance and equilibrium between people and activities. Like the body, all the parts, systems and functions of society are interrelated and integrated with one another. Cooperation, coordination and integration between its constituent elements are as essential for social peace as they are for bodily health.

### **3. The Evolution and Unification of Social Organization**

Peace is a function of effective and harmonious social organization. It is fostered by the progressive development and evolution of the whole society. It develops horizontally by expanding the geographic reach and coordination of its different activities. It develops vertically by increasing cooperation and integration between different layers and levels of the social structure. The evolution of society began with tiny units of family, village and tribe which gradually expanded to constitute kingdoms. The subsequent emergence of

multi-cultural, multi-ethnic nation-states marked an important advance in human social evolution, because this new model overcame the inherent limits resulting from the partition of humanity into separate groups according to languages, religious, ethnic and cultural background. The modern nation-state created a common space and organization within which diverse demographic and social groups could co-exist, cooperate and intermarry, resulting simultaneously in greater unity and greater diversity. The nation-state is a triumph of cultural diversity over mono-cultural isolationism.

The development of democracy has been the primary instrument for the vertical integration of society to reduce or eliminate class privileges and religious discrimination. For thousands of years, Indian civilization was organized politically into hundreds of princely states varying in size, language, ethnic composition and religion. The fragmentation of Indian society was finally overcome by successive foreign invasions by the Moghuls and the British. It required foreign conquest to forge national unity among this highly diverse population. It was only after India achieved independence in 1947 that these culturally related but politically separate units were fully integrated within a modern nation-state. Democracy in India has promoted vertical social integration by reducing discrimination between castes and classes. India's diversity of language, caste, class, religion, race and political grouping—perhaps Nature's greatest experiment with heterogeneity—has evolved into one of its greatest experiments with human unity.

The evolution of society remains a work in progress. In a few nations it has proceeded very far to ensure an atmosphere of peace, security and harmony for all members. Most offer some degree of protection. Still, in many even the basic internal conditions for peace and security within national boundaries are yet to be met. But when we look beyond the boundaries of the nation-state to the status of the human community as a whole, progress is far less evident, especially prior to 1945. Human rights, rule of law and democratic representation, which constitute the foundation of the modern democratic nation-state, are sparsely and sparingly applied to international relations. The UN Charter and the Universal Declaration of Human Rights set forth idealistic principles for peaceful co-existence between sovereign nation states and respect for the rights of individual citizens. In practice, the UN remains an undemocratic institution in which most power resides with the permanent members of the UN Security Council, who possess an arbitrary right to veto actions not perceived to be in their self-interest, even those supported by the entire rest of the world community.

Social evolution has progressed up to the level of the nation-state and struggles to advance haltingly beyond it. Peace and human security are still organized on that basis. Yet many of the essential conditions for permanent peace and human security necessitate cooperation and collaboration between nations. Moreover, when it comes to ecological security, global cooperation is essential. This makes the European experiment with a supranational organization of great relevance to all humanity. The problems it encounters arise mainly from two causes. First is the refusal of national governments to fully cede authority to a democratically elected, all-European government representing the rights and aspirations of all European citizens. Second is the unwillingness or inability of national populations to outgrow the limitations of national identity, as humanity has previously outgrown the

limitations of family, village, tribe, ethnic, religious and cultural differences in order to establish modern nation-states. Viewed in an evolutionary perspective, further transition appears inevitable. It will require corresponding advances in social organization. Europe's initial efforts point the way forward as well as the limitations of exclusive reliance in rules and mechanisms to achieve higher and wider levels of integration and unity. Society is a conscious living organism, not merely a constructed, inanimate machinery. Ensuring lasting peace and human security between nation-states will require psychological as well as social and cultural integration. Efforts to achieve global peace and human security can have only limited success so long as our educational system highlights differences in national culture, our economic system promotes competition between nation-states, and our political system places emphasis on national sovereignty rather than human unity.

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*“The UN General Assembly should assert its power to declare the use or threat of use of nuclear weapons a crime against humanity and refer a new case before the International Court of Justice demanding its recognition as valid international law.”*

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#### **4. Nuclear Weapons and Cooperative Security**

The persistence and proliferation of nuclear weapons graphically illustrate the limitations imposed by the prevailing system of global social and political organization. The mere existence of nuclear weapons undermines the security of all nations and people of the world, including and especially those residing in countries possessing nuclear weapons. The increasing likelihood of nuclear terrorism or blackmail threatens the security of all human beings. These weapons should never have been created. At least now they can have no possible *raison d'être*. *They are a disease that must be abolished.*

The solution does not lie in preventing Iran from acquiring nukes or convincing North Korea to give up the ones they possess, although both of these objectives are highly desirable. Nor will it be sufficient to persuade Pakistan and other nations to renounce first use of these weapons under any circumstances. The only effective solution will be for the international community in the name of humanity to declare the production, possession, use or threat of use of these weapons a crime against humanity and to destroy the weapons of mass destruction en masse. If the UN Security Council is unwilling to do it, then the UN General Assembly should assert its power to declare the use or threat of use of nuclear weapons a crime against humanity and refer a new case before the International Court of Justice demanding its recognition as valid international law. Failing that, the UN should conduct the first global electronic referendum of all adult human beings to declare the illegitimacy and illegality of these weapons.

But nuclear weapons are only one expression of the problem. The core of the problem lies in the present paradigm of competitive security in which each nation is responsible for its

own security and largely dependent on its own means to secure it. Under this paradigm, each nation is encouraged to acquire the maximum defensive and offensive weapons capability to protect against any possible threat. The nature of the competitive security paradigm was graphically described by the International Commission on Peace and Food (ICPF) in its report to the UN in 1994.

*The competitive security paradigm is a state-centred, egocentric approach in which the security of each nation is perceived in terms of its military superiority over potential adversaries. The push of each nation for unlimited security through military power is inherently destabilizing, since it inevitably increases the level of insecurity of other sovereign states. In practice, the effort of nations to arm themselves against perceived external threats generates a sense of insecurity among other nations and compels them in turn to increase military preparedness, thus initiating a vicious spiral, as it did during the Cold War.<sup>2</sup>*

This competitive paradigm was responsible for the insane escalation of arms production during the Cold War, which still persists today. That is the logic which led to 70,000 nuclear weapons and now sustains \$1.6 trillion in global military expenditure, up by 45% in nominal terms since the end of the Cold War. The only obvious permanent solution is to shift to a cooperative security system open to all nations in which each contributes to and is protected by the overall preparedness of the collective in exchange for renouncing the right to aggression against any other state for any reason.

*What is needed is a quantum shift from the competitive security paradigm to a cooperative security system in which countries mutually and collectively agree to refrain from acts of aggression and to protect each other from such acts by any nation. This principle served to protect the NATO and Warsaw Pact countries in the past, but on an exclusive basis which promoted a polarization of alliances into military blocs and, most importantly, left more than one hundred countries outside the security orbit and vulnerable to proxy wars. It should now be restructured on a global basis as a collective security system that offers protection to all nations from external aggression.<sup>3</sup>*

NATO is a working example of a cooperative security system, but it remains an exclusive club and a perceived threat to countries which are denied entry. The expansion of NATO may make the nations of Eastern Europe feel safer, but it also acts as a spur to greater military spending by Russia, China, India, Iran, Pakistan and a host of other states left outside its purview. The only permanent solution is a global cooperative security system, which necessitates an effective system of global governance. We have avoided world war for 65 years, but we have yet to secure peace. That we can only accomplish together.

Toward the end, in its report, ICPF called for the establishment of a truly cooperative international security system supported by a world peace army open to all democratic nations willing to renounce war as an instrument of public policy and committed to defend each

other against any acts of aggression from member or non-member countries. The proposal resembles the constitution of NATO except that it is an inclusive system open to all and exclusively defensive in character.

## **5. Economic and Ecological Challenges to National Sovereignty & Global Rule of Law**

As the recent nuclear accident at Fukushima illustrates, environmental catastrophes can be equally or more devastating than a nuclear detonation. It matters little to the hundreds of thousands of people who were driven from their homes, many never to return, whether the event was intentional or accidental. If this accident had occurred in Western Europe, instead of insular Japan, the radiation would have respected no national boundaries. If national sovereignty accords each nation the right to decide on the source of energy it will generate for its own use, what does it say about the right of neighboring nations to protection from the threat of nuclear contamination from beyond their borders? While regional security may be achieved by cooperation with other nations, global environmental security can only be achieved by cooperation with all nations. It is not the right of nations that is at stake here but the right of humanity as a whole to the global commons.\*

The inviolable sovereignty of the nation-state is a flawed conception that cannot withstand rational scrutiny. The legitimate claims of the nation-state for self-determinism must also take into account the legitimate claims of the individuals who constitute each nation and the total collective of those individuals who constitute humanity as a whole. Justice cannot support claims of the sole legitimacy of any of the three at the expense of the other two. The legitimate source of authority for the nation-state derives from the consent of the governed, which is based on the inviolable sovereignty of the individual, and from the inviolable sovereign rights of humanity, which has chosen to organize itself as a community of nations.

Economic globalization has already undermined the nation-states' imperious claim. The myth of national sovereignty has already been defeated by the global marketplace, especially by international financial markets. Foreign exchange transactions average some four trillion dollars daily. These transactions consist primarily of surplus money circling the globe in search of higher returns, moving with the speed of light and with callous indifference to consequences of an earthquake or tsunami. Like its natural counterparts, this ungoverned social tempest is utterly without conscience, but not without intention. It thrives on uncertainty and strives to multiply complexity in an effort to conceal its transactions in a bewildering haze of jargon and sleight of hand. It seeks to destabilize national currencies in order to take advantage of sudden changes in their value. It rushes in and out of countries with highly disruptive consequences. It is utilized to hoard scarce food grains, energy and other raw materials to drive up international prices, to the detriment of people everywhere. Its aim is to maximize self-interest regardless of whose interests are sacrificed as a result. It plays nation and against nation in a competitive game designed to minimize taxation and

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\* This section is based on a paper presented by the author at the UNESCO Conference on Sustainable Development, Dubrovnik, in September 2011 which was published as an article entitled "Turn Toward Unity" in *Cadmus*, 1-3, Oct 2011, p115.



legal accountability. It strikes every vulnerability, uttering the hallowed name of free markets and economic science as it plunders. The soul and mastermind of the international financial markets is a computer running black-box trading algorithms, which have already wreaked havoc on the global economy on several occasions. Nations are defenseless against this most pernicious of all computer viruses, the virus of financial speculation, which moves with total abandon across national borders. Even the strongest of central banks, acting on its own, is hapless to defend itself. But worst of all, the entire world economy is held hostage for an extortionist's ransom. Tens of millions of jobs, which mean tens of millions of lives, are prey to its whims. In the name of free markets, growing numbers of people everywhere are deprived of one of the most basic of human freedoms, the freedom of livelihood.

Financial speculation represents as real a threat to human security as nuclear weapons and climate change. Its actions may be less physically destructive, but its sudden and pervasive impact is deeply disruptive of the very fabric of peace, prosperity and human well-being. Speculation is defended in the name of freedom supported by neoliberal economic philosophy. It represents a gross perversion of the original intention for which financial markets were invented as a means to facilitate and support the growth of the real economy. On the contrary, speculation diverts resources from the real economy and undermines its stability. The rapidly expanding gap between the rich and poor in recent times is channeling more and more wealth from productive purposes into a pseudo world where money chases money instead of creating real wealth, employment and welfare. Investors rightly point out that an effort to regulate or tax money flows and transactions nationally will only encourage the movement of money to foreign markets. Yet the very same group vigorously protests efforts to establish uniform policies and tax rates globally, for that would remove the threat which prevents national governments from regulating or taxing financial transactions. Speculation thrives in the absence of effective global financial regulatory mechanisms. The wisdom of the marketplace is a myth. The only truly free markets are those that are subject to regulations that preserve competition and a level playing field. Left to themselves, markets do not take cognizance of human welfare.

Global peace and human security cannot be achieved without establishment of effective global regulatory mechanisms to govern the activities of financial markets and multinational corporations. Differences in policy and enforcement are an open invitation for arbitrage. The destructive impact of speculative currency trading can be substantially mitigated without detriment to the global economy by imposition of a uniform Tobin Tax on short term, cross-border currency movements that are not directly related to trade or direct investment. One immediate result would be productive investment in human welfare by freeing trillions of dollars in foreign exchange presently held in reserve by national governments to defend their currencies against the threat of sudden attack. Ultimately, a permanent solution requires a unified global financial organization backed by international law, a world reserve currency and a world central bank.

Similarly, environmental challenges are oblivious of national borders and claims to national sovereignty. Environmental threats clearly and compellingly demonstrate the need for united and concerted global action by all nation-states. But this is a field in which cooperation rarely

extends beyond the conference table. International environmental law is rudimentary at best. Ecological issues require the formulation of new legal principles embracing a universal concept of sovereignty, which international courts are reluctant to embrace. The concept of national sovereignty—the idea that the state is not subject to any higher jurisdiction apart from laws and regulations with which it voluntarily complies—is inconsistent with principles of justice and human security for all. The emergence of common global environmental threats, such as chemical and radioactive pollution, the exhaustion of energy, mineral and water resources, and climate change, compels us to accelerate the evolution of international law. Law is both a condition and a consequence of social development, a form of social organization and an outcome of the broader process of social development.<sup>4</sup>

Historically, law evolved as a mechanism for conflict avoidance and resolution. Law is a civilizing force that evolves as society develops, transforming the raw power of physical violence into legal authority. Law represents the sublimation of violence by acceptance of common values, principles and processes for defining rights, governing conduct and resolving disputes. Law presupposes the existence of a collective. International law presupposes the existence of an international community—a community of people as well as states. Social order does not necessitate law. Primitive societies can be sustained on the basis of arbitrary authority, the rule of force and power. Law becomes essential when the rights of the individual and groups are to be safeguarded from arbitrary action. Law emerges in society with the emergence of the individual. Law represents the power of the impersonal collective over the individual, but also the acceptance by the individual of the impersonal authority of the collective internalized in his own mind. Therefore, laws presuppose the mental development and awakening of the individual. What begins as custom and usage evolves over time into codified law. Customs are based on values. Laws come into existence when the customs are accepted by all members of society. The most fundamental premise of law is that each individual's existence must be in harmony with that of everyone else's. The challenge today is for us to embrace shared values with respect to the global commons and the sovereign rights of individuals, nation-states and humanity as a whole.\*

The evolution of law at the level of the nation-state is far advanced. At the level of the international community it is much less developed. The emergence of a shared global awareness and common human identity is still in a nascent state of emergence. The institutions needed to effectively organize global society have not yet acquired the requisite authority and strength. The process needed to create a comprehensive framework for global rule of law is still lacking. Insistent adherence to an outmoded historical concept of sovereignty is a major obstacle to the development of an effective global political, legal and social organization.<sup>5</sup>

## 6. Right to Peace

Since 1984, the UN General Assembly has been debating drafts of a resolution affirming the human right to peace. Subsequently the resolution has been considered by the Human Rights Committee. The right of peoples to peace resolution contains four substantive sections:

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\* This paragraph includes excerpts from the author's paper titled "Turn Toward Unity" published in Volume 1 Issue 3 of *Cadmus*

1. The solemn proclamation that the peoples of our planet have a sacred right to peace; 2. The solemn declaration that the preservation of the right of peoples to peace and the promotion of its implementation constitute a fundamental obligation of each State; 3. The demand that the policies of States be directed towards the elimination of the threat of war, particularly nuclear war, the renunciation of the use of force in international relations and the settlement of international disputes by peaceful means on the basis of the Charter of the United Nations; 4. The supplication to all States and all international organizations to do their utmost in implementing the right of peoples to peace.<sup>6</sup>

Inspired by resolutions previously approved by the General Assembly, since 2008 the Human Rights Council (HRC) of the United Nations in Geneva has been working on the “Promotion of the right of peoples to peace”. On 1 July 2016 the HRC adopted a Declaration on the Right to Peace and recommended that the General Assembly adopt this Declaration in its 71<sup>st</sup> regular session, which would have begun its work in September 2016.

Why has there been need for three decades of debate to affirm what must be regarded as the most fundamental and inalienable of all human rights? The long struggle to obtain final approval by the UNGA reflects the complexity of the legal implications of its adoption and the cumbersomeness of the procedures for international deliberation. But most of all, it reflects the difficulty in overcoming the reluctance of nation-states to recognize the sovereignty of the individual human being.

## **7. Social Foundations of Human Security**

There can be no assured peace and human security without addressing the international dimensions of peace—universal human rights, national sovereignty, global governance and rule of law, cooperative security, abolition of nuclear weapons and coordinated global action to address the environmental challenges. But these alone do not constitute a sufficient foundation for universal peace, social harmony and human security. The roots of conflict and violence lie in the deeper layers of human society and they can only be effectively extracted by addressing the issue at a more fundamental level.

This article has so far focused on the organizational structure of society. But it is also necessary to examine the content or substance of society and the process by which it is organized. Society is a living organism composed of living individuals and groups of individuals. They possess a vast reservoir of human potential in the form of energies, aspirations, ideas, attitudes, values, beliefs, knowledge, skills, and capacities that are expressed through myriad forms and varieties of organized and unorganized activity. This reservoir is the source and basis for all human activities, innovations, creativity and organization. The rapid and remarkable development of global society over the past few millennia has resulted from an increased capacity to develop, release, direct and channel this human potential for socially productive purposes. Its basis is the expansion of positive relations and increasing cooperation and coordination of activities between individuals and groups. It has been accomplished through the systematic development of social organization, including the institutions of national government and international relations, law and justice,

military, transport, communication, production, trade, education, scientific research, media and many others.

This process of social organization is the key to the process of social development. The process of development can be defined as an upward directional movement of society from lesser to greater levels of energy, efficiency, quality, productivity, complexity, comprehension, creativity, enjoyment and accomplishment. The essential nature of the process is the progressive development of social organizations and institutions that harness and direct the social energies for higher levels of accomplishment. Society develops by organizing all the knowledge, human energies and material resources at its disposal to fulfill its aspirations.<sup>7</sup>

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*“When the social organization is rigid and resistant to change or when it tries to direct the maximum benefits to an élite group, the energies are not able to find productive expression, and they begin to spill over in the form of frustration, discontent and violence.”*

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The organization of society converts social potential into many different types of social power—power for defense, governance, law, transportation, communication, production, commerce, research, education, healthcare, etc. All these forms of power are linked together, interdependent and interconvertible. The organization that accomplishes the transformation of social potential into usable social power grows increasingly sophisticated and complex.<sup>8</sup>

The values, ideals and structures that govern how the organized power is utilized determine the character of the society and its capacity for peace, stability, harmonious relationships and human security. Democratic values and institutions which recognize and uphold the rights of each individual and diverse grouping of individuals promote lasting peace and security. So also, social structures that maximize the equitable distribution of power among individuals, levels and groups and prevent the usurping of power by privileged minorities achieve the highest level of harmony and stability.

The relationship between peace and development is subtle and complex. It holds the key to effective strategies for addressing the roots of social unrest and violence. Society is not static or rigid. It continuously develops by an evolution of consciousness and organization. The awareness and aspirations of its members continuously expand and release fresh energies. Former WAAS President Harlan Cleveland observed this process in East Asia after the Second World War and described it as a “revolution of rising expectations”.<sup>9</sup> Rising expectations are the principal driving force for social development.

In the measure the social organization is sufficiently developed to provide effective avenues for these fresh energies to find constructive, productive expression, social progress is smooth and rapid. In times of war or natural calamity, society channels all the available energies to cope with the crisis. Thus, we find nations able to double or triple their productive capacity within a short time as USA did after entering World War II. So also, rapidly

expanding economic opportunity, such as that prevalent in the USA and Europe after the last world war and in East Asia during the last quarter of the 20<sup>th</sup> century, generates an enormous power for rapid social development which fully absorbs the available social energies for productive purposes.

When the social organization is rigid and resistant to change or when it tries to direct the maximum benefits to an élite group, the energies are not able to find productive expression, and they begin to spill over in the form of frustration, discontent and violence. Power becomes more and more concentrated as it did in pre-revolutionary France and Russia and inequality rises dramatically as it did in USA during the 1920s and in many countries since 2000. The growing gap between rising expectations and increasing social opportunities leads to mounting discontent, tension and propensity for conflict. Great revolutions were the result of this process. The faster and higher aspirations rise, the greater the likely gap between expectations and reality. That gap promotes a sense of frustration, deprivation and aggression leading to social unrest and violence.

This process explains why violence actually increases even during times of rapid economic development, as witnessed in India and many other developing countries in recent decades. The discontent does not arise from a real increase in poverty. It arises rather from an increasing gap between aspirations and opportunities to realize them. The spread of democracy, the rapid development of the media, and greater access to education all increase public awareness about how people live in other parts of the society and in other countries, leading to increased awareness of their own relative deprivation and consequently increasing frustration.

## **8. Role of Economic Development**

This process of social development explains why a comprehensive approach to peace and human security must necessarily take into account economic opportunity as well as political rights. Economic relations have always been an important and effective means for avoidance of war. The 20<sup>th</sup> century marked a radical shift from political negotiations to economic cooperation between nations, characterized by the opening of commercial relations for mutual benefit. The dramatic transformation of relations between China and USA since 1972 in spite of continued acute ideological differences is a remarkable instance of the power of economy to improve relations between people.

But the relationship between peace and economics is valid at the national level as well as at the level of international relations. This is dramatically illustrated by the sudden, unexpected end of religious conflict and terrorism in North Ireland since 2005. Up to that time the Irish conflict seemed so intractable that it appeared it would go on for decades. Like the conflict in Palestine, it had its origins in the distant past when England first colonized Ireland and subjected it to a deeply humiliating and oppressive imperial rule. The Roman conquest which conquered England did not reach Ireland and Scotland. Celtic Ireland lay beyond the pale of the Roman Empire and preserved its own distinct culture. The English colonial settlement of Ireland imposed centuries of severe hardship under English rule. The forced settlement of Belfast by Scottish Presbyterians generated deep resentment among Irish

Catholics. Irish independence in 1920 shifted the center of attention to the foreign occupied Northern region. An inextricable mixture of political, economic, cultural and religious factors made the problem intractable and seemingly beyond solution. Its intractable nature was complicated by the fact that the population of North Ireland witnessed bitter dispute between almost equal numbers of Irish Catholics on one side and Scottish and English Protestants on the other.

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*“There can be no effective and lasting solution to promoting peace and human security in a society which does not generate sufficient opportunities for gainful employment or provide some alternative means of ensuring social welfare.”*

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While many factors contributed to the remarkable transformation in North Ireland, one least appreciated was the consequence of rapid economic development in the Republic of Ireland to its south. When Ireland entered the European Union it was considered the basket case of Europe with high levels of poverty and unemployment, and very high rates of emigration to UK and USA. As a result, the population of Irish descent living outside of Ireland is roughly fifteen times higher than the present 4.5 million people living in Ireland. Faster rates of growth among the Catholic population in North Ireland aggravated tensions between communities, since it became evident that they would soon outnumber the Protestants who gave allegiance to Britain. The economic disparities between North and South were another aggravating factor, resulting in a steady flow of migrants and job seekers from Ireland to North Ireland until around 2000.

The turning point occurred imperceptibly when Ireland entered the European Economic Community, forerunner of the European Union, in 1973, but the consequences of that step did not become fully perceptible until nearly three decades later. During that period Ireland gradually transformed itself from Europe’s basket case to become its fastest growing economy in the 1990s, when its rapid economic development earned it the title of the Celtic Tiger. By year 2000, per capita income and employment rates in Ireland exceeded those in the UK and the direction of net migration reversed. Ireland became a popular destination for the North Irish, English and other Europeans in quest of better employment opportunities.

Until this dramatic change, a widespread belief had persisted that the conflict in North Ireland was essentially religious in nature and that anything short of a fundamental change in religious sentiments would be inadequate to resolve the conflict. However, a more considered view suggests that the factors influencing the region were at once far more subtle and more complex. After nearly five decades of terrorist violence, the conflict ended quite suddenly and unexpectedly in 2005, when the IRA announced plans for unilateral disarmament. The sudden peace in North Ireland gives us hope and teaches us not to rely too much on past precedent and recent experience in assessing the future prospects for peace in other regions subject to prolonged conflict.

## **9. The Right to Employment**

Access to gainful employment is essential for promoting peace and human security nationally and globally. In a modern market economy, employment is the principal means by which individuals acquire the purchasing power to meet basic human needs for food, clothing, housing, education, and medical care and to fulfill their rising aspirations to benefit from the ever expanding array of comforts and conveniences offered by modern society. It is the basis for economic democracy, equivalent to the right to vote in political democracy. In recognition of this fact, US President Franklin Roosevelt planned to introduce a second Bill of Rights at the end of World War II protecting employment and other economic rights, but died before he could do so. Employment should be recognized as a fundamental human right and constitutionally guaranteed.

There is substantial evidence linking high rates of youth unemployment with rising levels of crime, violence and terrorism around the world. The Naxalite Maoist movement in Central India, radical Islam in the Middle East and Pakistan, drugs and violent crime in urban USA, Central America and Africa are all related to the absence of employment opportunities. There can be no effective and lasting solution to promoting peace and human security in a society which does not generate sufficient opportunities for gainful employment or provide some alternative means of ensuring social welfare.

The problem of employment is neither insoluble nor inevitable. It is the direct result of policies and priorities held sacrosanct, because they benefit established centers of economic and social power. Rules such as the tax rates applicable to payroll and capital gains, patent and copyright laws, policies concerning interest rates and speculative investment, incentives for investment in human capital, subsidies for energy and technology-intensive investments, all impact on employment. Change the rules and unemployment can be eliminated. Today's economies are organized to maximize growth, speculative investments, corporate profits, expenditure on weapons, high energy consumption and ecological destruction, rather than peace, human security, welfare and well-being. Change the system and the threats to human security can be radically reduced.

Employment is a global challenge, as well as a national problem. The competitive policies of other countries undermine efforts to manage employment solely at the national level. Solution to the global employment challenge necessitates global coordination of policies and strategies to harness the enormous potential of human capital and financial capital to ensure stable employment opportunities for workers everywhere. The alternative is increasing inequality, instability and unrest that threaten to tear apart the delicate social fabric woven so patiently, yet so sensitive and intolerant of neglect.

Peace and rising expectations fueled by the information age and rising human insecurity resulting from unfettered markets are an insufficient foundation for building a peaceful and prosperous world. The absence of international regulation and coordination is exploited to the advantage of multinational corporations at the expense of job seekers. Global policy coordination can stabilize global labor markets, but it will not address the severe inequalities in wages, which are aggravated by the ease with which jobs now move from one place to

another. Some form of global minimum wage, which could be graded according to average national income, would more substantially benefit low income workers with minimal impact on total employment. Its main affect would be to remove the price subsidy which presently benefits more wealthy consumers domestically and abroad.

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*“The greatest obstacle to global full employment is not population, automation, world trade, multi-national corporations or outsourcing. It is our collective faith in the myth of market fundamentalism.”*

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Effective policies can address the global employment challenge, but they must be human-centered policies. Current policies are based on the flawed notion that full employment is neither possible nor even desirable and on a system of values that gives greater importance to money than it gives to human welfare. The human resource is the most creative, productive and precious of all resources. Human beings are a perishable resource. Their capacities grow when effectively engaged, decline when left inactive. Society has a vast array of unmet and inadequately met needs—for education, health care, housing, environmental remediation, etc. At the same time, the current system possesses all the human and financial resources required to fully meet these needs, but it allows these precious resources to remain grossly underutilized or misdirected.

Efficient market theory is a terrible misnomer. Replacing human beings with machines may be efficient for the firm, but it is highly inefficient and wasteful for society. The greatest obstacle to global full employment is not population, automation, world trade, multi-national corporations or outsourcing. It is our collective faith in the myth of market fundamentalism. Valid economic theory must be based on the premise that the primary purpose of economic systems is to generate human security and promote human welfare, not to maximize growth or preserve accumulated wealth. Such a theory must be founded on the right to gainful employment as a fundamental human right.

## **10. The Evolution of Diplomacy**

The course of history traces the evolution of diplomacy as a means for conflict avoidance and resolution. Several major stages can be identified that have transformed global society during the 20<sup>th</sup> century. The stages overlap and often occur out of turn, but still we can perceive a certain continuity in the progression from first to last. Before the advent of diplomacy, warfare was the principal means resorted to for settling conflicts based on the relative strength of the opposing parties. But even in early history, peaceful alternatives to warfare became prevalent. Among the most common was the forging of marriage alliances as a substitute for war or conquest. “Family diplomacy” enabled countries and empires to bind themselves to one another without resorting to wars of conquest and submission. During the 19<sup>th</sup> century, nearly all the monarchs of Europe including Queen Victoria and



Czar Alexander were members of the same extended family related by marriage. At an early stage of social evolution, a transition occurred from physical warfare to political treaties and alliances. Political diplomacy seeks to resolve or avoid military conflicts through treaty negotiations, alliances and balance of power based on bargaining and compromise. This phase characterized relations within Europe for many centuries and persisted as a dominant form of relationship until the end of the Cold War.

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*“Conflicts lend themselves to full and final resolution when we fully and genuinely recognize the truth in the other person’s point of view.”*

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Throughout history, diplomacy has often been clothed in high principles, fundamental rights and good intentions, but in practice these were usually little more than a veil for self-interest and self-justification. The transition from the politics of pure power and self-interest to political diplomacy based on principles of peaceful co-existence and rule of law is a recent phenomenon, even now respected more in word than in real act or intention at the national and international levels. The events that triggered the two world wars and many other regional conflicts were often clothed in similar garb. But in recent decades diplomacy based on Principles, Law and Rights has become more than mere words. The establishment of the International Court of Justice, the founding of the UN, ratification of the Universal Declaration of Human Rights, and creation of the EU are remarkable and unprecedented efforts of humanity to move beyond power to law, a process that is still only half done.

The 20<sup>th</sup> century marked a radical shift from political negotiations to economic cooperation between nations, characterized by the opening of commercial relations for mutual benefit. Economic relations have always been an important and effective diplomatic strategy and have become the most prevalent form of diplomacy today. The dramatic transformation of relations between China and USA at the height of the Cold War in 1972 in spite of continued acute ideological differences is a remarkable instance of the power of economy to improve relations between people. Before President Nixon’s surprise visit, such a radical change in relations seemed truly unimaginable.

Culture has always been a powerful force of change. Cultural diplomacy marks a significant step beyond traditional forms of political and economic diplomacy. Here the emphasis shifts from political treaties and trade agreements to social and cultural exchanges in which conflicts are resolved by mutual attraction to what is new, different and unique in other cultures. At its highest, cultural reconciliation leads to understanding that differences can be fully reconciled through mutual understanding and harmony. At its best, cultural diplomacy can lead to a higher stage of diplomacy which may be termed psychological. In this stage, we discover the universal principle that there is a truth in every point of view, even those which are diametrically opposite to our own. Conflicts lend themselves to full and final resolution when we fully and genuinely recognize the truth in the other person’s point of view.

The progression from military to political to economic to cultural and psychological diplomacy marks the transition from contradiction, conflict, and competition to compromise, reconciliation, harmony, and mutuality. Through this process, humanity evolves from the physical man to become the social and mental man. By this process violent revolution is transformed into social evolution, as the violent revolutionary fervor of France in the 1790s was transformed into peaceful social evolution between the classes on the other side of the English Channel in England. Inter-marriage between classes, religions, nationalities and even races has become a common means for cultural integration. Humanity starts by relating physically through war. It evolves to relating socially through trade. It evolves further by relating psychologically through culture. Culture represents the psychological evolution of humanity, as education reflects the evolution of knowledge.

## 11. Cultural Diplomacy

Culture is the finest flower of human social evolution containing the essence of knowledge and experience accumulated through long centuries of history and civilization. The astonishing achievements of the human community over the past few millennia are the product of intensive and incessant contact, exchange and interchange between cultures at the level of objects, foods, plants and animals, tools, products, languages, mathematics, technologies, customs, laws, systems of governance, religion, science, philosophy, art, architecture, literature and the other arts. All that humanity possesses today in terms of knowledge, skill and ways of life is the product of global cultural collaboration. Culture has an unrivalled capacity to generate positive, constructive human relations.

Cultural exchange is the highest in an ascending series of social measures that can be applied to sublimate humanity's aggressive instincts and reliance on physical violence and political power to resolve disputes and forge cooperative interactions between individuals and social groups. Because of its subtle character, cultural influences permeate by osmosis from one society to another, defying the political and social barriers that often obstruct understanding and recognizing the value of other societies. Past experience suggests that the comprehensive, systematic application of cultural diplomacy in concert with appropriate economic and other strategies can achieve a sudden breakthrough in relations in places which have defied resolution for decades through more conventional forms of diplomacy.

Political diplomacy is primarily the task of governments. Cultural diplomacy is primarily the work of civil society at the national and international levels. Business too has played an enormous role in spreading awareness of other cultures and ways of life through the dissemination of lifestyle products, books, TV, cinema and other popular media. Witness the craze in China when Apple releases a new model iPhone. The world media plays a similar role. It provides information and news about people and events that generate common global understanding, culture, values and lifestyles.

Global Civil Society plays an increasingly prominent role in promoting peace under circumstances in which national governments are severely constrained. Following the end of the Cold War, the number of international non-governmental organizations has grown

rapidly to exceed 40,000. This is in addition to the millions of national and local level NGOs, many of which also interact across national boundaries.

Of all the instruments for cultural diplomacy, the most powerful of all is the instantaneous exchange of information and ideas across national boundaries over the Internet, which has grown exponentially to become the first truly global social organization linking and binding together more than a billion people around the world into a single cultural community. The Internet permits the rapid diffusion of ideas and knowledge globally, enabling them to permeate all but the most inaccessible places and impenetrable political barriers. From a sparsely populated map of linkages between research institutions in the 1960s, it has evolved into a densely woven web of interrelationships linking together people, organizations and activities encompassing the entire gamut of humanity's global social life. It has done more than any other institution to forge a common sense of humanity and unified human culture.

## **12. Theoretical Foundations for Peace and Human Security**

Diplomacy that transfers conflict from the battlefield to the conference table, abolition of nuclear weapons, commitment to universal human rights (including the right to peace) and rule of law, truly democratic institutions for global and national governance, acceptance of a wider conception of sovereignty that recognizes the legitimate claims of individuals and humanity, economic and employment security for all, a halt to predatory speculative financial activities, effective measures to reduce economic and social inequality, harmonious multi-culturalism, and concerted efforts to protect the environment are core elements of a comprehensive strategy to promote global peace and human security. Many of them are reflected in the 17 Sustainable Development Goals adopted by the United Nations for global implementation. These challenging and elusive goals are necessary, but not sufficient to secure peace and human security for all.

Violence is rooted not only in human actions and emotions, but in ideas as well. Religious crusades, slavery, colonialism, imperialism, racial superiority, proletarian dictatorship, people's democracy and balance of power are among the long list of ideas which have channeled the energies of their people into horrendous acts of warfare and self-destruction in the past. Today we look back on these discredited ideas as primitive and barbaric relics of earlier times. Yet the seeds of violence live on in intellectual notions and theories that still command respect and adherence today, most notably in the fields of social science.

Contemporary social policies are still founded on outdated notions of a clock-work, mechanical universe tending toward equilibrium, natural selection and survival of the fittest, scarcity, and positivistic, value-free, objective ideas about science. Inspired by the achievements of the natural sciences in earlier centuries, the social sciences have attempted to reproduce the objectivity and rigorous discipline developed for the study of material phenomena in physical nature. This led to the search for impersonal, immutable universal laws governing society, akin to Newton's laws of motion and thermodynamics. It also led to the emphasis on quantitative measurements and mathematical formulations which have proven so precise and effective in the material sciences.<sup>10</sup> The philosophy of positivism which prevailed in the natural sciences eventually took hold in the social sciences as well. In

the process, the social sciences have largely come to ignore or regard as externalities vitally important distinctions between social and natural sciences.

The notion of a natural law and universal principles central to the natural sciences fails to take into account the conscious dimension of human behavior and individual uniqueness, which are vitally important to understanding the role of conscious human choice and its impact on social systems. Efforts to discover universal laws of political, economic, and social behavior fail to recognize the fact that the laws governing human society are created by human beings and are determined by prevailing values, attitudes, laws, customs, institutions, and social forces rather than immutable universal principles. Today few recall that Adam Smith considered himself as a morale philosopher, not a scientist. His advocacy for free markets was to counter the incestuous relations between business and government that shaped the policies of mercantilism. Smith's objective was to enhance human welfare and well-being by eliminating unfair policies designed to benefit the wealthy and powerful.

The aim of social science is not to imitate the impartiality of Nature founded on the law of the jungle, but rather to maximize human security and well-being. Philosopher of Science Karl Popper rejected the notion of value-free social science and emphasized the central importance of the ethical dimension in the social sciences. He cautioned against "misguided naturalism" and called on social scientists to accept moral responsibility for the outcomes of their knowledge. Persistent poverty, high levels of unemployment, and widening inequality reflect failures of knowledge, not immutable laws of social science.<sup>11</sup> Social science must be human-centered and founded on the power of conscious human beings rather than immutable laws of material nature.

Social science also ignores the single most powerful factor in social evolution: the role of the individual. It ignores the fact that a single person—a Lincoln, Churchill, Gandhi, Gorbachev—can change the world. In an effort to mimic the mathematical and statistical perfection of other sciences, the emphasis on mean, median, and standard deviation in the social sciences obscures the fact that all significant changes in social behavior originate in the mind and action of a single individual and from there spread to groups and the larger collective. The determinative power of the individual on the welfare and well-being of the collective is sufficient justification for all initiatives to eliminate authoritarianism and injustice, eradicate inequality, abolish nuclear weapons, fight against oligarchy and plutocracy, and strive to establish a harmonious and inclusive social organization promoting the peace, human security and well-being of all human beings.<sup>12</sup>

The prevailing concepts of war and peace based on the limited perspective of political and military science need to be broadened and founded on a comprehensive, integrated, transdisciplinary, human-centered science of society. Only then will we possess the right theoretical foundations to achieve permanent peace and human security for all.

### **13. Need for Integrative Thinking**

Social theory forms the explicit and implicit basis for our conception of what is possible and the formulation of policies to achieve it. Theory is a product of the way we

think. Different types of thinking have different epistemological foundations. The notion of peace as the absence of war and the conception of security in narrow military terms are the products of analytic thinking, which dominated scientific thought for three centuries based on a positivistic, reductionist view of reality. Positivism eliminated the role of consciousness and choice from the study of humanity. Reductionism eliminated the complexity arising from the interrelatedness and interdependence of all aspects of social reality. The study of the individual elements as separate aspects of reality is useful and necessary for practical purposes. But when mistaken for reality itself, it introduces significant distortions and errors that can have immense practical implications and in some cases catastrophic consequences. The 2008 financial crisis and the Cold War nuclear arms race are striking instances.

Analytic thinking utilizes the mind's capacity to divide reality and life into categories, classifications, sectors, subjects, topics, specializations, components, systems, elements, fragments, parts and particles and regard each as if it exists separately and independently from all the rest. Mind's capacity for division and analytic thinking inevitably led to a proliferation of separate disciplines, to specialization, and compartmentalization of knowledge with immense consequences. Over the last five centuries, the number of intellectual disciplines has multiplied from five to around 1000 disciplines and sub-disciplines. As the study of reality is divided up into smaller and smaller pieces, specialization has led to increasing fragmentation of knowledge. Viewing each field independently has generated precise knowledge of the parts, but obscured the complex interactions and interdependencies between elements that are essential for knowledge of the whole.<sup>13</sup>

The insufficiency of analytic thinking became increasingly apparent during the 20<sup>th</sup> century and led to development of more holistic ways of thinking in fields such as biology, ecology, genetics, cybernetics, systems theory, management science, neural networks, complexity and chaos theory, and artificial intelligence. These new approaches are all founded on the capacity of mind to aggregate the fragments of reality conceived by analytic thinking in an effort to understand the interrelationships and interdependencies between the parts. Systems thinking has led to the identification of a number of transdisciplinary principles applicable to all fields of social science, such as feedback loops, self-organization, network effects, and emergent properties, which link apparently independent fields together.

This more inclusive type of thinking confirms the view that peace and human security depend on a wide range of political, economic, social, cultural and environmental factors. But even systems thinking is an inadequate instrument to fully comprehend the intricate complexity of social reality. Society is an integrated whole. Every aspect and dimension is interconnected with all the others, just as the health of human body depends on interactions and interdependencies between virtually all of its parts, organs and systems. Integrality cannot be attained by a mere aggregation and assembly of its constituent elements, any more than the living integrity of the human body can be accurately represented or reproduced by a constructed assembly of its constituent atoms, molecules, cells, organs and systems. Nor can it be achieved even by identifying all of the myriad links between its constituent components. Society, like the body, is a living organism. It is organically integrated. It is a whole that is

greater than the sum of its parts. It cannot be understood by modes of thinking that regard the whole as a mere aggregation of interlinked parts. More effective social theory needs to be founded on more integrative types of thinking, which will require a radical reorientation of the educational system.

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*“WAAS proposes the establishment of an International Center on Human Security (ICHS) committed to an integrated approach that encompasses the political, economic, social, cultural and ecological dimensions of human security.”*

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#### **14. Peace as an Emergent Property**

Peace and human security are characteristics of society as a whole, not merely of one dimension of its integrated existence. Peace is an emergent property of a social organization that effectively addresses the full spectrum of human needs in a manner that maximizes individual freedom, social equality, economic opportunity, welfare and well-being in a manner that also recognizes the rights of other individuals and groups, promotes social harmony and cultural diversity.

#### **15. Proposal**

An integrated, value-based, human-centered approach to peace and human security will be difficult to advance based on the compartmentalized structure of social science research prevalent in universities and research institutes. Moreover, an integrated approach cannot be effectively undertaken by institutions whose responsibilities are primarily for observation and analysis rather than for action. Nor can it be accomplished by purely political institutions which are subject to the dictates of prevailing governmental policy. Theory and practical application need to go hand in hand, but they need to be considered in an atmosphere free from the imposition either of conventional social theory or prevailing public policies.

For this purpose, WAAS proposes the establishment of an International Center on Human Security (ICHS) committed to an integrated approach that encompasses the political, economic, social, cultural and ecological dimensions of human security. The center could be established by a coalition of governments, research institutes and NGOs committed to fresh thinking and new policy measures designed to break the logjam that presently stalls progress on critical issues.

The structure and governance of the center might well be similar to that of European Organization for Nuclear Research (CERN), the world’s leading institute for applied research in the field of particle physics based in Geneva, and, incidentally, the birthplace of the World Wide Web. Established by 12 European nations in 1954, CERN’s membership now includes 22 countries and it works in close cooperation with other leading research institutes around

the world. CERN operates autonomously and democratically and provides an excellent model for multi-national, cross-cultural research.

The purpose of ICHS would be political rather than academic. Although engaged in research, its activities would focus on formulating and propagating effective, implementable solutions to real world issues through international collaboration. Its aim would be to build alliances of partner countries and institutions committed to quantum change. The work of the center would be global in scope and relevance, while giving special attention to issues of regional concern.

The World Academy's research program to formulate a new paradigm for human development confirms that solutions do exist to the pressing political, economic, social, cultural and ecological challenges confronting humanity today.<sup>14</sup> Recent work by the Academy and other organizations on new economic theory, global employment challenge, the future of education, nuclear weapons, peace, cooperative security, multiculturalism and ecological security can serve as a useful foundation for the activities of the center. Regardless of its structure and membership, the mandate of ICHS would be to evolve new theoretical perspectives and practical strategies to address the most pressing challenges to global peace and human security in a comprehensive and integrated manner.

#### *Author Contact Information*

*Email:* [garryj29@gmail.com](mailto:garryj29@gmail.com)

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## A Flat World with Deep Fractures

**Emil Constantinescu**

Former President of Romania;  
Member, Board of Trustees, World Academy of Art & Science

### Abstract

*The Internet manages to connect different parts of the world, defies geographical distances and gives the impression that our planet is flat, but the Internet is there only for the ones who have the possibility and the ability to use it. Our contemporary flat world has deep transversal fractures which, like in many geological structures, make a direct connection between layers with different characteristics. The elites are moving across information avenues with targets set in the future; at the same time, in many parts of our planet, there are people organizing their lives in pre-modern agrarian cycles. Diversity in ways of living and in social organization is a sign of human freedom, not a sign of error, so, having different alternatives to achieving prosperity and happiness should be good news. Holding dear to a society's lifestyle should not push for the destruction of societies with different sets of values.*

At the beginning of the 21<sup>st</sup> century, Thomas Friedman, a New York Times editorialist, visited India to study the miracle of the new IT generation. After showing him the way Internet can help small companies to act efficiently anywhere in the world, a young Indian IT specialist said to him: “Now the land is flat”. The book *The World Is Flat*, drew inspiration from this experience, got Thomas Friedman the Pulitzer Prize and became an international bestseller. Many of us still do not perceive the book's ideas. The Internet indeed manages to connect different parts of the world, defying geographical distances, but it is there only for the ones who have the possibility and ability to use it.

I would like to share with you my own experience in India. On the occasion of my 1997 official visit to the country, the then President of India, a very wise and educated man, told me the story of an American company, which organized in India a promotional event for satellite television. With the aid of helicopters and guides, their staff reached some remote villages, deep in the jungle. The indigenous people they found there did not know that beyond the mountains surrounding them lay a different world. The helicopter, the television and the newcomers were perceived to be of divine presence. It was, in fact, the only possible interpretation considering the gap of several millennia of civilization. This shows, in contrast to the first example mentioned above, that the contemporary flat world has deep transversal fractures, which, like in many geological structures, make a direct connection between layers with different characteristics.

Another Indian story, well known today through the Internet, is that of six blind men, who by touching different parts of an elephant—leg, trunk, tusk, ear, belly and tail—described



different parts of the elephant's body. This is an appropriate allegory to describe present reality, which has shocked me several times in my life, whenever I travelled the Earth as a geologist, a statesman or a representative of the civil society.

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*“While thousands of historians are focusing on wars, political and social conflicts, research and innovation are, unfortunately, only enjoying sporadic attention.”*

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## **1. Different Chronological Horizons**

There was an extensive talk about the year 2000 as a verge between two eras, governed by universally accepted rules. Some societies, especially the western ones, moved across it already, while others lagged behind, sometimes by decades, and in some extreme cases even by centuries or millennia. Looking into societies we can see the same picture: there are groups living in different chronological spaces. The elite are moving across information avenues with targets set in the future. At the same time, in many parts of our planets, there are people organizing their lives in pre-modern agrarian cycles.

## **2. The Galápagos Tortoise**

In 2006, while travelling through Europe by car, I stopped at a supermarket. The ads screen near the cash registers was running the latest news. One of the news was about the oldest being on Earth, a tortoise from Galápagos, who died at the age of 250 years. In geological time, 250 years is an insignificant period of time scale, but in human beings' time this is a remarkable feat, which induced me to reflect on the subject.

A fair answer could be found in the unexpected change of certain conditions that stood still at a given moment in an outdated project. When the Galápagos tortoise was born, France was under the absolute monarchy of Louis XV, “le Bien-aimé”, and Constantin Racoviță was the prince of Moldova (I was born much later). In both situations, the interest of the people living in these countries in the Galápagos tortoise was null. When the tortoise's life ended on Earth, the communication technologies allowed the transmission of the news in real time around the world. The progress of science and investigation techniques could even tell the tortoise's birth month, reminding us that we are at the border between the information society and knowledge society. I cannot help but noticing that, while thousands of historians are focusing on wars, political and social conflicts, research and innovation are, unfortunately, only enjoying sporadic attention. As changes in society imposed by innovation and scientific research tend to become increasingly faster, the story of the changes occurring in a human being's life can be useful to a new generation. It is tempting to believe that many traits of the contemporary society are as old as mankind. Of course there is one condition: to accept that not everything each of us have lived through is interesting, just what we learned from our life experience is useful for the rest of humanity.

### 3. The Shock of Change as a Personal Experience

I was born in 1939. At the age of only 6 months I fell ill with scarlet fever and the fact that I survived was exceptional (only later, in 1945, when I was 6 years old, penicillin began to be produced on an industrial scale and Fleming received the Nobel Prize for his discovery). When I was one year old, General Electric launched the refrigerator with freezer compartment, which was about to produce a food revolution. When I was 7 years old, CBS broadcast the first colour TV program in the USA, but I was 17 when I saw the first black and white television set in Romania. I was 11 years old when Marion Donovan invented the Pampers diapers, but only my grandchildren used them. I was 30 when the first people landed on the Moon and 59 when I received from NASA a small flag of Romania that had been carried into space by American cosmonauts. I was 35 when computers started to be used by large corporations, 42 when the first PC came out and 51 when I first used one. I was 41 years old when Motorola manufactured the first mobile phone and 55 when I had one of my own. I was 72 years old when the iPad and iPhone were sold. I started using them the year they were released. It can be seen that in all the aforementioned cases I referred to the use of these inventions on a large scale, as they have caused important changes in human society.

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*“When we speak about a knowledge society we refer to a broadening of public space for knowledge, which became truly possible only after the emergence of the Internet.”*

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An important factor of progress is closely linked to reducing the time gap in which technical novelties reach different parts of the world and on this line we can have a discussion about an information society and a knowledge society. Looking back to antiquity, could we say that the Egyptian, Greek, Indian, Chinese, later the Arab or Inca societies, impressive though their cultural and scientific accomplishments, were, each in turn, a *Knowledge Society*? No, because when we speak about a knowledge society we refer to a broadening of public space for knowledge, which became truly possible only after the emergence of the Internet. Clearly, this does not imply the disappearance of cognitive fractures between different parts of the world, just new opportunities for new actors.

### 4. Paradoxes in Today’s World

Our present world faces a series of paradoxes: underdevelopment does not exclude huge military spending, democracy does not eradicate corruption, free market economy fails to stop unemployment and ecological disasters. The Universal Declaration of Human Rights, more than 60 years after it has been adopted, is systematically defied, either on ideological pretexts, or under the reason of endemic poverty. It would be inappropriate to leave out a short analysis of what might be called the globalization of vices. Organized crime, traffic of drugs, weapons, radioactive substances, human organs, child prostitution, pedophilia, underground economy, tax dodging and forced emigration are the most striking, but are not

the only aspects of world-wide evil that governments or humanitarian organizations have to battle against, often admitting their inefficiency.

The past shows us that no civilization or social structure in history has just vanished, like the mythical Atlantis. The source of the abovementioned disorders relates more to time rather than to space. On a flatter and flatter planet, deeply heterogeneous collective periods confront each other. The Western countries stepped into the so-called post-modern and post-industrial age, the Eastern Europe countries crossed post-communist times, evolving towards full modernity; on the other hand, many societies of our contemporary world rely on a pre-modern mentality.

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*“It is necessary to establish a universal consensus on universal moral values that protect not only every community, but also every person.”*

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## **5. Space and Time on Planet Earth**

Politics and economy have succeeded in organizing the planet’s space, but not its time. Through agreements, governments can bring together geographically distant countries. Players of the world economy can build the infrastructure necessary to ensure any type of connection between human communities. Physical distances thus become quite relative; however, this is not the case when considering the time perception gaps. These gaps generate contradictory horizons of expectations. People living in industrialized societies wish for a ‘green’ vacation, while the indigenous people living in the unpolluted Amazon forest dream about a motorboat. One individual wants to return to unspoiled nature while the other individual tries to enter technological modernity. No one would object if different perceptions led only to different personal ideals. Unfortunately, different perceptions shape community attitudes, expressed through politically aggressive options. All kinds of conflicts today occur mainly because different parts of our planet live inside parallel timeline histories. The big challenge for this millennium seems to be related to the question: what can we do for the Earth’s inhabitants to become truly contemporary?

How can we explain to those living outside of Western democracies the fact that the ones living there seek to progressively free themselves from the fascination of modernity and are looking for a spiritual alternative that does not exclude a return to traditional values? How could we persuade the West that the pre-modern or the post-totalitarian societies can pass directly to post-modernity, without being confronted with the excesses of the industrial age? We are facing a communication problem. We will not really have a dialogue until we live in the same type of time. But, in order to stand before one another with our particular affinities and needs, it is necessary to establish a universal consensus on universal moral values that protect not only every community, but also every person. How could we initiate a real dialogue to discover it?

## 6. Conflicting Values and Interaction

We live in an open world, in a world of communication and continuous interaction, in a world whose continuous evolution cannot be withheld. In such a world, closed societies have no chance. Globalization means much more than free trade and homologation of most competitive material goods. Globalization means knowledge, dedication to a fair system of norms and values and—why not?—a

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*“We need to  
change our way  
of thinking.”*

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certain tolerance and mutual understanding. We need to change our way of thinking, we need to evolve beyond the old concept of liberal tolerance, which sets the goal of rational consensus as to the best way of life, and only tolerates a reasonable disagreement concerning it.

I consider the concept of “modus vivendi” more up-to-date and productive. This concept, developed in the year 2000 by British professor John Gray, is built on the acceptance of the existence of different ways of life, in which people evolve and prosper. I speak of much more than accepting different value systems, rooted in different civilizations; this is about recognizing the coexistence of virtues valued differently, even within the context of the same culture. I refer to the contrast between virtues preached in the Old versus the New Testament, between the wartime virtues of Homer’s heroes versus the ones of Socratic philosophers, between the virtues of Brahmanism versus the virtues of Buddhism. Mass migration and communication outburst resulted in open societies, several communities coexisting in small areas. In John Gray’s vision, no political system can pretend to hold the best solution for managing the clash between values. Diversity in ways of living and in social organization is a sign of human freedom, not a sign of error, so, having different alternatives to achieving prosperity and happiness should be good news. Holding dear to one’s lifestyle should not push for the destruction of others. The first step towards accomplishing these ideals should be the construction of a conceptual map of the international political universe, drawing on the different worlds populating our planet: post-modern, modern and pre-modern. On this foundation we can design politics and security strategies, in tune with the fast changing and contradictory world.

Starting with value pluralism as an ethical theory, “modus vivendi” could thus be considered a political ideal.

*Author Contact Information*

*Email: [cabinet\\_ec@constantinescu.ro](mailto:cabinet_ec@constantinescu.ro)*

## Human Connectivity: The Key to Progress

**Janani Harish**

Senior Research Analyst, The Mother's Service Society, India;  
Associate Fellow, World Academy of Art & Science

### Abstract

*Progress results from human interaction. Advances in knowledge, transportation, communication, technology and industry have aided in social development only to the extent that they have brought greater numbers of people closer. It is only human ingenuity that has achieved. Historically, every event that marks a step forward in social evolution coincides with a discovery, invention or organizational innovation that brings people closer in contact. When two people meet, the knowledge, resourcefulness and capacity that they bring together grow not cumulatively but exponentially. Thus every additional connection made to the human network adds to its depth and richness. When this is done at a larger scale, between entire cultures and civilizations, the result is an explosion of creativity. Urbanization and advances in technology have accelerated this interchange between people and cultures. Unlike all other resources, human capital is inexhaustible, self-replenishing and has the potential to meet and overcome every challenge the world faces today. The logistics of bringing human minds together effectively holds the key to consciously accelerating human progress.*

### 1. Social Power

Wikipedia has a predecessor in the mid 19<sup>th</sup> century. A large body of knowledge of the English language needed to be built. Professor James Murray, a Scottish philologist, gave an open call for volunteers to submit all the words they knew in English, along with the meaning, origin, usage and so on. The project received over six million submissions over a period of 70 years. These entries were verified, corrected and arranged. Thus drawing on the knowledge and time of tens of thousands of volunteers, the first edition of the Oxford English Dictionary was published. Crowd-sourcing is not a new idea!

We humans have always generated great power by coming together in groups. Not all attempts have been planned and systematic like the processes that created the dictionary or the online encyclopaedia, most have been unconsciously or intuitively done. All our impressions and images of the earliest humans depict them in groups. We lived in communities, hunted together, travelled in groups, and when we gave up our nomadic life, settled down in villages and towns. There was a benefit for all in thus belonging to a group, and the group gained a power far greater than the sum of all its component individuals. A man who slipped while boarding a train in Perth, Australia in 2014 made it to the headlines because of the way he was rescued. He was about to board a train when he slipped and one leg got wedged in

the gap between the platform and the railway carriage. Instead of bringing in machinery or carrying out an elaborate rescue operation, the station officers along with all the passengers nearby simply pushed the railway carriage away from the platform, and it tilted a few inches, just enough for the man to pull his leg out!<sup>1</sup> Under normal circumstances, a crowded railway station sees people busily going about their own schedule, with hardly a glance at others. But this invisible network that we call society is very much alive, watching, hearing, responding. The recent Arab Spring showed even more dramatically the power of individuals coming together to rewrite history. This invisible, yet very tangible, power of society has shaped all human development.

## 2. Specialization

Society is a complex, organized structure composed of groups and subgroups of individuals and organizations that are interdependent and overlapping. These groups may consist of members of a family, caste, ethnic group, religion, profession, nationality or belief. Just as in a family, every member has a role to play, an authority and a set of responsibilities, and complements the other members in the group. An educational institution has a management board, a vice-chancellor or principal, teachers, supporting staff and students. Each has a specific role to play, and fulfils a unique and vital part in the education of youth. Among the subgroup of teachers, each teacher specializes in a different subject, and working together with the other teachers, gives the students comprehensive academic knowledge. This is one of the great strengths of organization in society, each member makes a unique contribution, and society, which is the whole, becomes greater than the sum of all its parts. This began in a primitive fashion with the barter system, and now spans the globe via the internet, bringing together people, knowhow, products and services everywhere.

The flip side of such cooperation is specialization. Because each member focuses on his or her core competency, it becomes possible for one to gain expertise in a field. This raises one's capacity and productivity, thereby raising the overall productivity of society. Henry Ford applied this process of specialization to raise production of Model T cars from 10,000 a year in 1908, to 2 million in 1925. He did this by introducing the moving assembly line. Earlier, a group of workers worked on a car from start to finish, much like horse carriages had been built earlier. Ford used standard, interchangeable parts for all cars, and conveyor belts that moved the cars being assembled along the factory floor. Workers stood along the assembly line, each fitting a part to the car. This saved time, enabled everyone to become skilful in his task, lowered costs, and raised production, profits, and salaries. Even the factory workers could afford the cars they assembled. What Ford accomplished through specialization in his factory, society does at a global scale.

Specialization increases quality as well as quantity. Today, research scholars are able to specialize in narrow fields of expertise because they form part of a larger, integrated system of knowledge and education. Where we had English teachers, today we have in addition an English teacher who specializes in the poetry of women writers in 18<sup>th</sup> century England, or the dramatic works of African Americans during the American Civil War. From the general practitioner, we have branched into specialists in Neonatology, Gynecologic oncology,

Paediatric allergology, sports medicine and so on. Medical science now includes more than fifty specialized sub-disciplines. Such specialization is a result of cooperation, between individuals, and between the individual and the collective. Everyone has the luxury to focus all their attention on one subject, task, or field, assured that all their other physical, social and psychological needs are being taken care of by others in society. A teacher deposits his money in the bank, knowing the bankers and the banking institutions will take care of it. The banker focuses on his daily tasks, knowing that the financial experts in the government will frame the economic policies that regulate the banks. Legislators need not worry about where their food will come from. The farmers, the supermarkets and everyone and everything in between take care of that. Educational institutions, educators and their research come up with products that assist the farmer, he can concentrate on his farm and improve his produce, and leave the rest to others. In short, the creative outcome of human relationships is the story of civilization. We have moved from hunting and gathering, sewing together garments and making our shelters all by ourselves, to choosing a career or position from which we can belong to society, contribute to it, and benefit from it.

Interacting and cooperating with others, complementing each other's work and specializing has resulted in the further growth of knowledge, in surplus production, commerce, trade, market, urbanization and technological advancement. It has developed individual capacities and enriched society.

### **3. Transportation**

Specialization and cooperation that began on a small scale expanded with the possibility of fast and easy movement of goods and people. When an object has to be sent from one place to another today, some of the options that come to mind immediately are the postal and courier service. But before modern transportation facilities, before roads, a person had to walk, or ride on an animal, to transport the object. Deserts, mountains, seas, even rivers, sometimes halted the movement. The limitations of human endurance checked all movement. That changed with the advent of roads and transportation facilities.

Roads were the first fertilizer. Before the laying of roads, interactions and exchange were restricted within a small geographic area. A trip to a neighbouring village was often a slow, difficult or hazardous journey. Farmers had no incentive to produce more food than they and their neighbours could consume. The same was true for all craftsmen. The village was the whole market. When its demand was met, perishable excess production went to waste. But when roads were laid, animal carts could be used to transport the excess to neighbouring villages and market towns. This gave birth to wider markets. It gave producers the incentive to grow more crops. Farmers in an isolated French village used to feed their surplus grapes to the pigs until a bridge was constructed providing access to market towns early in the 20<sup>th</sup> century. Within a year, the village was exporting wine to the Middle East.<sup>2</sup> The coming of roads converted surplus production into profits. Thus, roads acted like fertilizer to stimulate higher agricultural production.

Similar growth is seen in every field due to improved transportation. Movement of large numbers of people and large quantities of goods was easier over water, so ancient civilizations

and cities developed along the coast or rivers. The 85,000 kilometres of roads that the ancient Romans built enabled their armies to march and supplies to be transported, and contributed to the building of the Great Roman Empire. The Silk Route, used from second century BC, was a network of land and sea routes connecting Europe and China via the Horn of Africa, Arabia and the Indian subcontinent. Apart from the economic benefits, this exchange of goods and more importantly, the human contact, impacted and improved the civilizations in all these regions. Ideas spread along with the travellers. The system of paper currency travelled from China to Europe, the Hindu-Arabic numeral system originated in India, moved to Persia and from there to the rest of the world. The Silk Road carried not only people and products, but also languages, inventions, organizations, religion, civilization and culture across thousands of miles, unifying previously isolated tribes, linking small kingdoms with larger kingdoms, and laying the first foundations for globalization many centuries before the word was conceived. Transportation brought people closer, faster more easily, and for that reason, was a major milestone in social evolution.

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*“The greater the human connectivity due to better transportation and communication, the faster has been the growth in GDP.”*

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#### **4. Communication**

Gold was struck in California in January 1848. But the gold rush did not start till the end of the year. In August of 1849 an article appeared in the New York Herald about the discovery. Two months later the news reached Europe. At that time, news could travel only as fast as the fastest horse, which was the means employed by Genghis Khan to operate the fastest communication system between the Far East and Europe. It was only after the establishment of transcontinental trains and telegraph lines that information could move faster over long distances. The US presidential elections are held in November, but till the early 20<sup>th</sup> century, the inauguration of the newly elected president used to be in March the following year. This was because after the election, all the ballot boxes had to be transported to counting booths. After counting, the results from all the states had to be consolidated. Then the final results had to be sent back to all the states. On receiving news of the victory, the elected members had to meet and the new President travel to Washington DC, all of which needed a few months! Whereas it was a matter of months in the case of regions well connected by rail and road, news took a few years to travel in other parts of the world. Ten years after Indian independence, in 1957, a survey of 150 villages in central India showed that nearly 10% of the population was ignorant of the fact that the British no longer ruled the country and that India had become independent.

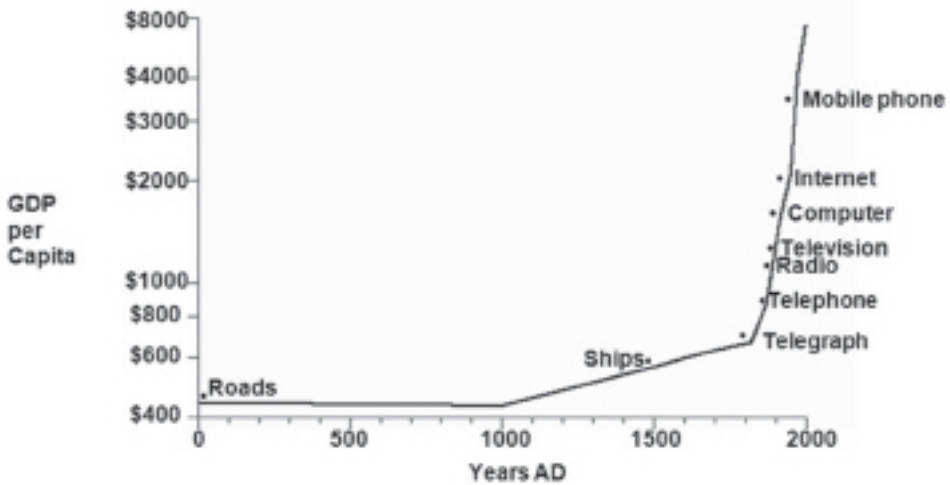
The printing press, books and newspapers liberated knowledge from handwritten manuscripts, disseminating information to large numbers of people over space and across time. Next, the Victorian internet, the telegraph, freed information from the physical realm. News travelled across the globe, without man, animal or machine having to carry it. Telephone personalized the spread of information. Radio and television did away with the



need for wires to transmit it. Today, computers, internet and mobile phones quite overwhelm us with constant, real time multimedia information. Tracing the history of transportation and communication is eye-opening because we see a close relationship with human development.

The greater the human connectivity due to better transportation and communication, the faster has been the growth in GDP. The infrastructure is important to the extent it brings people together. As the number of people who meet each other increases, and the speed with which information is exchanged grows, there is greater exchange of ideas resulting in greater creative capacity.

Fig 1: Growth in GDP juxtaposed with the rise in Communication Technology\*



The chart shows the growth in GDP over the past 2000 years juxtaposed with the rise in communication technology. Roads resulted in growth, but that remained nearly static, till ships were built. When information dissemination sped after the telegraph, the GDP growth graph began a steep climb. With every major step forward in communication technology, the gradient has got steeper. The growth can be attributed to many developments: more education, international trade, spread of democracy, migration, industrialization, the software revolution, global outsourcing of work... But fundamentally, all of these have one thing in common. They have brought people together—people in greater numbers, abridging time, overcoming space, removing linguistic barriers. It is the creative potential of this human interaction that has given rise to seed ideas, growth, development, and human welfare.

## 5. Urbanization and Multiculturalism

The Industrial Revolution led to massive urbanization and the growth of modern cities.

\* Author's own graph. GDP Data Retrieved from <http://www.efficientfrontier.com/ef/404/CH1.HTM>

People migrated in large numbers from rural to urban communities and between countries. This led to the intermingling of different backgrounds and cultures. When the 13<sup>th</sup> century Venetian merchant traveller Marco Polo returned after 24 years to Asia, he published a book describing what he saw and experienced. Many in Europe could not believe what he wrote because it seemed so fantastic. That the Far East could contain such wealth as Polo described, such geographical wonders, organized administration, even such large populations seemed unbelievable. Polo was given the nickname, *Il Milione*, or *The Million*, that reflected the public sense that he had exaggerated in his narrative. Other countries and cultures were so unfamiliar and appeared so strange that people could not believe they existed. Such alienation is removed today by our cities.

The wonders of diversity, contact, assimilation and exchange made possible in the cities have made them the centers and foundations of civilization and culture. In that sense, the city is a large university. People come together, to teach and learn from each other.

Education, art, literature, humour, music, aesthetics, justice, inclusive governance, liberty and intellectualism flourish in such a crucible of human interaction. Culture develops. It is said that it takes centuries of human experience to create a little history, centuries of history to create a little civilization, and centuries of civilization to form a drop of culture. Culture is that distilled essence of human wisdom acquired over many generations and centuries. The quintessence of culture is universal values that show us, as a species, the way forward.

Genetic diversity in a species enables it to actively adapt to changes and survive. It creates new generations that can flourish in any kind of changed future environment. Similar to the diversity at the physical level, mental diversity by way of tolerance, interchange of ideas and acceptance of opposing views can give us the social adaptability needed to meet any kind of future. The English language has grown and spread around the world, not only because of colonialism in the past centuries, but also because as it spread, the language adopted words from every culture and language that it encountered. The dynamism of North America is due to the tremendous power present there due to the mixing of races, ethnicities, nationalities and cultures of people who moved there from all over the world, particularly in the last century. What happens in a smaller scale in every city is replicated on the global canvas. Human contact, whether by migration, trade, imitation, or even war, is the ultimate catalyst for evolution of society and common humanity.

Mathematician and author William Byers writes that creativity comes from trying to reconcile conflicts. The mind creates stable conceptual systems to understand and represent reality. A conceptual system is an integrated family of concepts, that create a unified universe of knowledge and experience, in which everything can be explained by the logic of the system. But every conceptual system is based on some premises and perspectives, and comes with its limitations. There are some questions that cannot be answered within the framework of a system. Instead of ignoring the unanswered issues or explaining them away hastily, if we question the underlying assumptions of the framework, we see the boundaries that limit our mental functioning, we see the box, and can shift to a new, wider, conceptual framework, or think out of the box. The first step in this process of creating a spark is the collision of

two forces, or the meeting of two human minds. Urbanization and its virtual equivalent, the internet, provide the playing field for this creative collision.

## **6. Conscious Connectivity**

Advanced communication technology has made two-way instant communication around the world possible. Information in multimedia format is available to all. The internet is free of all the limitations of the physical plane, and in turn, liberates everything that it comes in contact with. It connects everyone globally. It allows every individual space to express himself. It provides knowledge to all. Public awareness can be raised on any issue, by anyone. Universal education, not only primary, but all the way to tertiary, can be achieved. Business is conducted over it. The internet and communication technologies empower us all. The majority of humans used to be an undifferentiated, amorphous mass, with most of the power in the hands of a miniscule minority of kings, serfs, religious leaders and land owners. But today anyone can become a news reporter, a public activist, leader of a mass movement, writer, singer, trader and much more.

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*“The logistics of bringing human minds together effectively holds the key to consciously accelerating human progress.”*

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The internet of things, or the internetworking of physical devices, buildings, vehicles and other objects, is going to blur all boundaries, between objects, between planes, and between humans and the world. We are headed for an ever more closely interconnected future. The continuing advances in transportation and communication technology, the declining costs and the resulting proliferation of electronic devices and connectivity hold an infinitely creative potential. Faster and safer travel, easier and more reliable transportation of goods, and interactive communication are all powerful, because they bring people together. Human capital is unique when compared to all other resources available to us. The more it is used, the more it grows. It has scope for infinite expansion and creative application. It has the potential to overcome every challenge we face today, and anticipate and prevent future ones. It can turn a problem into an opportunity.

The logistics of bringing human minds together effectively holds the key to consciously accelerating human progress.

*Author Contact Information*

*Email: [harish.janani@gmail.com](mailto:harish.janani@gmail.com)*

## **Notes**

1. “Train rescue: Commuters use people power to free man trapped against platform at Perth’s Stirling station,” *ABC News*, 7<sup>th</sup> August 2014 <http://www.abc.net.au/news/2014-08-06/man-freed-after-leg-trapped-in-gap-on-perth-train-station/5652486>
2. Eugen Weber, *From Peasants into Frenchman* (Stanford: Stanford University Press, 1976)

## Scientific Knowledge and the Citizen

**Herwig Schopper**

Former Director General, CERN;  
Member, Board of Trustees, World Academy of Art & Science

### Abstract

*How can citizens become more aware of science and how it proceeds in order to be able to form their own opinion on science based problems concerning our environment and thus participate in taking decisions relating to technical matters? Scientific knowledge is also part of human culture and contributes to the evolution of human values like faith. What role can scientific academies play in improving the trust between the public and science?*

It is generally recognised that science as the basis of modern technology has immensely contributed to the evolution of society during the last 200 years. By ‘science’ I mean in this article ‘natural sciences’ (physics, chemistry, biology, etc. but not humanities or economics). Science and technology are attacked as being at the origin of many of the problems we are facing today. Sometimes it is claimed that we are entering the era of post-enlightenment and that the advantages hoped for like freedom and wellbeing for everybody have not been attained and that instead of providing high standards of living, technology leads to crisis in many areas of human existence. In order to find ways to improve the situation and to exploit fully the social power of scientific knowledge it seems necessary to discuss the relationship between science and technology and their impact on society and to clarify some misunderstandings and some wrong concepts. These misapprehensions are partly due to erroneous presentations in the media but also because of premature public announcements of scientists driven by too much ambition.

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*“The image of the lonely genius as presented in many works of literature is completely wrong. Even Einstein, perhaps the most outstanding example of the solitary mastermind, depended on interactions with other colleagues.”*

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### 1. Does the normal citizen understand how science works?

To the general public, the image of science lies between the two extremes—on the one hand science represents the absolute truth and on the other hand, science is a social activity and hence depends on historical conditions, contingencies and is therefore untrustworthy. Both images are, of course, wrong.

In the progress of science one should distinguish between two phases: the first phase in which the personality of the researcher is essential for choosing his method of work when he explores new domains, following in some cases more systematic paths or in other circumstances trying to proceed by trial and error. During this phase, contact with other scientists is essential. The image of the lonely genius as presented in many works of literature is completely wrong.\* Even Einstein, perhaps the most outstanding example of the solitary mastermind, depended on interactions with other colleagues. Usually only after many wrong trials and many useless detours do final results emerge. Even those may be questioned by the results of other scientists and more work may be necessary to come to a definite solution. Also what is called the intuitive process can be essential in this phase, but intuition alone, as important as it may be for the progress of science, is not sufficient. Intuition alone may be crucial in other domains of human activities like in arts, but in science another phase has to follow.

It is the second phase, the phase of consolidation and verification, which provides the content for textbooks and handbooks used by students. There everything looks logical and straightforward and all the detours are suppressed (which sometimes gives the wrong impression that science is boring since it is not about surprises and intuition). In this phase interpretation, theory must be compared with facts which in natural sciences are measurements, i.e. numbers. Sciences are based on quantification and the empirical results are represented in mathematical form. This whole process requires a close collaboration between theory and experiment and implies a lot of hard and tedious perspiring work. It can be achieved in most cases only by cooperation of several or even many scientists and refutes the pictures of the lonely genius solving all the riddles in his study by thinking deeply. The media and also the public, of course, prefer human heroes which does not do justice to the fact that modern science is mainly based on cooperation. And progress is made mainly in small steps and not in a few breakthrough discoveries. James Clerk Maxwell, who is mainly praised for unifying electric and magnetic phenomena in the 19<sup>th</sup> century, added a final element to this unification by extending in his famous equations the theory from static to varying electromagnetic fields—after Michael Faraday, Hans Christian Ørsted and others found in experiments the relationship between electric currents and magnetic fields. Even Einstein knew already the Lorentz transformation which is a key element of the theory of special relativity and he learned a lot from Riemann's geometry of curved space for his theory of general relativity.

In natural Science facts are based on measurements which can be put in numbers, in formulae and finally in mathematically formulated theories which not only reproduce all measurements but also allow predictions. This is one of the mysteries: nature prefers mathematics as a language! Considering the history of science we state that a first step was the penetration of physics by mathematics. Combined with quantum mechanics this helped us understand the structure of the atom, then the atomic nucleus and most recently, the structure of elementary particles and the forces acting between them. Of course always being guided and confirmed by experiments! Chemistry was in the beginning like all sciences, a purely empirical activity, (starting with the alchemists) and later became a real science only around 1920 when, thanks mainly to Linus Pauling, physics helped us understand the

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\* See for example 'The Physicists', a play by Friedrich Dürrenmatt

chemical bonding and reactions on the basis of the atomic structure. Molecular Biology is presently in a transition from empiricism to theoretical understanding, whereas genetics and neuroscience are still restricted to certainly remarkable but still empirical successes.

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*“Scientific revolutions do not imply that all existing knowledge is wrong but rather they restrict the validity of a special theory to a certain domain of parameters.”*

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## 2. Truths in the natural sciences and other human domains

The main difference between the natural sciences and other human actions is the difference between what is considered true: in science a result is recognised as ‘true’ only if it can be reproduced anywhere at any time. The ultimate authority is nature and not human power. If a young student produces a result which obeys this condition of reproducibility he would be right even if all great authorities are initially against him. This reproducibility provides great confidence in the applied results of science in technology. When social scientists occasionally claimed during discussions that all results of science are uncertain since they are dominated by social conditions, I asked them whether they trust a bridge which they cross or an airplane which they board.\* Because of quantum mechanics airplanes have not become more dangerous!

This reproducibility is sometimes interpreted in the way that scientific results are considered to be eternally valid. Is this true? Yes and No! Media sometimes report about a revolution in science, what does this mean? Scientific revolutions do not imply that all existing knowledge is wrong but rather they restrict the validity of a special theory to a certain domain of parameters. For example relativistic dynamics does not imply the Newtonian mechanics is wrong but it means that the latter is valid only for velocities much smaller than the velocity of light. Quantum mechanics has not proven the invalidity of classical mechanics but has shown that it has to be modified when dealing with dimensions of the size of atoms. In these and many other cases the new theories include the old ones as asymptotic special cases.

Another problem which arises when scientific problems are discussed in public concerns the influence of errors. Results of measurements are expressed as numbers. No measuring equipment is free of imperfections and hence the results are affected by systematic errors. It is part of the experimental art to keep the systematic errors as small as possible or to estimate at least their size. The other kind of error is the statistical error. If we flip a coin the probability that one side will be up is 50%. However, if the coin is thrown 10 times we will find that one side is not up exactly 5 times, maybe 4 or 7 times. The simplest laws of statistics tell us that the deviation from the ideal expectation is proportional to the square

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\* Here, all the interesting philosophical discussions about reality and objectivity are neglected. They are very interesting from a philosophical point of view but as a practising physicist I ignore them as long as I am in the laboratory.

root of the number of trials. Therefore with 10 trials (square root of 10 is about 3) one has to expect a large error of about 30% which is reduced to 10% with 100 trials.\* Therefore in certain experiments the statistical error can be reduced by repeating the measurement. The scientific result expressed by a number has practically no meaning without quoting at the same time the error, both systematic and/or statistical. In physics and chemistry this is a strictly followed rule and to a certain extent, errors are discussed also in medical research and some other fields. However, in public surveys this is mostly but regrettably neglected. Normally in a survey, about 1000 persons are interviewed which gives a statistical error of about 3%. Various results differ often by not more than this and hence have no relevance which is usually not mentioned and completely neglected.†

The importance of errors becomes even more crucial when scientific models are used to make predictions. Every model is based on certain assumptions depending on the present state of knowledge. The lack of knowledge can be taken into account by considering several models based on different assumptions and leading to diverse results. This ambiguity results, of course, in a different kind of systematic error. Unfortunately also in such cases the error is often not mentioned in public presentations of the predictions. The most drastic actual case is the prediction of climate warming. An enormous amount of interdisciplinary work has gone into achieving the best possible predictions. However, some parts of the complicated climate system are not yet sufficiently understood, for example the influence of clouds or the interaction between oceans and atmosphere. Therefore different models have been developed starting from different assumptions. The average of all these models gives the famous 2 °C which is used in all political discussions concerning the reduction of climate warming. In all the public discussions I have heard, the errors attached to this value have not been mentioned although they are at least of the same magnitude as the value of 2 °C itself. For political reasons this might be justified but certainly it is not a rational use of scientific knowledge.

Of course, science is studied by people who have favourite ideas and prejudices. They make errors and follow wrong paths. To study the history of science is therefore very important, in particular in order to demonstrate to young people its human side and how fascinating it can be. However, after the fog has disappeared only the verified results will survive as explained above and only these should be used in any application.

In summary the following remarks are pertinent: scientific knowledge changes in history, but not by invalidating old theories but rather by restricting their domains of application. In addition because of unavoidable systematic and statistical errors all scientific results are not absolutely true to any degree of precision and their uncertainties have to be taken into account for decision making. The lack of this understanding among the public and politicians leads to many misinterpretations and sometimes to wrong decisions. It will also have the consequence that a large part of the population might lose the confidence in science since they might get the perception that science is not reliable. How can one achieve a state where difficult political decisions on energy production and use, climate change, nuclear energy,

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\* The general role of probability in quantum mechanics cannot be discussed here. As far as measurements are concerned involving quantum mechanical phenomena the estimation of the statistical error is very similar although much more sophisticated than when throwing a coin.

† This is also true of most election forecasts that compare results of different parties or persons.

water and food supply, etc., are based more on rational arguments instead of being strongly influenced by emotional disputes?

### 3. Education and Political Decisions

The importance of education for the citizen has many aspects which cannot be discussed in all its aspects in this article. Only the necessity of providing to every citizen a minimum understanding of scientific matters will be considered.

We are living in an environment which is determined to a large extent not only by technical man made conditions but also by unavoidable natural dangers. Both succumb to the laws of nature. Every citizen should have a minimum understanding of those conditions in order to deserve the connotation of being an educated member of human society. The obvious solution is education should include not only reading and writing but also a certain understanding of the fundamental laws of nature as discovered by science. This is the main task for primary and secondary schools. Primary education should be compulsory for all children and in developed countries secondary education should be made available to a large part of the population. This is certainly a difficult but important task since it would at least take away the fear of some natural phenomena (and has successfully done it already for thunder, lightning, earthquakes etc.) which are still dangers but are understood as natural phenomena and not as expressions of the anger of gods.

Things become more complicated when it comes to understanding some modern technological developments. The scientific and technical environment is extremely complex and it needs specialists to understand and evaluate it. However, decisions related to such problems are very often major elements of the strategies of political parties or governments. They are even directly raised in popular referenda (examples are climate change, air pollution, genetic technology, chemicals against weed, nuclear energy etc.). In an ideal world one would hope that all citizens can be sufficiently informed to be able to make their individual decisions based on rational arguments.

This is, of course, an illusion grounded on the erroneous assumption that all people are equal. Some people are stronger, more beautiful or more intelligent than others. The basic concept of democratic thinking should be that the *chances* are equal for all, but not necessarily the *final achievements*. Hence we should not expect that the critical power of judgement should be the same for all citizens. Maybe scientists and other trained experts should have a special function in political decisions, a very difficult problem. Certainly, an objective of public education should be that the citizens understand in principle how science progresses as described above and how its results should be interpreted and applied. But one has to accept that a certain specialisation is unavoidable and indeed is the practice in most state systems with primary, secondary and tertiary education institutions. However, it is an open question whether citizens with different degrees of (scientific) education should have different degrees of influence on social decisions. If the answer is yes, it remains a completely open question as to which way this could be established in. But it is certain that a popular vote does not guarantee the most reasonable technical decision.



## 4. Science and Human Values

For the general citizen it is relevant to have at least a basic scientific knowledge not only to better understand and evaluate our technological environment, it also has some influence on our acceptance and formation of values.

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*“Perhaps one day one might be able to understand better the mechanism of the human brain based on neurobiology, but consciousness, ethics and free will will remain outside the realm of natural sciences.”*

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Since the era of enlightenment, scientific development has infiltrated general education in many countries to a sufficient degree that the population has been liberated from superstition and the belief that supernatural powers take a direct influence on human destiny. Kings and emperors are not anymore believed to be installed by the grace of god,\* a concept that played an important role in Europe over centuries.

Our modern understanding of the physical world has deeply changed the relationship between science and faith. We know now that the age of the earth is about 13 billion years and not about 4000 years as it has been deduced from the bible and we understand the evolution of species, including man, as a result of evolution.† As a result, it is sometimes claimed that modern science leads necessarily to atheism and even famous scientists and politicians express themselves in this way. This and other wrong concepts concerning the relationship between science and religion are based on a misunderstanding of the progress of science.

As has been explained above, the ‘truth’ in science is based on observations reproducible anytime and anywhere whereas in religion it depends on revelation which is normally not repeatable at will. Hence, because of this fundamental difference in perceiving the world, there cannot be a conflict between science and faith. When Pope Johannes Paulus II visited CERN in 1983, I had the occasion to present to him this concept and he fully agreed. Hence it did not come as a surprise to me when a few years later Galileo Galilei was vindicated by the Vatican. When some time later the Dalai Lama came to CERN we came to the same conclusion. When I expressed my surprise that he fully agreed with the Pope he answered that he had dinner regularly with the Pope where they discussed such issues.

Miracles are essential elements of all religions, but in principle not repeatable. It is simply not possible to prove or disprove by methods of natural sciences any religious dogma, including the essential question whether god exists or not. Science provides only one aspect of human reality. Several other aspects apart from faith are not accessible to science. Beauty is one of them and science will not be able to explain to me why I like the paintings of the

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\*Although in some parts of society financial success is still considered to be a divine reward and astrology is still a much appreciated topic in some journals.

† Some of the formulations in holy scripts should be interpreted symbolically in the view of modern science and not taken literally

French impressionists and not those of abstract modern art, why I like the music of Mozart and not that of Stockhausen. The mysteries of the various forms of human love will never be fully explicable to science and perhaps one day one might be able to understand better the mechanism of the human brain based on neurobiology, but consciousness, ethics and free will will remain outside the realm of natural sciences as defined in this article.

As a physicist I can still be emotionally impressed by looking at the stars on a beautiful summer night even when I know how they produce their energy and that they will exist only for a certain numbers of years. And I still consider it as a great mystery how the world came into being in spite of knowing the modern cosmological model which explains the evolution of elementary particles, atoms, molecules, dust, stars and galaxies but starts time and space with a 'big bang' during which time and space were 'created'. What is the 'big bang'? I once read that to the question 'what existed before time?' Saint Augustin replied 'God has created the purgatory for people who ask such stupid questions'. When I explained to Pope Johannes Paul II during his visit to CERN that in our machines we create matter from pure energy he corrected me by saying thus: '*creation* is my business, you can only *produce* matter'.

According to the ways in which we explore or perceive the world we shall find different aspects which seem not to provide a coherent picture or even to contradict each other. It is like comparing the different projections of one object. The shadow of a dinner plate will be a circle in one direction but will be closer to a straight line in a different projection. Which one is true? They are both stemming from the same reality and only by combining all projections we shall get a better understanding of the reality behind.

It seems that human beings need in addition to rational thinking a metaphysical 'narrative'. Can sciences contribute at least indirectly to establish such a narrative and the ensuing human values? Maybe, maybe not! Some general principles accepted in sciences may provide some hints. As far as we know today the laws of nature are universally valid—everywhere on earth, in the whole observable universe and at all times. Should one endeavour to find similar general laws for human ethics? Are 'Human Rights' as defined by the United Nations at least an approximation of such general laws? At least in science we have learned that tolerance, non-discrimination of races, faith and mentalities and mutual respect are positive values for the development of society.

In sciences and particularly in physics we aspire to explain the enormous multitude of phenomena by a theory based on as few assumptions as possible—a 'theory of everything'. This search for unification, for unity, is one of the fundamental aspirations of human existence. It allows us to put the multitude of phenomena into a logical scheme and maybe it is the basis for logical thinking. However, in physics we have learned that there will never be a complete theory of everything. Exploring nature is sometimes compared to unveiling an existing unchangeable painting. This is a wrong comparison, since the natural sciences are not as automatic and uninspired. Indeed, in order to formulate the laws of nature the

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*"The search for unification, for unity, is one of the fundamental aspirations of human existence."*

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appropriate concepts have to be invented first. The conservation of energy, one of the most fundamental laws in physics, can be formulated only when, after many years of experimental and theoretical work, the differences between the concepts of energy, work and action are clarified. By developing new concepts based on empirical observations new realms of nature can be opened to research, e.g. the concept of electric charge was at the beginning of electricity. The understanding that there will never be a theory of everything in the natural sciences might perhaps be a lesson for other sciences and human actions.

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*“Could WAAS play a greater role as far as global issues are concerned?”*

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## 5. The Public and the Role of Academies

Exploring nature to understand from where we come and where we are going to is one of the noblest human activities, independent of the practical use of results. Therefore science as such because of its deep cultural value should be free to choose its targets for research and should not be limited by political or ideological ideas—a message that should be transferred to the citizens. Scientific academies should contribute to this task.

The results of science become the basis of technologies which can be used for the better or for worse of society. To decide which technologies should be developed and which suppressed is not the responsibility of the scientists alone, it is a decision to be taken by politicians based on the democratic will of the citizens. Which technologies to support and which to ban then becomes a question that has become extremely challenging because of the complexity of technical problems and the progressing specialisation. Democracy is partially based on the assumption that the ‘politically educated citizen’ (‘der mündige Bürger’ in German) would be able to form his own judgement. This is an illusion. Certainly the educational systems have made it possible for practically every citizen to understand better our environment and the public networks allow everyone to obtain immediate information on whatever topic is of interest. However, a few clicks on internet pages cannot replace many years of specialised studies. So how can citizens form their opinion, whom should they listen to? The media are often not neutral in their reports, they are influenced by economic or political pressures. Neither can individual scientists be considered as neutral and reliable sources of information. Scientists have their ambitions, they are proud of their own achievements and are after all human beings with their prejudices. For every dispute on a technical problem concerning society one will be able to find individual scientists who are in favour or against. In the past some outstanding scientists had managed to acquire sufficient confidence among politicians and in the media and thus their messages had a certain weight. Unfortunately this happens much rarer today—media prefer beauties or footballers who are much more attractive than scientists.

Could scientific academies or learned societies play a useful role in informing the public? I believe this is the case if certain conditions are met. The studies, analysis and recommendations must not be biased politically, ideologically or economics-wise. This is

trivial but not easy to achieve. It implies that the organisation must be financially independent from economic firms and political parties or other pressure groups and it must gain the confidence of the public which takes a certain time. A few organisations come close to this ideal, like the National Academy in the USA, the Royal Society in the UK or the Leopoldina in Germany. However, their influence on governments and media and hence on the public is still rather limited and in most cases restricted to national problems. Could WAAS play a greater role as far as global issues are concerned?

*Author Contact Information*

*Email: [herwig.schopper@cern.ch](mailto:herwig.schopper@cern.ch)*

## Unifying Subjectivity and Objectivity\*

**Murugesan Chandrasekaran**

Fellow, Institute of Chartered Accountants of India;  
Senior Research Fellow, The Mother's Service Society, India

### Abstract

*The contribution of modern science to the progress of civilization is immeasurable. Even its tendency toward exclusive concentration on the objective world has had salutary effects of great value. Modern science has wiped away much that was merely superstitious or speculative. Its rejection of unfounded opinions and prejudices has helped the thinking mind question conventional beliefs, shed preferences and prejudices, and challenge established authority. But modern systems thinking inherited from natural science is the suppression of the subjective dimension of reality. Many complex systems are an attempt to define and represent all subjective experience in physical terms. The modern man has a bias towards objectivity. The powerful influence of sense impressions on his mind and thinking makes him ignore the subjective experience and consider only objective facts as a valid, legitimate and representation of reality. Observing objective factors that are physical is easier than observing subjective factors that are subtle. The mechanistic view of reality has led to the rejection of the role of the individual in social development as insignificant. The individuals determine the development of society. Their social power has its roots both in subjective factors and objective factors. Economy, politics, society, and culture are inseparable dimensions of a single integrated reality. Subject and object constitute an integrated whole. The mind sees them as separate and independent. Or it views one as completely subordinate to the other. Unbiased approach to the study of all human experiences may prove that subject and object are interdependent dimensions or elements of reality.*

Franklin D. Roosevelt became the President of the United States on March 4, 1933. By the evening of March 4<sup>th</sup>, 32 of the 48 states had closed their banks. The New York Federal Reserve Bank was unable to open on March 5<sup>th</sup>. It did not have enough money to function, as huge sums had been withdrawn by panicky customers overnight. On that day, the United States was in the midst of the most severe banking crisis she had ever faced.

The Great Crash of 1929 marked the beginning of the Great Depression that devastated the economy of the country for a decade. It was a decade of high unemployment: 25% of the workforce was unemployed; plunging farm incomes: prices fell by 60%; poverty: two million people were homeless; low profits: Industrial production had fallen by 50%; and deflation. The United States was struggling to survive the lowest point in its history.

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\* The article reflects views presented and discussed at the webinar on Mind, thinking and Creativity and at the Post-Graduate Certificate Course on Mind, Thinking and Creativity at Inter-University Centre, Dubrovnik, Croatia organized by the World Academy of Art & Science and the World University Consortium

Since the beginning of the Great Depression, several thousand US banks had declared bankruptcy. Millions of Americans were lining up at the remaining banks daily to withdraw their savings before their bank failed and was closed. During the years after the Great Crash, every economic policy initiative thought to be relevant had been applied, but failed to stem the collapse of the system.

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*“Only when economics is viewed as a subset and integral aspect of the larger society of which it is a part, it is possible to develop a real science of economy.”*

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Roosevelt had studied the principles of Economics at Harvard. He later remarked, ‘I took economics courses in college for four years, and everything I was taught was wrong.’ He knew that all those principles of economics he was taught in college were inadequate to stem the crisis. He was under the strong conviction that the collapse of the system was the result of subjective factors. He understood that this issue could not be readily addressed at the institutional or policy level alone. So he addressed the American people on radio through Fireside chats—a series of 30 evening radio conversations he initiated to alleviate the fear.

The President began making informal addresses on radio eight days after his inauguration. He explained to the Americans that all the objective factors that had made America prosperous were still present. The rich natural resources, hardworking people, huge industrial infrastructure and continental market were still present. The real problem was not the absence of any objective factor. It was rather their own loss of self-confidence and faith in their nation. He appealed to their courage and national pride. He told them, ‘first of all, let me assert my firm belief that the only thing we have to fear is fear itself.’

During the following days, legislation was passed instituting insurance on bank deposits and other safeguards. On March 6<sup>th</sup>, the entire American banking system was closed temporarily. On March 9<sup>th</sup>, Congress passed the Emergency Banking Act. Roosevelt used the Act to effectively create federal deposit insurance when the banks reopened. On the eve of the end of the bank holiday, Roosevelt told a radio audience of more than 60 million people ‘what has been done in the last few days, why it was done, and what the next steps are going to be.’ He asked the people to redeposit their savings that they had withdrawn earlier.

The result was a remarkable turnaround in the public’s confidence. The Americans began to believe that the reopened banks would be safe, as the President explained in his first Fireside Chat. Within two weeks, people returned more than half of the cash they had been hoarding. The first stock-trading day after the bank holiday marked the largest ever one-day percentage price increase.

Over time, the bank crisis subsided.

This famous event teaches us several important lessons.

First, it illustrates that economy, politics, society, and culture are inseparable dimensions of a single integrated reality. The ever present public debate over the role of government in regulating markets is misplaced. There are no markets without government regulation. Without an infrastructure of law to protect property and contract rights, without a judicial system to enforce those rights, without public institutions to prevent collusion and monopoly control, no market can be free and functional. So too, any economy is dependent on the prevailing social norms, values, educational system, and a host of other social factors. Only when economics is viewed as a subset and integral aspect of the larger society of which it is a part, it is possible to develop a real science of economy.

Second, it shows that crises are opportunities. Roosevelt's remedy for the banking crisis of 1933 led to measures which provided for the stable development of the American financial system for more than six decades. Those protective measures were systematically withdrawn in the 1990s which resulted in the 2008 financial crisis. History confirms that virtually every tragic event has had positive consequences. The Black Death in Europe led to the collapse of feudalism, paving the way for the rise of democracy. The world wars led to the founding of the United Nations and the Universal Declaration of Human Rights.

Third, this event illustrates the role of the individual in social development. Mainstream economics and social science deal with broad generalities and statistical averages. The individual is just a number in statistics. But in reality, the individual is the source of all creativity and innovation in society. All creativity and innovation spring forth from subjective factors. Human history documents the fact that a single individual thinker, leader, inventor or entrepreneur has the power to change the world. All significant changes in human history have been the result of actions by small groups of individuals. The social power of these individuals has its roots both in subjective factors and objective factors.

Finally, this event illustrates the equal, or greater, importance of underlying subjective factors in the effective functioning of society. Every economics student is taught that the economic system is founded on trust and confidence. Without trust and confidence, money has no value and financial institutions cannot function. But although it is recognized as a necessity, it rarely figures in the prevailing conceptual framework of economy. It is because our present economic theory is so strongly grounded in objective, material factors. The economic performance is the result of conscious choices of countless conscious individuals. Those choices depend not only on their confidence in the system but also on their theoretical understanding of how it works.

Money is commonly regarded as an objective reality, a thing in itself. In fact, money is merely a convention adopted by human beings as a symbol of social power. Money has no value outside of a social context. What would I do with a million dollars in the lonely Moon? The value of money depends on the overall productive capacity of the society which is founded on the knowledge, skills and values of its individual members.

This brief narrative illustrates that every known fact, event and concept acquires greater significance when viewed from a more comprehensive, integral perspective. This perspective can only be subjective.

The reality of the subjective dimension in economics can clearly be seen in the above case. We are living in a world full of conceptual systems created by mind. Different types of economic systems, political organizations, religions, philosophies, and scientific theories are all examples of conceptual systems, or paradigms created by mind.

A paradigm or a conceptual framework or a conceptual system is a distinct set of mental concepts or thought patterns, including theories, research methods, principles, and standards for what constitutes legitimate contributions to a field. We think in the form of thoughts, ideas, concepts, and facts. Organization and coordination of the facts generate thoughts. Organization and coordination of the thoughts generate ideas. Organization and coordination of the ideas generate a Conceptual System.

A Conceptual System contains both subjective and objective elements. It is founded not only on external, objective facts, but also on subjective factors such as conscious and subconscious values, perspectives, and rules that process the external facts.

In Roosevelt's example, rich natural resources, hardworking people and man-made industrial infrastructure are the objective factors in the Economic system. Faith, trust, confidence and courage are the subjective factors. Both are needed for a successful system. However, in many conceptual systems, only the objective factors are taken into account, as the policy makers did before Roosevelt was elected.

Every conceptual system has the aspiration to construct a system that would put man in touch with perfect reality. But, being a product of mind, the system is limited by its own elements, characteristics, faculties and properties. What happens when the elements of a conceptual system are taken for granted as true?

In many cases, mind mistakes the system or just an aspect or an effect of the system for reality itself. For example, the stock market bull run in 1929 was mistaken for a booming economy. The decision to withdraw deposits from banks was mistaken by American people to be a wise financial decision, which was actually leading the country towards disaster. Economic growth means prosperity, is a good example for a limited truth mistaken for reality. Today we have growth combined with increasing inequality and environmental problems. These factors undermine the current living standards, and future potential standards of millions, or may be billions, of people. Growth resulting from speculation is a formula for future disaster, as witnessed in 1929 and 2008.

Every system we see in the objective material world is a product created in the subjective mental world. The visible outer, objective, conceptual system is a reflection of an invisible, inner, subjective idea. The computer I use to write this essay is a tangible product. It could not have come into the objective external world without someone creating it first in the subjective intangible inner world. In Roosevelt's example, the positive outer outcome had its origin in the President's positive inner conception. The ineffective policy of the earlier administrators produced negative outer results. They too had their origins in the inner conception of those administrators, their conception being negative.



The subjective and objective fields are neutral. The human mind acting in those fields produces results that are viewed as positive or negative to man. The way in which man thinks has so far determined his progress. Further progress can be accelerated if there is a change in the way he thinks.

Division is the origin of the mind's capacity for analytic thinking. The more mind divides, the more it distinguishes, compares, contrasts and separates things from one another. It comes to consider each part as a separate object of reality distinct from all other parts. Division also leads to abstraction of objects from their context. Thus we observe a ripe fruit as something separate and distinct from an unripe fruit, the leaves, branches and trunk of the tree on which it grows, the soil in which the tree is planted, the sunlight and rain by which it is nourished, and the season in which it ripens.

Similarly, mind divides us from one another and from the world around us. It separates the pursuit and dissemination of knowledge through science and education from the life of the community. It even divides our own inner psychological existence, the subjective reality into thoughts, opinions, beliefs, sentiments, emotions, attitudes, feelings, urges, desires, impulses and sensations.

The mind's capacity for division is the origin of foundational concepts of modern science—the Cartesian divide between mind and body, the independence of the observer and object, and the distinction between objective and subjective forms of experiencing reality.

Cartesian dualism sees subject and object as totally independent dimensions of reality. Dualism is an ancient concept that was deeply rooted in human thought. The ancient scriptures taught that soul is different from body. Plato and Aristotle reasoned 2000 years ago that the human mind or soul could not be identified with the physical body. Rene Descartes reinforced dualism. The word 'Cartesius' is the Latin form of the name Descartes. Cartesian dualism is Descartes' concept of dualism.

The central theme of Cartesian dualism is, 'I reflect, therefore I am.' Descartes held that the immaterial mind and the material body were two completely different types of substances that interacted with each other. He said that the body could be divided up by removing a limb, but the mind or soul was indivisible. A modern materialist or a scientist would find it difficult to accept this view. Accepting it means accepting supernaturalism. So, they reject it.

While science is not willing to accept the division of reality as subjective and objective, it divides matter or objective reality as much as it can. This division has played an important role in the development of science.

The rise of modern science altered the course of global civilization, the evolution of the human mind and the development of human conception of knowledge in six fundamental ways:

1. *Physicalism*: Modern science led to the materialization of knowledge. The exclusive focus on knowledge of physical nature eventually led to the implicit premise or explicit belief that the physical is the sole plane of reality. Newton and other early scientists would have vigorously rejected this conclusion. This premise is now pervasive even

in the social sciences, where genetics and neuroscience seek to unveil the mechanisms governing psychology and even conscious mentality. *Observing objective factors that are physical is easier than observing subjective factors that are subtle.*

2. *Deterministic Mechanism*: Modern science led to the conception of knowledge as a set of immutable, universal laws determining the functioning of a static, mechanical universe. Consequently, Knowledge of reality became synonymous with certainty and predictability. It was challenged by the discoveries of quantum mechanics three centuries later. Outside physics this premise remains largely unchallenged. The Newtonian quest for immutable, universal laws of Nature was later extended to identify immutable, universal laws governing polity, economy and society. For the past two centuries social scientists have attempted to reduce human behavior and interaction to external factors and mechanistic processes governed by universal principles. This attempt has obscured the unique role of the individual in social development, innovation, discovery and creativity. *The mechanistic view of reality has led to the rejection of human free will as an appearance and neglect of individual uniqueness.*
3. *Specialization*: The strengths of modern science are Mind's capacity for division and analytic thinking. They led to the creation or emergence of separate disciplines, later to specialization and compartmentalization of knowledge. The consequence is immense. Over the last five centuries, the number of intellectual disciplines has multiplied from five to around 1000 disciplines and sub-disciplines.<sup>1</sup> As the study of reality is divided into smaller and smaller pieces, specialization has led to increasing fragmentation of knowledge. Viewing each field independently has generated precise knowledge of the parts, but has obscured the complex interactions and relationships between parts that are essential for knowledge of the whole.
4. *Quantification of Knowledge*: Modern science led also to the quantification of reality. This resulted in the confusion of data and information with real knowledge, and the misconception that mathematical models and statistical probability are true and accurate representations of the real world. Mathematics is an extremely powerful tool for the discovery and validation of knowledge. But increasingly the valuable tool has come to be regarded as knowledge itself. The awarding of two Nobel Prizes in economics for development of computer algorithms that model the functioning of financial markets is only an extreme example of a widely prevalent phenomenon. Its consequences during the financial crises of 1998 and 2008 underline the extreme danger of mistaking models for reality and mathematical formulas for knowledge.
5. *Measurement of Uncertainty*: An unintended consequence of the Scientific Revolution has been to redefine the notion of chance. The conception of the universe as a giant mechanism subject to universal laws of causation made it possible to also postulate its very opposite, a complete absence of causality, pure randomness. The development of probability theory originally aimed at obtaining knowledge about complex causal processes, but later was applied to situations assumed to be characterized by a total absence of causality. The merger of probability and statistics in the early 20<sup>th</sup> century

resulted in the new hybrid field of mathematical statistics. The application of a posteriori induction to ascertain the likelihood of future events dramatically broadened the application of mathematics to the human sciences, with profound consequences. Under the influence of positivism, the philosophical dimension of causality was dropped and probability came to be viewed purely in mathematical terms as an expression of randomness. *The concepts of uncertainty and randomness were inadvertently elevated from philosophical questions to the status of objective scientific fact.*

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*“The notion of objectivity as the study of external objects merged with the very different notion of objectivity as the absence of distorting personal preferences and came to be regarded as one and the same thing.”*

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6. *Dominance of the Objective:* Modern science commenced with an exclusive focus on the study of observable external phenomena in the material world. They alone lent themselves to measurement, verification and experimentation. This led to the rise of the philosophy of positivism, founded on the premise that information derived from sensory experience, interpreted through reason and logic, forms the exclusive basis for all authoritative knowledge. Only knowledge that can be independently verified was considered authentic. Thus, knowledge of the objective world and knowledge acquired by objective methods alone were deemed valid. The study of subjective phenomena and subjective forms of evidence became inadmissible and invalid. Introspective and intuitive knowledge was rejected. Yet, Srinivasan Ramanujan wrote 3000 valid and original mathematical theorems purely through intuition without any objective proof.

The contribution of modern science to the progress of civilization is immeasurable. Even its tendency toward exclusive concentration on the objective world has had salutary effects of great value. Materialism has wiped away much that was merely superstitious or speculative. Its irreverent questioning of truths has unleashed an insatiable curiosity and spirit of adventure. Its ruthless rejection of unfounded opinions and prejudices has helped the thinking mind question conventional beliefs, shed preferences and prejudices, and challenge established authority.

These characteristics have contributed positively to the advance of scientific knowledge. They are partly responsible for its collective achievements over the past five centuries. At the same time, each of these characteristics has imposed arbitrary limits on the development of knowledge. After reigning victorious for four centuries, today we see the weaknesses and insufficiencies of modern science rising to the surface, staring at us with its flaws and inadequacies. An impartial consideration of their role will help us understand both the strengths and weaknesses of science today and reveal opportunities for the further advance of both knowledge and civilization.

The root meaning of Objectivity relates to the perception of objects. Later it was used to refer to perceptions and viewpoints that are impartial and unprejudiced. The root meaning of Subjectivity relates to self-observation and self-experience. Later the word came to be synonymous with 'prejudiced by personal interest and perspective'.

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*“Our conceptual systems have undergone a continuous process of evolution over the centuries and are always subject to modification by conscious choice.”*

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With the rise of experimental science, the quest for a verifiable external standard to ascertain facts eventually led to a confusion of meanings. Scientists began to believe only that which can be observed with the senses can be fully real and true. The difficulty is, objectively assessing or describing subjective phenomena poses severe limitations on the use of the experimental method for the study of subjective phenomena.

The moment the field moves away from the study of external objects, error, mistake, and superstition begin to rear their heads. Objectivity is a corrective to superstition. Subjectivity offers a clear unhindered field for superstition. This is inevitable. Each level of perception creates superstition appropriate to that level. The field of science needs to be scrutinized from each of these perspectives and cleansed for rationality or logic to step in.

The initial concentration of modern science on physical nature was justified as a practical necessity. The rise of positivism converted practical necessity into philosophical dogma with profound implications for the development of science. The transition was abetted by confusion regarding the ambiguity of the terms objectivity and subjectivity, each of which has a double meaning.

The study of physical nature is the study of inanimate objects and subconscious life forms which can only be observed objectively in the external environment, since we have no access to their subjective intentions or self-experience. Descartes' dualism encouraged the idea of the scientist as an objective, impartial witness standing outside of nature, rather than as an involved participant in the world he observes. Gradually, the notion of objectivity as the study of external objects merged with the very different notion of objectivity as the absence of distorting personal preferences and came to be regarded as one and the same thing. This led eventually to the philosophical premise that reality consists solely of objects that can be studied objectively and by extension that all subjective phenomena are secondary results of objective causes.

The word subjectivity also has two meanings which have gradually become conjoined and confused with one another. Subjectivity is the psychological field of conscious human experience that is not directly accessible to external observation. Only its behavioral expressions can be observed by others. But it is also used to connote subjective factors

contributed by the observer, such as preconceived notions and prejudice, traditional beliefs and superstitions prevalent at the time. In its quest for impartial knowledge of physical objects in the world around, modern science naturally placed its emphasis on eliminating this distorting influence. So the idea of subjectivity as the psychological experience of a conscious individual came to be regarded as an unscientific and invalid form of evidence and to some extent an invalid form of experience. Modern science sought to discover ultimate knowledge by the exclusive study of physical factors that could be observed by the physical senses and measured by material instruments. In the process the entire subjective dimension of reality, the dimension which distinguishes human beings from all other species, was subordinated to the objective dimension observable by the senses. Eventually it resulted in philosophical and scientific efforts to reduce all non-physical phenomena solely to physical causes.

The course of science exerted an influence on the development of mental faculties, and concepts of truth and knowledge. It displaced the Greek conception of truth as that which could be known in the form of pure ideas accessible to logical reasoning, but not necessarily to physical observation or measurement. Rationality itself came to be associated only with that which can be perceived and verified physically. The old adage that 'I will believe it when I see it' acquired the status of scientific dogma, even when applied to aspects of reality beyond the reach of the senses.

The fragmentation of knowledge occurs within disciplines. This has led to an increasing divorce between different aspects of our social existence. The financial markets were originally intended to support the economic welfare of people. But the fragmented theoretical conceptions have created a divorce between the financial markets and the economic welfare of people. A similar fragmentation has led to the treatment of a wide range of psychological, subjective problems as if they were simply physical in origin.

The Cartesian divide isolates and insulates social science from society and the social consequences of its theories. Theorists assume no responsibility for the failures arising from application of their flawed conceptions. Scientists in universities resist application of the findings of educational researchers about the most effective pedagogy to promote learning. The list of gaps and short-circuits is endless.

The approach that led to the phenomenal success of the natural sciences inspired early social scientists to imitate and replicate the same approach. The discovery of immutable universal laws governing the physical universe inspired these social scientists' search for similar principles applicable to society. The extension of the concept of immutable universal laws to conscious human behavior, individual and social, has been the source of endless confusion and error. The governance of political systems and the functioning of our economies are the result of conscious choices made by individuals and groups in the past. Our conceptual systems have undergone a continuous process of evolution over the centuries and are always subject to modification by conscious choice. They are not determined by natural law. The resistance posed to any change, whether social or psychological, by established habits, beliefs, self-interests and inertia may be formidable. However, history shows us that no social arrangement is unchanging or inevitable.

In the field of economics, the construction of mathematical models similar to those in physics has fostered a basic misconception regarding the factors that govern economic systems. For nearly two centuries the Newtonian concept of equilibrium in a static universe that dissipates energy and tends toward the lowest possible energy state prevailed almost

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*“Subject and object constitute an integrated whole.”*

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unchallenged in economics. The extension of the principle of scientific laws has fostered passivity and resignation before social injustices, political oppression, economic inequality, and other social ills. The vastly disproportionate distribution of the world’s wealth, the political influence of the rich, the displacement of human beings by machines, the subordination of women, and the social exclusion of minorities are the results of human choice. They are not the results of natural law.

Similarly, the Darwinian concept of the evolution of subconscious biological forms narrowly viewed as competition and survival of the fittest was inaptly applied and later rejected with respect to conscious social systems. Society evolves by processes that are conscious and subjective. Aspiration, curiosity, observation, thinking, creativity and imagination are more fundamental than external forces in human social evolution. Competition takes place within a wider and more fundamental framework of cooperation. Human evolution is a complex conscious process involving continuous interaction between the objective and subjective dimensions, physical facts and mental conceptions, natural forces and human aspirations, creative individuals and social groups. Analogies between the natural and human world may provide useful insights into similarities and parallels between the two domains. But the blanket automatic extension of physical principles to conscious living beings conceals more than it reveals, obscures rich complexity by simplistic assumptions, and reduces the creative complexity of human existence to simple mechanical models and quantitative equations.

The consequences of the conflation of objectivity with reality and subjectivity with unreality are most evident in the study of humanity’s conscious social and psychological existence. In this domain the confusions regarding impartiality and reality have imposed the most serious obstacles to the progress of knowledge. The identification of knowledge with objective facts has erected a serious barrier to the progress of knowledge. The sciences of society and psychology are concerned with the actions of conscious human beings. Those actions include not only the physical movements of their bodies, but also our mental actions of observation, thought, will, imagination and creativity. They also encompass our vital actions of perceiving, feeling, loving, enjoying, and so forth. The effort to dismiss or delegitimize our subjective experience is to reject all that is most truly human about us, simply because it does not lend itself to observation, quantification and measurement in physical terms.

Self-experience is the most vividly real and tangible experience of which human beings are capable. It seems reasonable that the physical scientist studying matter assumes the position of an observer mind witnessing an independent physical reality. Yet the same premise does not equally apply to a psychologist examining a subject’s conscious and unconscious mind. Indeed, we can never experience anything else so directly and intensely. When we examine the

supporting evidence, we realize that the reduction of all subjective experience arises from the initial premise of physical science rather than from either rational or evidential justification.

Nevertheless, the presumption that human intelligence and machine intelligence are the same may serve an evolutionary purpose. It can help us understand the mental and social processes by which both mind and civilization have advanced up to the present stage. Undoubtedly, there are correlations between our mental and physiological processes. An impartial observation of both the similarities and differences between them may generate valuable insights. But this requires that we remain conscious of the hypothesis we are testing.

In regarding reason as an impartial judge and witness of reality, we overlook the implicit biases that color all rational thought. Reason has a pronounced tendency to concentrate on facts and ideas consistent with its premises. It ignores or differently interprets those that contradict it.

Science is itself a subjective discipline for generating knowledge governed and framed by philosophical conceptions. These philosophical conceptions are themselves inherently 'unscientific' because they cannot be validated by scientific methods. The effort to exclude philosophy from science suppresses open discussion, but can never eliminate its subjectivity. In denying the validity of subjective forms of knowledge, science invalidates itself.

A major limitation of modern systems thinking inherited from natural science is the suppression of the subjective dimension of reality. Many complex systems are an attempt to define and represent all subjective experience in physical terms. They attempt to reduce conscious experience to automatic subconscious processes.

The collapse of the subjective into the objective dimension is illustrated by the prevailing economic models of society. The assumption that human beings make rational decisions is only another way of saying that individual decision-making can be modelled in mechanistic terms without recourse to consciousness. The obvious fallacy in this assumption has compelled economists to introduce terms such as irrational exuberance to explain the extreme fluctuations in the behavior of markets under extraordinary circumstances, while leaving intact the underlying premise for normal applications. Economic behavior is influenced by many subjective factors—aspirations, attitudes, preferences, fear, insecurity, curiosity, attraction, ideas, misconceptions, superstitions, prejudices, opinions, beliefs, ideals, values—that vary from person to person, moment to moment. The consequences of the near exclusive emphasis of economics and other social sciences on the objective dimension of human behavior are apparent in the inability to comprehend and manage the complex social world in which we live.

The efficacy of systems thinking is impacted by inherent limitations in the concept of randomness and the measurement of uncertainty as applied to human systems. Randomness and uncertainty are ambiguous concepts. The appearance of randomness may result from the real absence of causation or from a lack of information, effective measurement and valid knowledge. Black swans may surprise us because a phenomenon is truly random or simply because our concepts, models and measures are inadequate to represent what is really going

on. They are likely to become increasingly prevalent, so long as our study of human behavior neglects subjective factors, individual uniqueness and conscious human choice.

The modern man has a bias towards objectivity. His physical senses can only perceive the objective external world. The powerful influence of sense impressions on his mind and thinking makes him ignore the subjective experience and consider only objective facts as a valid, legitimate representation of reality. The methods of experimental science make him believe that the objective external world is the only field that can be directly observed and studied. These are only partial truths.

Subject and object constitute an integrated whole. The mind sees them as separate and independent. Or it views one as completely subordinate to the other. Can we not attempt to establish the objective and subjective domains as two equal dimensions of reality, or at least as two equally valid but incomplete ways of viewing reality, and try to reconcile them?

It is not possible to see, hear, understand anything without our feelings, opinions, prejudices, partialities coloring it. When a tree falls in the forest, does it make any sound? Only if there are the ears of living beings present to convert the percussion pressure waves of air into sound waves.

The mind of each person looks at things from one point of view which strongly depends on the person's own subjective state. We have come across hundreds of points of views on the Great Depression and its causes in the past seven decades.

Each of us is capable of assuming different perspectives, some objective and some subjective. The fact that many patients respond to medicines leads us to believe that disease is purely objective. There are known cases of patients responding to Placebo drugs and faith healing. Psychosomatic disease, Placebo effect and faith healing show us that disease is not purely objective. There is always a subjective contribution in such cases.

Unbiased approach to the study of all human experiences may prove that subject and object are interdependent dimensions or elements of reality.

Everything in this world evolves. What refuses to evolve is left behind by the evolutionary forces. Mind is evolving. Its faculties and powers are evolving. Man is moving from various forms of analytical thinking towards integral thinking. Embracing dualities and reconciling them to arrive at an integral reality is one of the important approaches of Integral thinking. Only if man accepts both objectivity and subjectivity and gives them equal status, further evolution of mind is possible.

*Author Contact Information*

*Email: [cs@motherservice.org](mailto:cs@motherservice.org)*



## Social Power, Law and Society

**Saulo Jose Casali Bahia**

Member, Board of Trustees, World Academy of Art & Science;  
Professor of Law, Federal University of Bahia, Brazil

### Abstract

*The article aims to discuss some aspects of the formal centers of social power. Thus, it seeks to answer how power becomes institutionalized in formal social organizations; what is the source of political power and how it is converted into institutions of governance; how legal power is generated by society and how it grows; what is the relationship between legal power and those who are governed; what is the role of the legal system and human rights in fostering the distribution of social power; and how a society has enhanced access to and equitable distribution of power in recent centuries.*

### 1. The Rise of Institutions

*“From these things, therefore, it is clear that the city-state is a natural growth, and that man is by nature a political animal, and a man that is by nature and not merely by fortune citiless is either low in the scale of humanity or above it (like the “clanless, lawless, hearthless” man reviled by Homer, for one by nature unsocial is also ‘a lover of war’) inasmuch as he is solitary, like an isolated piece at draughts.”\**

Aristotle defined the nature of man as gregarious, social and political.

City-states, or States, are a natural consequence of human character. As Aristotle pointed out, it is a “natural growth”. Life in society demands a set of conditions or organization between individuals. Anarchy or absence of rules would bring to an end the possibility of living together. These conditions or organization is a complex system of duties and responsibilities. For each arrangement we will find a specific institution.

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*“Law is power, because legal rules establish relationships among individuals within a society, and retain the permanence and stability of these relationships.”*

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\* Aristotle, *Politics*, 1.1253a. In *Aristotle in 23 Volumes*, Vol. 21, translated by H. Rackham. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1944.

Thus, State came into existence with the emergence of man, because the common protection against enemies (animals or hostile human groups) and the promotion of a general supply of alimentation, protection against unfavorable climatic conditions and so on, demanded an organization of scarce resources, which was only possible after the social establishment of *hierarchy*\*, *specialization*†, *coordination*‡ and *integration*.§ The State carries out exactly this work.

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*“The juridical rules, under any kind of government, must get the acceptance of the individuals of a society.”*

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Another example is the family, which came into existence naturally; family is an institution which was born out of survival and evolution needs, after sexual activity had been practiced by a couple or group and led to the birth of the offspring. Those individuals who did not protect the young did not give continuity to the species, which furthered natural selection, whereby individuals were able to understand and enhance the institution.

State and family are ancestral institutions. But there are a great number of others that were born out of the complexity of life in society.¶

## 2. Law and Institutions

Law is power, because legal rules establish relationships among individuals within a society, and retain the permanence and stability of these relationships. The *hierarchy*, which is inherent in the state, helps to develop a perfect way to demand the enforcement and observance of rules, with the menace of sanction. Law is a human creation that corresponds to an (inter-) institutional police. Law is an institution for maintaining institutions.

Thus, power becomes institutionalized in formal social organizations by Law.

Law defines the structure of a society, because the society needs to be defined and protected by a large frame of settled-out legal duties and rights.

As Janani Harish has written, *“society is more than the sum of all people. It is an intricately linked, complex organization. It is like the human body.”*\*\* Society can only be defined by Law; it is protected by institutions which preserve it.

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\* “Vertical grouping and delineation of authority and responsibility are required for the smooth functioning of any organization,” as defined by Janani Harish in the article *Society and Social Power* (in *Cadmus* v.2, issue 3, 2014: p.47).

† “Specialization is an improvement on coordination wherein different individuals or sub-groups within a group perform different tasks, and collectively accomplish far more than would otherwise have been possible. This is an improvement on coordination, and generates greater social power.” *Idem*, p.46/47

‡ “By coordinating the efforts of many people, society acquires capacities that are not available when everyone acts in isolation.” *Idem*, p. 45/46.

§ “Integration magnifies the energy of organization. Within a group, when the various subgroups and their activities are integrated, the overall effectivity is enhanced.” *Idem*, p.47.

¶ As Janani Harish points out, “the building that one calls house gives an objective reality to the biological tie of the family, but it is not just this physical structure that fully explains the idea of family. A set of rooms – some brick and mortar are not enough – and the social construction of roles and responsibilities are needed to make the biological tie real and complete the family. Society consists of many such non-physical structures that bind people. Language, manners, customs, standards and laws are some. They define and guide the interactions between people. They are like the standardized language, HTML, which makes it possible for billions of people to interact with one another on the internet. Guilds, unions, currencies, governments, armies, religions, trade, markets, factories, ports, banks, courts, parliamentary assemblies, hospitals, schools, newspapers and other media are specialized institutional structures that enable society to engage in a wide range of activities – for self-defense, production, exchange, commerce, governance, healthcare, education and recreation”. *Idem*, p.39.

\*\* *Idem*, p.40.

### 3. The Political Power

As mentioned above, the role of Law is to organize and stabilize relationships among individuals in a society, and to reinforce all the institutions by granting coercive power to the State.

Even political institutions are defined and circumscribed by Law, because hierarchy, integration, coordination and specialization (which form the base for a government's activities) imply juridical duties, rights and responsibilities among individuals.

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*“The source of political, social and legal power is the collective.”*

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### 4. Consent of the Governed

Does law have its own will? Obviously not. Law is not an autonomous institution with self-direction and self-determination. The juridical rules, under any kind of government, must be accepted by the individuals of a society.

When a law is imposed by an authoritarian leader and his army, without the society's acceptance, the imposition will hardly be stable.

It is possible to impose authoritarian rules on some individuals or a specific group all the time. It is possible to impose these rules on all individuals perhaps a few times. But history has not registered any instances of imposition of laws by authority on all people all the time (or most of the times) without a minimum level of acceptance.

Consent is the basis for Law, and democracy has the advantage of facilitating the permanent and contemporaneous control of the creation and modification of juridical rules.

Legal rules, when established without link with the true aspirations and values of the society, tend to be deprived of their legitimacy and tread on toward the lack of applicability to the real world. Formal and informal insurrections will come out, official clashes will take place, government support will become increasingly fragile, and in the course of time it will have necessarily opened new paths or models for the political governance of the society.

History has demonstrated that the lack of democracy is only supported when the people believe that other superior or valuable rights are granted by the government, and accept state impositions. But social power, like constituent power, is always there in potential and belongs to the people. Democracy is certainly a choice of each person, when they perceive the advantages of living under a different political power system, and refuse to accept authoritarian treatment.

In this sense, the source of political, social and legal power is the collective.\* Because of this, *human capital is the ultimate source of all resources, and it is inexhaustible in potential.*†

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\* “The source of social power is people. It is from people's aspiration, energy, and capacities that society derives its power. When individual capacity is organized and channeled through a system, it becomes social power”. Idem, p. 44

† Idem, p. 49

## 5. Human Rights and Distribution of Social Power

Democracy is not the only value to be considered by individuals in a society. Social power is crucial to all human rights that the legal system has to consider it (or not) in its provisions.

Only those human rights consented by the people must be adopted by Law. Human rights are historical, evolutionary and variable. But it is a fact that all human rights which are deemed by the society to be appropriate, must be acted on by the legal system as a consequence of social power. Justice is consensus.

The history of advancement in human rights means the history of an increase in solidarity and equality. Only when solidarity and equality develop, are individual, collective and social rights reinforced and can be experienced.

Solidarity and equality indicate that differences among individuals are merely secondary and accidental, and that such differences are not the true reason for discrimination. These feelings and values show that any member of the society can be seen like any other individual, considered by the observer as an equal, thereby creating proximity and empathy. These values suggest that the differences of gender, race, nationality and so on are commonly and generally irrelevant, and that the other members of the society have more things in common with us than differences. It allows us to understand that what really matters is the presence of common humanity in each of us.

As Janani Harish mentions, “Today, clan loyalty or fierce regionalism is increasingly giving way to a growing sense among many people that we all share a common identity and destiny as human beings. Society is evolving from the nation state to the human community”.\* The same idea has been espoused by Marta Nešković: “We consider that the recognition of equal values of diverse human capacities is a necessary step towards the individual accomplishment acquired through the expression of a unique potential”.†

Our common core values must be perceived. These values provide the best lives, and promote solidarity and altruism. After all, human development requires unselfishness, and human rights have their roots in our humanity. Altruism necessarily arises from the identity of individuals. It is necessary to identify the essential traits of common mankind in each of us. This is the essence and the goal of Social Power.

*Author contact information:*

*Email:* [saulocasalibahia@uol.com.br](mailto:saulocasalibahia@uol.com.br)

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\* Idem, p. 38.

† *Knowing Beyond the Structure: Maximizing Social Power through a Synergistic, Values-based Approach on Diversity.* Article in *Cadmus* v.2, issue 6, 2016: p.134.

## On the Conditions of Collective Action in Globalisation\*

**Augusto Santos Silva**

Minister of Foreign Affairs, Portugal;  
Professor, University of Porto, Portugal

### Abstract

*One must confer specific attention to “collective action” in the framework of globalisation. The article addresses this issue both at the analytical and normative levels. For the first one, it makes use of sociology. Two main problems are identified: the inequalities and imbalances that constitute globalisation are associated to globalisation; and its institutional embeddedness, that is, the way by which it can be combined with national, social and political structures. For the second level, the article uses the perspective of democratic public policies, advocating the building of a critical metanarrative about globalisation. Three axes can underpin this metanarrative: democracy, law and development.*

Globalisation means a new structural framework for human action. It also means new higher standards. As Joseph Stiglitz (2006) summarised, globalisation implies an increased integration of the countries of the world; this increased integration implies an increased interdependence; and this increased interdependence implies that there must be more collective action. Therefore, we must confer specific attention to “collective action” in the framework of globalisation, whether it takes place at the governmental or non-governmental level, in the relations between states or within civil societies, and whether or not it presents itself as a specific political strategy.

This paper will address this issue and will contemplate it both at the analytical and normative levels. For the first one, it will mainly make use of sociology. For the second one, it will use the perspective of democratic public policies.

Let us look at the fundamental characteristics of globalisation. On the one hand, the compression of space-time, the greater systemic integration, the increased interdependence and the diversity and the heterogeneity of the world are facts. Facts that are neither good nor bad in themselves.

On the other hand, the record of economic globalisation in terms of growth, diffusion of innovation and decrease of the so-called absolute poverty is impressive. Trade, investment and resource mobility have been powerful development engines in many parts of the world. Along these lines, defining several issues as global issues have enabled significant progress in the conciliation of responses to critical problems, be it in the area of health and pandemics, cooperative security, or in climate change and the environment.

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\* Paper presented at the XIII International Colloquium “Post-2008 Global Dynamics & Structural Changes: Economic, Political and Eco-social Transitions”, held at the University of Lisbon, Portugal on 11<sup>th</sup> May 2016.

From a democratic and European political perspective, the challenge of globalisation is of another kind. I would say it is a double challenge. On the one hand, it is a problem of asymmetry, that is, inequality and imbalance. On the other hand, we have the issue of institutional embeddedness, meaning the combination of the global scale of movement and mobility with the national or subnational scale of citizenship.

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*“A critical analysis must describe the changes in international law, both public and private, and characterise the large hegemonic institutions in the current globalisation framework for what they are: sources, systems and actors of political power.”*

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The word “asymmetry” suggests that the debate about globalisation cannot be cut down to an exchange of arguments in favour or against “liberalisation”. What do we mean by “liberalisation”?

If we mean the lifting of barriers to factor and product mobility, then we must acknowledge that there are dimensions in which liberalisation has achieved great progress. And maybe the issue comes down to verifying whether that generates negative externalities or not—see the case of movement of capital; and if there are dimensions in which constraints remain or have even, in part, increased and there is room to reduce them—as it is the case with movement of workers. If barriers to liberalisation are considered in their multiplicity, then we must draw attention to the fact that the opening of international trade is still to be concluded exactly in the areas where developing countries would benefit more from. That is true for agriculture and agribusiness, where the large public subsidies to national production in the United States, the European Union and Japan distort “free trade”.

There are obvious gains in terms of analytical precision when we avoid the uncritical incorporation of ideological slogans and we resort to a clearer conceptual language. And I think we can achieve this precision if we turn to the key issues of inequality and imbalance. They both lead us to the *structure of power* of the world economic system. International trade, foreign investment and the interplay of monetary, fiscal and regulatory policies, all are arenas of the relations of power between major political actors; and organisations like the World Trade Organisation (WTO) are the stage where those relations continuously take place. They articulate with other fields equally crucial, like copyright and patent law.

In analytical terms, power and inequality are, therefore, more useful angles of approach to reflect upon globalisation rather than those too close to the ideological narrative (like “openness”, “liberalisation”, “deregulation” or even “modernisation”). They are also useful to think about *action* inside and before globalisation—not least because they suggest that, even more productive than the pure protest or the purpose of “stopping it” will be to try to rebalance it, from the perspective of the global distribution of resources and opportunities.

This rebalancing is also important in what refers to the network of interdependencies that structures the world system, connecting the actors. In this network, the roles and possibilities of action of different actors like states, regional and international organisations of states, global public agencies and non-governmental organisations, are very unequal. And the course of globalisation depends highly on the balance of power between those actors and on the differential capacity of influence they hold. Therefore, a critical analysis must describe the changes in international law, both public and private, and characterise the large hegemonic institutions in the current globalisation framework (like the American Treasury or the Central Banks in the United States, the Euro Area, the United Kingdom, Japan or China, or the World Monetary Fund, or the WTO, or the main rating agencies) for what they are: sources, systems and actors of *political power*. And also, for instance, it must compare the very distinct resources, mandates and methods of agencies like the International Labour Organisation and the WTO, or the World Bank and the United Nations Programme for Development (UNPD), or the OECD and UNESCO, to render a true account of geopolitical dynamics as such.

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*“From a European perspective, the main consequence of hegemonic globalisation since the eighties on doctrines and policies has been the destructuring and—to a certain extent—the loss of legitimacy of the founding narratives of economic development and post-war social consensus.”*

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So, the first problem identified by an analytical approach committed to the sometimes called social market economy is this double asymmetry: the *inequalities* and *imbalances* that constitute globalisation are associated to globalisation. The second problem is its institutional embeddedness.

It is a double embeddedness. On the one hand, there is the embeddedness of globalisation in the different national structures: the social structure (the population and its resources); the normative structure (the population and its values); and the political structure (the population and its citizenship). On the other hand, there is the articulation between each one of the multiple dimensions of globalisation: and I would like to highlight the economic, geostrategic (and, in this regard, security in particular) and environmental dimensions.

Contrary to what the neoliberal ideology of globalisation claims, the economy is not the matrix dimension based on which we shall reflect upon the systemic evolution of the world. The basis to reflect upon and influence this articulation, the basis that may bind it to the preferences and decisions of sovereign actors is yet another one. It goes by the name of politics (see Silva, 2014, 2015).

Here is the challenge: how can collective action rebalance the process of globalisation, in order to pursue two objectives? The first objective is to favour the redistribution of resources and powers, in order to correct asymmetries, reduce inequalities and set positive

sum games between the actors involved. The second objective is to allow globalisation to better articulate its multiple dimensions and fit into the diversity of histories, cultures and values of the different societies. Thus set out, the challenge can be enunciated (in the wake of Dani Rodrick, 2012) as the tension between economic “hyperglobalisation” and democratic political action.

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*“The reform of the international system is less a question of grand organizational engineering than a matter of adaptive rebalances and dissemination of good practices.”*

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Managing this tension implies, at least, that two key elements must be called upon. One has a cognitive and normative nature: how do we interpret and evaluate globalisation, its effects and its limits; and what consequences do we draw in terms of choices and purposes of action. Let’s call it “metanarrative”. The other element is of a practical order: assessing which key players and in which institutional frameworks the necessary global regulation of globalisation will prove to be more efficient.

From a European perspective, the main consequence of hegemonic globalisation since the eighties on doctrines and policies has been the destructuring and—to a certain extent—the loss of legitimacy of the founding narratives of economic development and post-war social consensus: Christian-democracy and social-democracy. In particular, globalisation has jeopardised what Tony Judt (2005) called the “Grand Narrative of the 20<sup>th</sup> century”: the combination of political democracy, Keynesianism and Welfare State. The difficulties of this narrative to adapt, compared to the strength of the so-called neoliberal management of globalisation, have strengthened the signs of disrupt that Donald Sassoon (1996) once described as “the great crisis of European socialism” at the end of the 20<sup>th</sup> century, and Tony Judt (2010) reported as the “exhausted language of social-democracy”. Equivalent warning signals (albeit less studied) can be found on the side of Christian democracy.

This is not the place for an ideological debate *per se* (although pertinent and necessary) about these signals. But maybe we can agree on the thematic axes around which we can (re) build a critical metanarrative about globalisation.

I see three axes. The first one is *democracy*, as the institutional armature for a participation as large as possible of people, movements and organisations in the decision-making, implementation and evaluation processes. The second one is *law*, as a system of interrelations and interdependence rules, impersonal and tending to be universal rules, based on the equality of the parts before the law. And the third axis is *development*, as an economic and social process of qualification and empowerment of actors, organisations and territories, pursuing objectives and using paths of their own choice (I follow, of course, the work by Albert Hirschman and Amartya Sen).



Globalisation needs metanarratives that grant it a positive framework. Democracy, law and development can structure that metanarrative.

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*“The proposal here is that we grant special attention to two of those challenges: the need to render globalisation less asymmetric and unequal; and the need to embed economic globalisation in the political and social structure.”*

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As for the key players, what a sociologist can say is that the dynamics of collective action around globalisation will depend crucially on the relation between three forces. One of them is the *international system*, that is the set of international relations put together by the multilateral action of sovereign states. The second one is the *supranational entities* of regional dimension, under construction. And the third one is the *horizontal networks* of social movements and organisations, in particular those of a non-governmental nature.

The reform of the international system is less a question of grand organizational engineering than a matter of adaptive rebalances and dissemination of good practices. For instance, the progress achieved in the governance of global public health issues can inspire officials in other fields. When considered in its extent and ambition, the European Union still represents a *sui generis* supranational entity. Finally, concerning non-governmental global actors, the huge opportunities of cooperation provided by the globalisation of communications and by network organisation structures allow us to conceptualize a global “public sphere”, and also to underpin a global “civil society”.

Acting inside globalisation and acting before globalisation represent challenges that are qualitatively new for societies, institutions and actors. The proposal here is that we grant special attention to two of those challenges: the need to render globalisation less asymmetric and unequal, and the need to embed economic globalisation in the political and social structure.

To face these challenges, we must act collectively, by referring to a consistent metanarrative and mobilizing different actors. I suggest that the metanarrative be built around the conceptual axes of democracy, law and development; and that we take all the possible advantage of the adjustments and gradual reforms in the international system, of the action of supranational entities (like the European Union) and of horizontal networks of civic and non-governmental organisations. May these proposals be worthy of attention and criticism.

*Author Contact Information*

Email: [santos.silva@mne.gov.pt](mailto:santos.silva@mne.gov.pt)

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## **Blind Spots of Interdisciplinary Collaboration Monetising Biodiversity: Before Calculating the Value of Nature, Reflect on the Nature of Value**

**Joachim H. Spangenberg**

Research Coordinator & Vice President,  
Sustainable Europe Research Institute, Germany

### **Abstract**

*Defining, assessing and valuing biodiversity and ecosystem services is an exemplary field, illustrating the necessity as well as the obstacles to interdisciplinary collaboration between natural scientists and economists. Despite the frequent use of identical individual motivations and similarities in the terminology, the discrepancies and misunderstandings run deep. A main reason for the lack of reflection regarding the disciplinary and partly incommensurable world views, their ontologies, epistemologies, anthropologies and in particular their specific axiologies. While considered self-evident in their own disciplines, the lack of awareness regarding these basics hampers cooperation between disciplines. The challenges involved may be one reason why the readiness to participate in interdisciplinary research is actually decreasing amongst mainstream economists. In particular axiology (philosophy of values) is causing problems: at a closer look, there is a diversity of legitimate value systems, within which economic valuation is an important but limited niche. Recognising this implies acknowledging the limitations to economic valuation, and to economic statements more generally. Epistemological discrepancies show up in diverging interpretations of the same terminology. Interdisciplinarity requires rethinking of basic disciplinary assumptions in all participating disciplines, to generate results which are not based on assumptions in contradiction to secured insights of other disciplines in charge of the issue in question—otherwise integration of results is not possible. This is the basic law of interdisciplinarity, and it requires significant changes in academic education.*

### **1. Why is this the Case?**

Economics has long been considering itself the “king discipline” of social sciences (Lazear 2000), which is still the mainstream feeling. Others find the king to be naked and call for “debunking economics” (Keen 2001) or campaign against the discipline’s perceived autism for a post-autistic, real-world economics (Alcorn, Solarz 2006). Both hypocrisy and autism show up in valuing biodiversity. Furthermore, other disciplines in the social sciences have for sure not been isolated from the real world, but have blind spots of their own. Sociology, for instance—in particular in the German tradition since Max Weber—has made the basic assumption that *every social phenomenon can and must be explained exclusively by social processes*: not too helpful for collaboration with ecologists.

Natural scientists, on the other hand, have long believed—and most still do—that they are objective, with no subjective influences, and that they are measuring reality and based on that, exploring the “truth”. The resulting attitude towards the policy of “truth speaks to power” is still widespread in the scientific community (Spangenberg & O’Connor 2006), and the basis of the call for “fact-based/science-based politics” in the political domain. However, as soon as political actors use scientific arguments for purposes other than those intended by the scientists, many scholars feel abused and head back to the ivory tower.

Consequently, real cooperation is rare and usually only happens if made indispensable by forces outside the respective scientific communities like funding conditionalities (this refers not to pioneer groups like environmental sociology, ecological economics or social ecology, but the mainstream representatives). Valuing biodiversity and ecosystem services is one such case where the circumstances require the cooperation of disciplines (mainly biologists/ecologists and economists, with some doses of climatologists, geoscientists, sociologists and political scientists) which are mostly unprepared for doing so. The result ranges from enthusiastically adapting each other’s terminology without really understanding its meaning, to plain rejection of others’ approach as inadequate.

The enforced cooperation is full of misunderstandings, partly a consensus based on overlapping interests and a joint ignorance regarding the philosophy of science, and partly a clash of cultures. What is becoming rare is cooperation based on mutual understanding and insight into the complementarity of knowledge.

## **2. Consensus with Conflicts**

### ***2.1. Consensus Basis I: Subjective Devotion***

Usually bioscientists and economists share a common subjective desire which leads them into this field: to contribute, with their respective disciplinary knowledge, to halt the loss of biodiversity and ecosystem services. Both try doing so by applying their respective methodologies, with the scientific analysis resulting in limits, threshold values, etc. which we suggest should be introduced legally to avoid unacceptable damages (both disciplines most often forgetting the social construction of necessities and acceptability sociologists analyse). Economists use their tools to search for the optimal solution, providing a maximum of welfare (ignoring that welfare is much broader than their monetary yardstick). The personal, pre-scientific joint motivation can establish a strong bond between different agents, a level of mutual trust which even facilitates the mutual acceptance of scientific results without really understanding them or their implications.

Both camps are aware that the conservation needs decisions, and that their advice can influence them. However, both groups undertake analyses and derive recommendations in the context of and shaped by their own world view, its epistemology, ontology, anthropology and axiology (Spangenberg 2016). As a result, they tend to take their respective body of knowledge as the relevant set of information on which decisions should be based, and are unable to recognise their respective limits.

## 2.2. Consensus Basis II: Ignorance regarding the Theory & Philosophy of Science

In the recent past, economic considerations have played a more and more dominating role in decision making. Economically speaking, biodiversity is no public good, but a common pool resource: it is rivalrous (one agent using it diminishes the opportunities of the other agent to use it) and it is difficult or costly to exclude users. Due to the latter characteristic it is no market good, has no economic value, and its value (i.e. its importance) is not reflected in decision making based on economic considerations, e.g. based on cost-benefit analyses CBA. This led both scientists and economists to conclude that defining a price for biodiversity might be an option to overcome its “undervaluation”. Doing so, they fall victim to a category error, confusing the non-existence of an economic value with the existence of an economic value of zero.

Following the “causation principle” (*Verursacherprinzip*, established in the German legislation in 1972 and translated into English as “polluter pays principle”), compensation for damages became the norm, usually in the form of non-monetary compensatory measures like establishing restoration or replacement for the damage done. The non-existence of an economic value led to other kinds of values dominating the compensation. More recently, monetary valuation, tradable shares and futures, and biotope banking have become more prominent, all based on the assumption that economic value can be calculated or constructed. The more the monetary aspect of “polluter pays” dominates, the more it is important to monetise biodiversity by including any damages done to the environment in compensation packages. This became even more urgent in Europe with the EU legislation introducing liability for damages to biodiversity, calling for compensation payments.

However, while for bio-scientists the value of biodiversity lies in the importance of a function for the functioning of the ecosystem (and in the case of political ecologists the value lies in the functioning of society), for economists the value is defined as a market price (real or hypothetical) in real or hypothetical markets. The difference in thinking tends to go undetected, in particular as both science and economics share a systematic ignorance towards the philosophy of science, which has the capacity to put the different approaches into perspective.\*

### *Axiology or the Philosophy of Value and Valuation*

Axiology is one branch of ancient philosophy, encompassing a range of approaches to understanding how, why, and to what degree humans should or do value objects, whether the object is physical (a person, a thing) or abstract (an idea, an action), or anything else. In philosophy, value is a property of such objects, representing their degree of importance. An object with philosophic value may be termed an ethical or philosophical good. Different kinds of value can be distinguished, based on different philosophical traditions and approaches (for a more detailed version see Spangenberg & Settele 2016):

- *Ideal values* emerge from Platonism, the view that there exists such things as abstract objects, real and objective things that exist independently of us and our thinking, which

\* The analysis in this section follows the approach of A. Lerch (2002), but draws different conclusions.

are entirely non-physical and non-mental. In addition, they are unchanging and causally inert—that is, they cannot be involved in cause and effect relationships with other objects (Balguer 2009). Ideas and values are such abstract objects, eternal, unchangeable, perfect types, of which particular objects of sense are imperfect copies. As these ideas cannot be perceived by human senses, whatever knowledge we derive from that source is unsatisfactory and uncertain. In his “hierarchy of ideas”, including justice, truth, equality and beauty, among many others, Plato identified the idea of the good as the supreme and dominant principle, determining the value of different actions. Valuation then may be described as treating actions themselves as abstract objects, allocating value (i.e. a degree of importance) to them based on their content of goodness. This allows for an ordinal scale ordering of actions, but not for a cardinal measurement.

- *Real values* are emphasised by Naturalism, a summary term for a variety of philosophical, scientific and artistic approaches. As opposed to Platonism, they consider real world objects as the only relevant basis to be taken into account, while all phenomena and hypotheses beyond this, in particular all those commonly labelled as supernatural, are either false or not inherently different from natural phenomena or hypotheses. The approach of ontological naturalism can be summarised as “nature is all there is and all basic truths are truths of nature” (The Encyclopedia of Philosophy 1996). Epistemologically, this leads to methodological naturalism, the requirement that hypotheses are explained and tested with reference to natural causes and events (familiar to natural sciences, but less so to economics). In this system of thought, values are necessarily determined by the inherent characteristics of the natural objects, which are predetermined and evolve according to the laws of nature, not subject to human judgement.
- *Subjective values* are also based on real world objects, but are not based on their inherent characteristics, but on subjective preferences. Thus they are not natural characteristics, but social constructs, based on what humans individually or collectively value as important to them. This is the domain of economic valuation, but covers not only economic values. Instead, subjective values can be
  - *Intrinsic*: the value of moral subjects (anthropocentrists and biocentrists disagree whether this comprises only humans or also animals, but both emphasise the importance of this value category). As a value intrinsic to the subject as such, it can neither be enhanced nor be diminished by the situation the subject is in, and thus constitutes an equality of value between all humans (at least). The intrinsic value is the basis for general human rights, and the campaigns for animal rights. Since it is tied to the subject, it is a priori not open to exchange and substitution.
  - *Inherent*: utility directly provided by a unique object (as opposed to a subject which has intrinsic value). As typical of utilitarianism, traits of an object are judged by humans regarding the utility they provide. Inherent value exists if a good which cannot be substituted is valued for its own sake. For instance, for bird watching a binocular has instrumental value (see below), but the birds themselves have inherent value.

However, which elements of nature are unique, and which ones are indispensable, or in which state of the overall ecosystem the elements cannot be substituted even at the margin will remain disputed and can probably only be decided case by case.

- *Instrumental*: an object has instrumental value as a means for achieving a given purpose. As the same object can be used for different purposes, instrumental values cannot become absolute values, but the value of the same object can vary with the purpose for which it is used. Achieving the purpose provides a utility, and the instrumental value is the value of this utility. A landscape, an ecosystem, can be assessed to have very different utility, depending on whether it is analysed from the point of view of resource use, or from a leisure and health perspective. Some economists (most prominently Marx) distinguished between two kinds of instrumental value:
  - *Use value* describes the utility from having access to and being able to use a certain object. It comprises the solving of problems, improving the quality of life (improvements in a given situation), and also the personal satisfaction gained from the use of the object. Thus use value and the understanding of utility it incorporates are multidimensional, and—for subjectively valued, for instance, inherited objects—can be much higher than the exchange value.
  - *Exchange value* measures the value by determining the ratio in which objects (in this case called goods) are exchanged against each other based on the subjective preferences of different agents for one good or the other. Note that in this case utility is conceptualised as a scalar, a common property of all goods, not directly measurable or quantifiable, but is the basis of all exchanges or transactions. According to this concept, goods of all kinds are mutual substitutes exchanged on markets, and the ratio of their exchange is based solely on their respective utility.\* Modern economics is essentially a theory of exchange, and defines a cardinal scale of product values based on it. This value increases with the scarcity of the goods traded, and decreases when cheaper or superior substitutes are developed.

However, exchange can still be barter trade, i.e. without monetisation of goods (one cow is three sheep, one sheep is two pairs of shoes, but how much is a camel? Or in the modern version: how many tanks for a million barrel of oil?). This is where monetisation comes in, with money providing a universal means of exchange, and a storage for value. As all value is measured in transactions, the market price reflects the utility and is used as the only yardstick to measure the value of goods (goods not traded on markets have no monetary value).

Furthermore, the exchange value does not measure the utility provided by a stock of goods, but only the marginal utility, i.e. the price of one additional unit of the good,

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\* To explain the market mechanism, individual preferences have to be aggregated into a collective demand curve, a mathematically questionable procedure but indispensable to economic theory, see Keen 2001. Assuming this kind of rationality, postulating market clearance and the emergence of equilibria, the economy is perceived as a fully deterministic system, a mechanical clockwork (early economists in the 19th century, deeply impressed by the achievements of contemporary physics, described their profession as the mechanics of the economy). This results in an under-complex model of reality, see Allen 2001; 2014.

dependent on the relative scarcity prevailing. Marginal utility based valuations are *per definitionem* not applicable to valuing the stock as a whole, and they cannot be added up. It is impossible to determine the total value of a good, e.g. all freshwater on Earth, but the economic value of one more glass of water can be measured: that is the market price people are willing to pay for it. Obviously, this price will change with the external conditions, in particular with scarcity or abundance of the good, and with their financial endowments.

Given the diversity of value definitions and their diverging underlying concepts, consider the economic understanding of the value of an ecosystem: as such, it is a stock, not traded and thus has no value. But it provides services, which are flows people are willing to pay for. Then the total payment over the period of use, i.e. the value of a certain service aggregated over time (and depreciated, but this is a different issue)\* is taken to represent the value of the stock, i.e. the ecosystem. This is as close as economics gets in measuring the monetary value of ecosystems, but it usually ignores that each ecosystem provides a diversity of values between which trade-offs may exist. Calculating the maximal value implies an optimisation process, exploiting all different services over time so that a maximum of utility/income is generated. Even theoretically it is hardly conceivable (natural systems have infinite characteristics, i.e. they cannot be described exhaustively with a limited number of statements). The very attempt usually takes too much effort, and so only a few easily measurable services are taken into account (like freshwater provision and carbon fixation). Other services go unaccounted, let alone fill up bioscience knowledge gaps.

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*“Pricing unique, and thus non-substitutable objects, means treating objects with an inherent value as ones with only an instrumental value, specifically an exchange value: it is a category error, and no refinement of the measurement methodologies can overcome it.”*

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In a nutshell, economic valuation is necessarily only partial, as amongst the subjective values only the instrumental ones are taken into account, and amongst these it is undefined for intrinsic, inherent and use values, but only for exchange values. It is necessarily marginal, capable of valuing one unit of goods on markets, but not the stock of goods they flow from. Applying it to stocks is a methodological choice error, and cannot be corrected by skilful modifications of measurement methods. Pricing unique, and thus non-substitutable objects, means treating objects with an inherent value as ones with only an instrumental value,

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\* The depreciation rate is decisive for the “value of the future” as for instance at 3% or 5% depreciation, any event in 100 years has only marginal meaning today, even global climate change. Depreciation assumes that future generations will be better off, thus constituting an imminent necessity of economic growth, and the assumed rate (chosen subjectively) represents a kind of “inherent ethics”. For a critique of assuming an exponential discounting function see e.g. Gowdy et al.



specifically an exchange value: it is a category error, and no refinement of measurement methodologies can overcome it. However, what is non-substitutable, subjectively and objectively, is disputed. In economics, a functional substitute is not one which replaces all functions of another object, but one which provides an equivalent utility.

*“In the domain of purpose, everything has either a price or a dignity. Whatever good has a price can be replaced with something equivalent; goods standing above all pricing, and thus having no equivalent, have a dignity.” – Immanuel Kant\**

#### *Exchange Value Calculations: Going Beyond the Limits*

For products traded in markets, the market prices equal the exchange values. However, biodiversity is not traded, so valuations use several hypothetical constructions to derive exchange values. Option values are a direct measurement, covering hypothetical prices for alternative uses of the same resource in real markets. Indirect measurements in real markets are damage cost, like the loss of yield due to invasive species or pollinator loss (they do not measure the value of biodiversity, but the lost contribution from biodiversity to wealth creation; double counting is the rule rather than the exception). Indirect measurements, in hypothetical markets are repair, avoidance and replacement cost, with an increasing degree of uncertainty due to the assumptions which have to be made regarding future prices of substitutes. Despite this caveat, all these price calculations are based on assessing the value of market goods, and thus represent none of the category errors mentioned above. Here the difficulty is more as most of these valuation methods have a high level of uncertainty, and lead to different results.

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*“A basic assumption in neoclassical economics is that individuals with fixed preferences show a deterministic behaviour, forego choice, and thus have no freedom of choice.”*

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The situation is different for the valuation of non-market goods in hypothetical markets, based on stated or otherwise revealed preferences. The latter are rather case specific; they include in particular the prices of houses assumed to be a stand-in for the quality of their location (an assumption empirically falsified), and the expenditure for reaching a certain location as the value of being there (travel cost)—easy to measure but difficult to interpret.

The most frequent measurement method is based on stated preferences, the figures people give when interviewed for getting access to a certain amenity or the compensation they demand for losing it. Besides mixing exchange and use values, such figures have little to do with payments in real markets but are ethical statements of diverging quality as is well known from sustainable consumption research. All the diverse methods based on stated preferences

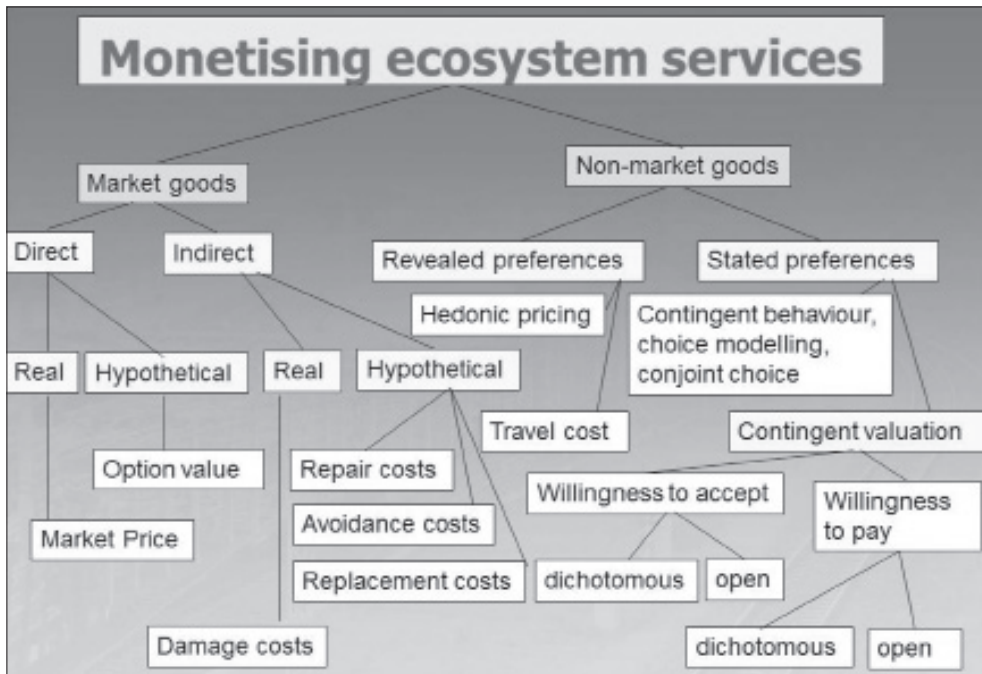
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\* Author's own translation

are applied to value non-market goods, and thus the objects of measurement are usually characterised by their inherent or intrinsic value: monetisation in these cases is an applied category error.

Furthermore, asking for the willingness to pay in such contingent valuation (CV) experiments presupposes rational choice. In order for this approach to have any predictive power, economists must assume that preferences do not change over some period of time. So a basic assumption in neoclassical economics is that individuals with fixed preferences show a deterministic behaviour, forego choice, and thus have no freedom of choice. This is inherent to the theory's determinacy: without determinism, no neoclassical theory, with determinism no choice. Consequently, many normal human behaviours are prohibited under the neoclassical notions of rational choice and rationality, and the lack of conceptualisation of the individual or economic agent, leaving out cultural norms, tastes, social motivations and institutions, makes this result inevitable (Rees 2006).

Fig 1: Monetising Ecosystem Services



Bio-scientists have problems of their own: they tend to work in a world without human influences (or, if they are taken into account, they are dealt with as external forces, as given, not as parameters to be changed). These diverging approaches to biodiversity and its value are based on diverging world views, underlying patterns of perception which determine (and are shaped by) the basic assumptions of the disciplines, not their explicit teaching or applied

methods. To understand the different approaches, a brief look at the pre-analytical world views (Daly 1996) may be helpful.

*In ecology*, species and numbers play a key role, but energy is another currency that can be used, as demonstrated first by Lindeman 1942.

*In economics*, utility (a non-quantifiable scalar) is the key unit, measured through market prices. A labour theory of value (in classical economics including Marxism) was given up, but an energy theory of value pops up again and again (Costanza 1980).

*In ecology*, on the population and ecosystem level, spatial structures including abundances play a key role (spatial spread, island biology, etc.). Thus most ecosystem models are spatially explicit, often GIS based.

*In neoclassical economics*, space as a category does not exist, it is free of space and real time. Only recently Paul Krugman, a Keynesian economist, showed that space has a role to play in economics, which earned him the 2008 Nobel Prize. Conventional Economic models are space independent and based on national statistics.

*Community ecology* (e.g. cascades) concentrates on the higher level, above populations, and since May (1975) ecosystems and their complexity have been in focus.

*Macroeconomics* describes complex systems, but uses mechanistic equilibrium models (even system dynamics models are heterodox), thus simplifying the analysis to make it fit the theory; empirical tests take place in the models (Spangenberg 2014).

*In ecology*, a range of approaches has always been used, and interdisciplinarity has proven fruitful (e.g. game theory, Maynard-Smith 1976, Dawkins 1978), with resilience and evolution as the key concepts.

*In economics*, different approaches constitute different, competing and mutually exclusive schools of thought including evolutionary economics (Schumpeter), ecological economics (Daly, Martinez-Alier, Söderbaum) or institutional economics (Veblen). The mainstream tries to “reintegrate” them by interpreting new approaches on the basis of its own paradigm (see the “Keynesian synthesis”, which has little to do with Keynes), while only slowly rejuvenating itself. Even celebrities (Krugman, Stiglitz) criticising not only symptoms but some of the basics risk falling out of favour.

*Qualities* are of crucial importance in *ecology* (and in many social sciences and the humanities), but not in economics. They cannot even be expressed in economic language unless they get translated into a quantitative change in economic parameters.

*Diversity* is a property of ecological systems which (potentially, and empirically in some cases) enhances their resilience. It is of no relevance in neoclassical economics. Diversity means not everything is at the maximum efficiency level, and thus reduces the provision of utility. In evolutionary economics, diversity is considered to stabilise the economy against shocks. Nonetheless, this “insurance function” is dedicated to maintaining a maximum of utility providing services at minimal cost, since they must not be too “expensive”.

### 2.3. Consensus Basis III: Conceptual Misunderstandings

Based on the different, mostly non-overlapping world views, systems of thought and argumentation, including specific nomenclatures, have developed. Unfortunately, some terms are shared by several disciplines, although each one gives a specific meaning to it. As a result, different concepts are used under the same name, and it requires a basic understanding of the different disciplines to identify commonalities and differences. Some examples include:

- *Optimal Solutions*: economists look for the optimum in a mechanistic, static system, the highest utility provided overall (distribution plays no role, the optimum is defined as the maximum of the one variable analysed, utility), and whether the system is always in the equilibrium state (the disequilibrium of adjustment processes is considered transitory, and judgement/measurement refers to the equilibrium state).
- *Systems*: economic systems are teleological, they develop naturally to maximize utility, reaching an optimal state if not disturbed by external influences. Ecological systems evolve without a target, are non-teleological, and there is no such thing as an optimum state from a biological point of view.
- *Competence* in science is restrictive, based on knowledge of the object area. In economics the understanding is broad, based on mastering the economic methodology and applying it to diverse object areas.
- *Proof* in science is not possible (unlike in mathematics), instead falsification and evidence are used. In economics proof by theoretical conclusion from existing economic theory, and evidence mainly from models based on the same theory.

#### *Problems of Decision Making*

Given these differences in basic concepts and self-perception, meetings of scientists and economists indeed represent a clash of cultures (if there has ever been one, this is it). This becomes most obvious to those not involved in the dispute when both approaches are used to derive policy recommendations, with diverging results. Political decisions (like business strategies) are always decisions under incomplete information; strategic decisions are often confronted with risk, uncertainty and ignorance.

- **Risk** means knowing the potential impacts of a decision, but not the probability.
- **Uncertainty** means not knowing all potential impacts, but having an idea about the probability that something might occur.
- **Ignorance** means having no idea of either.

Neither natural science nor economics has developed systematic means to deal with these different qualities of information: science tends to exclude all but the “hard facts” from its considerations, while economics tries to transform all kinds of uncertainty into stochastic probabilities to make them accessible to (a fuzzy version of) the deterministic economic concepts inherent e.g. to CGE (Computable General Equilibrium) models. Thus while

economists reduce the complexity of reality to make it fit their tools, scientists in order to avoid type 1 errors (claiming a false right) systematically produce type 2 errors (ignoring a right, thus claiming a false wrong).

In continental Europe it is an established truth (a social construct) that politics has to take potential but unproven effects into account, i.e. to avoid type 2 errors, resulting in the precautionary approach. This has long been contested by the USA and other Anglo-Saxon countries, calling for evidence based decisions, i.e. for scientific proofs focussed on avoiding type 1 errors. In this approach, the results of economic models are usually considered evidence.

Thus in the Anglo-Saxon world decisions are systematically based on economic Cost Benefit Analyses (CBA), even in extreme cases. For instance, the European Commission, after calculating that about 5 million Europeans would die from heat related illness by 2100 if no effective climate change adaptation policy is established, then asks: does such adaptation pay out? (EU White Paper on Climate Adaptation). As opposed to that, in Continental Europe decisions (at least until the mid-1980s) have been based more on the scientific approach, introducing limits and thresholds, while economics was used for cost effectiveness calculations, i.e. to help identify the most effective way towards achieving politically defined objectives. Unfortunately, the results of both methods are far from identical, regarding the limits as well as the means.

### **3. Conclusion and Lessons Learnt**

#### *Interdisciplinarity and Transdisciplinarity – Post-normal Science*

No single discipline commands all necessary knowledge to deal with complex, co-evolving socio-environmental systems. The existence of different levels and scales even implies the unavoidable existence of non-equivalent descriptions of the same system (Giampetro 1994).

This led us to suggest a law of interdisciplinarity: *No discipline must make assumptions which are in open contradiction with the consensus of other disciplines.* Note that this does not rule out contradictory results, but refers to assumptions, and does not favour a specific school of thought, but refers to the consensus.

Methodological differences and the enormous competition in each discipline as the (still) rather exclusive peer group often condemn interdisciplinary work as a kind of a hobby besides the “real scientific” work.

It cannot be enforced, but supported, e.g. by incentives like cross-cutting PhD positions (and collaborating supervisors), by grants and research funding (with a diverse spectrum of reviewers), joint workshops, symposia and publications (although the latter may be difficult as most interdisciplinary journals have low impact factors).

Not even all disciplines together could possibly derive a joint, exhaustive and contradiction free system description: they would miss out other sources of knowledge. Stakeholders contribute relevant knowledge, and thus the establishment of an extended peer community including non-scientific knowledge is a means to improve scientific advice, in particular

when knowledge is incomplete, stakes are high, values disputed and decisions urgent. Funtowicz and Ravetz (1993) describe this as the typical situation requiring a post-normal science approach as described above.

### *Living with Complexity*

In order to address contemporary issues, economics and biosciences need to expand their empirical relevance by introducing more and more realistic and thus more complex assumptions into their models (Munda 2004). Currently, the systems, the mental models used in bio-sciences are usually dynamic or, at best, self-organising systems not easy to simulate in computer models and ruling out predictions (hence the boom in scenario development as an alternative means of exploring the future). However, despite their inherent unpredictability, only the latter are based on a level of system complexity corresponding to one of the systems they intend to describe.

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*“The context provides the meaning, and the context is legitimately different between disciplines. No discipline can claim the “right” view.”*

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The challenge to economics is even larger: on the one hand, economic models are usually simpler, despite all their sophistication in details, based on equilibrium calculations and representing fully determined, predictable worlds. Dynamic models are rare, self-organisation models exotic, for a (non-scientific but plausible) reason: economists and the profession as a whole gain much of their reputation, influence and funding from their advisory function, based on model predictions given that it is hard to acknowledge the insufficiency of existing models, and the inability of better models to provide predictions.

Secondly, economics (like the other social sciences) deals with a more complex system than physics or chemistry. In self-organising systems the system as such can learn; this is hardly true when it comes to its system elements, in complex evolving social systems, and partly in ecological systems, the individual elements can learn, in social systems by reflective behaviour. This causes an even higher degree of complexity, making the gap between theory and reality even wider. Thus the challenge is to progress towards reflexively complex systems, and combine systems learning (usually for bio-geochemical systems without reflexive agents) with learning processes of (some of) the system elements (Spangenberg 2014).

For both ecology and economics, learning to deal with complex evolving systems is a necessity on the macro level (macroecology, macroeconomics). This also has impacts on the internal situation of the disciplines: in both, today the micro perspective dominates. All too often attempts are made to derive macro level system descriptions from a micro level perspective, ignoring the fact that the emerging properties on higher system levels condemn every attempt in this respect to partial and inconclusive results as far as the macro system

is concerned. On the contrary, if micro level systems, genomes or companies, had been analysed in terms of the macro level context, many past errors could have been avoided.

This will require learning to think outside of the box, to understand that the context provides the meaning, and the context is legitimately different between disciplines. No discipline can claim the “right” view, although the specific competences should be respected.

*Mutual Respect and the Need for a Common Language*

As mentioned in the analysis, a joint dedication can lead to mutual respect and an uncritical adoption of each other’s views. The challenge is here to progress from imitation to an enlightened collaboration, to a mutual respect based on understanding. To express this joint understanding, a common language is needed, usually the language of everyday communication (a common language without jargon).

However, beyond the everyday language, some classifications, some ideas about the relationship of different disciplines are necessary. We found the DPSIR system (driving forces, pressure, state, impacts, responses) to be such a structure, not as a causal circle, but as didactical tool to come to grips with complexity. It helps to see complementarities and mutual dependencies between sciences, economics, political science and other disciplines.

A different but similarly helpful didactical tool has been the Prism of Sustainability, which illustrates the distribution of themes, agents and disciplines in sustainability research and decision making. In particular, it highlights the linkages, the need for interdisciplinary collaboration as a condition for effective sustainability science. Other tools may do the same service.

*Understanding the Basics of other Disciplines*

A condition for successful communication is the ability to express the results of one’s own research in the language of the partners, in terminology and analytical categories. Such language skills are hard to learn once someone is absorbed by the disciplinary treadmill—the best option may be a *studium generale* in the first year of academic education providing a joint basis between the disciplines.

*Education is Philosophy and Theory of Science*

Finally, as the extended reference to the philosophy of science intended to illustrate, a qualified education in the theory and philosophy of science, pretty unusual in current academic education, may provide the means to arrive at a joint view, put results in perspective and in particular avoid mistakes which are not on the methodological, but on the systemic level. Category errors, method choice errors and the like are easily avoided if the basics are clear and the scholar is aware of them.

*Author Contact Information*

Email: [joachim.spangenberg@gmail.com](mailto:joachim.spangenberg@gmail.com)

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## **Rethinking Economics, the Role of Insurance: Adam Smith Upside Down—The Central Role of Insurance in the New Post-Industrial (Service) Economy\***

**Orio Giarini**

Director, The Risk Institute;  
Fellow, World Academy of Art & Science

### **Abstract**

*In the first page of *The Wealth of Nations*, Adam Smith described an apparently trivial issue, the making of a pin. In his search for ways to effectively fight poverty, he formulated the basis for a new view of economy based on the Industrial Revolution. Two centuries later, the perspective he developed remains intact and is largely outdated. It does not reflect the radical shift from an industrial to a service economy, which occurred during the later half of the 20<sup>th</sup> century and prevails today. Insurance, a very important component of the modern service economy, was and has been ignored or dismissed by past and contemporary economists. Founded on the principle of uncertainty, insurance now provides the basis for valuable insights into the unique characteristics of the service economy. A rethinking of economics is needed from this perspective.*

Adam Smith's analysis in *The Wealth of Nations* gave birth at the end of the eighteenth century to what is today called 'Economics'. A moral philosopher, Smith wanted to provide a better understanding of how to fight poverty. Most of his contemporaries insisted that wealth could only be developed from agriculture. Smith perceived that the beginning of the industrialisation process was the key and priority to promote human wealth and welfare in the future. He was right.

This article proposes some unconventional considerations to promote the Wealth of Nations by a reconsideration of key economic issues.

Economics did not start as a general social discipline concerning wealth in general, but as a consequence of the industrial revolution, an important historical event, which had a beginning, and had a glorious development for over two centuries. Contemporary economics is markedly different from the economics of the Industrial Revolution as Smith conceived it and has lost its initial and traditional connotations. We now live in a Service Economy, which implies that the economic theories and analyses built from the classical industrial framework need a serious, fundamental reappraisal. Many economists have long agreed that macroeconomics in particular is in a crisis. In addition, still today there are no clear economic explanations as to why after 1973 the rate of growth in GNP terms in the "industrialized

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\* This article is a slightly modified version of the author's paper published in *European Papers on the New Welfare* issue no. 15, October 2010.

countries” fell from an average of 6% or more to an average of 2% or less. An understanding of these events is essential for understanding the real reasons for the recent financial and economic crises.

Some basic reference issues have to be reconsidered to address the problem: what is economic value and how is it produced today? What is productivity and how is it measured? These along with the other main indicators used today still reflect the basic industrialized manufacturing system. For instance, one calculates value added on the basis of the remuneration of production factors, say cost of machines and labor for an automobile and productivity measures, say the possibility of producing two cars instead of one in the same time period. But all this is less and less relevant. Classical theory divided economic activity into three sectors: agricultural, industrial-manufacturing, and services. Now the services sector, as a consequence of technological development, has become the main production factor in ALL activities: in total about 70 to 80% of economic value produced (whatever the way to account for it). Services are the key production function today.

It must be stressed, right away, that services do not exist without tools that are manufactured and manufacturing cannot exist without recourse to a wide range of services, so the two sectors are inextricably intertwined. The development of the modern Service Economy implies simply that there has been a reversal in dominance from manufacturing to services as the main contributor to the production of economic wealth.

Today, what we call a “production” system consists very largely of service functions. It begins with investments in R&D, long before a new product is ever manufactured. Research requires management of a system in which a portfolio of projects with perceived commercial potential has to be proposed, approved and managed in order to achieve usable results in an uncertain period of time. The research period is uncertain, although a good professional manager will do his best to reduce the risk resulting from time overruns. The size and the nature of the portfolio itself have to conform to the characteristics of the sector under enquiry i.e. pharmaceutical industry, high speed trains etc. to determine whether several projects or only a few should be selected. Here too there are risks and uncertainties to be controlled and reduced as far as possible. Doesn't all this remind us of the management of an insurance contract?

Services are becoming increasingly important within every phase and aspect of manufacturing activity such as control, design, planning, financing, security and safety, which are essential for storage, distribution, logistics and maintenance.

The outcome of systems and products is measured with respect to time. Here it is the UTILISATION value that is important, which is based on real PERFORMANCE for a PERIOD of time. The utilization value of a physical product depends on both its utility, its lifespan, the liabilities for service and repair. The utilization value of a service such as education may depend on its relevance for employment or productive application. The last step involves disposal, an ex-post production cost. The length of time projected into the future is by definition uncertain. The magnitude of the value is subject to uncertainties regarding lifespan, service and warranty costs, product liability, etc. Furthermore, even the

best estimate of this period can be reduced by any sort of accidents or unanticipated interruption. Uncertainty and risk are therefore the rules of the game in the modern “service” economy.

This reality conflicts with the idea held by many that the enormous advances in research should make reality more and more defined, predictable and foreseeable. This is simply not true, which appears paradoxical. If economic value is linked to performance in time, the future remains at least in part unpredictable. Many insurers themselves believed once that because of science, the market of insurable risks would disappear, as a result of the anticipated increase in predictability. The opposite has happened: the market for insurable risks is constantly increasing.

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*“Insurance is a necessary and indispensable gear for the functioning of the modern world economy.”*

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There is also another basic reason well understood by engineers. As technology advances, the margins of error possible in any operating system producing destructive results tend to get more and more reduced. In an automobile one can drive with open windows, but what about in the airplane? Moreover, as the Fukushima nuclear accident, the BP Gulf of New Mexico oil rig accident and recent launch failures by SpaceX so dramatically illustrate, giant technological performances tend to produce what are referred to as uninsurable risks.

It is also important to understand that the risks linked to the vulnerabilities of systems implicitly interconnected with the environment where one operates are not of the same kind as the so called entrepreneurial risks. One can take or refuse to take entrepreneurial risks, but the risks related to system vulnerability are unavoidable “acts of God”. The notion of Risk Management today has to take into account two types of risk which are often confused: entrepreneurial risks and “pure risks”.

Since the time of the industrial revolution, insurance has been traditionally considered as secondary. At best it was sometimes wrongly identified with banking and finance. If an automobile company does important investments and financial activities, it still remains an automobile company. However, today insurance is at the center of the service economy, concerned with performance in time. Insurance is a necessary and an indispensable gear for the functioning of the modern world economy which reflects the centrality of risk and uncertainty in the modern service economy and the need for a serious reevaluation of many prevailing tenets of Economics.

It is essential to remember that for over a century after Smith, knowledge of economics was considered a dispensable luxury. The emphasis after Smith was on the supply side, on how to produce wealth. During and after Keynes, it has been concentrated on the demand side (first in its solvable version, and then extended more and more into its insolvable version, hence the present financial crisis). The service economy requires an equal understanding of the supply side as well.

The present indicators of the “value added” economy such as the GNP measure both positive productive activities and negative destructive activities such as war as if they were

of similar and equal value. Instead a vital distinction needs to be made between positive contributions to wealth and the cost of conservation, remediation and recovery from natural disasters which do not reflect positive contributions to economic welfare. These costs should be deducted rather than added to GDP. Obvious examples of deducted value are the cost of disposal of wastes and controlling pollution. On the other side, advances in technology/communications have resulted in many performance enhancements which are only partly accounted for by the “value added” system of accounting. The contribution of IT to the wealth of nations is largely underestimated (in particular in mobilising non-monetarized contributions). It is clearly obvious that the accounting of the wealth of nations has to be deeply revised.

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*“No vision has yet emerged of something practically and intellectually stimulating. The future has something much better under preparation, providing us with the opportunity now to rethink economics and for a new, better understanding of the Wealth of Nations.”*

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I have suggested in various publications two main possibilities. The first is to adopt indicators integrating economics with other social disciplines (sociology, demography, psychology, etc.). The other—remaining exclusively within the field of monetarized systems, but adopting the definition of utilisation value in the service economy—is to use the analogue methods of calculation or evaluation employed by insurance companies to ascertain the value of future events, for which they collect a premium that takes uncertainty into account.

In the older industrialized countries there are daily hundreds of articles and papers written in the hope of achieving a new wave of “traditional” growth soon: the optimists mention 2 or 3%, within essentially the same traditional system of reference (the classical industrial revolutionary perception). No vision has yet emerged of something practically and intellectually stimulating. The future has something much better under preparation, providing us with the opportunity now to rethink economics for a new, better understanding of the Wealth of Nations. All this depends on our upgrading our understanding of insurance.

*Author Contact Information*

*Email: [giarini.orio@gmail.com](mailto:giarini.orio@gmail.com)*

## Domesticating Finance for Pursuing Post-Crisis Growth

Dimitrios Kyriakou

National Council for Research and Innovation, Greece

### Abstract

*There has been a total (public and private) debt bubble that has been growing since the 80s, accompanying an implicit promise of higher standards of living through large market deregulation experiments (capital markets deregulation and capital mobility being chief among them). The path chosen by conventional economics for delivering this implicit promise was debt accumulation. This debt-based road to growth raises the weight, power, risk-taking and returns in finance—the larger its weight/centrality, the likelier the losses would be socialised—while benefits remain private. Moreover, the concomitant attractiveness of finance siphons away talent from the scientific/technological endeavours that could propel growth and ultimately justify higher indebtedness (i.e. the way the digital revolution has been building on science dating back to the 60s, justified former post credit expansion since the 80s). In sum, the meteoric rise of finance may be sawing off the proverbial branch on which it sits.*

### 1. Introduction

In the current and ongoing debt crisis in Europe, there are different levels of analysis and policy response; broadly speaking there is a global level, a European one, and a national one. Though, unfortunately, often the emphasis stays at the national level, the other two are far from negligible. The global level would include the origins of the crisis in the infra-regulated practices of financial entities worldwide, and at the European Union (EU) level, i.e. architectural weaknesses of the European Monetary Union (the EMU or the euro, for short).

At the global level, there has been a total (public + private) debt bubble that has been growing since the 80s, accompanying an implicit promise of higher standards of living through large market deregulation experiments (capital markets deregulation and capital mobility being chief among them). Delivering on this implicit promise called for an increasing accumulation of debt. This was based on the hope that the growth of the real economy would ultimately justify and catch up with the hare of debt growth (unfortunately not only did debt prove to be a very rapid hare, the growth of finance ended up pushing grey matter away from science and technology, the ultimate productivity-growth booster). Debt growth could be reflected more on the side of private debt (Spain, UK, US, Ireland, etc.) or public debt (Greece, Italy, Portugal), or both, but that distinction is secondary. The key point when it comes to the global level of analysis is that incomes and consumption growth ended up being achieved through practically continuous debt (public and/or private) growth—*Deutsche Welle* reported (April,

23, 2014, quoting Daniel Stelter, Veit Etzold, Ralf Berger und Dirk Schilder: *Die Billionen-Schuldenbombe*. Wiley VCH Verlag, Weinheim, 2013) that in western countries debt grew from 160% of GDP in the early 1980s to 320% thirty years later.

Re-regulating the financial sector has been on the policy agenda since the crisis erupted. Private benefits-public costs, TBTF, moral hazard, incentives, bank governance, flaws in supervision, macro-and micro-prudential issues etc. have been addressed by an avalanche of initiatives and promises of initiatives.

It is however very doubtful whether this avalanche has gone to the heart of the matter, or even whether the sense of ‘avalanche’ may give a false sense of acquiescence. It is also quite doubtful that this avalanche of initiatives would even address successfully those stability aspects on which it largely focuses (setting aside issues of growth, equality, etc.), and how exactly measures/initiatives will be transposed/implemented across member states. Following up on such assessment/implementation/transposition is a separate lengthy and available exercise for anyone wishing to join the multitudes of analysts focusing on such aspects. Similarly, although banks clearly serve many financial intermediary roles regarding payment services, liquidity provision, consumption smoothing, risk allocation and management, their most highlighted key function for the economy and society as a whole has purportedly been to serve as a conduit between savings and investment; ergo this is used as short-hand for their role. We are acutely aware of other financial intermediation functions, such as those mentioned above, and of their attractiveness for financial institutions—indeed this is part of the narrative, as will be seen below, which includes considerations of inequality of income and wealth. This inequality produces differential access to information, undermines democratic processes of control, lawmaking, etc.

In what follows, and although we recognise the aforementioned avalanche as part of the most recent history of finance-related issues, and its potential importance for the specific aspects they are tailored to address, we focus on growth and equality aspects (which inadvertently also reflect political power accumulation issues), stressing that the traditional trade-off view between growth and equality is breaking down in this context.

## **2. Financial recessions/depressions are particularly hard to overcome**

Why the emphasis on finance and domesticating it? For a number of reasons; to begin with, the character of the ongoing crisis that has triggered a revisiting of growth issues and groups such as this one, throughout the world. Financial crises have often led to depressions or great recessions, whose impacts have cast a long shadow, out of which countries have often taken a long, arduous time to escape. This is due to the painful deleveraging process that follows such crises, the asymmetric way in which the burden and pains of this transition are distributed/shouldered, and the undermining of confidence to pivotal financial institutions, whose credit function depends on precisely that: credibility.

Second, because of the centrality of finance: the parallel is often drawn between the cardio-circulatory system of blood in the body, and finance in the economy. The analogy should go a step further: just how blood flowing too fast or too little blood flowing too

slow can cause damage to the system, liquidity can have the same effect on an economy. Healthy organisms effectively control such behavior; healthy economies should do likewise. Indirectly, a first message emerges for revisiting not just the size of finance but also its mobility (as Nobel Prize winner Tobin famously put it, we need to throw some sand in the wheels of our international money markets). Note that, regarding the EU specifically, this does not reverse freedom of capital movement, it simply introduces costs to its realization, to bring it somewhat closer to the very real costs one faces when exercising his/her right to labour mobility (and art. 347, allowing suspension of articles when a state perceives serious dangers, of the Lisbon treaty can always be invoked, if the need arises—as it has, recently). Listening to our heart (and our circulatory system) in this case, may help avoid future heart attacks.

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*“Although economies initially benefit as finance expands and addresses pent-up demand, there is a point beyond which continued financial development has no positive impact.”*

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Third, because of the size of the beast, both as a sector, as well as in terms of stocks and flows it generates. Vis-à-vis the global financial economy has become an increasingly huge tail wagging a confused dog.

The size of the sector, in and of itself, has grown tremendously since the eighties. Even in a country with a large variegated economy such as the US, it went from ~11% to ~21%, while in the years before the crisis, finance accounted for more than 40% of all US corporate profits. In terms of the stocks and flows it generates:

- Household, corporate and government debt as a percentage of GDP is at unprecedented levels throughout the world. Across OECD countries median debt doubled from 160% in 1980 to 322% GDP in 2010. And this excludes bank balance sheets, which in turn exclude gross exposures to derivatives, and the shadow banking sector.
- The sheer size of the financial economy relative to the real economy implies increased vulnerability and risk of instability. Europe stands out compared to the rest of the world, with major European economies having a ratio of banking assets to GDP that is more than twice as large as the corresponding ratio in Japan, or Brazil, and more than three times as large as the corresponding ratio in the US.
- This has been a long and gradual process. The financial crisis has not really broken the long-run trend of bank liabilities/assets growing to 200%, 300% or even 400% of GDP in major European economies since the fifties.

Indeed the growing literature and empirical work (Berkes, Panizza and Arcand, 2012) suggest that, although economies initially benefit as finance expands and addresses pent-up demand, there is a point beyond which continued financial development has no positive impact—that point may be reached when credit to the private sector reaches 100-110% of GDP. This is

an interesting line of further research on the size of finance that can complement the one mentioned earlier about slowing down the wheels of finance.

- High indebtedness affects the linkages between the financial sector and the real economy.
- Short- and medium-term economic fluctuations are increasingly driven by financial flows and balance sheet developments. Very high indebtedness of firms, households and governments in combination with rigid and lengthy bankruptcy procedures has economic costs in terms of reducing flexibility in the economy and increasing risks of financial crisis.
- Lack of risk-sharing in financing, a stronger protection of creditor's rights than in other regions, and inadequate bankruptcy procedures make the EU more vulnerable to adverse effects of the age of credit than other regions. Households with negative net wealth have become a social problem in many countries. Their low propensity to consume is also an issue for short- to medium-term growth.
- As debt levels increase, borrowers' ability to repay and refinance becomes more sensitive to drops in revenues (be it income/sales/tax growth), and increases in interest rates.
- This can lead to endogenous adverse loops and multiple equilibria. For any given shock, the higher the debt, the higher is the probability of defaulting. Even for a mild shock, highly indebted borrowers may suddenly no longer be regarded as creditworthy. It is not surprising that when lenders stop lending, consumption and investment fall. If the downturn is bad enough, defaults, deficient demand and high unemployment might result; the higher the level of debt, the bigger the drop for a given size of shock to the economy. And the bigger the drop in aggregate activity, the higher the probability that borrowers will not be able to make payments on their non-state-contingent debt. In other words, higher nominal debt raises real volatility, increases financial fragility and reduces average growth.
- As a result, policy making is increasingly driven by market forces sometimes undermining the scope for democratic choices. The need to rescue institutions that are "too big to fail" may transfer massive amounts from taxpayers to (financial) institutions. Concentrated holders of government debt might have a strong influence on government policies.
- Have we reached the point in which the importance of feedback effects and expectations has become so strong to prevent stabilization without active policy intervention?
- The macro-financial linkages have not been captured in mainstream economic modeling used by policy makers. Comprehensively modeling endogenous credit cycles and macro-financial linkages continues to raise major analytical challenges though.
- The large balance sheets also have major effects on the distribution of wealth and income.
- In the long run, moving towards a system with more explicit ex-ante risk sharing and more financing by equity-type instruments, or more balanced and efficient bankruptcy procedures may enhance growth and social welfare. Changing creditor rights will reduce



excessive build-up of debt and balance sheets. Some steps are made in this direction by required bail-in clauses in sovereign and banking bonds.

- Where the debt bias is driven by policy incentives (taxation, regulation), these should be addressed and possibly financial incentives for more equity-type or flexible funding could be enhanced to counter market failures. An analysis into the key drivers of debt financing versus other forms of financing and investigation of the scope for more risk-sharing and equity-type financing in the future could be a useful contribution to policy making.
- Transition to a new steady state with lower debt can be very distortive with large transition costs, and strong wealth distribution effects. This implies strong resistance to changes.

Empirical evidence is not able to show a positive and linear relationship between the development of the financial sector and growth. For example, Arcand, Berkes and Panizza (2012) show that the relationship even turns negative at very high levels of financial development. What are the reasons for this insignificant or even negative relationship between finance and growth across high-income countries? Two explanations deserve particular reflection: a) Who gets the credit? There has been an increasing trend across high-income countries towards banks providing more credit to households rather than enterprises, driven partly by alternative financing sources for enterprises through financial markets, partly the higher cost efficiency with which banks have been able to provide consumer credit in recent times. Theory makes ambiguous predictions about the effects on the relationship between household credit and growth and this may partly explain that the finance-growth relationship turns insignificant at high levels of economic development. b) A new literature is focusing on the idea that the financial system is growing too large relative to the real economy attracting too much talent towards the financial industry. Empirical evidence has shown that industries relying on human capital suffer more as the financial system expands. There is a trade-off between the intermediation function that the financial sector provides to the real economy and the drain on talent. It is therefore important to distinguish between the intermediation role (facilitating role) of the financial sector and the focus on financial services as a growth sector in itself. Beck, Degryse and Kneer (2014) suggest that in high-income countries, intermediation activities increase Long Term (LT) growth and reduce LT volatility, while the expansion of the financial sector stimulates growth on Short Term (ST) at the cost of higher volatility.

Recent decades have been characterized by increasing financial innovation. Welfare may substantially improve due to financial innovation (i.e. small and medium enterprises may have easier access to funding opportunities, households may manage their money more efficiently, etc.). Yet, financial innovation may also serve the purpose of avoiding financial regulation, imply higher information opacity, and worsen agency problems. Clearly, regulation needs to take into account the recent and incoming changes in the financial system ('new' financial instruments, 'new' financial intermediaries like shadow banking, etc.), especially as standard models have failed to explain well-documented 'anomalies' in financial markets.

To anticipate a point to which we will return later, one would need to address incentives and disincentives towards redirecting finance to its purportedly central *raison d'être*: matching savings with investments. The much discussed 'bail-in' clauses affecting the creditors of a bank and its shareholders will not do the trick: the actual remuneration (both short- and long-term) of those managers making the decisions must be affected. Otherwise, as long as someone else down the line foots the bill, the incentives will persist in favor of taking risks, hoping to hit it big and get out before the chickens come home to roost—more on this in the closing section below.

Related to this is the need to explore ways to rebalance credit expansion away from households and towards firms; not because firms are less vulnerable to near-predatory-lending practices employed with households in the pre-crisis years, but because of the differential impacts on growth, and the apparent stagnation observed in the savings-consumption liquidity pump emerging in recent years—more on this below, with reference to the observation that compared to the vast credit expansion in recent years growth has not been all that impressive.

### 3. Reining finance in will not be painless

Indeed finance has become so large and powerful that reining it in will not be an easy, painless undertaking. Note that all measures to make high risk taking by banks and mistaken decisions costlier for those making these decisions will inevitably make credit less readily available to all applicants, especially the borderline accepted/rejected applicants. Nevertheless, the cost seems acceptable if we are to rein in the financial goliath.

In essence beyond a certain point the avalanche of finance becomes too self-important, and its purported role as the liquidity-pumping heart of the economy becomes secondary; the heart becomes one more muscle to beef up and flex to impress and get others to do things for you.

This brings us to the fourth reason for focusing on domesticating finance: it has become so muscular through the riches earned in recent decades, so increasingly concentrated, and its strength so ubiquitous, that soon it will be impossible to fathom reining it in, due to the influence exercised directly or indirectly over policy decisions, the media, academic work through foundations, and even the courts, through key appointments in some countries, and ultimately through the cornerstone argument: if I fall you will all go down with me. The preponderance of finance—issues predicted and discussed early in the 20<sup>th</sup> century by analysts such as Hobson and especially Hilferding—has gone hand in hand with a deregulation, and self-regulation (some quip about disregulation) emphasis, and a defanging of regulatory bodies since the 80s, and especially in the 2000s. It has also been fed by the very nature of the credibility game underpinning finance, making it hard to challenge big-name incumbents, and for clients to shop around for better deals.

The case of derivatives and the attempts to regulate their trading in the US, since 2008, is edifying. The key banks got on the boards of clearinghouses that the new regulation envisaged, merged them into creating a dominant one, wrote the rules of membership so that other banks cannot enter, undermined those daring clearinghouses that worked with small

banks, and had the same representatives on the boards of different clearinghouses, as well as on committees of the powerful International Swaps and Derivatives Association.

Most importantly, they ensured that all relevant market data for derivatives will go through a small gatekeeper firm called Markit, which holds the rights to certain derivatives indices and is under their umbrella. This way they have preserved opacity regarding pricing of tailor-made over the counter derivatives—precisely the type the law aimed at to regulate—generating profits in the billions for them.

More broadly, the ways in which bank rescuing operations of 2008 were organized are known; and so is the role of the revolving door between policymaking and banking, with an array of former Wall Street CEOs holding high government office in the US, but increasingly also in Europe in recent years.

The lesson, and avenue for policy analysis here, would be that it is not easily effective to entrust new private sector entities with the role of whipping large financial houses into releasing their hold on important areas of finance. Exploring the role of public control of such new entities may be useful. In any case the key gatekeepers—such as Markit in the example above—must be identified; to use a term from chemistry, they are the rate-limiting factors.

#### **4. The expansion of deregulated finance into new areas intensifies the need to reregulate it**

As deregulated finance has been conquering (or at least spilling over into) non-traditional areas, the need to reregulate it is becoming stronger. More generally, although finance plays crucial roles in midwifing investments, and in reallocating resources quickly, it should not be allowed to be the tail wagging the dog. In any case, as mentioned above, much of the growth of finance has been away from its traditional savings-meet-investment role, and towards operations that repackaged risk in ways that made it seem palatable in the eyes of many potential and unsuspecting clients.

Stiglitz suggested the basis of securitization is the premise that there is a sucker born every minute (Phillips, 2009, preface, p. xxviii)—you just need to find them and have the right gimmick to sell your wares to them, and the gimmick often was securing triple A ratings on the argument that real estate prices cannot fall simultaneously in all 50 US states. Note that even in those cases in which genuinely different appetites/profiles for risk were matched, and a risk-lover bought a risky product that those risk-averse did not want to hold on to, this did not affect the actual underlying risk that things could go wrong with the underlying asset, nor the crucial counterparty risk: that if many of them went wrong at the same time, the counterparty to the transaction (the risk-lover) would be unable to hold his part of the deal.

Specific areas the further regulation of which bears policy-relevant research include the aforementioned derivatives, short-selling practices, increasing margin requirements, and financial transaction taxes slowing down the speed of finance, and making it pay a toll for using those capital movement highways.

In this context, also, measures to throw sand into this revolving door and collusive practices would be worth pursuing. The issue goes beyond strong prosecution to catch the few bad apples. As long as such huge rewards can be reaped, and secured as take-home pay, the temptation would be too strong to bend the rules (or simply reinterpret them with the help of friendly policymakers). This is why remuneration is the key to this—again, more will follow in the last section. Regarding overconcentration of financial power in the hands of a few firms, it may be worth exploring a 21<sup>st</sup> century version of what worked well in the past: a revamped Glass-Steagall-act type regulation, measures treating finance as one would treat utilities, and ultimately applying lessons learned in the breakup of Standard Oil or the Bell company in the 20<sup>th</sup> century.

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*“The longer we postpone the reining in of finance, the harder and costlier it becomes for future generations.”*

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Note here, that to be realistic, many of the policy initiatives that can be explored/analyzed meet the immediate reaction that they would never be implemented. This applies to very technical matters like tax authorities cracking down on triangular accounting-book-only transactions shifting losses and gains among subsidiaries in different EU countries to reduce taxation revenue, and it also applies to large monetary policy issues, where, for instance the US Fed approach is not followed by the ECB because of atavistic inflation fears, even when inflation has not reared its ugly head in the US, even when unions are in no position to demand wage rises, as they were in the seventies, and even when global competition and technology have undercut producers’ ability to raise product prices as they did in the seventies. Often the argument against new initiatives is that they go against the received wisdom of the last thirty years (the Washington consensus or the neoclassical mantra, call it as you will). However, it has been the application of this mantra that has led to this debacle, and as the Keynesian mantra had its go for 30+ years and gave way after the 70s’ stagflation crises, so it is perhaps time for the mantras of the 80s, after a 30+ year run of arrogant preponderance, to give way, in light of the ongoing debacle.

## **5. Socializing huge losses undermines the claim of ‘just rewards’ and breeds inequality**

A sixth reason for focusing on finance is because the way one deals with financial crises can have profound impacts for this and for coming generations. Indeed we suggest that the longer we postpone the reining in of finance, the harder and costlier it becomes for future generations. Since the painful experience of the thirties, with banking defaults producing domino effects and exacerbating the depression (and following similarly painful experiences in the 1890s and 1870s, as well as before that), the decision was taken, and has since been reaffirmed, to protect the financial system from collapse, whenever it is threatened, in order to prevent a repetition of the 1930s traumas.

This has led to a rather powerful contradiction at the heart of western economies. In principle the market system is based on allowing economic agents’ decisions to lead to rewards or penalties which they themselves reap; yet the financial sector is a huge exception

(in terms of size and importance) right at the heart of the system. Gains are privately reaped by financial actors; their losses are socialized just when they become huge, threatening financial stability.

This ‘heads I win, tails you lose’ take is not only a huge source of tension, undermining the credibility of the economic system as a whole, and adherence to it by citizens, it also generates a monumental case of ‘moral hazard’ right at the heart of the system, encouraging financial actors to take large risks. And, of course, it highlights the many ways in which finance relates to widening inequalities/tensions. This may be a bit paradoxical since the proponents of financial expansion and fast credit growth since the 80s have argued exactly the opposite, i.e. that credit expansion would reduce inequalities, by allowing cheap access to credit to practically everyone, to purchase a home, launch a firm, pursue their dreams. Allowing finance to capture winnings privately, socializing huge losses, undermines the ‘reaping just rewards’ claim of our economic system and promotes inequality.

What went wrong is that although pent-up demand for credit will be satisfied during the first waves of financial expansion, soon the financial behemoth becomes an avalanche that feeds on itself, second-tiering its presumably central role of facilitating/intermediating the translation of savings into investment, and emphasizing the growth of finance per se. This led to a large multi-bubble, or a series of bubbles, depending on one’s vantage point, conveniently alimented by central bank policies since the 80s, especially in the case of the US Federal Reserve, which crucially also stepped in to sweep the damaged goods under the rug, when each bubble burst, beginning with the crash of 1987, and generate strong monetary winds for the next bubble to quickly replace the previous one. The easy money policy was reinforced by global liquidity gluts, due to energy producers and large emerging economies (such as China, India, Russia, Gulf countries, etc.) looking for ways to invest their exports earnings in alleged safe havens in the west.

The easy money, ample liquidity ambience that was cultivated gradually drew into it both private sector borrowers, e.g. vast numbers of households, a source of growing business for banks, and also local, regional and national governments. As US Senator Lloyd Bentsen put it in a vice-presidential electoral debate in October 1988: “if you let me write US\$200 billion worth of hot checks every year, I could give you an illusion of prosperity” (Commission on Presidential Debates, 1988).

What Lloyd Bentsen aptly called the illusion of prosperity was based on credit: in some countries the conduit for the prosperity-mongering flows was the state budget itself, with banks then buying state bonds in cavalier fashion to finance state budgets, while in some other countries, the banks themselves directly supplied easy credit to households and firms. Both avenues led to illusion-shattering outcomes when the ever-bigger bubble burst; and the policies put in place either to salvage state budgets, or to salvage banks placed the burden on the tax payer, and predictably more so on those with less mobile assets, usually those who had benefitted less during the bonanza years.

Hence, the lean cow years of dealing with the impact of the financial crisis are exacerbating inequalities/tensions, within each generation, (between those with less mobile assets, mainly

their labour and/or their home, and those with large amounts of mobile capital) as well as in intergenerational terms—because the bill for former profligacies and cavalier lending is paid by the next generation(s). Moreover, this comes on top of the impact of the fat-cow years, when returns were higher for those with mobile capital, as liberalization of capital mobility allowed staggering returns to fast-moving capital, in comparison with real hourly wages, which had seen little growth in key countries since the eighties. This latter development was masked by the fact that two-income households became much more prevalent in the last forty years, and those who could find jobs worked much longer hours, raising the total home pay. Still, concentration of income in ever fewer hands has accelerated—and the finance sector itself is where many of the lucky few are increasingly to be found.

## **6. Rising inequality and diminishing growth prospects disprove the equality-growth tradeoff**

Now, this latter source of inequality (returns to mobile capital vs. less mobile labour) brings us back, in a roundabout way, to the purportedly main role of finance: funnel savings towards growth-generating investment. A central aspect that very recent analysis is identifying, including powerful statements by former US treasury secretary Larry Summers (Krugman, 2013), is that for all the hype, the actual growth achieved in the credit bubble years was not all that exuberant, with respect to the credit needed to finance it! We are seeing similar phenomena in China today (i.e. that the amount of new credit needed to generate a unit of output is going up—the so-called credit-intensity of GDP growth is rising).

To put it in a nutshell, the prospect (and/or evidence) of rising inequality undermining growth prospects disproves the traditional view of equality and growth as sitting on two horns of a perennial dilemma.

It is becoming clear that the difficulty in rekindling robust sustained growth, through traditional mechanisms of credit flows (the savings-investment-consumption pump), is linked to high and increasing income inequality. There is need for a better understanding of the savings-investment-consumption pump, income distribution and the role of technology and skill-bias in this. Since the wealthy have much higher savings than those at the lower and middle levels of the economic ladder, who have little left to save after they consume, the pump has usually worked as follows: the financial sector has used the savings of the well-off to lend to the less affluent, allowing them to raise their consumption and investment levels. The less affluent were able to repay their debts, as long as the economy grew at a sufficiently high rate AND as long as they received an important part of the extra income generated through this growth.

However, the increased skewedness of income distribution in recent years has undermined the capacity of borrowers to pay back loans, and is undermining the functioning of the entire system, with less extra output generated by each unit of extra credit. The numbers are particularly stark in the US, where the top 10% earned more than 50% of national income in 2012, their incomes being two-thirds higher than those of their counterparts 20 years ago, leaving a smaller share of income for the less affluent, who are the consumption drivers and,

given the role of consumption in aggregate demand, the demand drivers in the economy (Bradford DeLong, 2013).

This gives an extra impetus, beyond the obvious distributional one, to the pursuit of policies that promote growth AND equality—instead of either/or approaches: at last the twain shall meet...

In other words, it is not only for the sake of distributional justice, and for the sake of preventing system-threatening tensions that we should worry about equality. It is also for the sake of efficiency itself and for making the proverbial overall pie bigger. Understandably, economists have been trying to understand better the links between rising inequality and the fragility of economic growth.

Recent narratives include how inequality intensified the leverage and financial cycle, sowing the seeds of crisis, or how political-economy factors—especially the influence of the rich—allowed financial excess to balloon ahead of the crisis (Stiglitz, *The price of Inequality*, Norton, 2012). More recently, Ostry et al. (2014) found that income equality is protective of growth and not inimical to it, and that redistributive transfers have little, if any, direct adverse impact on growth. It would be helpful to explore both redistributive policies, as well as policies emphasising mechanisms other than the credit pump, such as technological innovation, pushing the production possibility frontier.

## **7. The missing link: finance siphoning away human capital from growth-enhancing pursuits**

This brings us to the last, but certainly not least, aspect of the centrality of finance and its role: the power of finance and the attractiveness of careers in finance undercuts not just the branch finance sits on, but even undercuts the trunk of the tree (the economy) itself, by diverting talent away from technical progress, i.e. from the ultimate driver of per capita income growth, and the only possible justifier of continual credit expansion.

In other words, a key link between inequality and growth prospects is precisely the role of science and technology and human capital in promoting growth, and the role of finance in siphoning away human capital from that pursuit towards high-paying finance jobs (often cleverly construed ‘pass the buck’ activities).

The basic argument runs as follows:

There are very well-known arguments for saving banks, especially large ones, whose downfall might jeopardize the entire financial system, i.e. for providing implicit or explicit assurance that the state will intervene to save them. There are also very clear incentives for such banks to take on huge risks (‘moral hazard’ problems as they are called in economics), a problem identified already in the XIX century by Walter Bagehot as particularly thorny in dealing with banks. The solution has in general been tight regulation of what banks can and cannot do, thus limiting their risk-taking, their potential upside, but also their downside, and hence the eventual exposure of the state coffers should they need to step in. In other words,

banks can make money but since they enjoy the extraordinary ultimate protection of the state they cannot make too much.

We think that this solution has been severely undermined since the seventies; that liberalization in financial markets has brought gains in efficiency in operational terms but at the expense of launching a long thirty-year credit bubble, which coincided with and was helped by ‘ideology’ bubbles, purveying maximalist views on the benefits from deregulation, from tax-cuts, from capital mobility, from reducing the role of the state, and from subdued inflation, first due to tight monetary policies, then due to trade and union-retrenchment, and eventually due to competition from cheap producers in large newly industrialising countries. This maximalism was also helped by the existence of technologies that would bring transportation/communication costs down, and by an academic and policy malaise in the seventies with perceived government slow-footedness or even wrong-footedness, and with the reigning Keynesian model, already facing academic revisionist challenges, better at fanciful messages, easy soundbites, PhD-churning math, and support from wealthy foundations.

The credit bubble and the policy changes instituted since then, together with the legacy of technological work which had been already underway, and historic events such as the end of the Cold War have nurtured these maximalist born-again-fundamentalist beliefs in the ability of the new Prometheus-unbound free market to deliver growth in the real economy, pushing the production possibility frontier out, in unprecedented ways.

The problem is that it is hard to disentangle the impact of the credit bubble, as such unsustainable on its own, from the underlying changes in our ability to combine factors of production ever more efficiently and innovatively.

In effect, the larger credit bubble was reflected in a series of smaller bubbles inscribed within the larger trend. Each time a crisis would seem to end, the bubble that has just burst would be replaced soon by a new one, thus allowing the larger credit bubble, and the *laissez-faire* euphoria on which it thrived to continue unchecked. Many of these ‘near-misses’ were associated with Alan Greenspan and his tenure at the Fed. He made sure the 1987 crash hardly put a dent on the markets’ optimism, with easy-money monetary policies, which were helped by the fall of the Wall in 1989, the collapse of the Soviet Union in 1991, the rise of emerging markets, with their newly liberalized capital markets, the Internet bubble that took over when the 1997-8 crisis left emerging markets out of steam, and the real estate bubble that took over, when the Internet bubble burst.

However, if (de)regulatory innovation has helped unleash dormant potential in the seventies, and world events have expanded the capital, labour and land that came into the market system since the late seventies (China, Eastern Europe, etc.), one must recognize that these are still one-off gains. In order for the continual financial growth to find justification in growth of the real economy, the production possibility frontier has to shift and ultimately the determinant of that is technical progress.

We have therefore here not just the standard Bagehot problem of moral hazard in finance; we have the more vicious variety, moral hazard on steroids, wherein the finance juggernaut of the last thirty years is undermining the possibility of real growth that would justify the huge



credit expansion, in the first place. The success and promise of finance can only be sustained if it has a strong counterpart in terms of sustained real economic growth, which in turn feeds on technical progress. However, the very attractiveness of the finance sector in recent decades has been increasingly diverting human capital away from S&T and towards financial careers. As always in economic decisions, opportunity costs must be taken into account. The question is not whether financial innovation will be enabled, but what the economy foregoes to devote human capital resources towards one sort of innovation/activity, as opposed to others.

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*“Smart people who betrayed/sacrificed their scientific vocations and aspirations at the altar of financial success make for even more avid seekers of the quick huge deal, of the rewards that would justify this sacrifice, their having given up on their intellectual pursuits/dreams, their having recast their lives under new flags.”*

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Note here that this ties in surprisingly with one of the key points made by Piketty, Gordon and others recently regarding technological innovation: the economy’s growth rate falls as the low-hanging fruit of industrialization is picked. The solution, one would counter, is to go through a new industrial revolution that will create more low-hanging fruits (DeLong, 2014).

The indications however are not encouraging (and they will not easily improve while finance attracts talent away from science and technology). This (mis)allocation of talent has repercussions: between 1980 and 2006 the share of NIH grants won by young scientists in their early thirties fell by a whopping 90%. In 2007 there were more grants to 70-year-old researchers than to researchers under 30. The National Science Foundation reports that only 26% of scientists hold a tenure-track academic position within six years of receiving their PhD. Between 1980 and 2006 the age distribution of grant-successful scientists had sharply shifted and the young scientists have been missing in action—and it is traditionally young scientists who have been responsible for pushing the envelope of knowledge further, in drastic, growth-accelerating ways. (Lehrer, 2010).

Scientific and technological innovation drives productivity, and productivity drives real incomes. Between 1996 and 2009 productivity grew by a robust 2.7% a year as technologies that had been developed in previous decades, from personal computers to fibre optics, found their way into the mainstream. Dale Jorgenson of Harvard University says technology is advancing more slowly than in the decade before the crisis, and productivity will slow down too, as much as by half (The Economist, 2010).

The reasons for this attraction to finance are evident: after fifteen years, successful employees would be making more money in finance than in any other profession. And they would not have to go through long prerequisite graduate programs, tough exams, years of underpaid laboratory or clinical work. Indeed as Allen Wheat, ex-CEO of Credit Suisse First

Boston, disarmingly put it to journalist Helen Dunne: “OK. If I am being honest with you, let’s whisper it, but the truth of the matter is that all of us are overpaid. There is nothing magical about what we do. Anybody can do it.” (Dunne, 1998).

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*“In order to domesticate finance, it may be necessary to make it boring and less financially attractive.”*

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Even regarding starting salaries, graduates received pay packages in finance that were triple what they would earn in other sectors. Junior associates’ average compensation was around \$US240,000 (bottoming out at around \$US150,000) in 2000—when it was around \$US70,000 for good business schools graduates in other sectors (Augar, 2005, pp. 59-60).

In sum, extraterrestrial compensation and the ability to make very large amounts of money at a young age, without having to go through tough low-paying years of academic/laboratory/clinical work have been diverting grey matter to finance and away from science & technology (S&T). Finance depends, ironically, on S&T for turning into reality the promise of sustained high real growth, a wish on which the credit binge, the various ‘soft-landing’ theories and the new economy fads were ultimately based.

Moreover, as people’s preferences reflect/pick-up on this state of affairs the trend is reinforced through social considerations/interactions, e.g. young spouses or potential mates/spouses (and in-laws) have increasingly seen bankers as the proverbial ‘great catch’ (replacing for instance doctors in this regard), making such career choices even more attractive for those young adults contemplating them.

The counterpoint to this that we suggest is that smart people who betrayed/sacrificed their scientific vocations and aspirations at the altar of financial success make for even more avid seekers of the quick huge deal, of the rewards that would justify this sacrifice, their having given up on their intellectual pursuits/dreams, their having recast their lives under new flags. In this light it makes sense that fears of a possible end to their belle époque would drive them to close deals which would prove untenable only a few years later; that they would insist on bonuses even during crises.

Putting it bluntly, we suggest that in order to domesticate finance, it may be necessary to make it boring and less financially attractive. In order to reduce the probability of recurrence of this crisis, we must take into account the opportunity cost of keeping finance as the extremely attractive, powerful and ‘royal’ profession that it has been in recent years. This royal attractiveness undercuts not just the branch finance sits on, by promoting pass the buck to a greater fool schemes that are ever more complex (and harder to oversee); it even undercuts the trunk of the tree (the economy) it springs from, by diverting talent away from technical progress, i.e. from the ultimate driver of per capita income growth, and the only possible justifier of continual credit expansion. The finance juggernaut of the last thirty years is undermining the possibility of sustained real growth that could justify financial expansion.

The evidence here begins with the armies of graduate students or post-docs who have been leaving science and engineering for finance, since the eighties. Michael Lewis, author of the book ‘Liar’s poker’ exposing his experience in Wall Street firms and their shenanigans, related his astonishment that many of his young readers contacting him, were simply seeking information on how to get a job in such firms (Lewis, 2010, prologue, p. xv). Whereas back in 1970 5% of Harvard’s graduating class went into finance, the figure reached 20% by 2007 (Ferguson, 2008, p.5). Our own preliminary empirical research indicates that those graduating from Princeton in the mid-nineties were 20-30% more likely to be in finance ten years later than those graduating in the mid-eighties. Princeton’s seniors in this post-crisis period still lean to finance careers at rates close to 30%. As Stiglitz put it (2010, p.276): “I saw too many of our best students going into finance. They couldn’t resist the megabucks”.

To reiterate, in order to fix finance, it may be necessary to make it boring and financially much less attractive—e.g. through combinations of rigorous claw back schemes, taxation and regulation. This would certainly help crisis-strained public finances, which in surreal fashion are under attack for profligacy by the very financial sector the governments bailed out. Moreover, such compensation disincentives should be rigorous enough to redirect key human capital away from finance, and back towards science.

#### *Author Contact Information*

*Email:* [dkyriakou96@gmail.com](mailto:dkyriakou96@gmail.com)

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## **Towards a Conceptual System for Managing in the Anthropocene\***

**Robert Hoffman**

President, whatIf? Technologies Inc.;  
Member, Club of Rome

### **Abstract**

*This note takes as its frame of reference the concept of ‘deep thinking’ developed by William Byers [Byers 2015]. According to Byers, deep thinking or creative thought can emerge when a problem is framed by two (or more) conceptual systems and it is found that there are areas of incoherency between the conceptual systems. A new conceptual system encompassing elements from the primary conceptual systems may arise from the effort to resolve the incoherencies. Managing in the Anthropocene is a problem domain that can be framed by two conceptual systems, one of which may be described as Newtonian, the other as evolutionary. This paper explores elements of a conceptual system for framing the problem of managing in the Anthropocene inspired by the incoherencies between Newtonian and evolutionary framings.*

This note takes as its frame of reference the concept of ‘deep thinking’ developed by William Byers [Byers 2015]. According to Byers, deep thinking or creative thought can emerge when a problem is framed by two (or more) conceptual systems and it is found that there are areas of incoherency between the conceptual systems. A new conceptual system encompassing elements from the primary conceptual systems may arise from the effort to resolve the incoherencies. The critical element is the ability to see a problem domain through the lens of different conceptual systems. Byers illustrates the concept of deep thinking using examples from number theory involving the problem domains of counting and measuring. The counting domain gave rise to the conceptual system of positive integers; the measuring domain to the conceptual system of fractions. When these two conceptual systems were brought to bear on the problems of zero, infinity, and negative numbers, more encompassing conceptual systems emerged.

### **1. Problem Domain**

The problem domain to be addressed by the ‘new economic theory’ could be summarily described as ‘managing in the Anthropocene’. It has been brought to our attention that not only do human activities have an impact on naturally occurring Earth systems but, as well, the long term and systemic consequences of those activities will have a significant and

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negative impact on future generations of human beings. It is becoming clear that we are to some degree responsible for the future of life on Earth. The symptoms of our failure to take into consideration the long term and systemic consequences of our collective activities are clear: exponential growth of human populations, global climate change, loss of biodiversity, deforestation, pollution of water and air, loss of fertile soils, depletion of resources, human conflicts, famine, and the accumulation of wealth and power in an increasingly small number of hands. Much has been written on the subject of the global challenges facing humankind and it is not my intention to repeat or summarize it here. It is clear that the problem domain captured by the phrase managing in the Anthropocene encompasses both physical and social sciences.

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*“The increasing order or complexity is important and cannot be understood by reducing the system to foundational elements.”*

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## 2. Conceptual Systems

There are two conceptual systems that can be brought to bear on the problem domain of ‘managing in the Anthropocene’. The first is a conceptual system that has been labelled ‘Newtonian’; the second is one that might be called ‘Evolutionary’. Let us call these conceptual systems CS(N) and CS(E) respectively.

CS(N) might be described as reductionist, mechanistic, reversible, and deterministic. The system as a whole can be understood as the sum of its parts. The observer of the system is not a part of the system and has no impact on it. The system is governed by a small number of timeless and universal laws. Once these laws are understood and one point on the trajectory has been observed, the future and indeed the history of the system can be known. The forces at play in the system come into equilibrium.

CS(N) originated in the problem domain of physics in the 17<sup>th</sup> century. It is not by accident that CS(N) takes its name from Isaac Newton, the English physicist and mathematician who is widely recognised as one of the most influential scientists of all time and a key figure in the scientific revolution. Newton formulated the laws of motion and universal gravitation, which dominated scientists’ view of the physical universe for the next three centuries.

In CS(E), the whole is greater than the sum of its parts. The properties of system as a whole emerge from the dynamic interactions among the constituent processes and those properties cannot be ascribed to the individual components. Time is fundamental and not reversible in the sense that cause always precedes effect. The laws or, more appropriately, the stabilities that are observed evolve from within the system. Higher levels of order can emerge when the processes that constitute the system are far from thermodynamic equilibrium. The structure of the system that emerges once a threshold or bifurcation point is reached is not predictable. The increasing order or complexity is important and cannot be understood by reducing the system to foundational elements. The observer is an integral part of the system as the act of observing the system may change the system.

CS(E) had its origins in the domain of living systems. It is associated with the Darwin's theory of evolution of the mid 19<sup>th</sup> century. It spawned general system theory [Bertalanffy 1968], cybernetics [Ashby 1956], and the new field of systems biology [Noble 2006].

Both physics and economics that dominate and frame the physical and social sciences respectively have proven to be resistant to CS(E) and the mainstream continues to seek resolution of anomalies or paradoxes within the confines of CS(N). Those who comprehend the incoherencies between CS(N) and CS(E) in their problem domains and seek to reframe have been marginalized by the mainstream. The resistance has been institutionalized in the organization of academia into disciplinary specialties and the adoption of rules and conventions that tend to legitimize scientific methods that involve analysis to the exclusion of methods of synthesis.

In the field of physics, paradoxes have been encountered at both the micro and macro scales, for example, the paradoxes of wave-particle duality and Schroedinger's cat, situations involving motions nearing the speed of light, and, in cosmology, the evolution of the universe from the moment of the big bang. The mainstream 'explained' these anomalies by appealing to theories involving randomness, the space-time continuum, and the multi-verse and continued to pursue the search for universal and timeless laws, a 'theory of everything' that would unite gravity with the electromagnetic, weak and strong forces. Recently, the philosopher Roberto Unger and physicist Lee Smolin have hypothesized a conceptual system that resolves incoherencies between CS(N) and CS(E) and effectively bridges the problem domains of physics and biology. In their conceptual system, time is real and fundamental and the universe is governed by laws that evolve from within the singular universe [Unger and Smolin 2015].

Mainstream or neoclassical economic theory was based on the concepts of the physics of the mid 19<sup>th</sup> century and was well within the frame of CS(N). It is essentially a system of deductive reasoning based on two foundational axioms concerning the behaviour of consumers and producers. It is a theory of value that legitimizes aggregation and in so doing makes macroeconomics possible. Should either or both of the axioms be falsified, the entire house of cards would collapse and an entire generation of economists schooled in neo-classical economics would have to admit that their careers were wasted. Many of the sub-disciplines of economics including behavioural economics [Kahneman 2011], institutional economics [Galbraith 1967], [Ostrom 1990], [Bromley 2006], and ecological economics [Brown 2015] have falsified the axioms, yet have failed to challenge the legitimacy of mainstream economics [Hoffman 2012]. The mainstream has accommodated these challenges by declaring that the neo-classical model is a model of a perfectly functioning economy and it is the purpose of policy to make the real world economy more closely approximate the neo-classical model. It has also added concepts such as rational expectations and a single economic agent to accommodate incoherencies. As early as 1898, Thorstein Veblen posed the question, 'Why is economics not an evolutionary science?' [Veblen 1898]. Since then a number of scholars have advocated that economics be framed as an evolutionary system [Boulding 1966, 1978, 1988], [Georgescu-Roegan 1971], [Beinhocker 2006], [Arthur 2009], [Dosi 2011], [Hidalgo 2015].

### 3. Elements of a Conceptual System for ‘Managing in the Anthropocene’

This section explores an approach for exploring and understanding the problems of managing in the Anthropocene that is suggested when CS(N), the dominant conceptual system, is augmented by consideration of CS(E) as an alternative approach.

As already indicated, the problem domain for managing in the Anthropocene spans both physical and social sciences. What this suggests is a need for a meta-science, rather than a ‘new economic theory’. Economic theory as framed by CS(N) seeks universal and timeless laws governing the behaviour of agents that are independent of context. But, the behaviour of economic actors or agents is conditioned by the bio-physical world and the extent to which the bio-physical world is understood by those agents. As knowledge of the ever changing bio-physical world increases, the behaviour of agents adapts and changes.

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*“Earth System, viewed as an evolutionary system, is subject to constant and irreversible change.”*

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The system as a whole to be considered encompasses both the processes that transform material and energy and those that transform information that constitute the Earth system. The component processes can be understood from within CS(N) by analysis, but the behaviour of the system as a whole arises from the dynamic interactions among the constituent processes. This involves synthesis that puts the constituent processes into the context of the challenges to be met.

The Earth System, viewed as an evolutionary system, is subject to constant and irreversible change. It is open to the flow of low entropy radiant energy from the sun. The processes of the Earth System transform the low entropy radiant energy from the sun into high entropy energy or heat that is radiated into space and are far from thermodynamic equilibrium. Higher levels of order or novelty can arise in systems far from equilibrium. The accumulation and propagation of knowledge or know-how is the main driving force in evolutionary systems.

In the era of the Anthropocene, the future is influenced by what is yet to be learned. By Kenneth Boulding’s nonexistence theorem that “we cannot predict what we are going to know or what know-how we are going to have in the future, or we would have it now”, it follows that more emphasis must be placed on epistemology—how we learn—than on prediction and prescription. What we can know is limited by what we can observe. Learning arises from our need to link cause and effect, to explain or understand the processes that give rise to what we observe, and to anticipate the consequences of actions. We make and act upon hypotheses about our understanding of the underlying system until we observe phenomena that cannot be explained by our hypotheses. It follows as well that more emphasis be placed on abductive rather than deductive reasoning [Bromley 2006].

That the outcome of evolutionary processes cannot be predicted is not to say that all futures are possible. Ervin Laszlo puts it this way: “The evolutionary paradigm challenges concepts of equilibrium and determinacy in scientific theories; and it modifies the classical deterministic conception of scientific laws. The laws conceptualized in the evolutionary



context are not deterministic and prescriptive: they do not uniquely determine the course of evolution. Rather, they state ensembles of possibilities within which evolutionary processes can unfold.” [Laszlo 1987] Emphasis should be placed on determining the limits or constraints on future trajectories. These constraints define a ‘cone’ of possible trajectories, starting at the present, from which choices can be made.

Values are the criteria for making choices. As framed by CS(N), values are thought to be universal and timeless. As framed by CS(E), values emerge from within the system and are context dependent.

The problem domain is complex; it is compositionally rich insofar as the number of processes is apt to be large and the flows of material and energy among them have a multitude of physical properties that must be differentiated; the dynamics of the processes range from geological time measured in millennia to reaction times measured in nanoseconds; many of the relationships among and within processes are nonlinear with the consequence that the system response to a disturbance is specific to its location in space and time.

The human mind by itself is incapable of understanding in a meaningful way how complex systems work. The best, if not the only, way to understand complex systems is to ‘experience’ them using exploratory simulation [Casti 1997], [Holland 2012] just as the climate system is a complex system consisting of a large number of processes with dynamic feedback structures that can be best understood using large scale integrated assessment models.

#### **4. Implications for Approach to Modeling and Model Structure**

Most models in science and economics are framed by CS(N). They are representations of systems closed to learning and adaptation. The model developer/model user is outside the system. They are seldom intended for the communication of understanding needed to foster an informed public. Thus framed, these models are largely inappropriate for the problem domain of managing in the Anthropocene. Models intended for the problem of managing in the Anthropocene need to have some of the following characteristics, which are presented here in no particular order:

1. The objective of the model should be to explore alternative trajectories and communicate understanding. The emphasis should be on learning rather than prediction or prescription. To this end, the model needs to be transparent, accessible to a wide range of users, modular, and flexible if it is to be continuously updated and maintained.
2. The model must synthesize both the domain of economics with its focus on the behaviour of agents and exchange among agents and the domain of the biophysical world with its focus on processes, both naturally occurring purposeful, and the flows of materials and energy among them. These two domains are linked: agents ‘own’ elements of the biophysical world, establish and manage the processes that transform materials and energy to meet human needs, and exchange materials, energy and information.

3. The model must be global in scale to accommodate the concepts of biophysical limits and planetary boundaries, but must be spatially disaggregated to accommodate differences and exchange among regions. A minimum of three regions would be required but probably not more than ten.
4. The model should reflect the planet Earth as a complex evolutionary system, open to energy from the sun, materially closed, subject to constant, irreversible and unpredictable change, whose future is in part determined by what humanity will do and by what has yet to be learned. Higher levels of order emerge from Earth system processes that are far from thermodynamic equilibrium.
5. In order to handle ecological limits and sustainability, the model must incorporate structure for representing the stocks and flows of materials and energy and the processes that transform resources and energy sources into the goods and services required for human uses. This accounting must be done using energy and mass units and with sufficient compositional detail to recognize that materials and energy carriers differ in their physical and dynamical properties. Accounting for stocks and flows of fresh water should be included. Resources include land, energy in coal, oil and gas, hydro electric potential, forests, minerals, and materials.
6. If the model is to be relevant for climate change, it is important that the model represent both renewable and non-renewable energy sources, the processes that transform energy sources into energy carriers, (hydro-carbon fuels, hydrogen, and electricity), and the stocks of artifacts (vehicles, buildings, infrastructure, etc.) that use fuels to provide the services (nutrition, shelter, mobility, recreation) needed to support human populations and to drive industrial processes. It is also important to recognize that all energy is not created equal: energy from different sources and in different carriers are not perfect substitutes. As well as the greenhouse gas emissions from the use of fossil fuels, the model should keep track of emissions from other human activities including deforestation, cropping, and livestock production.
7. Emissions from human sources are then input for a climate systems model that would serve to calculate concentrations of greenhouse gases and global temperatures, including dynamic feedback from the response of earth systems to warming.
8. If the model is to be relevant for the issue of food security, it must include accounting for land use by region (agriculture land suitable for cropping, range land, forest land and other land), the production of crops including water use, the use of fertilizers and pesticides, production of meat and animal products, fish harvesting and fish stocks.
9. If the model is to be relevant for examining the role of finance and the relationship between finance and the real economy, and the distribution of income and wealth, it must include exchange among agents denominated in money units and the concept of indebtedness. This can be accomplished by distinguishing different classes of agents in each region: at least households by three or four income levels—government; central banks; commercial banks; corporations.

10. If the model is to be relevant for exploring the phenomenon of financial bubbles, it must include the concept of debt. What is needed are the variables contained in balance sheets that indicate the assets, both financial and real, against which debt is issued. A fully articulated set of income and balance sheet accounts subject to the usual accounting identities are financial constraints that limit the behaviour of economic agents. Of particular importance is to keep track of income from employment as this source of income is an important determinant of income distribution.
11. The model should not include feedbacks that represent the behavioural responses to tensions between the availability of resources, the capacity to transform them and the needs of the population. Rather the model user should examine alternative ways of resolving those tensions. In this way the model user is an integral part of the system and learns how the system responds to alternative settings of control variables.
12. The model should include enough structure for the calculation of an array of performance indicators including GDP, economic well-being, ecological footprint, resource efficiency. A more nuanced concept of prosperity requires stock as well as flow variables. Adequate stocks of public social infrastructure from which services can be provided, such as schools, roads, hospitals, are as important a component of prosperity as private stocks such as houses, cars, appliances, and home computers.

## **5. Can such models be built?**

The global modelling initiatives taken by the Club of Rome in the 1970s show that global scale systems models can be built that can generate new and important insights. These initiatives ignited the debate on global futures, which were instrumental in the establishment of IIASA as a center for systems modelling, and led to ‘sustainable development’ as a global imperative.

The first initiative involved the World Dynamics model, developed by a team led by Jay Forrester at MIT. The findings from this model were reported in *The Limits to Growth*, published in 1972. The most important finding was that biophysical limits to growth might be reached in the 21<sup>st</sup> century should the pattern of human activity dominant in the 20<sup>th</sup> century persist. This initiative was followed quickly by the development of the Regionalized Multilevel World Model by an international team led by Mihajlo Mesarovic and Eduard Pestel. The results from this effort were published in *Mankind at the Turning Point*. It saw the World as a system of interacting regions whose future would be dependent upon socio-political choices constrained by conditions in each region in each time period. This represented an important departure from the (Newtonian) world view of Limits to Growth that the world is a homogeneous system whose evolution in time is pre-determined once initial conditions are specified.

There is a rich experience in modelling biophysical processes, both in the naturally-occurring and human domains. The concept of activity analysis may be traced to Tjalling Koopmans [Koopmans 1951]. Its relationship to energy and the entropy law was developed

by Georgescu-Roegen [Georgescu-Roegen 1971]. The input-output modelling of Leontief is essentially a quantification of activity analysis at a national scale using currency denominated units as a proxy for physical units [Leontief 1985]. Robert Ayres' work in materials and energy process-product modelling [Ayres 1972,1978] introduced the use of mass and energy units and mass and energy balance principles in the design of process models. Dynamic bio-physical process models were realized using the stock/flow accounting framework proposed in what was called 'the design approach to socio-economic resource modeling' [Gault et al, 1987]. The Australian Stocks and Flows Framework, a large scale dynamic bio-physical stocks and flows model developed at CSIRO by a team led by Barney Foran, is an application of the principles of the 'design approach' [Turner et al 2011].

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*“Surely the challenge before us is to communicate understanding of complex global systems. Without such understanding there is little hope for coherent and co-ordinated actions to address the global challenges that threaten humankind.”*

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It cannot be said that there is such a rich experience in modelling exchange and indebtedness among actors/institutions using an integrated set of income statements and balance sheets. But there is some recent and promising work in this domain that has been called stock/flow consistent modelling [Kinsella 2011], [Ciani et al 2015].

The Global Systems Simulator, developed by Robert Hoffman and Bert McInnis in association with the Canadian Association for the Club of Rome in 1993, serves to illustrate the use of open simulation models as learning devices. The computer-based model does not by itself resolve tensions between human needs and the bio-physical resource base from which those needs are met. Rather, the user sets variables that control the processes represented in the model; the simulation is run and tensions reported; then the user of the model explores how the control variables might be manipulated to resolve the tensions. The tension free scenarios that result from this process are the product of the interaction between the computer-based simulator that represents interactions among the bio-physical processes that constitute the system and the user who is a source of novelty/creativity. This outcome is not pre-determined in the logic of the simulator, nor does the simulator select the optimal or best trajectory from among the set of possible or coherent scenarios [Hoffman and McInnis 2015], [Hoffman and McInnis 1997].

Surely the challenge before us is to communicate understanding of complex global systems. Without such understanding there is little hope for coherent and co-ordinated actions to address the global challenges that threaten humankind. There is no better way to do so than providing widespread access to transparent and flexible global systems simulators so that the long term and systemic consequences of societal choices can be experienced before they are taken.

The development of a next generation of global models rooted in the theory of complex evolutionary systems and incorporating lessons learned from the first generation of global models, is a first step in meeting this challenge.

### Author Contact Information

Email: [robert.hoffman@whatiftechnologies.com](mailto:robert.hoffman@whatiftechnologies.com)

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The search for unification, for unity, is one of the fundamental aspirations of human existence.

*Herwig Schopper,*  
Scientific Knowledge and the Citizen

We need to establish the objective and subjective domains as two equal dimensions of reality, or at least as two equally valid but incomplete ways of viewing reality, and try to reconcile them.

*Murugesan Chandrasekaran,*  
Unifying Subjectivity and Objectivity

It is necessary to identify the essential traits of common mankind in each of us. This is the essence and the goal of Social Power.

*Saulo Jose Casali Bahia,*  
Social Power, Law and Society

The proposal here is that we grant special attention to two of the challenges: the need to render globalisation less asymmetric and unequal; and the need to embed economic globalisation in the political and social structure.

*Augusto Santos Silva,*  
On the Conditions of Collective Action in Globalisation

No single discipline commands all the necessary knowledge to deal with complex, co-evolving socio-environmental systems.

*Joachim H. Spangenberg,*  
Blind Spots of Interdisciplinary Collaboration

No vision has yet emerged of something practically and intellectually stimulating. The future has something much better under preparation, providing us with the opportunity now to rethink economics for a new, better understanding of the Wealth of Nations.

*Orio Giarini,*  
Rethinking Economics, The Role of Insurance: Adam Smith Upside Down—The  
Central Role of Insurance in the New Post-industrial (Service) Economy

In order to fix finance, it may be necessary to make it boring and financially much less attractive—e.g. through combinations of rigorous claw back schemes, taxation and regulation.

*Dimitrios Kyriakou,*  
Domesticating Finance for Pursuing Post-Crisis Growth

The development of a next generation of global models rooted in the theory of complex evolutionary systems and incorporating lessons learned from the first generation of global models, is a first step in meeting the challenges we face.

*Robert Hoffman,*  
Towards a Conceptual System for Managing in the Anthropocene

It is no longer realistic to define the purpose of education as a mere transmission of what is known to new generations. The main purpose of education must now be to develop the skills of inquiry—to learn how to learn.

*Alberto Zucconi,*  
The Need for Person-Centered Education

We must generate a change in the discourse of our values and then look toward a process of those changes being reflected in a wide framework of decision making at all levels for the promotion of full employment.

*Winston Nagan,* The Concept, Basis and Implications of Human-Centered Development

The real wealth of a nation, developed or developing, resides in its people and their ability to innovate.

*Neanthro Saavedra-Rivano,*  
Financing Human Capital: Families and Society

We propose the establishment of an International Center on Human Security (ICHHS) committed to an integrated approach that encompasses the political, economic, social, cultural and ecological dimensions of human security.

*Garry Jacobs,* Integrated Approach to Peace and Human Security in the 21<sup>st</sup> Century

It is necessary to establish a universal consensus on universal moral values that protects not only every community, but also every person.

*Emil Constantinescu,*  
A Flat World with Deep Fractures

We are headed for an ever more closely interconnected future. The continuing advances in transportation and communication technology, the declining costs and the resulting proliferation of electronic devices and connectivity hold an infinitely creative potential.

*Janani Harish,*  
Human Connectivity: The Key to Progress

*Continued . . .*

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