PROMOTING LEADERSHIP IN THOUGHT
THAT LEADS TO ACTION

THE WEALTH OF NATIONS REVISITED

CADMUS

NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

Volume 2, Issue 3 | October 2014 | ISSN 2038-5242

UPCOMING EVENTS

New Paradigm of Sustainable Human Development: G-Global – a new form of global dialogue

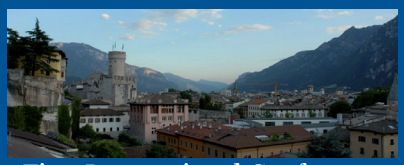
Nov 5-7, 2014, Almaty, Kazakhstan

New Paradigm For Human Development

Apr 29-30, 2015, Baku, Azerbaijan

XII International Colloquium on Visions of Sustainable Development: Theory & Action

May 20-22, 2015, Florida, USA



First International Conference on Anticipation

Nov 5-7, 2015, Trento, Italy

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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 with Harmonia represents the symbolic coupling of Eastern learning and Western love of beauty. The youngest son of Cadmus and Harmonia is Illyrius. The city of Zagreb, which is the formal seat of SEED, was once a part of Illyria, a region including what is today referred to as the Western Balkans and even more. Cadmus will be a journal for fresh thinking and new perspectives that integrate knowledge from all fields of science, art 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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Volume 2, Issue 3

October 2014

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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 it 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 2, Issue 3, October 2014

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International Conference on
New Paradigm of Sustainable Human Development:
G-Global – a new form of global dialogue

November 5-7, 2014 in Almaty, Kazakhstan

The conference is being organized by the World Academy of Art & Science, World University Consortium and Al-Farabi Kazakh National University in partnership with a consortium of leading international organizations, research institutes and universities to examine the theoretical foundations and policy framework for a new paradigm in human development capable of addressing the pressing challenges confronting humanity today. The conference will consist of four trans-disciplinary, inter-related tracks focusing on issues related to governance, international security, human rights and law; economy, finance and employment; education and human development; and energy, resources and climate. This conference builds on the proceedings of about a dozen recent conferences exploring the limitations of current theory and public policy and viable alternative approaches.

For more information, click here.

Invitation to Participate

International Conference organized by The World Academy of Art & Science and The Nizami Ganjavi International Center on

New Paradigm for Human Development

April 29-30, 2015, Baku, Azerbaijan

Click here for more information

Invitation to Participate

XII International Colloquium organized by The University of Florida, The World Academy of Art & Science and The University of Brasilia on

Visions of Sustainable Development: Theory and Action

Florida, USA, May 20-22, 2015

This colloquium will encourage contributions about alternative visions of sustainable development and explore alternative economic theories that more effectively translate economic activity into sustainable models of economic security and equitable development for humanity as a whole. It will examine current concepts and premises in the light of the rapid and radical changes that have transformed economic activity. It will look at the changes since the period in which most prevalent concepts were formulated to assess their relevance to the knowledge based globalized service economy emerging in the 21st century. Additionally, it will examine the need for formulation of value-based trans-disciplinary science of society that effectively integrates economics with politics, law, society, culture and ecology. Special emphasis will be placed on the challenges confronted by States in Transition.

Authors are requested to submit their articles on or before February 28, 2015. Please send in your papers to Professor Winston Nagan (nagan@law.ufl.edu) and Professor Ricardo Araújo (rsaaraujo@gmail.com).

For more information, click here.

United Nations Educational, Scientific and Cultural Organization

UNESCO Chair in Anticipatory Systems

UNIVERSITY OF TRENTO - Italy

ADVANCED DESIGN NETWORK Unibo Center

First International Conference on

ANTICIPATION

5-7 November 2015, Trento (Italy)

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

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

Topics of Interest include but are not limited to

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

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

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

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

Conference Fee:

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

Relevant dates:

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

Inside this Issue

Part 1 of this issue of *Cadmus* contains discussion documents for the next in the series of World Academy conferences on New Paradigm of Sustainable Human Development, which will be conducted in Almaty, Kazakhstan on November 5-7, 2014. Efforts to date confirm the conclusion that a new paradigm must necessarily be founded on a new theoretical framework based on universal values and a trans-disciplinary perspective of social evolution. "Unification in the Social Sciences: Search for a Science of Society" by **Garry Jacobs, Winston Nagan & Alberto Zucconi** provides an overview of perspectives that emerged from two trans-disciplinary courses conducted by WAAS and World University Consortium in Dubrovnik earlier this Fall. Human aspirations and perceptions of the future play a crucial role in determining behavior and outcomes.

"Anticipation: A New Thread for the Human and Social Sciences?" by **Roberto Poli** calls for incorporating the influence of the future in social theory. Society is a complex organization of human relationships with enormous power for accomplishment.

In "Society and Social Power", **Janani Harish** analyzes the origins and role of social power in human development and argues that society possesses all the capacities needed to solve the pressing challenges confronting humanity today.

The individual is the source of all creativity and the catalyst for all social change, yet strangely the role of the individual is largely neglected by the social sciences. **Ashok Natarajan** explores this unique source of creative potential in "The Conscious Individual".

Part 2 of this issue continues our exploration of New Economic Theory with a report on issues discussed during the "11th International Colloquium on Global Crisis and Changes of Paradigms: Current Issues" conducted in Brasília on May 6-8, 2014. "Fictitious Capital & the Elusive Quest in Understanding its Implications: Illusions & Paradoxes" by **Joanilio Rodolpho Teixeira & Paula Felix Ferreira** examines the destabilizing role of financial speculation and its negative impact on the real economy.

"Replacing the Concept of Externalities" by **Jim Lunday** examines how the divorce of economics from governance and society leads economic theory to ignore the central role of political and social factors in economic performance and human welfare.

Erich Hoedl discusses the problems generated by application of traditional economic theory to the transition of East European societies in "European Transition into a Socio-ecological Market Economy".

In "New Paradigm in the Service Economy", **Orio Giarini** points out fundamental differences in the factors influencing performance of the industrial model of economy and the modern knowledge-based service economy and calls for formulation of theory and measures appropriate to the new context.

Part 3 is a collection of articles relating to political, educational, and ecological aspects of the new paradigm. In "A World Parliament and the Transition from International Law to World Law," **Andreas Bummel** explains the urgent necessity for evolving representative, democratic institutions for global governance and rule of law.

In Chapter 3 of their work on "The Double Helix of Learning and Work", **Orio Giarini & Mircea Malitza** call for a new paradigm that links education and career in a life-long, mutually beneficial relationship.

In "Approaches to a New Climate Contract," **Franz Josef Radermacher** presents a strategy to effectively meet the objective of a maximum 2 degree C rise in global temperature and **Francesco Stipo** et al. present an article summarizing a new Club of Rome USA report on "The Future of the Atlantic and the Role of Africa in International Development".

Michael Marien reviews Yehezkel Dror's new book *Avant-Garde Politician: Leaders for a New Epoch,* in which Dror addresses the multiple global crises and argues that humanity's future will depend on our capacity to create new institutions that are better-equipped to foresee and act upon what lies ahead.

We hope you enjoy this issue.

The Editors

EDITORIAL

Our Common Enemies and Our Best Friends

The re-emergence of dangerous East-West tensions, atrocities in the Middle East, Islamic State of Iraq and the Levant (ISIL), bloodshed in Ukraine, traumas inflicted on many children by war and violence, massive war in Europe becoming imaginable for the first time since the end of the Cold War, violation of current international laws, unfulfilled expectations, missed opportunities offered by the end of the Cold War and in the Middle East, as well as attempts to "solve" them using military threats and economic sanctions, are all manifestations of an old paradigm that perpetuates the very problems it promises to resolve and is incapable of addressing the pressing challenges confronting humanity today.

We need a new paradigm – a human-centered paradigm for global human security based on human dignity, peace and sustainable development, truly democratic governance and dominance of raison d'humanité.

The foundation for human security lies in building a truly inclusive global cooperative security system. The rationale for a cooperative security system is that the more countries are included, the fewer the potential threats that can come from outside and the lower the level of national resources needed to prepare for an increasingly unlikely eventuality. Conversely, nations that are excluded from such a system perceive the threats to their own security heightened by the growing strength of an exclusive club. The end of the Cold War was a missed opportunity to move from a world divided by competing security systems to one that was truly inclusive. Haunted by painful memories of the Cold War, two years ago NATO officials scoffed at the idea of including Russia within NATO. Today, the consequences of that exclusion are evident.

We need immediate cessation of all hostilities and violence, enforced by strong UN action preventing violation of peace, human security and dignity, followed by urgent concrete steps leading to joint economic, ecological, energy and other projects to enlarge and strengthen cooperation between Euro-Atlantic and Euro-Asian associations.

The contemporary world has truly dangerous enemies: destruction of natural, human and social capital − destruction of trust, extremely high unemployment and income inequality − economic and political, and above all, moral crises. Building peace and prosperity is a long slow process and considerable success has already been achieved. But it only takes seconds to destroy that peace. Let us not forget the words of President D.D. Eisenhower, "Every gun that is made, every warship launched, every rocket fired signifies in the final sense a theft from those who hunger and are not fed, those who are cold and are not clothed. This world in arms is not spending money alone. It is spending the sweat of its laborers, the genius of its scientists, the hopes of its children." The old approach, "they" and "us", does not solve anything.

It is we human beings, our institutions, sovereign states, the UN system, international organizations, academies and universities who should be collectively establishing a new

paradigm. The founding fathers of the World Academy of Art and Science (as well as of the Nobel Peace Prize recipient Pugwash Movement) Albert Einstein and Bertrand Russell concluded their famous Manifesto writing, "Remember your humanity and forget the rest!" The alternative is sleepwalking into war and the destruction of humankind. As another of our founding fathers (and that of Pugwash) Sir Joseph Rotblat said, not only is a war-free world desirable, it is now necessary, if humankind is to survive. We have to change the mindset that erroneously believes in the doctrine of seeking security for oneself by actions which spell insecurity for others. We know that countries with large stocks of weapons, particularly weapons of mass destruction, have low rankings on the Global Peace Index. We must replace the old dictum "if you wish peace, prepare for war" by a new one that is essential for the Third Millennium, "if you wish peace, prepare for peace by developing and strengthening natural, social and human capital − by developing a new paradigm".

The World Academy of Art and Science calls upon all people, specifically those whose governments and political elites have brought them in conflict – to make their voices heard in the cause of peace and security.

Ivo Šlaus, Heitor Gurgulino de Souza,
Winston Nagan & Garry Jacobs

CADMUS, Volume 2, No.3, October 2014, 01-22

Unification in the Social Sciences:
Search for a Science of Society

Garry Jacobs
CEO, World Academy of Art & Science and World University Consortium;
Vice President, The Mother's Service Society, India

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Alberto Zucconi
President, Person Centered Approach Institute, Italy;
Trustee, World Academy of Art & Science

Abstract

The social sciences have contributed significantly to humanity's remarkable progress over the past two centuries, but the multidimensional crises confronting the world today reflect the need to rapidly move beyond the limitations imposed by the compartmentalization of social science disciplines and the absence of common unifying principles equivalent to those in the natural sciences. Unification of apparently disparate phenomena is a central characteristic of advancing knowledge. Pressing global challenges compel the search for greater knowledge of the unity underlying the diverse fields of social activity, the objective and subjective dimensions of human experience, the role of the collective and individual in social evolution, the action of conscious and unconscious social processes, and the influence of the future on the present. From August 25 to September 6, 2014, the World Academy of Art & Science and World University Consortium conducted two post-graduate courses at the Inter-University Centre, Dubrovnik entitled "Individuality and Accomplishment" and "Toward a Trans-disciplinary Science of Society." These courses explored the interactions and relationships between different aspects of human accomplishment and social development in search of common underlying principles and processes that can provide a foundation for the evolution of a more comprehensive, inclusive and integrated science of society. This article is an attempt to summarize and synthesize some of the rich insights that arose during the presentations and discussion. While the authors accept responsibility for its contents, we would like to acknowledge other members of the faculty who made important contributions to this endeavor: Zbigniew Bochniarz, Janani Harish, Ian Johnson, Roberto Poli, Mila Popovich, Ivo Šlaus and Karl Wagner.

The greatest scientific discoveries have been those which have revealed the relationship between phenomena that long appeared unrelated to one another, revealing the unity behind the diverse multiplicity of forces and forms. Unification is the ultimate quest of

knowledge. The quest for unification has been the source of its greatest discoveries.* Newton reconciled the contradictions between motion and rest by demonstrating that the same laws govern the movement of celestial bodies and objects on Earth. Maxwell discovered that electricity and magnetism are two forms of electromagnetism. Einstein revealed that matter and energy are two interconvertible forms of a single energy-substance. Today Quantum and Relativity theorists search for the ultimate reconciliation between the laws governing the subatomic microcosm and the intergalactic macrocosm.[1]

"Division and fragmentation of reality are the governing rules & modus operandi in the social sciences."

The sense of unity in diversity pervades all the natural sciences. The same laws are applied consistently in different fields. The chemist, meteorologist, zoologist and geneticist apply the same laws of Physics and Chemistry to inanimate and living phenomena, to the earth's atmosphere and interstellar space, to microscopic bacteria and large mammals. While living beings no doubt exhibit characteristics unknown in inanimate material forms, they consistently adhere to the basic laws of material Nature. In this sense trans-disciplinarity is a fundamental precept in the natural sciences. Moreover, in spite of the compartmentalization of knowledge common to all fields today, the natural sciences are inherently inter-disciplinary. The meteorologist and oceanographer could never dream of excluding the impact of physical, chemical, geological, biological, ecological and astronomical factors from their theories and models.

Yet when we turn to the social sciences, consistency and unification between and across disciplines are a rare exception. The theories governing each discipline exist in airtight compartments, each in its own separate world of principles and phenomena. It is almost as if the political, social, economic and psychological human being were different species, each with its own unique characteristics, rather than multiple roles and fields of expression common to all human beings. With few exceptions, each of the social sciences seeks to understand and describe a particular dimension of social reality with minimum reference to the action or interaction with other dimensions. Micro economic theories assume a set of specific conditions rarely found in the real world and regard all variations as intrusive externalities rather than natural and inevitable facts of the interrelationship between the economic, political, social and psychological dimensions of reality. This tendency reaches its acme in the neoliberal concept of free or unregulated markets, based on the premise that law and regulation are external factors interfering with the normal equilibrium-seeking movement between supply and demand. In reality, few markets – other than the black variety and the underworld – could exist at all in the absence of the legal and regulatory framework that defines and protect property rights and contractual relationships. Moreover, Economics ignores the large non-monetarized part of human activity, all that we people do without exchange of money, the vital core of our existence without which no society or culture could survive and

* Ivo Šlaus, "Need for a New Paradigm in the Social Sciences," lecture delivered during a World University Consortium course entitled "Towards a trans-disciplinary science of society", Inter-university Centre, Dubrovnik, Sep 1, 2014. All lectures for the two courses are available online at www.worldacademy.org.

function, which represented around 80% of value added at the time of Adam Smith. Division and fragmentation of reality are the governing rules and modus operandi in the social sciences. "Disciplinary and conceptual boundaries don't just focus attention; they also inhibit the discovery and study of processes that transcend those boundaries and bias public policy development in certain directions."[2]

"The notion of value-free social science artificially divorces us from the living laboratory in which we live and blinds us to the implicit values that frame our perception of reality."

1. Objectivity and Values in Science

The natural and social sciences differ markedly in one other important respect. Knowledge of reality, the pursuit of truth, has always been regarded as the primary motive and fundamental goal of the quest for knowledge in the natural sciences. The intimate linkage between science and technological progress we now regard as essential and self-evident is a relatively recent phenomenon. Until early in the 20th century, developments in science and technology occurred largely independent of one another. Most technological advances were made by inventors in pursuit of practical applications, rather than scientists in pursuit of knowledge for its own sake. Even today, while huge scientific research budgets are justified by their technological and social benefits, the essential standard for judging the value of scientific inquiry is proximity to truth, not practical application. The fundamental objective of natural science is to arrive at knowledge which is independent of the observer and value-free.

But when it comes to the social sciences, practical application has always been considered to be of primary importance. What is the value of a perfect theoretical model of economy or decision-making if it does not provide guidance for public policy and private enterprise? Although widely regarded as the father of Economics, Adam Smith described himself as a moral philosopher seeking to enhance the welfare and well-being of people, not a scientist in pursuit of universal laws of economy. Natural science is in quest of the immutable, universal laws governing natural phenomena. But the 'laws' governing human society are neither immutable nor universal. They are framed and formulated by human beings, based on human perceptions and aspirations, and evolving over time with the evolution of human consciousness and society.

The social sciences necessarily and inevitably represent our human construction of the reality of our own existence, individual and collective. As conscious beings, human beings are purposeful. We create social institutions intended to fulfill certain needs, achieve certain objectives and realize certain values. Our quest for knowledge of society is rightly intended to aid our efforts at self-realization. The assumption of impartiality or objectivity disguises the fact that the quest of social science is purposeful and is valued in terms of its capacity to fulfill human aspirations. The notion of value-free social science artificially divorces us from the living laboratory in which we live and blinds us to the implicit values that frame our

perception of reality. As Carl Rogers said, "at the basis of anything that a scientist undertakes is, first of all, an ethical and moral value judgment that he makes."[3] Social science is and should be judged based on the values human beings seek to realize.

Our identities as human beings are based on narratives shaped by the dominant culture from which they originate. Alberto Zucconi stresses the central importance of narrative to our understanding of ourselves and society and to fashioning a more meaningful science of society. "We need to become aware of how we construe our experiences, our narratives of what we call reality: the relationship with ourselves, others, the world. We need to foster at every level of society awareness of our narratives, of our power and responsibilities for the present and future of humankind and the whole planet. We need to promote a new socially compelling, forward-looking vision of evolution that brings together the worlds of science and spirit, evolutionary theory and developmental psychology. We need an updated recipe for resilience, on how to think, feel and act outside the present obsolete mechanistic box, to become aware of the fact that we live in a complex web of relationships; to be blind to the world of relationships will bring dire consequences."*

2. Complexity in the Social Sciences

These observations are not intended as a criticism of social sciences or to impute their inferiority to the natural sciences. On reflection, it is easy to account for their differences. The natural sciences were established much earlier and have had at least three centuries' time to explore the realities of interrelationship and interdependence between fields. Moreover, the complexity of the interactions between particles, atoms and molecules are dwarfed in magnitude by the multi-dimensional complexity governing the behavior of conscious living beings. Human actions and interrelations combine the physical complexity of matter with the intricate mutual interdependencies of all forms of life with one another and their physical environment; the social complexity of myriad interactions and interrelationships between human beings, their institutions and cultures; and the psychological complexity of conscious and subconscious thoughts, feelings, attitudes, needs, desires, sensations, and impulses which confront us with the insoluble mystery of our own personalities and of all those we relate to.

A fair evaluation must acknowledge the role social sciences have played in the remarkable achievements of humanity over the past two hundred years. Since 1800 world population has multiplied 7-fold, but at the same time real world per capita income has risen 12-fold, a result of an 84-fold growth in real world GDP. This remarkable achievement cannot be fully accounted for by technological advances alone. Development of the social sciences have contributed immensely to our understanding of political, economic, social systems and the psychology of human behavior and to our collective ability to establish, manage and develop social institutions and policies conducive to the survival, security, welfare, growth, development and evolution of humanity.

* Alberto Zucconi, "Biological, social, psychological and spiritual dimensions of society and individual life" lecture delivered during a World University Consortium course entitled "Accomplishment, Growth, Social Evolution and the Character of Life in Management, History, Psychology and Literature", August 25th, 2014 Inter-University Centre, Dubrovnik.

3. Need for Trans-disciplinary Social Science

The premise of the World Academy's quest for a New Human-centered Development Paradigm is that the multi-dimensional political, economic, ecological, social and cultural challenges confronting humanity today defy comprehension and resolution based on the prevailing principles and specialized knowledge developed by separate social science disciplines. The persistence and continued aggravation of these challenges are evidence of the need for the evolution of a new paradigm in the social sciences that is more comprehensive, inclusive, integrated, and trans-disciplinary. There is an urgent need to transcend the limitations of separative, compartmentalized knowledge, to build on the knowledge acquired by each discipline by striving to connect and integrate them at a more fundamental level, while preserving the valuable insights each has contributed to social progress. We need to expand the boundaries of each discipline and make them more porous and flexible, while searching for trans-disciplinary principles and processes that unite and unify rather than separate and divide knowledge in each field from that in others.

Transdisciplinarity concerns that which is at once between disciplines, across disciplines, and beyond each individual discipline.[4] The quest for a trans-disciplinary science of society is based on the conviction that human society and individuality cannot be adequately understood in terms of positivism, reductionism, formalism and naturalism. It is founded on the premise that there are fundamental constructs, forces, processes and characteristics that underlie all social phenomena, knowledge of which can generate greater understanding and more effective action in the real world.

This prodigious task might appear too daunting to contemplate were it not for the fact that significant progress has already been made in recent decades in discovering foundational principles applicable to all fields of human activity. The earliest breakthrough came with the emergence of management as a science in its own right. While focused primarily on applications in business, the role and power of organizational structure, systems, specialization, hierarchy, authority, delegation, communication, coordination, integration, goal-setting, values, strategy, decision-making, planning, social research and human resource development evolved by Management Science are principles applicable to the development of organizations of all sizes and types in all fields of human activity. Management is the study of how organizations combine individual acts to form complex chains of activities and systems and to create complex structures based on specialization of function and hierarchical levels of authority. Organizations coordinate the energies and diverse activities of many people and integrate them within a larger whole. All human activity is governed by the fundamental principles and processes of human social organizations.

More recent advances in Network Science, Cybernetics, Complexity and Chaos Theory and the identification of the principles of self-organization, autopoiesis, and emergence mark important further advances in the evolution of trans-disciplinary theory and process – in spite of their common tendency to regard living and conscious systems as if they were simply more complex forms of mechanical material systems, reducing life and mind to purely material processes. The application of these principles to living systems and to the science of

Ecology demonstrates the integrative power of this wider approach, which is still in an early stage of development.

4. Social Power

A half century ago, former WAAS President Harold Lasswell developed a trans-disciplinary framework for understanding the relationship between social, political and legal processes, reuniting three fields of human activity that are commonly treated separately. Their framework provides insight into the means by which social capacity for accomplishment is institutionalized and distributed as political and legal power for effectuation and enforcement. Winston Nagan's presentations focus on their efforts to frame a comprehensive global social process model describing how human beings seek to realize values through institutions and activities.[5] The core of Lasswell's conception is the central role of power in human affairs.

Human behavior is purposeful, even when it is intended simply for relaxation and enjoyment. Security, sustenance, wealth, status, power, knowledge, beauty, love and enjoyment, self-realization and spiritual fulfillment are common human pursuits. Maslow defined a hierarchy of needs. Lasswell groups them under eight categories of values which human beings seek to realize – power, enlightenment, wealth, well-being, skill, affection, respect, and rectitude, to which Nagan adds a ninth, aesthetics.

Regardless of the classification, human beings seek to accomplish and society possesses an amazingly diverse range of powers and capacities for accomplishment at the physical, social, cultural, mental, psychological and spiritual levels – most of which we take for granted like the air we breathe. This social capacity grows exponentially from one generation to the next. One need only imagine the challenges earlier generations faced performing simple tasks that we now carry out effortlessly on a daily basis – communicating instantaneously around the world, traveling between cities and continents in the time it once took to go from the farm to the nearest town. Explorers used to travel the globe for years trying to ascertain what lay beyond the horizon. Healers have spent millennia cataloging the nutritional and medicinal benefits of various foods, flowers, and herbs. Today literally the whole world's knowledge is available at our fingertips. The experience and knowledge of the entire human community accumulated over countless generations are freely offered to each new generation in a concentrated and abridged form through education.

Society's powers for achievement are legion. Society has established law and order and extended freedom and rights to billions of people, doubled the human life span and raised the average standard of living twelve-fold in the last two centuries. Rapidly increasing social capacity is evident in all fields – from science, education, healthcare and entertainment to business, governance and the arts. It extends from the local to national to global level and beyond into outer space. It ranges from the capacity for short term immediate gratification to achievements sustained over many centuries – magnificent structures, living constitutions, immortal works of art and eternal wisdom. It encompasses achievements that are physical, social, mental, artistic, and spiritual – the Partheon and the pyramids, the family, community

and nation-state, democratic forms of governance, banking, measurement, mathematical renderings of Nature's secret formulas, insights of geniuses, timeless literature, exalted works of art, cultural and universal values. It traverses all the stages from mere physical survival to expansive growth and increasingly sophisticated levels of development to the continuous evolution of new ideas, institutions and ways of life.

Do all these achievements have anything in common? They all represent diverse expressions of the collective capacity of society for accomplishment. Moreover, the various forms of social power by which they have been fashioned are largely interchangeable. Throughout history, military power has served as a basis for economic expansion, whether through colonial conquest or by providing a protective atmosphere of peace and security among trading partners. The power for transport and communication is readily convertible into productive power. The power of scientific and technical knowledge is applied to generate economic power. Economic strength translates into political power. Broad-based political power provides the capacity for rule of law founded on universal human rights. The legal power to protect property, uphold human rights and enforce justice creates an expansive social atmosphere that releases the energy of people for peaceful, productive progress.

A closer examination reveals that this power exists in several stages and forms. There is the raw capacity or potential of the society for constructive (or destructive) activity, which is fully harnessed only during times of war and severe national challenges, when society exhibits the capacity to dramatically increase its level of activity, as the USA multiplied its capacity to produce trucks, tanks, ships and aircraft during the early 1940s to support the entire Allied war effort. Within a single year America increased its arms production to equal the combined output of Germany, Italy and Japan, and then doubled it again during the following two years.[6] Through the Green Revolution, India doubled foodgrain production in five years to overcome the imminent threat of famine and achieve food self-sufficiency in the late 1960s. Japan mobilized its institutions and citizenry to deal with the horrendous consequences of the Fukushima nuclear accident. Apart from these exceptional achievements, society performs countless near miraculous actions every day without which modern civilization cannot function – it generates energy, distributes water, educates youth, enforces law and order, produces and distributes goods and services, develops and maintains infrastructure, governs, seeks knowledge, invents, innovates, and creates an endless progression of new ideas, objects, devices, processes, institutions, ideas, artworks, means of entertainment and enjoyment. All these are expressions of society's power for accomplishment.

Not all social capacity expresses in action. Not all of its endowments are equally shared and distributed. Not all social power is made freely available for the betterment of society-at-large. Intervening layers of social authority determine how social capacity is converted into social power and for whose benefit. Once concentrated among a tiny élite aristocracy or military class, today freedom and rights are more widely distributed than ever before. But we still witness extreme inequalities in the distribution of wealth so dramatically documented by Thomas Piketty.[7] Contrary to the principle that all citizens in a democracy have equal rights and voice, the influence of wealth and corporations over political power is ubiquitous. Nagan shows how law and constitutional principles are interpreted to support the inequity.[8]

The exercise of social authority in the form of political power, money power, corporate power, and social status influences the total social capacity that can be harnessed and how that capacity is utilized. As society advances, it organizes a portion of its total power and channels it through various institutions. Economic institutions such as corporations, commercial networks, monopolies, cartels, labor unions and shareholder bodies organize, magnify and govern the distribution of production, wealth creation and distribution of income. Political institutions including executive, legislature and judicial bodies, political parties, lobbyists, media houses and special interest groups mold public opinion, altering the power of different individuals, groups, organizations and classes to determine the uses and abuses of social power. Constitutions, laws and the institutions that enforce and interpret them define what and to what extent social power is converted into rights, rules and procedures that can be applied uniformly and impersonally to all citizens and activities.

"The potential power of society is not subject to any inherent limits."

"The development of the technology for social organization lags centuries behind the development of material technologies."

At any point in time only a tiny portion of the total power of society is converted into political and legal forms. Most of our lives remain unregulated and self-directed and most of the capacities of society remain underutilized. Global unemployment of more than 200 million, levels of underemployment five or ten times greater, technology that is hoarded, markets that are monopolized, public resources that are exploited for private profit are symptomatic of the gross inefficiency of social systems. The very notion of efficiency is narrowly applied at the level of the firm, neglecting the enormous waste and high economic costs to society generated by the misallocation of social power.

Thus the world is confronted by the paradox that vast underutilized social capacities exist side by side with persistent poverty, suppressed rights and unmet needs.[9] Indeed, the potential power of society is not subject to any inherent limits. There is always scope to enhance the development, expression, organization and application of knowledge, skill, organizational know-how, and technology. Human capital and social capital are potentially limitless resources. The more we develop them, the more they grow and the greater their capacity for further development.

5. Energy Conversion

The development of the technology for social organization lags centuries behind the development of material technologies. A comprehensive, integrated unifying science of society can spur rapid development of this unfathomable social potential. There are indeed common principles and processes underlying and governing the multiple expressions of

human creative and productive potential. Newton's laws of motion explain the behavior of material objects. A change in the motion of an object results from the application of material energy as force. So too, all human activity and accomplishment are an expression and result of the release, direction, channeling and application of human energy. That energy may be the physical energy of a laborer or skilled craftsman, the social energy of the dynamic entrepreneur, entertainer, military or political leader, or the mental energy of the thinker, creative artist, planner, or engineer. In *War and Peace,* Tolstoy referred to the 'spirit of the army', an intangible power that enables an inferior military force to overcome great odds, as the English overwhelmingly defeated an immensely superior French army at the Battle of Agincourt, immortalized by Shakespeare in *Henry V*.

"The mental tendency to divide reality into contrary polar opposites results in a continuous clash between mutually exclusive contradictions that resolve into complementarities at a higher level."

5.1. Directed Energy becomes Force

Human energy is released by human aspiration for accomplishment. The greater the aspiration, the greater the energy released. That aspiration can arise in response to a vast new opportunity or a severe problem. The opening up for settlement of the American West released the aspirations of millions of indigent European immigrants to abandon their homelands and risk their lives in the quest for freedom, cheap land and gold. All living beings release and mobilize great bursts of energy in response to life-threatening challenges. That explains why remarkable accomplishments issue from severe catastrophic challenges. The American Civil War was the first mechanized modern war in history with devastating impact on the people and the country, yet it was quickly followed by America's emergence as the pre-eminent economic power in the whole world. Similarly, two horrendous, life and property destroying world wars in the 20th century were followed by the most dramatic surge in prosperity and social welfare in human history.

Human energy is directed through by our knowledge, goals, values and beliefs. The intensity of energy released and the effectiveness with which it is focused depend on the quality of that knowledge, the type of goals and the nature of values we seek to realize. Truth is reality. The human mind does not possess truth. It does not know reality. It possesses ideas, perceptions and conceptions that seek to represent truth. It relies on language, definitions and abstract mental symbols which present images and impressions of reality, not reality itself. Even an exact photographic image is only a two-dimensional image, not the living thing it portrays. Our minds analyze and view these mental constructions through the framework of social constructions and psychological perspectives that determine our particular point of view and interpretation of reality.[10] Thus, the debate between proponents of free markets and regulated markets framed by implicit differences in beliefs and values is presented as logical differences and incompatibilities. In truth, no markets are truly free and none fully regulated.

The mental tendency to divide reality into contrary polar opposites results in a continuous clash between mutually exclusive contradictions that resolve into complementarities at a higher level.[11] Capitalism and Socialism were never the stark contraries they were represented as until the 1930s when the USA, the most capitalist nation in the world, embraced socialist welfare principles during the New Deal. China began introducing elements of capitalistic competition into its Communist economy in the 1970s. Today no market system can survive that does not incorporate a significant degree of socialist policy and vice versa. Freedom and equality are complements, not irreconcilable opposites.

> *"Everything needs its opposite for its existence. The indivisible, whole being that the Individual is, is made complete when he accepts and integrates all aspects of his personality, realizing in the process that contradictions are complements." – Carl Jung*

5.2. Force Organized Acquires Power

The power generated by energy depends on the way in which it is focused and directed. Sufficient solar energy falls on the earth every day to meet all human needs now and in the future, but only a tiny portion of that energy is collected and directed for productive purposes. Raging rivers are storehouses of enormous energy, but only when a river is dammed, the energy channeled through sluice gates into high velocity flows and is transformed into electrical power by turbines is that energy made available for productive purposes. Energy when directed becomes Force. Force organized becomes Power. The technology of a hydroelectric power plant is a mechanical form of organization. Political parties, market places, financial institutions, factories, and educational institutions are social forms of organization that focus and direct human energy and pass it through a variety of processes that transform it into productive power of one form or another. Organization magnifies the Energy it transmits by Integration. It also creates greater opportunities for the growth and development of specialized knowledge and skill among people.

Society can be viewed as a gigantic hydroelectric power project that harnesses a tiny portion of the potential energy of its members, focuses and directs it, channels it through organized structures and activities in pursuit of social goals. What is true of societies is also true of the organizations and institutions of which they are composed and the individuals who are its members. The same principles apply at all three levels. Countries and companies vary enormously in their capacity to release, focus, direct, channel and express the energies of their people for productive purposes. Autocratic forms of organization can compel a minimum level of performance, but have never proven capable of inspiring their individual members for peak levels of sustained accomplishment. Sooner or later internal friction, conflict and suppressed resentments rise to the surface and undermine the organization.

Over time humanity has evolved more and more effective forms of organization more capable of positively motivating and directing human energy. Alberto Zucconi describes a core set of the people-centered strategies which societies and organizations apply to empower their members – democratic relationships, equal rights and opportunities, delegation of

authority to instill a sense of responsibility, transparency, knowledge sharing, and empathy.* For all its limitations and deficiencies, America has excelled in the capacity to generate a social atmosphere that provides a high degree of freedom and encouragement for the development and expression of individual initiative. High energy companies such as Apple, Google and Intel remain perpetually dynamic and creative for the same reason. In spite of its evident shortcomings and inequities, the market economy combining cooperation with competition has so far proven to be the most effective form of organization yet evolved for the production and distribution of goods and services, but ample scope exists for eliminating its distortions and excesses.

Human accomplishment is based on relationships between people. Nature produces on the land. Human beings produce by entering into constructive relationships with one another. Society is an infinitely complex field in which human beings relate to one another in pursuit of security, wealth, well-being, affection, knowledge and other values. Ivo Šlaus reminds us that human beings are the ultimate source of all resources. "Anything becomes a resource only when its potential value is recognized by the human mind."† Further, human capital and social capital are inexhaustible in potential. He describes the self-augmenting character of human capital through a formula relating its development with political, economic, social (education, health) and natural factors. Human capital refers to the unlimited potential to enhance the knowledge, skills, capacities, attitudes and values of the individual for more effective relationship. Social capital encompasses the enormous power of social organization for coordination, specialization, planning, delegation, authority, hierarchy, standardization, integration and value implementation.

Language, money and the Internet are three of the greatest social organizations so far developed to enhance the capacity of human beings to relate, interact and coordinate with one another for mutually beneficial purposes. Language is a networking tool that makes possible exchange of ideas, information, intentions and transactions between people and organizations. Money is a networking tool that facilitates the exchange of products, services, forms of wealth and power. The Internet is the first truly global social system capable of facilitating and coordinating interactions between billions of people instantaneously with a high degree of individual freedom, empowerment, capacity for customization and personalization. It connects horizontally and integrates vertically all nodes, levels and types of social activity within a single global network. These organizations not only channel social energy, but through complex feedback loops continuously increase the total social energy released and directed.

The evolution of the Internet has spurred rapid advances in our understanding of networks, as a highly sophisticated form of social organization. In reality, networks are as old as humanity itself. The market is a social network that brings together buyers, sellers, financiers and transporters. Cities are networks that concentrate the most advanced capabilities of

* Alberto Zucconi, "Power, empowerment and disempowerment", lecture delivered during a World University Consortium course entitled, "Toward a Trans-disciplinary Science of Society", Inter-university Centre, Dubrovnik, Sep 2, 2014.

† Ivo Šlaus, "Human Capital", lecture delivered during a World University Consortium course entitled "Towards a Trans-disciplinary Science of Society", Inter-university Centre, Dubrovnik, Sep 3, 2014.

civilization on a single location to optimize access and interrelationship. Zbigniew Bochniarz cites research on the power of industrial clusters and city networks on climate change to illustrate the important role played by networks in the process of social development.* Banks such as Visa and Mastercard cooperate to compete by providing credit card transfers to billions of people through millions of merchants and tens of thousands of banks. Each bank retains its autonomy and competes for business with other members of the network, yet all benefit from the operation of a shared global information and money transfer system that achieves high speed and efficiency and minimum cost to banks, merchants and customers.

Figure 1: How Energy is Converted into Accomplishment

5.3. Consciousness and Organization

Sri Aurobindo depicts human social evolution as a progressive dance between rising levels of consciousness and rising levels of organization. "Life evolves through growth of consciousness. Consciousness evolves through greater organization and perfection of life: a greater consciousness means a greater life."[12] Human Energy directed becomes Force. Force organized becomes Power. Power expressed through knowledge, skills, positive attitudes and values is converted into productive results.

The enormous investments made by modern society to enhance the knowledge, productive skills, social attitudes and cultural values of its members have contributed as much to the progress of the past two centuries as the development of miraculous new technologies.

* Zbigniew Bochniarz, "Social Development as Network Dynamics: An Economics Perspective", lecture delivered during a World University Consortium course entitled "Towards a trans-disciplinary science of society", Inter-University Centre, Dubrovnik, Sep 5, 2014.

Investment in human capital is the most powerful lever for enhancing the individual and collective capacities of humankind for higher levels of development and further evolutionary advancement in all fields of accomplishment. Skills function like the billions of tiny transistors on a silicon chip that govern how infinitesimal quanta of energy are directed and combined together to perform complex functions at incredible speed. Every human act is composed of innumerable physical, social, perceptual, mental and psychological skills. Each tiny circuit has the power to aid or obstruct accomplishment.

6. Personality – The Psychological Microcosm

The process of energy generation and conversion at the social level has a precise counterpart at the level of the individual as well. The social process depends on the aspirations, knowledge, values, goals, institutions, skills and attitudes of the collective. The individual process depends on their counterparts at the level of individual personality. Society is an infinitely complex macrocosm. Personality is an equally complex microcosm of ideas, concepts, beliefs, attitudes, values, opinions, and skills organized and coordinated by multiple layers and levels of psychological structures – superficial manners, conscious behaviors, subconscious character traits and deeper capacities for creativity, originality and uniqueness. As the modern democratic welfare state is the most successful collective form of social structure thus far created, the formed individual capable of independent thinking, judgment and action on internalized values rather than conformity to the collective represents the most complex, sophisticated organization of human consciousness yet to evolve.

Energy is the driving force for accomplishment at the level of the individual as well. Highly accomplished individuals tend to be those who exhibit a high level of energy and channel that energy into an intense laser beam-like focus to accomplish the goals and values they seek to realize. Their personalities act as coordinating centers to organize their energy, knowledge, values, skills, capacities, actions and relationships to achieve maximum results with minimum expenditure of time and energy. Teddy Roosevelt, Churchill, Mahatma Gandhi, Balzac, Beethoven, Victor Hugo, Tomas Bata, Bill Marriott, Tom Watson and Steve Jobs are among countless legendary examples of personal energy converted into focused intensity for high accomplishment.

Personality is the link between the individual microcosm and the institutions of the social macrocosm. Individuals access social power by identifying with the aspirations and affirming the values of the collective. The failure of the Knickerbocker Trust of New York in 1907 precipitated a severe financial crisis that threatened to destroy banks and securities markets throughout the USA. At the time there was no government banking oversight system with the power or responsibility to control the situation. The government remained a passive and helpless witness to the rapid deterioration of market confidence. Finally it turned to the only man in America who was widely considered capable of effective action – J. P. Morgan. Morgan was a wealthy industrialist and banker like many others, but he was distinguished by a sterling reputation of trustworthiness and reliability which were the most prominent characteristics of his personality. Morgan appealed to the social need for reliability and stability.

When the New York Stock Exchange was on the verge of closure, Morgan managed to cajole the bankers into collective action and the crisis was contained. He appointed six analysts to identify which banks were sufficiently solvent to be saved. He called on other financial institutions to contribute to a voluntary pool of finances to support institutions that could be salvaged. Even the US government contributed $25 million to the private pool. Morgan defused the financial crisis by his remarkable negotiating skills and the immense trust placed in him by bankers and the general public. After the crisis had subsided, the US Government established the Federal Reserve System to institutionalize the powers and role Morgan had played to quell the panic. The personality of an individual was institutionalized as a system that eventually acquired the knowledge and power to maintain high levels of stability and public confidence in the US financial system. Individual personality and social culture are interdependent expressions of a unified reality.

"The search for impartial truth came to be regarded by many as synonymous with the study of objective forms of reality."

7. Reuniting Subjectivity & Objectivity

The further evolution of the social sciences requires efforts to identify unifying concepts and processes that transverse disciplines and function similarly in multiple dimensions. Reunification is especially necessary to restore the proper relationship between three dimensions of reality which were obscured during the triple reign of positivism, reductionism and materialism: the reunification of the subjective and objective dimensions of social reality, the reunification of the individual and collective dimensions, and the reunification of the three dimensions of time within an inclusive vision of human causality.

Social science needs to reunify the objective and subjective aspects of human existence that became increasingly divorced during the hey-days of 20th century scientism. The source of the rift is not difficult to understand. The scientific method evolved during the Enlightenment as an impartial, objective means of validating truths of natural phenomena freed from the distorting influence of the physical senses, personal belief, superstition, religious dogma, preference and prejudice. It proved ideally suited for a study of material objects and processes that lent themselves to external observation and analysis. But over time the focus of early science on the study of external objective manifestations of reality gradually morphed into the notion that only phenomena which can be studied objectively can be approached rationally and scientifically. Eventually many scientists began to speak and act as if the subjective dimension were somehow less real than the objective. Two separate meanings of the word 'objectivity' became confused. The search for impartial truth came to be regarded by many as synonymous with the study of objective forms of reality. The study of subjective forms of reality was confuscated with the distorting and unscientific notion of personal preference and prejudice. That which is not observable as an object came to be regarded as somehow less real than external material things. By a strange alchemy of logic, a mud pie,

plum pudding, chemical reaction or electrical impulse came to be regarded as more 'real' than Plato's *Dialogues,* Lincoln's idealism or Gandhi's belief in non-violence.*

The reality of the subjective permeates all dimensions of human existence and must occupy a central place in all valid social theory. Franklin D. Roosevelt was inaugurated as the 32nd President of the United States on March 1933 in the midst of a financial crisis of unprecedented magnitude. Since the onset of the Great Crash in 1929, more than 6000 American banks had closed and the national economy was in the midst of a panic. All over the country, depositors were lining up at their banks to withdraw their life-time savings before their banks also collapsed. Even the financially strongest bank could not withstand such huge sudden surge in demand for return of deposits, so the panic was self-fulfilling. Long before the nascent Federal Reserve had acquired sufficient knowledge or power to provide unlimited funds to support the banking system in 2008, there was no known economic or political remedy for a panic of such proportions.

The objective situation seemed hopeless. FDR was not an economist, but he had shrewd insight into the underlying social and psychological basis for economic institutions. He understood that the panic was not an objective problem of economic management, but a subjective problem of trust. In his inaugural address, he pronounced his famous dictum "We have nothing to fear but fear itself." Five days later he addressed the nation on radio in the first of his famous fireside chats. He explained in simple language that the rich natural resources, enormous industrial infrastructure, and skilled hardworking labor force, which had made America the world's wealthiest nation, were still in place. The problem resulted from a loss of public confidence in the banking system. He appealed to American native self-confidence, pride, courage and trust and made an outlandish proposition. He called on the people to go back to the banks and redeposit their hard-earned savings. He instituted a host of legislative and administrative measures to restore public confidence in the banking system. When the banks reopened the following Monday, the tide turned and the panic gradually subsided.

Roosevelt intuitively understood what social science often overlooks – that the entire objective edifice of a nation's economic, political and cultural institutions and activities rests on intangible, but all-powerful, subjective social and psychological foundations. FDR's management of the crisis is one of countless events in history that illustrates the singular difference between conscious human behavior and the behavior of inanimate objects and subconscious forms of life. Subjective reality may play a relatively insignificant role in lower forms of life that can be ignored, but in human behavior the subjective and objective dimensions are inseparable aspects of a single reality.

No social science can be complete or effective that partitions the objective and subjective aspects of social reality, as if they are separate realms of existence that exist and can be studied independently from one another. Valid economic and political theory and practice can never be divorced from sociology, anthropology and psychology. The psychology of the

* Dramatic advances in neuroscience and psychopharmacology have recently led to an alternative approach to eliminate the divorce between subjective and objective experience by reducing all psychological phenomena to their chemical and nervous manifestations in the body. The correlation between physiological and psychological factors proves there is an interrelationship but is far from sufficient to establish causality.

individual can never be fully understood without reference to social and cultural context. In his actions as well as his understanding, FDR applied a remarkable combination of subjective powers – superb communication skills and exuberant personal charm – to stop the panic of 1933. The same strategy, the same speech delivered by another president with a different perception and different values may very likely have led to very different consequences.

The true relationship between subjectivity and objectivity in human affairs does not lend itself to this radical approach. *All human accomplishment represents an objectification of the subjective components of reality.* All human creation is founded on subjective truth. The aspiration of the scientist for knowledge, the moralist for integrity, the artist for beauty, the engineer for precision, the craftsman for perfection, the child for love, the entrepreneur for wealth, and the political leader for power are all-powerful forces that have driven the rise of civilization over the millennium. A science bent on explaining away every subjective human experience as the consequence of objective chemical and electrical processes must eventually give way to one which restores the subjective dimension to its rightful place as the ultimate determinate and prime mover in human affairs.

8. Reuniting the Individual and the Collective

The divorce in social sciences between subjective and objective phenomena is closely related to a second disunity between the individual and the collective. The science of material Nature and lower life forms is the science of types. Particles, atoms, molecules, minerals, stars, solar systems, galaxies, unicellular organisms, plants and animals fall into categories and subcategories that can be distinguished by their observable characteristics. In each case science studies the common characteristics of the type. Every diamond may possess some unique attributes, but the atoms and particles of which diamonds are composed are remarkably uniform and indistinguishable. Ascending the scale to complex forms of life, we observe greater differences and disparities between individuals of the same type, as every pet owner knows from personal experience, but science focuses on the similarities and mostly ignores the differences. While ancient history was normally recorded in terms of the lives of outstanding individuals, the modern approach to historical analysis and contemporary events places much greater stress on the action of broad tendencies and statistical trends, than unique individuals and events.

Applied with incredible success with regard to non-human subjects of study, the same approach has been applied by the social sciences to categorize societies, classes, groups, institutions, social processes and activities by generalized type and to apply statistical measures to describe the shared behaviors of groups. In practice, this approach encounters serious methodological and practical problems.

Foremost among these is the problem of the Individual. What would have happened to the banking American crisis in 1933 had Herbert Hoover been re-elected for a second term? Would the Cold War have ended in 1989 if Mikhail Gorbachev had never been elected as President of the Soviet Union? Would the North have won the American Civil War and constitutionally abolished slavery in 1865 if Lincoln had not been the president during this

period? Would Britain have defeated the Nazis in the Battle of Britain had Churchill not been chosen as its leader? Would Apple Computers have ever been founded or would it have recovered from its progressive decline during the 1990s to become the most valuable company in the history of the world had Steve Jobs not lived or had he not returned a decade later to the company from which he had been summarily ejected in 1985?

Attention to the central importance of the individual and his uniqueness has recently reemerged, as Ivo Šlaus points out. Nassim Nicholas Taleb's book *Black Swan: The Impact of the Highly Improbable* emphasizes the inordinate significance of highly improbable, high impact, unpredictable events in human affairs. Taleb observes that statistical measures of normal behavior have been inadequate to anticipate the most important events in human history, such as the onset of World War I, the Great Crash, the End of the Cold War, the invention of the World Wide Web, 9/11, Fukushima, the 2008 financial crisis. He concludes from these observations that human existence is inherently uncertain, like the behavior of subatomic particles, an appealing premise since it implies a sort of unity between the human and material microcosm of quantum particles. Taleb's thesis is a useful reminder that human life cannot be wholly understood in terms of generalizations and statistics, but his interpretation of events does not take fully into account the role of conscious individuality in human affairs.

The human individual is distinguished from every other species of living and non-living life form by the enormous variation and uniqueness of its individual members. Within our species there are wide disparities between the degree of individual or unique characteristics exhibited by different people and the degree of individuality or individuation is increasing over time. Our individuality is evolving. The formed individual – variously described by leading humanistic psychologists such as Goldstein, Maslow, May, Murray and Rogers – is the self-actualized, self-realized person who by a process of individuation assimilates the rich experience of life and internalizes it as a unique organization of aspirations, knowledge, perceptions and values. According to Rogers, the human organism has an inherent "actualizing tendency", which aims to develop all capacities in ways that maintain or enhance the organism and move it toward autonomy. Individuality is that which does not depend on social authority or tend toward social conformity for its own sake; it is the capacity for original inspiration, creativity, and uniqueness of expression. Zucconi cites prominent characteristics that emerge by the process of individuation: self-awareness, authenticity, trust in oneself and others, a sense of purposefulness and direction, creativity, leadership qualities, a deep capacity for affiliation and communication, adaptability, flexibility, self-regulation and maturity.*

No matter how successful the exclusive concentration on shared characteristics may be when applied to other fields of natural science, a science of society cannot ignore the significant differences in knowledge, skill, motivation, aspiration, action and achievement that distinguish members of our species and their influence on the life of the collective. A symbiotic relationship exists between the human individual and social collective. Mila Popovich

* Alberto Zucconi, "Personality and individual accomplishments", lecture delivered during a World University Consortium course entitled "Individuality & Accomplishment", Inter-university Centre, Dubrovnik, August 28, 2014.

calls for a sense of responsible interconnectedness. "Always keep in mind the relational nature of individuality – the correlation between the micro and macro scale – the co-creative relationship among individuals, individuals and their environment as well as the human embodied and embedded system within the greater cosmic system."*

Society is the repository of the accumulated knowledge, skills, values, laws, customs, institutions, activities and behaviors of past generations made accessible to every new member to varying degrees. We acquire our language, ideas, beliefs, attitudes, habits and values from the societies to which we belong. The behaviors, attitudes and values that characterize our personalities are molded by the social institutions with which we relate, as Zbigniew Bochniarz points out.†

At the same time, the individual is the catalyst for all social change. As Margaret Mead observed, "Never doubt that a small group of thoughtful, committed, citizens can change the world. Indeed, it is the only thing that ever has." All social innovation, invention, discovery and creativity can be traced back to one or a few individuals who seek to push beyond society's current boundaries. The explorer, adventurer, entrepreneur, inventor, public leader, original thinker and creative artist are the source of innovations that propel the evolution of society. Progress of organization and society ultimately depends on the development of each of their individual members. The individual develops by raising his consciousness and organizing his personality at a higher level. The highest stage of organization of personality is what we mean by individuality. The formed individual is the catalyst for raising the consciousness and organization of society.

It is evident to most people that Apple Computers would never have invented the Macintosh, iPod, iPhone or iPad had it not been for the work of a single individual, Steve Jobs. But in most cases we do not perceive the relationship between the personalities and actions of individuals and the social institutions that govern the social collective. In fact, all our social institutions can be traced back to the ideas, values and actions of creative individuals. As chief of the Continental Army, George Washington had such a firm belief in the need for subordination of military to civilian authority that he submitted to the authority of the Continental Congress even when Congress left its soldiers without food, clothing, shoes and ammunition to survive the harsh New England winters and wage war against the British. When the war was finally won, most Americans were highly suspicious of central authority and reluctant to empower a federal government to rule over the states. They unanimously elected a reluctant Washington as the first President because he was the one leader who had demonstrated beyond doubt his commitment to civilian democratic rule. So little did he crave for power that he accepted only on condition that he would be relieved of responsibility within two years. When told that Washington wanted to return to his farm after winning independence, his bitter enemy King George III replied incredulously, "If he does that, he

* Mila Popovich, "Restoring order and care: The Role of Human Relationships in Individual and Social Development", lecture delivered during a World University Consortium course entitled "Towards a trans-disciplinary science of society", Inter-University Centre, Dubrovnik, August 28, 2014.

† "Institutions are patterns of social activity that give shape to collective and individual experience.... Institutions form individuals by making possible or impossible certain ways of behaving and relating to others. They shape character by assigning responsibility, demanding accountability, and providing the standards in terms of which each person recognizes the excellence of his or her achievements. Each person's possibilities depend on the opportunities opened up within the institutional contexts to which that person has access." Robert Bellah, et. al., *The Good Society,* 1991, p. 40.

will be the greatest man in the world." For 230 years since then, the US military has subordinated itself to the elected government. Washington's personal values became embodied as the values of the nation.

Social institutions are an objectification of the consciousness of individuals. Individual personality and social culture are interdependent expressions of a unified reality. Our vision of social reality is based on an erroneous separation of consciousness and force. Like Descartes, we view social institutions as impersonal seats of power functioning autonomously and beyond our power to control. We fail to perceive the consciousness of human beings that underpins and supports that exercise of power and therefore feel helpless. This perception is so prevalent that politicians, lawyers and judges act as if law is created by legislatures and interpreted by judges independently of the will of the people. In reality, law is a codification of public conscience founded on what the public endorses and is willing to accept, even when governing power is a colonial or authoritarian government. Mahatma Gandhi demonstrated this truth by a single act of civil disobedience that shook the foundations of the British Empire. In April 1930 he called on Indians to violate law taxing the manufacture of salt by marching to the sea coast and making salt. Tens of thousands rose to his call. More than 60,000 were arrested, but Gandhi had demonstrated to all concerned the obvious fact that no foreign power could rule India if the Indians were unwilling to accept foreign rule. Indian Independence was achieved by altering the attitude of millions of Indians to reject its position as the jewel in the crown of the British Empire.

Twenty-six years after India became free, a middle aged black woman in Montgomery, Alabama refused to obey a local law imposing racial segregation on public buses. Arrested and fined $8 for her crime, Rosa Parks' example inspired thousands of citizens to boycott the public transport system until the law was abolished the following year. A local clergyman named Martin Luther King was inspired by the enormous power of her actions to launch the American Civil Rights Movement. Rosa's role illustrates the bridge between the generation of new law at the micro level and its gradual expression at the macro level. Laws, public policies and social institutions are expressions of the social consciousness, whether by consciously determined intention or reluctant passive submission. The individual who perceives that truth possesses the power to re-establish the connection between the apparently impersonal social system and the personal values and aspirations of its members. Such an individual possesses the knowledge and therefore the power to change the world.

Human beings have a marked propensity for creating marvelous new inventions and then becoming slaves to their own creations. Thus, today we feel helpless before the governments, technology and financial systems created to serve us. The sense of fatalism that pervades public attitudes about unrepresentative political systems, corruption, unfair public policies and unsustainable economies arises from a flawed understanding of the true relationship between individual consciousness and collective power. A science of society for the 21st century can empower humanity to reclaim control of institutions that have gotten out of control, restoring the connections and providing the theoretical and practical support needed to heal the breach.

9. Unification of Time

Causality in the physical sciences moves in only one direction, from past to future. Past actions have future consequences that often appear inevitable, such as the path of the apple as it falls from the tree to the ground. The future in the physical sciences is something that does not exist yet, so it cannot possibly impact on the present. Events in the present depend only on the forces set in motion during a preceding interval of time.

But time behaves somewhat differently for conscious human beings. For us the future already exists in the form of our aspirations, expectations, imaginations, perceptions, hopes and fears. Unlike rolling stones and falling apples that are propelled by the past into a future course, human beings are moved to act in the present according to their anticipation of future outcomes. The expectation that banks would fail motivated millions of Americans to rush to their banks before it was too late, setting in motion a self-fulfilling prophesy. The dream of creating a computer that would empower creative individuals motivated Steve Jobs to invent something that did not previously exist. The aspiration for freedom and self-government motivated the American colonies to revolt and fight for independence. The faith in the power of non-violence espoused by Mahatma Gandhi led Indians to win their freedom without waging war. Modelled after the natural sciences, theories of causality in the social sciences depend inordinately on the consequences of past events and tend to ignore or minimize the role of future expectations, even in instances where it is intuitively obvious that perceptions of the future are a critical determinant of present behavior.

The flaw in this paradigm is made evident by a well-documented history of flawed projections by 'experts' considered to be most qualified to predict the future based on their knowledge of past and present achievements. Among the most notable and amusing, Lord Kelvin's observation in 1883 that "X-rays will prove to be a hoax"; the comment in 1946 by the famous American movie producer, Darryl Zanuck, "Television won't last because people will soon get tired of staring at a plywood box every night"; IBM founder Tom Watson's assessment in 1943 that there would be a world market for about five computers, the advice by famed entrepreneur Michael Dell to Steve Jobs on his return to Apple in 1996 to shut down the company and give the money back to the shareholders; and then Microsoft President Steve Balmer's estimation in 2007 that "There's no chance that the iPhone is going to get any significant market share. No chance." Note that these efforts to project the future based on past experience and present knowledge relate to social and economic trends, not merely technological advances.

Roberto Poli cites recent evidence from psychology, anthropology, sociology, and economics that indicates that the importance of future anticipation in the social sciences is gaining recognition. He and a group of associates are striving to establish a discipline of Anticipation that has potential applications to all fields of social science. "A better and more complete understanding of anticipation and its effects will improve theories and models of individual and collective human behaviour and its consequences. The benefits will thus assist those who are explicitly seeking to understand and design 'the prepared society', to make more effective

and sustainable use of technologies, to create more inclusive democracies and to explore the boundaries of human endeavours."[13]

Human behavior is the product of subconscious and conscious perceptions and forces that are influenced by past events, present perceptions and future possibilities. The reunification of these three dimensions of time into a triple time vision will mark an important contribution to the emergence of a trans-disciplinary science of society.

10. Ways of Knowing

This discussion of the present status and future development of social science returns repeatedly to the central importance of our instruments of knowledge in determining the validity of our quest for truth. In the natural sciences, we rely to a large extent on instruments that extend remarkably the reach of our senses from the microscopic infinitesimal to the macroscopic infinite. But the social sciences cannot take refuge in mechanical and electronic instrumentation, no matter how powerful or impressive. The reality we are striving to comprehend is not material. It is social and psychological. The objects of which it consists are invisible to both the eye and instrumentation. We cannot see our thoughts, feelings, beliefs, values, sentiments. We cannot even see our social institutions and culture, only expressions and symbolic representations of them. The bond between a married couple may be symbolized by a wedding ring, but to the naked eye they are simply man and woman.

The one essential instrument we possess for the study of our individual and collective humanity – indeed for the study of all reality – is the power of the human mind and consciousness. Our capacity to effectively utilize that power of knowledge depends very much on understanding its characteristics, modes of operation and its limitations. As is the consciousness, so is the power. Limited knowledge means limited power for accomplishment.

The future of science requires that we focus much greater effort to understand the workings and limitations of the human mind. Foremost among those characteristics is the tendency of mind to divide reality into parts and relate to each part as if it were an independent whole, which is the basis for reductionism and the division of disciplines that now limit the evolution of social science. This divisive tendency also accounts for our habit of perceiving reality in terms of mutually contradictory opposites such as objective and subjective, individual and collective, overlooking the fact that contradictions can be resolved into complementarities at a higher level. Mind by its very character has the capacity to affirm any perspective as true or false.*

Mind also has an opposite tendency to aggregate assemblies of parts, mistaking the sum of those parts for the whole, as many regard society as simply a sum of its members, rather than a complex living social organism. In addition mind thinks in symbols to represent reality and often mistakes the symbols for the reality itself. Thus, we tend to forget that money is only a symbol for productive capacity and public trust, not a thing in itself of any inherent value. So too, we overlook the common tendency of mind to analyze reality based on

* "All human thought, all mental man's experience moves between a constant affirmation and negation; there is for his mind no truth of idea , no result of experience that cannot be affirmed, none that cannot be negated." -- Sri Aurobindo, *The Life Divine.*

premises that pre-determine the conclusions we come to, such as the current quest for the chemical substances that determine human behavior.

Finally, we should not overlook the evidence that the greatest scientific discoveries have arrived by processes other than the normal rational mental faculty we pride on as the essence and mainstay of science – processes such as insight and intuition which we barely understand and rarely even try study scientifically. The testimony of great thinkers and scientists is irrefutable. As Kant observed, "All human knowledge begins with intuitions, proceeds from thence to concepts, and ends with ideas." Einstein stated it this way: "The intellect has little to do on the road to discovery. There comes a leap in consciousness, call it intuition or what you will, and the solution comes to you and you don't know why or how."[14] We must always keep in mind that the pursuit of science itself is entirely a human activity with its own sociological, cultural, mental, psychological and spiritual dimensions.

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Anticipation: A New Thread for the Human and Social Sciences?

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Abstract

Anticipation is increasingly at the heart of urgent contemporary debates, from climate change to economic crisis. As societies are less confident that tradition will provide an effective guide to the future, anticipatory practices are coming to the foreground of political, organizational and personal life. Research into anticipation, however, has not kept pace with social demand for insights into these practices. The paper outlines the main contributions to the understanding of anticipation from the human and social sciences, focusing in particular on the most recent developments.

1. Introduction

Anticipation is increasingly at the heart of urgent contemporary debates, from climate change to economic crisis. As societies are less confident that tradition will provide an effective guide to the future, anticipatory practices are coming to the foreground of political, organizational and personal life. Research into anticipation, however, has not kept pace with social demand for insights into these practices, their risks and their uses. The conditions should be created for interdisciplinary collaboration and conceptual development to inform decision-making, strategy formation and societal resilience. To achieve a fuller understanding of the centrality of anticipation to human behaviour a research base must be developed that is capable of assessing and enhancing the potential of anticipatory practices for individuals, organisations and society while mitigating the risks of human behaviour. This research base is in development, but it is fragmented. Bringing researchers together from across disciplines, to explore the question of how humans anticipate, and the risks and uses of such anticipatory practices, will lay the foundation for understanding and creating future-oriented dialogue across disciplines and subsequently enhance decision and policy-making.

A better and more complete understanding of anticipation and its effects will improve theories and models of individual and collective human behaviour and its consequences. The benefits will thus assist those who are explicitly seeking to understand and design 'the prepared society', to make a more effective and sustainable use of technologies, to create more inclusive democracies and to explore the boundaries of human endeavours. The ability to anticipate in complex (self-generating, unpredictable) environments greatly improves the resilience of societies facing threats from a global proliferation of institutions, agents and forces, by articulating insecurities through anticipatory processes.

2. A First Surprise

As soon as one starts collecting data on anticipation, the first unexpected surprise perhaps is the finding that over the past century many scholars from many different disciplines and fields have worked on anticipation. (Nadin, 2004); (Zamenopoulos & Alexiou, 2004); (Poli, 2010). The unwelcome result is that nobody has systematically collected and compared the various proposals to date. It may well be that the same phenomenon has been discovered time and again. Even so, it would be interesting to know the differences, if any, among the various phenomena and among the theories purporting to capture them. It may be that different scholars have seen different aspects of anticipation, and a thoroughgoing comparison between the different proposals may help develop a more rounded-out theory. The following notes outline a map of the territory. A former paper of mine (Poli, 2010) provided an even more preliminary, somewhat idiosyncratic, survey, and it included some information on areas not covered by the present sections, such as semiotics (Nadin, 2004), engineering (Camacho & Bordous, 1998); (Astrom & Murray, 2008), and artificial intelligence (Butz, Sigaud, & Gerard, 2003); (Butz, Sigaud, & Baldassarre, 2007). In the meantime I have discovered other areas that have contributed to anticipation, such as language (for which see Streeck and Jordan (2009), a special issue of *Discourse Processes*), family therapy (Boscolo & Bertrando, 1993; Goldbeter-Merinfeld, 2005; Selvini Palazzoli, Boscolo, Cecchin, & Prata, 1975), and the advanced design approach (Bleecher, 2009; Celi, 2014; de Mozota, 2006; Zamenopoulos & Alexiou, 2004). The next sections cover only some of the main areas of the territory that, for good or ill, are considered the main articulations of the human and social science: namely psychology, anthropology, sociology, and economics. It is patent that much systematic work remains to be done.

3. Psychology

Anticipation is an old friend of psychologists. Herbart claimed that anticipations of sensory effects not only precede voluntary movements but also determine them. This thesis, known as the Ideomotor Principle (IMP), runs contrary to the claim that psychic processes in general are determined by stimuli (i.e. it is at odds with both behaviorism and most of current cognitive psychology; for an overview of IMP see Stock and Stock (2004); for a treatment unfolding the idea that, after all, stimuli may not be as important as mainstream psychology believes see Albertazzi (2013)).

After the prelude represented by Herbart, studies on anticipation in psychology have been conducted only very recently, providing evidence of distinct forms of anticipation in learning, attention, object recognition, and many other cognitive activities (see Hoffmann (2003) for references; for an overview of the impact of anticipations on cognitive development see Butz (2008)).

These studies show that behavior is more goal-oriented than stimulus-driven. In other words, they show that there are robust reasons for challenging one of the main assumptions of cognitive science, namely that stimuli come first. The contemporary version of IMP claims instead that ambient interactions reinforce *anticipated* outcomes.

Behavioral and cognitive schemata – be they pre-given or acquired – shape the way in which organisms perceive the environment. For this reason they are anticipatory: "Schemata construct anticipations of what to expect, and thus enable the organism to actually perceive the expected information" (Riegler, 2003, p. 13).

However, the most systematic development of anticipation in psychology is the theory of prospection presented by recent research (Seligman, Railton, Baumeister, & Sripada, 2013), a major contribution to a new conception of psychology as a whole. As a matter of fact, during the past decade psychologists have begun a systematic study of people's orientation towards the future (for a non-technical introduction to time perception see Hammond (2012)). Seligman's paper, however, has the nature of a paradigm shift, and it will likely provoke heated discussion. The paper's main aspects are the following:

- Historical reconstruction of the development of twentieth-century psychology, with a particular focus on the limits of behaviorism and cognitivism;
- Empirical collection of data, especially on white rats;
- Presentation of the idea of the 'prospective brain' and analysis of its 'default mode'.

Other aspects include a comparison with and critique of Kahneman and Twersky's prospect theory (not to be confused with Seligman's prospection theory) which deals with the prospective reformulation of several psychological disorders and analysis of memory, subjectivity, consciousness, and free will. I am providing this highly compressed summary to show that, whilst in my reconstruction below I will have to be very selective. The paper is worth reading in its entirety.

Prospection, for Seligman, is the representation of possible futures – an idea undeniably close to anticipation. While prospection is a ubiquitous feature of the human mind, much psychological theory and practice has understood human action as determined by the past. According to mainstream psychology, anticipation is seen as "a violation of natural law because the future cannot act on the present" (Seligman et al., 2013). However, "prospection involves no backward causation; rather, it is guidance not by the future itself but by present, evaluative representations of possible future states" (Seligman et al., 2013).

While "viewing behavior as driven by the past was a powerful framework that helped create scientific psychology, … accumulating evidence in a wide range of areas of research suggests a shift in framework, in which navigation into the future is seen as a core organizing principle of animal and human behavior" (Seligman et al., 2013).

If the future indeed becomes a core organizing principle of the mind, the past will have to recede from being a force driving needs and goals to being a resource from which agents "selectively extract information about the prospects they face. These prospects can include not only possibilities that have occurred before but also possibilities that have never occurred" (Seligman et al., 2013, p. 119). To do so, "the prospective organism must construct an *evaluative landscape* of possible acts and outcomes" (Seligman et al., 2013, p. 120).

Moreover, "the success or failure of an act in living up to its prospect will lead not simply to satisfaction or frustration but to maintaining or revising the evaluative representation that will guide the next act" (Seligman et al., 2013, p. 120).

"Since all the modes of time are mutually interconnected, changes in any one of them reverberate on the others."

The entire conceptual framework of psychology changes when we shift our focus from the past to the future. Since "at any given moment, an organism's ability to improve its chances for survival and reproduction lies in the future, not the past … learning and memory, too, should be designed for action. These capacities actively orient the organism toward what might lie ahead and what information is most vital for estimating this" (Seligman et al., 2013, p. 120). Moreover, the focus on expectations helps in reconsidering the role of past experience, which ceases to be seen as a force directly molding behavior and becomes information about possible futures. "Choice now makes sense … stretching well beyond actual experience and enabling them [the rats in the paper's exemplification, but I see no obstruction towards understanding the claim generically] to improvise opportunistically on the spot" (Seligman et al., 2013, p. 124). There is more than opportunistic improvisation, however: namely the "active, selective *seeking* of information ('exploration')" (Seligman et al., 2013, p. 124).

Furthermore, there is no need to see expectations as limited to conscious processes only. Indeed, "generating simulations of the future can be conscious, but it is typically an implicit process … often not accessible to introspection, and apparently occurring spontaneously and continuously" (Seligman et al., 2013, p. 126).

4. Anthropology

Anthropology has traditionally focused its research on non-industrial societies; moreover, the main focus of anthropology has been the cultural reproduction of identity, which for the most part means analysis of the ways in which societies develop their sense of the past. These claims are no longer valid: anthropology has begun to focus on both industrial societies and the ways in which societies develop their sense of the future (Appadurai, 2013, p. 285). As a cautionary note, one may add that "anthropology has the means, but not yet the concerted conversation, to develop an ethnography of the near future of the 21st century" (Guyer, 2007, p. 410).

Within anthropology, the recent debate on its future has been ignited by Guyer (2007). Previous efforts to call attention to the future within anthropology had little impact (Munn, 1992; Wallman, 1991). Munn (1992), for instance, already saw that the future is a crucial topic for anthropology: "anthropologists have viewed the future in 'shreds and patches', in contrast to the close attention given to 'the past in the present'" (Munn, 1992, p. 116). Here I will consider only three main contributions to this otherwise rich debate: namely the already-mentioned works by Guyer and Appadurai, together with Piot (2010).

Guyer starts by noting the emptying "of the temporal frame of the 'near future'" (Guyer, 2007, p. 409). What has been called the 'postmodern condition' seems to be based on a "reduction to the present" (Jameson, 2002, pp. 207, 209). Since all the modes of time are mutually interconnected, changes in any one of them reverberate on the others. Jameson notes that the sense of the past and future within the present tends to become feebler and feebler (Jameson, 2002, p. 214). As a counter-move, he proposes learning to see utopian tendencies as they develop. To which Guyer replies: "I like the general direction here but doubt the matrix. The spaces opening up are not alternative or utopian in any holistic sense. They are reconfigurations of elements that are well-known already, moved in to colonize particular phases and domains of individual and collective life that have been released from answerability to a more distant past and future" (Guyer, 2007, p. 416). Moreover, "the spaces opened up offer innovative extrapolation from some vantage points and block any cumulative momentum from others.… In many literatures and in formal and informal daily life, I perceive a similar rising awareness of a time that is punctuated rather than enduring: of fateful moments and turning points, the date as event rather than as position in a sequence or cycle, dates as qualitatively different rather than quantitatively cumulative" (Guyer, 2007, p. 416).

Guyer's analysis is based on the concept of 'near future'. The question that she raises is whether the near future includes "a gap, a space, a rupture in time" – that is a singularity that cannot be described but only believed and witnessed. If indeed the near future includes a temporal rupture, this implies that previous frameworks providing temporal coherence have been substituted by a series of new frameworks "entailing continual temporal arbitrage to stay afloat" ((Han, 2004); (Guyer, 2007)).

Piot's reconstruction of West Africa after WWII explains how the end of the Cold War has been a major disruption for the colonial system of governance: "the end of the Cold War has changed the sociopolitical landscape in ways that demand new theoretical tools" (Piot, 2010, p. 16). All the recognizable continuities notwithstanding, Piot remains "committed to the idea that a threshold has been crossed and that the contemporary world is undergoing significant shifts in modes of sovereignty and forms of political-economic organization, shifts that dramatically transformed Africa in the 1990s" (Piot, 2010, p. 13).

Perhaps surprising from a European perspective, in West Africa Pentecostal churches are the main forces forging a new understanding of the future. By urging a break with the past, including rejection of the old structures of authority, these churches reshape temporality (Piot, 2010, p. 9). Attention may be called to the fact that "US pastors are now traveling to Africa to be ordained – because they see African Christianity as a purer form – before returning 'home' to engage in 'mission' work" ((Jenkins, 2002); (Piot, 2010, p. 63)).

There is more than this, however. The issue is not limited to rejection of the past; the really intriguing issue is that "futures are replacing the past as cultural reservoirs" (Piot, 2010, p. 16). While our understanding of these Pentecostal-mediated futures is remarkably poor (for an insider's point of view, see (Heward-Mills, 2006)) the very possibility of using futures as cultural reservoirs is central to the idea of anticipation.

In order to develop a systematic understanding of the future, anthropologists should examine "the interactions between three notable human preoccupations that shape the future as a cultural fact, that is, as a form of difference. These are imagination, anticipation and aspiration" (Appadurai, 2013, p. 286), even if "we have not yet found ways to articulate how anticipation, imagination, and aspiration come together in the work of future-making" (Appadurai, 2013, p. 298). Nevertheless, "as we refine the ways in which specific conceptions of aspiration, anticipation, and imagination become configured so as to produce the future as a specific cultural form or horizon, we will be better able to place within this scheme more particular ideas about prophecy, well-being, emergency, crisis, and regulation. We also need to remember that the future is not just a technical or neutral space, but is shot through with affect and with sensation. Thus we need to examine not just the emotions that accompany the future as a cultural form, but the sensations that it produces: awe, vertigo, excitement, disorientation" (Appadurai, 2013, pp. 286-287).

The capacity to anticipate the future is socially differentiated, however. On understanding that "'the capacity to aspire' is unequally distributed" and that "its skewed distribution is a fundamental feature, and not just a secondary attribute, of extreme poverty" (Appadurai, 2013, p. 289) one begins to grasp some of the deeper issues related to the future as a cultural reservoir. Not everybody has access to this reservoir.

As a step towards building a future reservoir where none is available, one may consider the productive role played by memory. "While state-generated archives may primarily be instrumental of governmentality and bureaucratized power, personal, familial, and community archives –especially those of dislocated, vulnerable, and marginalized populations—are critical sites for negotiating paths to dignity, recognition, and politically feasible maps for the future" (Appadurai, 2013, p. 288). Put differently, without "the capacity to aspire as a social and collective capacity … words such as 'empowerment', 'voice', and 'participation' cannot be meaningful" (Appadurai, 2013, p. 289).

Anthropologists need to engage in a "systematic effort to understand how cultural systems, as combinations of norms, dispositions, practices, and histories, frame the good life as a landscape of discernible ends and of practical paths to the achievement of these ends. This requires a move away from the anthropological emphasis on cultures as logics of reproduction to a fuller picture in which cultural systems also shape specific images of the good life as a map of the journey from here to there and from now to then, as a part of the ethics of everyday life" (Appadurai, 2013, p. 292).

This effort will evidence the difference between what Appadurai calls 'the ethics of possibility' and 'the ethics of probability'. The former is based on "those ways of thinking, feeling and acting that increase the horizon of hope, that expand the field of the imagination, that produce greater equity in what [he has] the capacity to aspire, and that widen the field of informed, creative, and critical citizenship". Conversely, the ethics of probability deal with "those ways of thinking, feeling, and acting that flow out of what Ian Hacking called "the avalanche of numbers"… they are generally tied to the growth of a casino capitalism which profits from catastrophe and tends to bet on disaster" (Appadurai, 2013, p. 295).

5. Sociology

Alfred Schutz argued that we simultaneously live in different contexts of meaning, with different temporal dimensions, at different levels of familiarity. Schutz distinguished three main systems: thematic, interpretative and motivational. The system of most interest here is the last one, the motivational system (Schutz, 1972; Schutz & Zaner, 1982).

According to how motivational systems operate, actions are typically framed by two types of opposition: the opposition between my actions and yours and the opposition between future and past actions. Future actions are interpreted according to an 'in-order-to' structure, whilst past actions are interpreted according to a 'because' structure. In-order-to motives are components of the action: they shape the action from within. By contrast, because-motives require reflective acts upon already-taken decisions. This structure helps explain why we perceive actions as free according to in-order-to-motives and as determined according to because-motives.

Actions are always elements of wider projects, which in their turn rely on various stocks of knowledge. One of the most familiar components of knowledge is the stock of typical expectations, which may become actual in typical circumstances and predetermine typical re-actions. As Riegler notes, "Instead of getting overwhelmed by the details of a new situation, humans seek to replace them with familiar activity and behavioral patterns that show a high degree of predictability to putatively gain control again, to be able to anticipate the outcome" (Riegler, 2003, p. 12). In this sense, indeed, new experiences may be familiar to their type.

Expected social behavior constrains social life ((Schutz, 1972); (Berger & Luckmann, 1969); (de Jouvenel, 1967)). The distribution of social capital (including economic, relational and intellectual forms of capital) further distinguishes the typical anticipations of the future characterizing different social groups (Bordieu, 1984). While "the network of reciprocal commitments traps the future and moderates its mobility," it nevertheless makes social life less difficult in the sense that it "tends to reduce the uncertainty" (de Jouvenel, 1967, p. 45). On the other hand, the growing degree of uncertainty experienced by contemporary society implies that something more is at stake. Specifically, what is at work is the covert connection between a peculiar interpretation of rationalization and an equally peculiar interpretation of the future. As to the former, already at the beginning of the past century Weber showed that efforts to make social life more rational generate the unintended consequence of raising uncertainty (Adam & Groves, 2007, p. 12; Weber, Lassman, Velody, & Martins, 1989).

The subsequent distinction between two main kinds of futures paves the way for a better understanding of the roots of social uncertainty. Adam and Groves distinguish between "the embedded, embodied, contextual future", on the one hand, and the "decontextualised future emptied of content, which is open to exploration and exploitation, calculation and control", on the other (Adam & Groves, 2007, p. 2). I shall distinguish them as respectively concrete and abstract futures.

Not surprisingly, economic agents see the future as a commodity, a good to trade like any other good: banks calculate the value of the future with respect to interest and credit,

insurance companies calculate the value of future risk (Adam & Groves, 2007, p. 10). These futures are abstract possibilities, independent of any context. They are reduced to pure, i.e. abstract, exchange value. The future as a commodity "can be calculated anywhere, at any time and exploited for any circumstance" (Adam & Groves, 2007, p. 10). Once the future has been traded as an abstract exchange value, "speed provides not only evolutionary and cultural but also commercial advantage" (Adam & Groves, 2007, p. 102). Trading concrete with abstract futures paves the way for the onset of uncertainty (Adam & Groves, 2007, p. 55). Furthermore, the experience of the past two centuries shows that "efforts to control, manage and engineer the future produce unprecedented uncertainties" (Adam & Groves, 2007, p. 77).

The tendency towards higher degrees of uncertainty experienced by contemporary society is further strengthened by the interplay between abstract futures and the role of information and communication technologies. Not only has communication become instantaneous, it is also networked across space to cover almost the entire planet. As a consequence, the usual, primarily local, order of causal dependences recedes into the background and contributes less and less to sense-making efforts. Again, the net result arising from abstract futures and globally networked instantaneous communications is the rise of uncertainty (Adam & Groves, 2007, p. 55).

Disturbingly, as uncertainty increases, the capacity to anticipate real, i.e. concrete, futures decreases (Adam & Groves, 2007, p. 35). The more our activities generate outcomes extending into the deep future, the more our explicit anticipatory capacities diminish.

Leaving abstract futures aside, two main kinds of concrete futures can be distinguished: pre-given futures, and futures in the making. The former are the futures resulting from relevant pasts, the futures resulting from given structures, from individual embodiment and social embedding in networks of social relations. These futures are primarily past-driven and common-sense-based. On the other hand, the futures in the making are growing possibly latent futures. Adam and Groves distinguish them respectively as 'present future' and 'future present'. Present futures are "futures that are imagined, planned, projected, and produced *in* and *for* the present" (Adam & Groves, 2007, p. 28). Economic and scientific forecasts are cases in point. They colonize the future from the present (Miller, 2007). Present futures are continuations of the past through the present. Future presents, on the other hand, are futures "that can be known, 'seen' and anticipated". As far as future presents are concerned, they are the futures that are used in the present, the futures that enter into and shape the present.

The distinction between 'present future' and 'future present' was initially introduced by Luhmann (Luhmann, 1982, p. 281). According to Luhmann, while present futures are utopian, future presents are technologically biased. Adam and Grove develop a different understanding of these two expressions based on the difference between 'pre-given futures' and 'futures in the making'. I am suggesting that they add a more explicitly active component to their description indicated by the expression "using the future". I will reserve the qualification of 'anticipatory' only to those systems that can use the future in the present.

To return for a moment to present futures, the value of a given present future is calculated against its alternative present futures. The present future generating the larger profit is the

future with the highest value. "In this way the future as such becomes tradable: one future outcome is tradable for another, on the basis of its estimated returns" (Adam & Groves, 2007, p. 73).

"Are we sure there are no other institutional frameworks and configurations of social relationships that are further able to advance democracy, freedom, and respect for individual and social rights?"

Adam and Groves call the future in the making 'latent'. A latent future is a future 'on the way' that still has to surface and become visible. Even if a latent future is hidden and invisible in the present, it is nevertheless an actual component of the present: it is a future "living within the present".

This may be the appropriate place to note that "during the past thirty years substantial experimental data have shown that all axioms of expected utility theory have been violated by real subjects in experimentally controlled situations" (Berthoz, 2003). Real agents are far from being ideal or idealized decision-makers, as expected utility theory assumes. On the contrary, we systematically make mistakes, for various reasons including social pressure, the tendency to agree with others, the influence exerted by hierarchical structures, the role of emotions, the desire to be right, the way in which problems are represented (Berthoz, 2003). All this may eventually provide robust evidence that it is time to update the decision-making programs used in business schools for managers, public policy schools for administrators, or military schools for soldiers.

As we have seen, the invention of abstract futures is one of the sources, possibly the most important one, of the rising level of uncertainty in contemporary society. The idea of developing strategies intended to reconnect abstract and concrete futures presents itself as the natural option to consider. The suggestion is not to return to anything like the 'good old times' because nothing historical reverts to any of its previous states. The only possibility, as always, is to move forward. What has to be considered is whether it makes sense to reconnect what was severed. However extraordinarily successful the bourgeoisie has been, the institutions that it has invented are only two centuries old. Are we sure there are no other institutional frameworks and configurations of social relationships that are further able to advance democracy, freedom, and respect for individual and social rights? Wright's idea of 'Real Utopias' faces such questions (Wright, 2010, p. 4). Indeed, one cannot rule out that at least some of the problems being faced are directly or indirectly connected to the form that political institutions have historically taken in the West. Imagining new institutional frameworks may be of assistance in addressing some of these issues. Clearly, it would not be sufficient to simply carry out purely abstract thought experiments on institutional changes. As social scientists, we can and must also assess whether the newly proposed frameworks are desirable (for instance in the sense of mitigating the adverse consequences in question), viable (i.e. capable of withstanding the test of time), and achievable. A fra-

mework that induced unbearable unintended negative effects, that proved unsustainable in the long run, or that could not be established in practice would not constitute an acceptable outcome (Wright, 2010, pp. 13-14). Identifying the ways in which existing social institutions and social structures cause harm for people is a natural starting point. Complementarily, a better understanding of the variety of human flourishing clarifies the capacities that any institutional framework should respect, protect and improve.

"Within economic thought there seems to be an unrestrainable tendency to see everything as risk."

According to Wright, a theory of transformation involves four central components: (1) a theory of social reproduction; (2) a theory of the gaps and contradictions within the process of reproduction; (3) a theory of the underlying dynamics and trajectory of unintended social change; and (4) a theory of collective actors, strategies, and struggles (Wright, 2010, pp. 17-19). All of these obviously involve the future and should be integrated into a full-fledged theory of anticipation.

6. Economics

Economics deals with the future in many different ways, at many different levels. Governments deal with forecasts on the inflation rate and the increase or decline in the Gross Domestic Product; almost any aspect of the strategic management of companies concerns the future: from calculation of the production of goods adjusted to seasonal variations to long-term decisions about producing entirely new goods or opening new factories. In turn, finance is entirely based on anticipations. Leaving aside all its remarkable technical complexities, the basic rule of finance is simple, almost trivial: buy assets that are going to grow in value, sell assets that are going to fall in value – both sides include unavoidable reference to the future. However, as later chapters of Beckert's book will show, the vast majority of ways to see into the future exploited by economists is severely constrained. There are entire realms of anticipation that have never been considered by economists.

Even within economics, however, things are starting to change. Jens Beckert in particular is opening new avenues. Particularly worth mentioning is his endeavor to break down the walls that so far have isolated economics, political science and sociology from each other (Beckert, 2013a, p. 324).

In order to understand the micro-processes underlying macro-economic outcomes, one should focus on agents' expectations. The economic activities that are pursued or avoided are established by expectations. The problem is that "under conditions of fundamental uncertainty, expectations cannot be understood as being determined through calculation of optimal choices taking into account all available information, but rather are based on contingent interpretations of the situation in the context of prevailing institutional structures, cultural templates, and social networks" (Beckert, 2013a, p. 325). It is here that Beckert introduces the concept of 'fictional expectation' referring to "present imaginaries of future

situations that provide orientation in decision making *despite* the incalculability of outcomes" (Beckert, 2013a, p. 325). This means that fictional expectations are more imaginations about the future than they are forecasts. Like imaginations, fictions add creativity to the economy and contribute to the dynamics of capitalism (Beckert, 2013b, p. 220). As Beckert explicitly declares, "the notion of fictional expectations is directed against the concept of 'rational expectations' constituting the micro-foundation of much of modern macro-economics" (Beckert, 2013a, p. 325), (Beckert, 2013b, p. 221). The reason is clear: according to rational expectations theory, aggregate predictions are correct because individual errors are random. Therefore predicted outcomes do not diverge systematically from the resulting market equilibrium. As a consequence the uncertainty of the future becomes a predictable forecast, paving the way for the rational calculation of optimal choices. On the other hand, the true openness of the future makes it impossible to explain decisions as calculations of optimal choice (Beckert, 2013b, p. 221).

"It is the images of the future that shape present decisions" – Jens Beckert

Despite all the objections raised against the just summarized train of thought, such as the role played by cognitive biases or true novelties, the ideology of the rational calculation of optimal choices is still the position defended by the vast majority of working economists. Apparently, economists tend to analyze uncertainty as if it were risk. As should be well-known, the distinction between the calculability of risk as opposed to the incalculability of uncertainty was introduced by Frank Knight as early as the 1920s (Knight, 1921). This notwithstanding, within economic thought there seems to be an unrestrainable tendency to blur their differences and to see everything as risk.

Beckert's intention is to reintroduce a difference between risk and uncertainty by raising the question of the nature of expectations under conditions of uncertainty. Here is his answer: "Structurally, expectations depend on cultural frames, dominant theories, the stratification structures of a society, social networks, and institutions. But the concept of fictional expectations gives the notion of expectations at the same time a political twist because expectations are seen as being open to the manipulation by powerful actors" (Beckert, 2013a, p. 326).

In order to clarify his concept of fictional expectation better, Beckert openly claims that "it is the future that shapes the present—or, to be more specific: it is the images of the future that shape present decisions" (Beckert, 2013b, p. 221). The fact is that actors must develop expectations "among other things, with regard to technological development, consumer preferences, prices, availability of raw materials, the strategies of competitors, the demand of labor, the trustworthiness of promises, the state of the natural environment, political regulations, and the interdependencies among these factors", despite the true unknowability of the future (Beckert, 2013b, pp. 221-222). Hence expectations are real fictions – there is no chance of seeing them through the opposition between truth and falsehood; eventually, the proper opposition will be based on the difference between convincing as opposed to unconvincing expectations. Moreover, expectations are more than 'mere fantasies' because actors

develop plans that are based on and include them (the difference between 'mere fantasies' and 'design fantasies' reaches back to (Schutz, 2003, p. 148)).

Finally, fictional expectation works on an 'as if' base: "fictional expectations represent future events as if they were true, making actors capable of acting purposefully with reference to an uncertain future, even though this future is indeed unknown, unpredictable, and therefore only *pretended* in the fictional expectations" (Beckert, 2013b, p. 226).

7. Toward a Discipline of Anticipation?

The generality of anticipation raises many questions. On the one hand, it shows that anticipation is indeed a general feature of a variety of phenomena and research fields. From this point of view, anticipation traverses disciplinary boundaries and may indeed become a point of unifying perspective. On the other hand, the danger is always present of treating in a uniform manner phenomena that are essentially different. The theory of anticipation may risk the same fate as suffered by systems theory (at least in some phases of its history) and 'anticipation' may become a catch-all term for so many different phenomena to be scientifically unhelpful.

As far as the social sciences are concerned, a clear result emerges from the above overview: that the boundaries among the various social sciences appear more and more meaningless. The more the efforts to develop the discipline of anticipation proceed, the more the traditional walls separating the social sciences will break down.

However partial the preceding overview may have been, it has nevertheless shown the variety, generality, and depth of the interest in anticipation of the future. Not surprisingly, terminologies differ widely, and the lack of a uniform theoretical framework within which to understand anticipation will become a major obstacle to the establishment of anticipation as an autonomous, unifying research field.*

The following five aspects emerge from the overview as likely components of the incipient Discipline of Anticipation:

- The difference between calculable risks and incalculable uncertainty. The former emerges from closed futures – closed because calculable – and the latter characterizes open futures. While there is only one way to be closed, there are many ways to be open. There are also many different ways to open a closed system, which implies that the process of opening a system is not generic.
- The difference between the distant future and the future in the present. The further distinction between 'present future' and 'future present' – that is, the distinction between the future as a projection of the past (a form of calculable future) and the future as a proper anticipation of the future – distinguishes different types of the future in the present. An issue to be addressed is whether the future in the present and the near future are synonymous concepts.

* For a first effort to lay down the basis of the Discipline of Anticipation see R. Miller, R. Poli and P. Rossell, "The Discipline of Anticipation. Exploring Key Issues", 2013, http://unitn.academia.edu/RPoli.

– The difference between continuous future and the discontinuous or ruptured future. While it is granted that the far future will include major discontinuities, the issue is whether the opposition between continuity and discontinuity characterizes also the future in the present or the near future.

– The difference between systems able to use the future as opposed to systems unable to do so. I shall call 'anticipatory' only the systems that have the capacity to use the future in the present.

– If it is acknowledged that there are different types of anticipations arranged along a variety of dimensions (such as (1) biological, psychological, and social forms of anticipations, (2) explicit and implicit anticipations, (3) calculable and incalculable anticipation; (4) continuous and discontinuous; etc.), the question arises as to how they interact with each other. Under what conditions do the various forms of anticipation work together? Under what conditions do they interfere and even block or destroy each other?

This list, though partial and provisional, raises further questions. Anyway, while a full-fledged theory of anticipation will likely require further, presently unaddressed components, the above five components show that a systematic effort to gain better understanding of the many nuances of anticipation promises to pay dividends.

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Society and Social Power

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Abstract

Society is the source of immense power. Over the past few centuries humanity has recorded phenomenal growth in its collective capacity for accomplishment, as reflected in the 12-fold growth in global per capita income since 1800. The remarkable achievements in living standards, longevity, science, technology, industry, education, democracy, human rights, peace and global governance are the result of the exponential development of the capacity of society to harness human energies and convert them into social power for productive purposes. Today, humanity possesses the power and capabilities needed to fully meet the multi-dimensional challenges confronting global society. The source of this energy is people. Human energy is transformed into social power by the increasing reach, frequency and complexity of human relationships. Society is a complex living network of organized relationships between people. Its power issues from channelizing our collective energies in productive ways by means of organizing principles such as coordination, systems, specialization of function, hierarchy of authority, and integration. This immense social power remains largely underutilized. Social science needs to evolve a comprehensive, trans-disciplinary understanding of the roots of social power and the process by which it is generated, distributed and applied. This knowledge is the essential foundation for formulating effective social policies capable of eradicating forever persistent poverty, unemployment and social inequality. This article is based on a series of lectures delivered by the author in the WAAS-WUC course on "Toward a Trans-disciplinary Science of Society" at Dubrovnik on September 1-3, 2014. It traces the development of social power in different fields to show that human and social capital are inexhaustible in potential. The more we harness them, the more they grow. Unleashing, directing, channeling and converting human potential into social power can eliminate all the problems confronting the world today.

1. Introduction

Human beings seek to accomplish goals to fulfill their needs and aspirations. People have sought different things, depending on their economic and social position, at different periods in their lives, and at different periods in history. Needs have evolved, from personal physical survival, to emotional fulfillment, to global and idealistic concerns. Needs change over time, new ones replace earlier fulfilled ones, but throughout, we see that they have all been met. Some are met readily and easily. Some demands are conceded after a prolonged struggle. But human aspiration is eventually fulfilled, and the power for this fulfillment comes from society.

Society not only facilitates the realization of aspirations, it also anticipates our needs and fulfills unexpressed wishes. It possesses great powers and capacities that are drawn from within itself. Its potential for accomplishment is infinite. A trans-disciplinary science of society that studies the formation of society, the generation of social power and the empowerment of the individual members for personal and collective accomplishment is essential for a new human-centered development paradigm that can solve all the problems that confront the world today.

2. Society as a Web

Society is usually thought of as something out there. It is that which is outside of us, our family, home, institution or work place. It is abstract. Like the air all around, it is invisible, intangible. But if it is not there, the absence is immediately felt, and existence becomes impossible. So, what exactly is society?

Society consists of people. We do not refer to society during the Jurassic period or in the South Pole. These people who are collectively described as a society are related to each other. These relations can be physical or psychological in nature. Society also consists of structures that bring people together, and like the relationships, these structures can be physical or non-physical.

Though society feels amorphous, it has a physical basis. The biological tie is one basis for bringing people together. The family gives a sense of belonging. It is the first group with which we all identify. The parents, siblings and children form a close-knit unit. The extended family and the clan come next. Geography is another basis for a set of people to be grouped together. People of one village, town, province, city state, region, country or continent are referred to as a society. We talk about the American society, the Arabs in the Persian Gulf, the Russians in the Siberian region or the Asian immigrants in Europe.

The sense of identity felt on the basis of geographic location or biological tie used to be confined to very small groups. 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.

Society is not adequately defined by physical groupings alone. It has a psychological basis as well. Ethnicity, educational background, profession, economic stratum, class, caste and institutional membership can distinguish and group people. Thus, we have the society of the Asian industrialists, European artists, Chinese communists, the Harvard or Oxford alumni, the upper or middle class, the people below poverty or without literacy, the world's billionaires, indigenous tribes of Africa, Silicon Valley entrepreneurs, the republicans, democrats, priests, warriors, doctors, teachers, scholars, writers and so on.

Ideas can bring people together, regardless of their location or other attributes. People who are opposed to the use of nuclear power, who care deeply for the environment, who advocate greater economic equality or who believe in religious harmony, anywhere in the globe identify with each other. In this way, society also consists of groupings that are essentially

mental in nature – beliefs, opinions, ideals, attitudes, sentiments, religion, political ideology and values. So we have people of different religions who are referred to collectively as a group – Christians, Muslims, Jews, Hindus, Buddhists. We have liberals and conservatives, communists and capitalists, Keynesians and monetarists, atheists and theists.

In theory, people can be grouped on the basis of various formal and informal, physical and mental coordinates. But to actually bring them together, some structures are required. Otherwise, what can make a person feel one with another person who lives a few miles away? How can one even know the other exists? Houses, roads, community halls and town squares are physical structures that bring people together physically. Villages, towns, cities and countries mark the boundaries of the groups. Shops, market places, schools, colleges and offices let them transact. Transportation facilities enable movement and help bridge distance. Telephone instruments, telephone lines, wireless devices, satellites, telecom companies, research organizations and government departments comprise communication facilities that keep people in contact.

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.

Educators, educational institutions and education are three different but related components of society. Educators are a group of people, the institution is a physical structure, and education a social organization that encapsulates the collective knowledge of humanity and provides it to each child in a period of 15-20 years. Societal groups are interdependent, and often overlap. One can be an Indian Hindu software engineer, an American Republican lawyer, Chinese Buddhist Silicon Valley entrepreneur, a European banker belonging to the royalty or an African tribal who has studied to become a doctor and migrated to Canada.

Society is a complex, but organized, structure of such groups and subgroups of individuals and organizations.

3. A Living Organization

One and one makes two only in Arithmetic. In all else, 'the whole is greater than the sum of its parts,' as Aristotle said. Bringing together two objects, such as the horse carriage and

the engine can result in something far greater in complexity, utility and power, the motor car in this case. The integrated circuit chip, a screen and keyboard give the computer. When the computer is hooked to a telephone, we have the internet. Add any one component to the web – education, commerce, entertainment, socializing, advertising, news, book publishing – and a new industry is born. Perhaps the greatest illustration of Aristotle's statement is society. Society is more than the sum of all people. It is an intricately linked, complex organization. It is like the human body.

"The recent Arab Spring shows how conscious society is."

Various types of molecules come together to form cells, tissues, organs, organ systems and the entire human body. But the body is much more than a collection of molecules. It is a highly complex, sophisticated organization of all these molecules, cells, tissues, organs and systems. The smooth functioning of all the parts and the interlinks between them determine the survival and functioning of the body. Even the slightest change or disturbance can result in a breakdown. Every part is integrated with every other part. A change in any one affects the whole, which is true for the human body as well as the society. Society is alive.

This living organization, just like the human being, has senses. It responds to stimuli, expresses itself, and has survival instinct. It remembers, learns, reacts, acquires skills, aspires, grows, evolves.

Minutes after Britain's Princess Kate steps out of her car, dresses similar to what she is wearing are sold out in online stores. Society seems to be watching, literally. Fashion is one of the simplest signs of society's senses. Society responds to its surroundings. Whenever there is any natural calamity in one part of the world, aid pours in from everywhere. Whether it is a tsunami in Asia, typhoon in the Caribbean or famine in Africa, the world comes together to act. When there is a success in one place, it is recognized, and emulated elsewhere. The Indo-Arabic numerals that we all use today originated in India, was improved in Arabia, reached Italy, and then spread to the rest of Europe. Try multiplying two 4-digit numbers using Roman numerals, and by the time you are finished, you will realize why this development is so important. Green Revolution, brought about by improved seeds, was developed and tested in Mexico. When this became a success, India imported these hybrid varieties of seeds and eliminated famine. Soon, other countries in Asia and Africa followed.

The recent Arab Spring shows how conscious society is. An unfortunate act of one poor vegetable seller in Tunisia sparked off a revolution in 20 countries, and impacted the whole world. Society sees, feels, thinks, acts. It also learns from past mistakes. After an economic crisis or humanitarian disaster, society takes steps to prevent its recurrence. After the Fukushima nuclear plant disaster in 2011, it was not only Japan that changed its nuclear policy, countries everywhere chose to stop or slow down their nuclear programs.

We are becoming increasingly aware that we cannot isolate ourselves from others; we all share a common fate as humanity. Terrorism and climate change are negative reminders of this fact. Everyone is becoming aware that if trees are cut in South America's Amazon forests, or coal is burned excessively in villages in Africa, it can result in the melting of the

Polar ice caps and Himalayan glaciers and rising sea levels in America and Europe's coasts. When scientific discovery or technological advancement in one laboratory benefits people worldwide, or online learning democratizes education for all, they remind us that we are part of one living organization called society.

4. Social Power

Jules Verne published his famous novel *Around the World in 80 Days* in 1873. The novel portrays a wealthy English gentleman who wagers that he can travel around the world in a mere 80 days and achieves what was considered impossible at the time. When he manages to reach the shores of England after braving storms, fighting tribals, and crossing forests and raging rivers, everyone considers it a miracle. This is fiction, but it closely reflects the reality of the period. Long journeys, whether by sea or by land, were fraught with risk. Columbus could not get people to even agree with his idea that one could go east by sailing west. He failed to find financial support in Portugal, Genoa, Venice and England, and managed with great difficulty to get the backing of the king of Spain. Ferdinand Magellan, who is supposed to be the first man to circumnavigate the globe, actually did not. His ships and part of his crew did, he died along the way in the Philippines, in a battle with the native people. Travel was slow, dangerous, unreliable, difficult.

"The number of people killed in battle – calculated per 100,000 people – has dropped by 1,000-fold over the centuries."

Compare this with travel today. Travel agencies, online booking, and improved modes of transportation have made travel fast, safe and comfortable. Some amount of luck may be necessary, but surely there is no need for a miracle to enable us to complete the journey as planned.

Travelling around the world is no longer considered the achievement of a lifetime, but business as usual.

How did this happen? How have we become so powerful? There are airplanes, computers, internet and cell phones, true. But this change has not been brought about by technology alone. Technology cannot explain all of the power we possess today. This change over 50-100 years or more is seen not just in travel. We see it in every sphere of life. We are better off than ever before.

We live longer today. Healthcare has improved. Life expectancy that was 31 in the early 20th century is 72 today. We see less starvation and famine. The world has immense productive power, to grow more crops, to create more goods. 200 years ago, Thomas Malthus said that human population growth would outpace food production. A UN study predicts that the world will have surplus food, in excess of the needs of the population by 2030.[1] A 100 years ago, Ford customers had the choice of "any color you want as long as it is black". Today, one does not have to be shopaholic to know that we are all spoilt for choice.

We live in the most peaceful of times. It is not easy to get this impression from reading the daily newspaper, but historically, the number of people killed in battle – calculated per 100,000 people – has dropped by 1,000-fold over the centuries. War like WW I or II is unthinkable in Western Europe today.

Primitive early man living outside society went out, and either returned with food, or had become food himself. It was each man for himself. Today, the family nurtures the young till the age of 18 or 21, taking care of their physical, social, emotional, financial and educational needs. The family is a microcosm of society. What the family does to its members, society does in a larger way.

Most countries provide its citizens security, law and order. We do not go to sleep wondering whether the neighboring country will invade our borders in the night and colonize us. We have our governments and armies, there is also international diplomacy. We are all covered by a fabric of law. We do lock our doors at night, but we are also fairly sure that powers stronger than our front door are protecting us, and that law enforcement agencies are policing and ensuring safety. The idea of human rights is established. We have rules for property as well as intellectual property. There are rules that bind international trade. There are conventions enforced even in the treatment of prisoners of war. There are even laws that protect animals and natural resources.

Better transportation and refrigeration facilities and trade links between countries have brought the world's produce to our supermarkets. When a major phone manufacturer launches a new version, it becomes available simultaneously in every continent. Online stores deliver all over the world. A hundred and forty years ago, Jules Verne said in *Around the World in 80 days* that the world has become smaller. Then how do we describe the world today?

Earlier, people had to wait for the next day's newspaper to find out what happened in the world that day. Later, radio and TV brought us news the same day, and then events began to unfold live. Today, we have live streaming video, not just from major international news channels, but from people on the street who have a cell phone and internet connection. We can also reach out to the world better. Expensive and cumbersome trunk calls are replaced by instant wireless communication.

Education is no longer the domain of a select few. It was expensive and not easily accessible. In the 16th century, a wealthy German merchant asked a learned man how to give his son a good business education. The learned man told him, *If you want your son to learn addition and subtraction, then any French or German university will do. But if you want the boy to go on to more advanced subjects like multiplication and division, then you had better send him to Italy*.[2] Today, all primary school children all over the world learn the multiplication tables without leaving their country or town or village. Almost every country has compulsory, free primary education. All the knowledge accumulated by earlier generations over millennia is made available in a capsule form, and delivered to the student through formal education in 15-20 years. We take for granted all the knowledge that we have. Among a group of illiterate people, the one person who could read and write enjoyed great power. We

all have that power today. Education has become more easily accessible too. Student loans are available. Books that were so few and precious used to be chained to libraries. Today there are book stores, book banks, private and public libraries. Massive Open Online Courses (MOOCs) have electronically opened up the classrooms of the world's best universities to all. With the advent of the digital reader, electronic books and online libraries, it is time and energy that are in short supply.

The internet has accelerated the pace of individual empowerment. Getting a book published, previously a challenge even for renowned writers, is a simple task today. Without the backing of a publishing group, without an investment, one can self-publish one's writing, through Amazon or other similar services. Ebay and many similar sites make a trader of anyone, we do not need a physical store to sell anymore.

Banks and other financial organizations allow us to do what was not possible earlier. If it were not for the bank loan, only the wealthy could venture into entrepreneurship. Today venture capital and bank credit can make an entrepreneur of anyone with an idea or skill. The opportunities that were available to only the wealthy or influential earlier are now available to every one of us.

Women in most countries can vote today, whereas a 100, even 50 years ago, they could not. Even some men could not. Being different is not condemned or frowned upon as much as before. Being colored, left handed, physically challenged, homosexual, unmarried, divorced, part of the minority, and being a liberal in a conservative society or a conservative in a liberal society are more accepted today. Individuality is accepted.

We were born with all these rights, we did not fight for them or have to ask for them. We received them, for no fault or desert of our own. All these powers we enjoy today are diverse expressions of the collective capacity of society. Society possesses great powers and capacities for accomplishment, and it enhances the power of its members to accomplish any and everything they seek to achieve. The experience and knowledge of the entire human community accumulated over countless generations are freely offered to each new generation. We are the product of a long line of evolution. We start off with the accumulated achievements of past generations, and build on it. So social capacity grows over time.

Not all development is positive, there are setbacks and digressions. Some movements seem to go in cycles. Even when there is progress, it is not uniform or fast. School enrollments for girls in Mali in 2012 are comparable to those in the United States in 1810. So there are countries that are 200 years apart. In Afghanistan, women are celebrating now because they are allowed to ride a bicycle. But the overall direction in which we're moving is progressive.

5. Empowerment of the Individual

As society makes progress, it empowers the individual members more and more. The individual does not exist separate from society. His or her growth is defined, sanctioned and supported by society. All movements headed by an individual derive their energy and power

from the support of the society. Success of any magnitude, in any field, for any person, has a parallel in the world around.

> *"The individual and the society are like nuclear physics and astronomy, one is the finite microcosm, and the other is the infinite macrocosm."*

When Martin Luther posted the ninety-five theses on the door of the Castle Church of Wittenberg in 1517, the Protestant Reformation was launched. But the Reformation was born not because he posted the theses, it was because his views were accepted by people, because the people were ready for the Reformation. Luther's views spread like wild fire and within years 200 new religious denominations sprouted up around Europe. His power came from society, if not all of it, from some sections of it that endorsed his views.

All great leaders rose to power on the strength of their followers' support. Mahatma Gandhi was able to free India from colonial rule because he was accepted and obeyed by 300 million Indians. Mikhail Gorbachev was able to end the Cold War and dismantle authoritarian rule because the Russians aspired for greater freedom, and people everywhere wanted an end to the threat of nuclear war. The individual and the society are like nuclear physics and astronomy, one is the finite microcosm, the other is the infinite macrocosm. The interaction between the two is the catalyst and formula for social evolution and personal growth. Neither is complete without the other. The individual is the quintessence of society, and includes all the complexity of this macrocosmic society in specific expression.

6. Sources of Social Power

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. This process of this transformation is illustrated by the story of a 16th century Indian emperor, Humayun. Humayun was engaged in a military campaign, when his wife was expecting their first child. Humayun was anxious to get news of the delivery as soon as possible. The problem was his army camp was at a distance of hundred miles from the palace. The fastest horse and the best rider would take more than a day to cover the rough terrain in the scorching heat. One wise old minister said he had a solution, and announced that he would arrange for the news to travel to the emperor within minutes. Now, this was in the 16th century, before the era of instant long distance communication. So what did this minister do? He ordered tall towers to be erected every few miles between the city and the army camp. He stationed a man with a drum on every tower, and a code was agreed upon. The moment the baby was born, the drum message was relayed, from tower to tower, across the hundred mile span in less than five minutes. A simple system made possible a feat that seemed impossible. Hundred drums and hundred men together cannot do this, but when they are arranged at a uniform distance from each other, along the hundred mile route,

instant communication becomes possible. This is how society gets its power, by harnessing the energies and capacities of its individual members, and channelizing it through a system, much as the magnifying lens channelizes sun's rays and creates fire, or the dam and the turbine channelize the river water and generate electricity.

Society is made up of people – their aspirations, energy and potential. Therefore it is a teeming mass of this potential that is unorganized at first. Human energy is released by human aspiration – for physical survival, happiness, accomplishment. The more intense the aspiration, the greater the energy released. Aspiration arises in response to crises, such as war or the spread of a contagious disease. It also arises in response to emerging opportunities –independence, democratization, spreading education or entrepreneurship. Sometimes the distinction between crises and opportunities is blurry. The threat of global warming has opened up research and development of renewable energy sources. The challenge or opportunity awakens the aspiration for a solution. This releases energy.

Energy is of many types. It can be the physical energy of a laborer, skilled work of the carpenter, plumber or goldsmith. It can be the dynamism of the leader or industrialist. It can be the erudition of the scholar, the creativity of the artist, the imagination of the writer or the mental energy of the engineer. All human activity is an expression of this energy. All human accomplishment is the result of the proper direction and application of the energy. The energy when directed towards finding a solution, becomes force. Force organized, becomes power.

A simple analogy to this process of generating social power is seen in the everyday task of lifting a heavy object. A box that one person cannot lift alone, can be carried by four people together. When the four individuals, who represent society here, come together, and aspire to lift the object, they exert themselves and energy is released. When each directs it towards lifting the object, the energy becomes a force. When all four lift the object, at the same time from four different sides, the force is organized, and the power thus generated lifts the box. This coordination of four individuals gives the power to do something which none of the four can individually accomplish.

In this way, society is a huge reservoir of all our energies, skills, capacities, knowledge, intelligence and aspirations. A group of people lifting an object, and the old minister stationing hundred men on hundred towers are simplistic models. Society is filled with more complex organizations – family, market, trade, industry, economy, government, army, law, education, value systems – that focus and organize human energy so that individual human capital is transformed into social capital. The quality of the organization through which the energy passes decides the quality of the power that issues. The knowledge with which the power is directed and administered decides the productivity of the power. Over time humanity has evolved more and more effective forms of social organization.

7. Coordination

The idea of four people lifting a heavy object together is so simple that there hardly seems to be any theory behind it. But this marks an important step in the evolution of society. By coordinating the efforts of many people, society acquires capacities that are not available

when everyone acts in isolation. When the caveman went out in search of food, if he came across a lion, or a pack of lions, that could be the end of his story. If on the other hand, he found a deer, he could chase it or aim a spear at it, and if it was too fast for him, he had to try his luck elsewhere. But when two or three men went out together, things became different. One could herd the animal in a direction, another could be ready for it, a third could watch their back, and the bigger the group, the stronger and safer they all became, and more effective became the hunt. When the hunter gatherers took to farming and settled down in one place, they built their dwellings close together. There was safety in numbers. Villages formed, and collectively, everyone had the protection that the lone individual lacked earlier.

Insurance is another organization that empowers through coordination of another type. It divides the risk among everyone. In return for a small sum, the power of the collective offers everyone the capacity to tide over a heavy personal loss.

A small contribution from many sources amounting to a massive work is seen in the online encyclopedia Wikipedia. It is the work of over 30 million editors, 3 million of whom have been active at different times, each contributing a miniscule part of the compilation. No one man or woman is capable of doing this task alone, but each small addition or edit has gradually resulted in this repository that contains 30 million articles in 287 languages. The vastness of Wikipedia is not only because of the internet or the wiki application. Technology is such an integral part of every aspect of our life that it is very easy to explain everything as a result of advances in science. But science itself is a product of social evolution. Before the internet or the wiki, a similar project was carried out. In the mid-19th century, Professor James Murray led a literary project that similarly drew from the knowledge, expertise and time of tens of thousands of people. He gave an open call for volunteers to submit all the words they knew in the English language, along with the first known use of the word, its origin, meaning, usage and so on. This project received over six million submissions over a period of 70 years, and became the first edition of the Oxford English Dictionary.

By coordinating us and our efforts, society has generated remarkable power, with which it empowers each one of us.

8. Specialization

Specialization is an improvement on coordination wherein different individuals or subgroups within a group perform different tasks, and collectively accomplish far more than would otherwise have been possible.

An examination of the organization of an army, the ancient Roman army for instance, reveals power of specialization. Instead of entering as a single large mass, the Roman Army broke into many columns during the battle. They had specialized divisions, each with a specific role – foot soldiers, archers, cavalry, javelin throwers, signal bearers. Some soldiers had special skills, such as swimming across rivers to surprise the enemy, much like modern day commandos. In the background, the army was supported by physicians, blacksmiths, cooks, drivers, porters, spies, messengers and men who took care of the animals. No amount of

brute force, courage or determination of the enemy could match the tactical strength of such specialization.

Specialization is an improvement on coordination, and generates greater social power. The term *Specialization* has a rather high sounding connotation, but we see it in practice everywhere. The family has its own specialized divisions – for protecting the members, providing for everyone's physical needs and comforts, housekeeping, taking care of the children, fulfilling the emotional needs of all, instilling discipline and inculcating values in the younger generation. Specialization exists everywhere – education, agriculture, industry, governance – and increases the productivity and efficiency of the organization.

9. Hierarchy

Specialized Roman divisions working in coordination defeated powerful armies. Imagine for a moment what would have happened if everyone in the Roman army had started giving orders during a battle? If a general had disobeyed the king, or a centurion had told his general that he had a better plan, or a soldier decided that he knew best, they would have simply been run over by the enemy. Vertical grouping and delineation of authority and responsibility are required for the smooth functioning of any organization.

Like specialization, hierarchies are seen in all organizations. Colleges have a vice chancellor, different departments with a dean to head each, and lecturers in the various departments. Schools have a principal, various grades and a class teacher for every grade. Political power is differentiated into local, state, national and international levels. Every profession has its hierarchy of expertise – from service technician to production engineer to designer. Authority and responsibility flow through this path so that the whole group functions effectively.

This vertical division is seen even in families, though parental authority is becoming more difficult to exercise! Many Prime Ministers and Presidents, or maybe all of them are criticized by their own countrymen, but no country that does not want to be dissolved into chaos can do without them. Also, how dysfunctional would a country be if each and every decision had to be taken by the President! Hierarchies prevent this by differentiating authority and responsibility vertically into different levels, so the highest authority is assigned matching responsibility, and the smaller issues are handled by others lower down the line. This raises productivity and efficiency of the whole organization. Social capacity combined with social authority gives social power.

10. Integration

Integration magnifies the energy of organization. Within a group, when the various subgroups and their activities are integrated, the overall effectivity is enhanced.

Amartya Sen, the Indian economist and philosopher who won the Nobel Prize for Economics in 1998, said that countries with functioning democracies do not suffer from famine. What is the connection between democracy and the availability of food? Society's power to integrate is seen here. In democracies, the government is answerable to the public. The leaders are more responsive to their voters' needs. Democracies generally have a free

press that reports unbiased news. So the press watches what the government is doing, the people are aware of what their leaders are up to, they can voice their opinion in the press, and the leaders know the entire country, even the world is watching. Lack of transparency will allow one to get away with anything. But this integration of food production and supply, responsible governance and the media has the power to eliminate famine.

In this way, society generates tremendous power through coordination, specialization, hierarchy and integration. This power is made available to every member of society, to make use of and benefit from.

11. Inter-convertibility of Power

Society offers different types of power –food, healthcare, governance, law, education, science, production, trade, commerce, communication, transportation, recreation. All these forms of power are inter-convertible. The Roman Empire converted military might into economic power. Today, a country with a strong economy can use its money power to leverage political power. A farmer, using the power of technology, can produce more crops, and make more money. He can use this money to educate his children. So the power of technology can be converted into food, wealth, education and more. A commercial organization can use better transportation and communication facilities to expand the business. Knowledge can be used to get a job, make money, buy the latest technology, travel, communicate or gain social status. Physical prowess or artistic talent can be used to earn money and fame.

Power of any one type can be transformed into any another.

12. Individuals and Networks

Those who think that social networking began with Orkut and improved with Facebook must be teenage or younger. Humans have always been socially networked. Relationships are hardwired in us. They have helped us survive as a species. They stimulate our mental and emotional development. All human accomplishment can be traced to relating to others constructively.

The World Wide Web shows how powerful interlinking can be. Even search engines rank a website higher if it is connected better to other sites. Great civilizations of the past flourished when they forged trade links with other civilizations. The English language assimilates some 4000 new words from other languages every year. The more it accepts foreign words, the more it grows and is accepted. The stronger the connections between the nodes, the greater the opportunities for success.

All that we use – language, numbers, education, employment, money, clothes, food, stationery, furniture, buildings, roads, gadgets, freedom, law – are products of society. Society offers these vast resources to each one. That Wikipedia is the work of 30 million people is conceivable to us, if not the actual magnitude, but at least in concept. But as we go through the day, do we realize how many people have contributed to making each act of ours possible?

Society offers vast resources to each one. Some go to school, and learn. Some do not. Some do just enough work to make the grade. This is what we all do on a larger scale with ourselves in society. Those who take the slightest effort to make use of these powers are carried on by the movement of progress in society. Those who refuse to participate in society and isolate themselves for whatever reason, fail to benefit from the collective resources. There are some who see what society has to offer, empower themselves, and go on to accomplish, both personally and for the collective. These are the formed individuals who go from being led by society, to leading society instead. They create change; they are at the forefront of social evolution.

"A small portion of society's powers are organized and channelized through systems and made productive. But not all social capacity expresses in action."

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13. Unutilized Potential, Infinite Potential

The earth receives enough solar energy in one hour to meet human needs for a full year. But solar power accounts for less than one tenth of one percent of global energy produced as the world struggles to meet the demand for energy. Most of the sun's rays are unutilized. Similarly, a small portion of society's powers are organized and channelized through systems and made productive. But not all social capacity expresses in action. A large part of our personal and collective lives are unorganized, and our capacities unutilized. Inequality in the distribution of wealth and freedom, poverty, unemployment, illiteracy and scarcity of opportunities alongside unused human potential reveal the inefficiency of present social systems.

Human capital is the ultimate source of all resources, and it is inexhaustible in potential. It grows by giving, much as information grows when shared. Social power is not subject to any inherent limits. It has unlimited scope for development, organization and application. A complete knowledge of the process by which human and social capital develop and are converted into power can be utilized by any individual to rise to the highest level of accomplishment and by any society to become a leader of human social evolution. Such a knowledge is essential for establishing a new human-centered development paradigm.

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The Conscious Individual

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Abstract

This article traces the evolutionary development of human consciousness and its increasingly complex and sophisticated organization as human personality from the instinctive behavior of the animal and the subconscious conformity characteristic of early forms of human civilization through progressive stages of transition from physical to social to mental levels of awareness and from the undifferentiated social consciousness of the member of the tribe to the emergence of independent thinking, creativity and uniqueness, which characterize the Conscious Individual. The individual and the collective evolve in tandem. The collective imparts its acquired capacities to its members. The emerging individual acts as a catalyst to spur further development of the collective. Each stage of the journey is the same in essence and structure at progressively higher levels of consciousness and organization. The higher the level achieved by the collective in terms of quality and complexity, the greater the knowledge and organization demanded of the individual. The article ends by cataloging crucial points at which modern society is mired in outmoded conceptions, superstitious beliefs, pre-modern values and archaic institutions that obstruct humanity's further evolution from problems and limitations to ever-expanding opportunities. The conscious individual is the key to that process.

The conscious individual is the most complex phenomenon yet discovered in the universe. The individual is the vanguard of human evolution. Society has the capacity to create conscious individuals as a finite expression of its infinitely vast and varied social potential. At an earlier stage society fosters development of members who conform to its values, rules and norms and submit subconsciously to domination by the collective.

Mind is the highest instrument of the individual, yet it remains largely ignorant and unconscious both of the world outside and its own true inner being. Human beings becoming mentally conscious is the process of civilization. It is mental awakening. The individual becoming conscious of the existence of eternal, infinite Spirit is spiritual awakening.

Primitive man, though endowed with an intelligence as great as our own, was largely unconscious of the world in Space beyond his immediate community or of existence in Time beyond the recent past and immediate present. Growing awareness in Space and Time is growth of consciousness and spiritual awakening. Animals are guided and protected by unerring subconscious instincts. Humanity has largely lost this subconscious knowledge as civilization advanced, replacing subconscious instinct with conscious knowledge of hunting,

agriculture, language and education. The flawless knowledge of subconscious instinct can be regained at a higher level as mental insight by a transformation of subconscious into conscious processes.

Our growing knowledge of Geography and History is a sign that human beings are becoming increasingly aware in Space and Time. The development of literature, especially poetry, is indicative of our increasing awareness of subtle psychological realities beyond the reach of the senses.

"Humanity progresses in the measure it becomes conscious and organizes that consciousness."

Humanity progresses in the measure it becomes conscious and organizes that consciousness. The individual grows by becoming conscious of relationships with other people and society. Life presents crises that compel us to discover new knowledge, create new institutions and acquire new behaviors. Natural calamities are the outer symptoms of such crises. Death is their physical inward expression. Mental confusion is the stimulus for growing comprehension. Resolving crises enhances our understanding of Life, the world in which we live, society and ourselves. Confusion is mental. Crises are physical and social. Improved understanding enhances our effectivity. Increasing mastery of nature is an expression of growing consciousness. This is the external social progress. A corresponding inner progress drives our individual evolution psychologically and spiritually.

Language was born when man became mentally creative. Education is the process of society consciously passing on to future collective generations the knowledge of the collective acquired through its past experience, making conscious the collective individual. Culture makes people conscious of the value of other people. Existence, history, civilization, culture, law and custom are successive stages in the evolution of society. Humanity, long fascinated by the moon from afar, now walks upon it.

"The world is beset with problems that appear insoluble largely because we are unconscious of the social capacity that already exists and the social potential waiting to be developed."

The conception of the World University Consortium represents humanity's growing global awareness of the power of knowledge. Education began as language and speech. Language represents mental conception expressed verbally. Language and education make possible the transmission of knowledge from one generation to the next, which is essential for humanity to learn from past experiences and avoid the necessity of continuous repetition. Education has the power to abridge the historical experience of time by the application of Mind in the field of organisation. In early times that knowledge was just sufficient to help people survive physically and nomadically. The awareness of social identity and the conscious striving for social progress within groups came later as the innate urge of gregariousness

led human beings to associate with one another for territorial defense and sedentary social life.

Thus, humanity has advanced through progressive stages of a long evolutionary journey individually and collectively. Each stage of this journey is essentially the same in essence and structure at progressively higher levels of consciousness and organization. The higher the level in terms of quality and complexity, the greater the knowledge and organization demanded. With respect to food, this has meant a gradual shift in emphasis from mere quantity to quality and improvement in taste. The evolution from simple sounds to complex harmonies of music is a parallel qualitative movement. Advances in each dimension parallel those in other dimensions. Each aspect advances horizontally to cover wider areas and new fields of expression and vertically to form higher levels of organization. Thus, local level food production has evolved into national and global food systems. Monoculture crop production and limited diets have been replaced by multi-national cuisine. Folk music of local origin has evolved into myriad varieties and unlimited choice generated globally and accessible around the world. This social process is analogous to a tree's progressive growth as roots, trunk, foliage, flowers and fruit. The same process repeats everywhere with infinite variations in expression.

"The New Paradigm can be fuller and richer than anything now imaginable, if only we do not cling to outmoded concepts, vested interests and dead conventions."

No resource or opportunity is ever fully availed of. A large portion of the public is largely unaware of the services offered by governments. People are unaware of the enormous benefits conferred and creative opportunities offered by society and by life. No human being utilizes all his or her knowledge, skills and capacities. No society fully engages all its members. The law of utilization demands that supply be many times larger than the demand. The human brain and its potential remain mostly unused.

We confront a paradox of needs and opportunities. Humanity possesses a huge surplus of productive and technological capacities that remain underutilized, yet we confront perpetual problems of scarcity. The world is beset with problems that appear insoluble largely because we are unconscious of the social capacity that already exists and the social potential waiting to be developed. Like the child in the story, someone should have the courage to state that our insoluble problems are like the emperor's new clothes. A sense of helplessness and hopelessness prevents us from seeing the incredible power society has created for human accomplishment in all fields and for modifying our ideas, attitudes and actions to more fully avail of it. The New Paradigm can be fuller and richer than anything now imaginable, if only we do not cling to outmoded concepts, vested interests and dead conventions.

We condemn other cultures for preventing the development of their women and children, forgetting that women acquired the right to vote in America only in 1922 and in Switzerland only in 1971. We condemn the corruption in developing countries forgetting that most of the prosperity and wealth of Western nations was acquired before laws were introduced to

legalize and sustain the status quo. Forms of discrimination and corruption have changed. In the name of democracy we have 'legalized' plutocracy. We blame the terrorists and fundamentalists of the world for disturbing our peace and security while clinging with equal fervor to our own archaic forms of fundamentalism that 'terrorize' the billions who are excluded. In the name of free markets, we have created a new aristocracy of the speculators. In the name of technological progress, we disenfranchise millions of workers, rob tens of millions of youth of their future and witness soaring levels of inequality. In the name of democracy, we perpetuate a system of global governance over which veto power is exercised by five nations which happened to be the victors in a war fought before 95 percent of the world's population was even born. In the name of security we cling to our nuclear arsenals that can only destroy and never secure anything, proliferate the dissemination of small arms around the world, and insist on expanding a cooperative security system that exponentially enhances the perceived threat to nations that are excluded, rather than building one that is truly inclusive and cooperative. Why have we not solved all these problems and eradicated these inequities? Why do we hesitate and submit? Why did Western nations repeat the folly of earlier generations by consciously dismantling the regulatory protection that ensured seven decades of financial stability? Are we really incapable of understanding the source of our problems and fashioning effective solutions? Or are we too secure and satisfied as respectable members of society to willingly rock the boat?

"In the name of democracy we have 'legalized' plutocracy."

"The need of the hour is for the 'supreme court' of world public opinion to overrule perverse decisions of governments."

We are the species that have emerged from the forest, settled the globe, traveled to edge of the solar system and peered into distant corners of the universe. Who is in charge of human evolution? We have invented money and now let it possess us. We have created markets and now in the name of neo-liberalism let them rule us. We have fashioned an endless succession of technological wonders and now let them replace us. We have developed rule of law and democratic governance to promote freedom and equality and now passively succumb to new forms of tyranny. We reject countless superstitions of earlier generations in favor of new knowledge, yet continue to uphold the right of citizens to own weapons capable of firing 900 rounds a minute over a distance of 1000 yards based on a law established at a time when a flintlock musket could fire a single shot per minute over a distance of less than 100 meters. Is this really what human rights stand for? So long as governments refuse to ban gun-carrying and passively condone the frequent death of innocents, they have no right to criticize terrorists or fundamentalists.

If the US Supreme Court insists on the right of corporations to dominate US elections or the World Court refuses to enforce the provisions of the Nuclear Non-Proliferation Treaty

abolishing all nuclear weapons, or the five permanent members of the UN Security Council refuse to renounce their undemocratic powers, then it is time for the world public opinion to rise up in protest and demand wiser counsel and more truly democratic institutions of governance. The need of the hour is for the 'supreme court' of world public opinion to overrule perverse decisions of governments. Law is a codification of public conscience and when it ceases to reflect the evolution of that consciousness, it must be modified, supplanted or rejected, regardless of the sanctimonious pleadings of vested interests and archaic institutions.

"Thought should rise boldly in the world to offer leadership."

Though slavery was abolished by constitutional amendment in 1865, it persisted for a century until Rosa Parks sparked the onset of the American Civil Rights Movement. Her action qualifies her as a conscious individual. The world has seen many more conscious individuals such as Churchill, who defended liberty in WWII; Franklin D. Roosevelt, who humanized capitalism with the New Deal; and Gorbachev, who worked from inside to demolish the authoritarian fortress. When Club of Rome came out with the slogan "Limits to Growth", the world responded enthusiastically. Now perhaps the same world should respond joyously with the call for "Limitless growth of human well-being". The Gordian knot that helps keep problems alive needs to be cut right now for the emergence of the conscious Individual.

Though unconsciousness continues to rule, it does so by default and cannot claim the right to rule. That right belongs only to consciousness. Society as well as the individual has to become conscious and continue to grow in consciousness. Gorbachev became conscious and the Soviet Union dissolved. It is true that there is no leadership in the world today, but there can be leadership in Thought. The world is facing an evolutionary crisis. It cannot be solved by appeasing the culprits. The French Revolutionaries did not negotiate with the French aristocrats to plead that they renounce their autocratic power. Charles I was not consulted before he was removed from power. Thought should rise boldly in the world to offer leadership. If not a distinguished individual, then at least a group of like-minded international organisations now see some light at the end of the tunnel. This is a process of the world consciously emerging from the folly of its own ignorance and fundamentalism. The individual must become conscious in order for the society to follow. For the conscious individual, there is no problem in the world too difficult to solve. Rather the conscious individual will discover opportunities all around.

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Fictitious Capital and the Elusive Quest in Understanding its Implications: Illusions and Paradoxes*

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Abstract

This paper deals with the interaction between fictitious capital and the neoliberal model of growth and distribution, inspired by the classical economic tradition. Our renewed interest in this literature has a close connection with the recent international crisis in the capitalist economy. However, this discussion takes as its point of departure the fact that standard economic theory teaches that financial capital, in this world of increasing globalization, leads to new investment opportunities which improve levels of growth, employment, income distribution, and equilibrium. Accordingly, it is said that such financial resources expand the welfare of people and countries worldwide. Here we examine some illusions and paradoxes of such a paradigm. We show some theoretical and empirical consequences of this vision, which are quite different and have harmful constraints.

1. Introduction

There is an extensive controversy concerning traditional models of economic equilibrium and new development paradigms based on an interdisciplinary, broader study of economics. When faced with the harmful effects of misguided directives in an economic and global sense, theorists have the obligation not only to explain their causes, but also to offer a practical solution or alternate thinking. After all, consistent levels of poverty, unemployment and low growth are results which were not expected in orthodox economic models of equilibrium and should be dealt with instead of being thrown aside as a politically restricted issue. Moreover, typical third world problems such as unemployment, recession, debt and social turbulence sided with corruption are now appearing in developed countries. There is an ethical dimension in social sciences which must not be forgotten, when presenting new views on solving crises.

It is in this sense that Jacobs points out an arrangement of guidelines destined to comprehend new economic theory.[1] Amongst an extensive list, he points out that all economic theory must be goal-oriented. This means that social sciences should have a practical use,

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that of improving human welfare. They must abandon hope of achieving a fully complete and dynamic model able to explain and control all variances of the environment. Elegance and Originality may shine through abstract theory; but it is necessary, moreover imperative, that such a theory have its adequate means in adapting itself to the reality of material means of existence.

In this paper we focus on the capitalist world after the surge of globalization, following the global 2008 crisis. For us, it is essential that the analysis of such an occurrence be linked with other disciplines, particularly the Social Sciences. After all, Economics places itself in a faulty position when it fails to emphasize human welfare as the ultimate purpose. It is in this vein that Jacobs also emphasizes that new theory "must integrate with all other fields of social life (...) and replace the concept of externalities with a growing awareness of the complex nexus of political, legal, commercial, organizational, technological, social, cultural and psychological factors that determine economic performance and results."

In order to make an interdisciplinary study on the reasons why crises occur (and what can be done), it is important to get to the roots of conventional economic theory and then to point out its differences in empirical reality.

According to neoclassical economics, a commodity's economic value is determined by the amount of labour time spent in its production process. In the classical world, labour-value and competitive market prices rearrange each other in a state of equilibrium in which money plays an intermediate role of neutral effect. Its only effect or defect would be, as a last resort, a perverse influence on price rearrangement through inflation.

Such a theory receives merit for its elegance and simplicity. However, reductionism and critical omissions may be spotted on labour-value theory, which could compromise the entire structure of the model if taken under consideration. In fact, the chosen exchange background is as simple as a barter economy. And if we can find a variety of economies based on barter, medievalism, mercantilism or slavery, the capitalist mode of production makes the approach more complex. Even though in archaic societies, cattle creation sufficed for nourishment, today our complex relations demand the rise of industry, slaughterhouses and distribution channels for socialization of consumption. In the same manner, the specialization of technology demands less hours of labour-time and more of capital use.

Thus on adding a historical component, capitalism offers an essential controversy to the model: the role of Money not as a passive extra, but as the main actor in a system where the quest for Money (and not exchange) reigns. The idiosyncrasy of such affirmation signals the importance of Money and its expanding network on the rearrangements of power structures involved in the capitalist mode of production. In this vein, Weber, Bloch and Braudel have commented notably on the role of Money throughout historical development.[2,3,4] But it was Marx who was the main analyst on the importance of Money, and the harmful effects that could occur should Money be detached from the productive dimension of an economy.[5]

Marx in *Capital* has arrived at a specific conclusion: in capitalism, circulation of Money and production of goods are relatively independent of one another, where Money is the

central axis which reflects the social labour division. It does so not only because average income is determined by social needs, but also because generated income plays a greater part in determining the consumption of produced goods. However, this monetization that allows for the exchange and circulation of commodities at a generalized level is subject to a number of disturbances. These are given by credit, by the creation of money without anchorage on production, and by the "magic formulas" in which invested money may render income, without the intermediate process of merchandise and production necessary for the division of socialized labour.

Since the exchange of commodities is always underlined within the statute of production prices, one manner in which crises could occur would be through Fictitious Capital. Hence, heterodox economic theory of value does not assert its position based on a reductionist model, but as the main generalization of private and social processes at an accurate moment in history (capitalism).

This paper is organized as follows: after this introduction, Section 2 presents an overview of the theory which deals with fictitious capital, its definitions and the quest in understanding its foundations. Section 3 is concerned with implications of fictitious capital, crises, illusions and paradoxes of the liberal approach to economic policy. Section 4 concludes with some aspects of orthodox economics' adventures and misadventures in global development.

2. Fictitious Capital

A clearly observable role of Money is its possibility to separate in time operations of purchase and sale. With the rise of capitalism, money can also be seen as capable of generating surplus value and thus becomes a commodity desirable in itself. In the process of credit overture, lent money has the ability to synchronize the production capability of distinct time periods – present and future. Thus, through a credit document a firm may gain instantly an expectation of future income. It should be noted, however, that such lent credit ratifies only the supposition that a firm could generate such competence through a forthcoming capital accumulation not yet realized within the circulation process.

It should also be considered that such credit carries out periodically a charge of interest. Marx pondered on the idea that interests are not derived from supply and demand forces between lenders and borrowers of credit, but are in fact anticipations from a share of hypothetical surplus value which the capitalist would obtain if he were inclined to follow its enterprise solely on his capital accumulation. This separation between time periods conferred by credit may generate two results: i) the well-succeeded flow of capital throughout its different phases, or ii) crisis.

An especial type of capital that may produce crises is Fictitious Capital. In this vein, heterodox thinkers present alternative views or meanings.[6,7,8,9]

On the one hand, it is possible to see fictitious capital as resources that (in the same manner as credit) possess a double value, an imaginary component without anchorage on production, but may have value after a productive investment. In such matters, one can

consider government bonds as fictitious capital, since they render interest based on debt. Suffice it to say that it makes its owner richer starting from indebtedness.

On the other hand, amongst Mollo's thesis and others, fictitious capital can be seen as a secondary and artificial valorisation of applied capital, without anchorage on production. In this matter, the primary issue of a stock is without doubt linked to the corresponding firm's use-value; significant changes in the use-value (excessive capital accumulation or loss of it) also influence the stock price. Nonetheless, financial market is much more than the primary issuance of a stock. Usually, assets are securitized, issued amongst investment portfolios with derivative credit. Hence their generated income surpasses far beyond a company's use-value, and is instead determined by speculative supply and demand of a number of assets.

This alteration on an enterprise's production process and its assets' profitability arises because the spring of credit allows the creation of endogenous money without correspondence to production. At first, the portrayer of such assets will always become wealthier with new profit, but in the scheme of circulation of commodities there was no productive creation enough to support such creation of wealth. As fictitious capital also presents a higher and faster profitability compared to the production process, the exceeding profits of the latter also tend to be reinvested on the former. The dissociation between prices and value intensifies, whereas the real market of production relatively impoverishes at a steep pace.[10]

The creation of credit has allowed banks to create money endogenously without an anchorage of production and has opened the room to the possibility of crises. Gradually, fictitious capital started to gain immense powers – it has the tendency to create, like a spell, money that becomes more money, richness which prompts more richness in an uncontrolled spiral. In the capitalist system where the quest for easy and fast profit is imperative for survival, it is not surprising that a great amount of money can be reallocated and invested in the financial market leading to an artificial creation of capital through interests. This severely damages the accumulation of capital and the circulation of commodities, whether by great capital outflow, or by the direct and indirect effects that the speculative market has on production. Notwithstanding, in the medium term, the attractiveness of fictitious capital binds a group of powerful followers which will advocate free capital flow. This support is given not only by governmental institutions with high economic expertise and low engagement with history, but also by theoretical economists themselves, who present a sufficient argument for wealth provided by fictitious capital and thereby the maintenance of orthodox economic theory.

In this vein, liberal mentality brought by standard economics is strengthened, the same mentality that always cared for global economic balance between all nations' exchange rates and balance of payments, paying hardly any consideration to the issue of domestic poverty and income concentration.[11] However, the so-called balance reached during the Pax Britannica hegemony was deformed to the free flow of fictitious capital within the globe, as remarked by Chesnais and Teixeira & Ferreira.[12,13]

3. Fictitious Capital and Crises

Credit is a kind of capital with double-value which links production and circulation of

commodities through the anticipation of surplus-value in a manner that its entire amount is invested (though through compression of time) in production. Fictitious Capital is (in our reasoning and also of Foley and Mollo) the artificial and secondary valuation of such credit, subordinate to speculation schemes without anchorage of production and whose main interest resides on the asset itself, not the object portrayed by the asset.

If one were interested in portraying an accurate historical development of credit, it would become clear that such development is heavily linked with political thinking throughout the last few decades. Subsequent to the Second World War, economic models of minimum intervention from the state were questioned, as a reaction to their poor effects: the rise of monopolies, the deprivation of basic and beneficial conditions of life (such as health and education), the shrinkage of small businesses, and so on. This led to the *Welfare State*, a political and socio-economic model aiming at warranting human dignity through state intervention at all costs where assistance was needed.

However, in the 70s orthodox economics began to have its voice strengthened by the election of several conservative political leaders such as Thatcher, Reagan/Bush and Chirac. Such events were linked with the rise in prices brought by the rise of oil prices, amongst other crises in the decade. The result was that the Welfare State was gradually altered and capital gained more power through flexibilisation and globalization. The development of the Washington Consensus was a key event that occurred after that time and continued during the 90s. It aimed for a world with free global capital flows, and emergence of the euro-dollar market, which made it more difficult to trace money back to its origin and to establish full, effective regulation.

As a result, during the last few decades, capital has multiplied sharply. It is estimated that in 2007, generated income in the U.S. financial markets was ten times bigger that the country's GDP. Balance Payments Deficits and private indebtedness have also escalated rapidly in the United States since the beginning of this century.[14] Whereas on the financial side, wealth was uphill: big companies could splurge in swaps, debt securitization, leverage, and derivative credit to prosper without constraints. Hegemonic nations also have worked consistently to provide free capital flow and also to evade themselves from any responsibility.

For a better regard of such massive fictitious capital flow, Teixeira & Ferreira signal that in 2007 the five largest investment banks in the U.S. possessed leveraged loans up to US $4.1 trillion, which amounted to 30% of the U.S. GDP.[15] Around the same period, the appreciation of house value rose 124% from 1997 to 2006 whereas assets derived from said mortgages (such as synthetic collaterized debt obligations and naked CDS) have had their face value estimated at US $35 trillion, that is to say, 14 times the value of the same mortgages which supposedly backed them.[16] By 2009 the global financial market already possessed a face value of US $614,674 trillion, which is the equivalent of the global production of the previous 10 years.[17] Duyn's estimates are similar to Mollo's findings, in which financeirization represented, in face value, almost 10.8 times the global GDP.[18] In Teixeira and Ferreira's work, since some hedge funds promised a 30% annual interest, investing in short run speculative bonds became widespread instead of investing in the productive sector.

However, the free assimilation of Fictitious Capital increases the amount of presumed wealth in the globe, without further possibility of realization in the commodities' circulation field. This internal contradiction can only resolve itself through periodic crises, in which capital needs to destroy itself in order to realize its ultimate devaluation.

"Crises are the only symptom through which capitalism can be reborn and still sustain itself with all its inner contradictions."

The triggering of the crisis is correlated with a rise in interest rates, which conveys a difficulty in accessing credit but renders bigger profits for fictitious capital. When the interest rate rises, the payment of loans previously made are compromised and firms need to sell more assets in order to reimburse money for such loans. As many of the firms usually suffer the same conditions, the vast selling of assets knocks down prices and worsens the situation of the firms which need to sell themselves. This triggers the crisis.

In this vein, it is possible to consider that crises are not caused by exogenous and random shocks due to state carelessness, nor do markets spontaneously reach a state of equilibrium. On the contrary, the relative autonomy between prices and value and between production and circulation – entitled by money and credit – is an intrinsic conflict innate in capitalism and it must solve itself periodically through the occurrence of crises. Crisis, depression and recession are elements as common as money and speculative resource allocation in capitalism. Unfortunately, it results that the fictitious capital scheme works in favour of privatization of gains and socialization of losses. There was not, according to FeD's reasoning, a mere bureaucratic deregulation which ended up in unexpected crisis. Crises are the only symptom through which capitalism can be reborn and still sustain itself with all its inner contradictions.

4. The Orthodox Theory, its Harmful Effects on Growth and Concluding Remarks

Neoliberal theory is strongly based on models of equilibrium proposed by the founding fathers of Economics. Such framework also demands, for its consolidation, the free flow of capital. Believing that capital flexibilisation will converge global economy to a state of equilibrium is the same as assuming that a casual and grotesque fact may imprint on reality the idealized forms of a theory, and that in economics the platonic epistemology applies.

The pseudo-neutrality of equilibrium models (in all its makings) is consubstantiated by formalization born in mathematics. This approach has its origin in positivist reductionism with a normative appeal, for it does not take under consideration the real dilemmas of material means of existence. Amongst them we can cite class conflict, structures of power, and *ad hoc* political choice perpetrated in a global development and poverty reduction context.

A brief historical and political research shows first-hand that greater flexibilisation of capital does not result in a harmonic price rearrangement, but, rather, in a rash and uncontrollable crusade in which capital hunts, at every concealed hideout of the globe and the markets,

which are new ways to improve exponentially its profitability.[19,20] And on this quest, the first things to run over are the jobs, the ideals of social welfare and the environment. From time to time, workers themselves are blamed for poverty, whence they are found guilty for the harm they inflict upon themselves.[21]

> *"Crisis is not the disease: it is the main solution through which capitalism can sustain itself in time, even when carrying within itself the "seeds of its own destruction"."*

In regard to the analyses on crises, conventional thinking still puts the blame on a cause-effect relation external to the logical and formal equilibrium model. Accordingly, it would be sufficient to eliminate the exterior cause (financial deregulation) as a way of healing and preventing any other crises. This assertion is precisely what our study of fictitious capital aims to criticize. Crises do not occur through an exterior cause, they are embodied within the internal contradictions of capitalism itself. Capitalism is a living historical organism anchored in time and the bearer of a number of symptoms and internal conflicts which can only be resolved through crises. Therefore, crisis is not the disease: it is the main solution through which capitalism can sustain itself in time, even when carrying within itself the "seeds of its own destruction". This pattern of thinking is parallel to how Freud and Lacan addressed their patients: if a psychotic patient is in a delirium, delirium itself is not considered the disease.[22,23] It is a crutch the patient – a crystallized and broken subject – uses to address the disease's existence. In the same manner, the study of capitalism should not begin from a supposed state of "normality" and "convergent equilibrium" but, rather, as an analysis of a broken subject, an unstable mechanism, uneven, with strong tendencies to capital concentration. In this vein, the subject lends itself to be understood as "delirium", an unexpected state of affairs which also aims to provide the meaning of its existence. If Freud and Lacan listened to their patients' delirium, so should we listen to the symptoms of the crisis instead of ignoring them and strengthening our weak faith in normality.

Conventional and normative discourse has been used to bury underneath the ground all historical importance of resource reallocation. Nowadays, history has thrown light on the irrationality of our laws in social life, the victory of cheap labour market over humanitarianism, of profit over reduction of misery. Thus, financial capital still expands throughout the globe under the mantle of a "scientifically neutral" orthodox theory. The domain of critical multidisciplinary vision has become restricted, whereas the scope for theoretical realization is much larger. Economic intellect has become much more demanding in the formal realm and much more modest in the realm of social reality. Economic criticism is no more a combative weapon to attack world injustice, but has become a receded trench behind big companies, bankers and lobbyists. Political economy is no longer an instrument of conquest but one of renouncement.

Thereby, even under the occurrence of crises the orthodox speech solidifies itself. And specifically, the idea that capital may grant long term artificially created wealth without

further damage to production, since in the long term all supply and demand would cancel themselves in harmony. It is through this reasoning which acquiesces to fictitious capital that we bring Gramsci's theory: his main idea was that the ruling class did not dominate by force, but by persuasion.[24] Persuasion was indirect: subordinate classes learned to view society through their ruler's eyes, due to an obscure schooling of reality and the foul setting of education in societal organization.

"Fictitious capital has become a nationless being, unruly, insatiable, thriving for infinite expansion with the promise of extraordinary profit."

Due to "pure idealism", an abstract and ideal world is created, reminiscent of a sphere of values autonomous to civilization. This beautiful speech serves well for monopolists and bankers to maintain their power. Science of equilibrium, in this manner, is based on pseudo-neutrality, as a consequence of which science can be utilized either for humanity or for the means of the powerful. We are not nullifying or underappreciating formal science, but are, rather, in the quest of freeing it from its masters that science itself has established.

The alternative line of thought alien to conventional economics, illustrated by Marx, Keynes, Luxemburg, Kalecki and others, helps economic debate regrow after the failure in predicting the great economic disturbance that sprang in 2008.[25,26] This line of thought is crucial in revealing intellectual flaws in the model that has allowed the creation of recent crisis. The heterodox view is also important in narrating internal contradictions of the capitalist economy, suggesting a political agenda that may, under certain limits, contour serious problems in growth, distribution and instability within the economic system.

Without this critical view, it is not possible to establish a comprehensive theoretical overview of new paradigms in economic development. These should ally themselves not to capital flexibilisation and conventional economic narrative but, rather, to a multi-faceted study involving sustainable development. The former does not ignore all true questions about full employment, reduction of income inequality, sustainability of the world ecosystem, of economic social welfare and of true governance that support laws far beyond equality of rights, but has social precedents such as access to quality education and health.

The recent global financial and economic crisis has underscored the fact that despite significant increases in income and other "development" indicators in many parts of the world, in the last 50 years or so, the appropriate paths to development require serious rethinking. The rapid growth of the financial sector in the global economy has made economies fragile. Increases in inequality seem to make societies more unjust and unstable.

In short, Fictitious Capital is a specific kind of "asset" that is grown in the speculative financial market (amongst other origins) and promises to generate extraordinary profit, money that multiplies itself into more money, without any anchorage of production. As such, fictitious capital does not take part *a priori* in the "real world productive process" nor the circulation and realization of commodities; it enriches the pockets of the owners of such assets but does not constitute value which binds and holds together the axis of social relations. It

is also able to align itself to the government, bankers and to powerful businessmen to find a variety of paths to expand around the globe. When its size is significant, the law of value strikes back and capital devalues itself, carrying along firms in bankruptcy, unemployment, recession and so on. And surprisingly, the answer orthodox economics offers is more capital freedom – and its dubious ability to bring back equilibrium.

In spite of the emergence of excessive deregulation, a number of financial innovations, the euro-dollar market and globalization, fictitious capital has nevertheless spread throughout the globe and has become a nationless being, unruly, insatiable, and thriving for infinite expansion with the promise of extraordinary profit. This is thus aligned with free capital mobility, and the relative immobility of workers and natural resources, many times located in poor nations with low political strength and vulnerable to market exploitation. The result is great stress not only on workers' quality of life, but also on great vulnerability to which the environment is exposed.

The recent book by Thomas Piketty signals that inequality is rising, where the author also comments extensively on the harmful effects of capitalism.[27] Taking all this information into consideration, we may suggest some guidelines to formulate new development paradigms, such as a new outlook on taxation, a higher stimulus to productive investment, granting more importance to heterodox thinking, and controlling both the rise of the degree of monopoly and of the financial speculative market.

In times of crises, heterodox thinking is most important for avoiding the traps and pitfalls that a normative equilibrium-based theory can offer. Conventional economic thinking, hopeful for a long lost, harmonic restoration point, may trigger an even worse deepening of the crisis, and may launch environmental and labour agenda into oblivion. As for the constant modelization of capital dynamics without further regard to social and historical reality, we can only say that the margins of reality, once fixated through language, cancel each other. Through the same spirit of contradiction which fictitious capital theory offers, we bring another tale narrated by Italian-naturalized writer Italo Calvino.[28] In his book, the *Invisible Cities*, it is said that the tartar emperor Kublai Khan asked Marco Polo to visit a number of places in his empire and describe, as a model, how those cities were. Their discussion is very elusive of the same discussion we hope to have successfully placed in this paper. It is as follows:

"From now on, I'll describe the cities to you." the Khan had said, "In your journeys you will see if they exist."

But the places visited by Marco Polo were always different from those thought of by the emperor.

"And yet I have constructed in my mind a model city from which all possible cities can be deduced," Kublai said. "It contains everything corresponding to the norm. Since the cities that exist diverge in varying degrees from the norm, I need only foresee the exceptions to the norm and calculate the most probable combinations."

"I have also thought of a model city from which I deduce all the others," Marco answered. "It is a city made only of exceptions, exclusions, incongruities, contradictions. If such a city is the most improbable, by reducing the number of elements, we increase the probability that the city really exists. So I have only to subtract exceptions from my model, and in whatever direction I proceed, I will arrive at one of the cities which, always as an exception, exist. But I cannot force my operation beyond a certain limit: I would achieve cities too probable to be real."

"We need a value-based, trans-disciplinary science of society."

We would like to emphasize that in order to deal with the deleterious destabilizing effects of poorly regulated (or unregulated) financial assets and fictitious capital, it is essential to recast the central focus of economic theory and economic programs. In this vein we need deep integration with other disciplines. After all, we live in an increasingly competitive environment (locally, nationally and globally). In other words, we need a value-based, trans-disciplinary science of society. A science anchored in a solid understanding of institutional configurations, visions and dynamics of society.

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Replacing the Concept of Externalities to Analyze Constraints on Global Economic Growth and Move Toward a New Economic Paradigm

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Abstract

The prevailing economic paradigm has fallen short as a guide to policy making in this era of global economic crises. Numerous efforts are underway to revise it or replace it with a science of society that integrates intellectual disciplines. This paper makes a contribution to those efforts by arguing that the economic concept of externalities is no longer viable and that replacing it with the concept of an inclusive world economy provides new explanatory potential. The concept of externalities divides the world hierarchically, with the internal dominant and the external subordinate. In this way it gives any group of people the scientific legitimacy to conquer, manage and use other peoples and the natural world (the external) instrumentally; by extension, it drives the creation of ever newer technologies to do so. The concept fit the economic growth experiences of the emerging capitalist nations in the centuries prior to the 20th fairly well. Now that we live in a world in which all peoples, all economic activities, and all of the earth are tied together into a global economy that is no longer the case. The concept of an inclusive world economy fits our contemporary experiences better, aligns well with an integrated science approach, and provides new insights into prospects for economic growth.

> *"At the dawn of a new year, the world is in the midst of several epic transitions. Economic growth patterns, the geopolitical landscape, the social contract that binds people together, and our planet's ecosystem are all undergoing radical, simultaneous transformations, generating anxiety and, in many places, turmoil."*[1]

Efforts to construct a new paradigm of understanding and action that makes sense of our world and empowers us to create a better one are being pursued in many quarters. This quest is widely seen as necessary because so much that has happened over the last quarter century has undone our sense of knowing what is going on. And having lost our sense of what is going on, we have lost our ability to effectively solve problems, especially those for which a collective will is required.

The financial crisis of 2008, the Great Recession, and the slow and fitful recovery have shattered our certainty about economic matters. Concerns about rising levels of economic inequality, the emerging resource limits, and record numbers of extreme weather events are

undermining our faith in a future that is more equitable and prosperous than the present. Globalized trade and financial relationships have increased exposure for everyone to many more sources of economic and political shocks.

The responsibility for our troubling circumstances falls heavily on the field of economics. Economists did not predict the financial crisis of 2008, did not warn that the recovery from the Great Recession would proceed very slowly and be incomplete, have largely dismissed concerns about climate change and resources limits, and almost universally hail globalization as an unmitigated advancement for the world's people.

"Human activities, institutional processes, climate dynamics, & ecosystem dynamics are all deeply connected."

The need for rethinking economics is clear. Some of the world's leading economists have affirmed this:

> *"As a world economic crisis developed in 2008 and lasted longer than most economists predicted, it became increasingly clear that beliefs about macroeconomics and macroeconomic policy needed to be thoroughly examined ... we knew that we had entered a brave new world ..."*[2]

The challenge for people working to construct a new paradigm is well defined. The failures of the prevailing economic paradigm mentioned above, and others, tell us what a replacement paradigm must do well. How to go about the work of constructing that new paradigm is less well defined. But, we do have some ideas with which we can begin.

The scope of the work cannot be limited to the field of economics. The effort must draw from many intellectual disciplines and the resulting paradigm must transcend disciplines because the challenges the world is facing transcend disciplines. We now know that human activities, institutional processes, climate dynamics, and ecosystem dynamics are all deeply connected. We also know that ideas about challenges and opportunities, and decisions about which public policies to develop and implement, are deeply connected to our value systems.

The need for this kind of approach was captured with a rhetorical question in the preface to the *World Social Science Report 2010*: "Does a more integrated world require a more integrated social science?" The report went on to examine institutional issues related to taking a more integrated approach in the social sciences.[3] In an article devoted to explicating the effort to construct a new paradigm Garry Jacobs surveys the forces behind the need for a new paradigm and calls for "an integrated science of society based on common principles to replace the fragmented disciplines that prevail today." Those common principles broaden the call for an integrated effort to make it a values driven effort. In particular, Jacobs calls for an effort in which the foremost guiding star is "the right of every human being to peace, security, welfare and well-being."[4]

The Club of Rome has defined the interdisciplinary scope of the work in programmatic terms. Its description for the program, A New Path for World Development, lists five areas of work (environment and resources, globalization, world development, social transformation, and peace and security). These areas of inquiry bring together multiple disciplines. The program description adds that a systems integration effort is part of the program: "As work proceeds on the five clusters, a parallel effort will focus on developing a better conceptual and practical understanding of the world systems within which they are linked and embedded. This helps to understand the linkages between trends, issues and actions and to identify the drivers of global change."*

Two suggestions for particular steps to take are offered in the June 2014 Newsletter of the World Academy of Art and Science. Alexander Likhotal defined the work ahead in this way: "We need to develop a new content-based vocabulary for the changing social context, for the new model of social life." While not directly responding to this idea, Ivo Šlaus suggested a way to begin this work: "A new paradigm maintains and preserves all the valid aspects of the existing paradigm…" These statements suggest that we can begin with a critical examination of the premises, concepts, and causal statements that make up the prevailing economic paradigm, tossing out some, modifying others, and creating new concepts as appropriate.

This article takes the lead from these suggestions and examines a concept that is part of the foundation of the economics of capitalism. That concept is externalities. Economists use the concept of externalities at every level of economic organization, from the firm to an industry to national and regional economies. Here, our focus is on the use of the concept in relation to an economy.

The concept is worth examining because it can be linked to a prediction that is widely embraced in the field of economics: the prediction that the world economy, or at least the majority of nations, can be restored to a high rate of economic growth. Most of the world's economists insist that for any nation, a high rate of growth is only a few sound policy decisions and a little time away. For the world economy it is only a matter of time until nations that adopt the right policies lead the world into an era of increasing prosperity.

We have to question this prediction for three reasons. First, it is one of the most important predictions that economists derive from their economic paradigm. It fuels a widely shared expectation that the world's middle class people will become more prosperous and middle class material prosperity will spread to more of the world's people. It also drives the policy discussions among the world's leaders that give us the policies that will or will not solve the world's vexing problems.

Second, a growing number of economists, environmentalists, physicists, and other experts argue that the potential for economic growth is becoming increasingly limited, perhaps impossible.[5,6,7] Third, the slow and erratic recovery from the Great Recession to date is at least as consistent with a model of the world economy in which economic growth has become permanently constrained as it is with one in which a resurgence of economic growth is assured.

* A New Path for World Development, Program of the Club of Rome. http://www.clubofrome.org/?p=697

1. From Externalities to Limitless Growth

The concept of externalities facilitates optimism about economic growth because it lends scientific credibility to an abiding faith in technological mastery over the human made and natural forces that threaten a nation's welfare. In turn, this faith in technology leads most policy makers to dismiss critical discussions of the future of economic growth as misguided and embrace investment policies in technology that are intended to promote ever more economic growth.

Concepts are seldom either right or wrong. They facilitate or inhibit particular lines of reasoning and particular modes of action within the context of a paradigm. The economics concept of externalities is part of the prevailing paradigm of knowledge about the world. This is a paradigm that fragments and divides research and explanations – which is supposed to be a good thing because disciplinary and conceptual boundaries promote the development of specialized skills and knowledge. But disciplinary and conceptual boundaries don't just focus attention; they also inhibit the discovery and study of processes that transcend those boundaries and bias public policy development in certain directions.

The concept of externalities divides and orders the world in a way that intellectually and morally empowers groups of humans to use technologies to conquer, control, and exploit other peoples and the world of nature. It does this by setting up a hierarchy of relationships across geopolitical, ecological, and geophysical boundaries and by inhibiting development of understandings of processes that transcend those boundaries.

The very word "external" divides the world into the internal and external. In economics, this division connotes a hierarchy of initiative and power that is played out at the boundary that separates an economy (the internal) from everything else (the external). This hierarchical bifurcation is implicit in definitions of externality.

BusinessDictionary.Com defines an externality as "a loss or gain in the welfare of one party resulting from an activity of another party, without there being any compensation for the losing party." About.com puts a slightly different, but relevant, spin on the concept: "An externality is an effect of a purchase or use decision by one set of parties on others who did not have a choice and whose interests were not taken into account."*

As well as dividing the world into two components, these definitions define an asymmetrical relationship in which one party has greater power than the other. One party initiates an action; the other party is a seemingly passive victim (negative externalities) or beneficiary (positive externalities) of the action initiated by the first party.

In the Western mind, passivity is less worthy than activism. Thus, the concept of externalities also carries with it a hierarchy of worthiness. From within an economy (the internal world), the external world is seen as less worthy than the internal world, so it is legitimately subject to being conquered, controlled, manipulated, and consumed.

* See http://www.businessdictionary.com/definition/externalities.html and http://economics.about.com/cs/economicsglossary/g/externality.htm

2. A National Economy and its External Worlds

For economists and the rest of us, the primary economic unit is a nation. Everything economic is seen through the lens of boundaries that define a nation. The boundaries that come to mind immediately are territorial – the boundaries that divide the world's people and territories into separate geopolitical entities and economies. But, a national economy is also defined in terms of geophysical and ecological boundaries. Certain things, notably the things of nature, are not part of the national economy even when they are found within the territorial boundaries of the nation.

3. The External Status of Other Economies

From the perspective of the people of an initiating nation, the boundaries of their nation are the boundaries of an economy. Other people and their economic activities and other territories are external. Because those people and their economic activities are external, economic relationships with them are "foreign" relations entered into for instrumental purposes – to supplement domestic demand, to provide supplemental and low cost labor, to gain access to the resources in their territories, and to use their territories as dumping grounds for waste.

The people of external territories are excluded from discussions within the initiating nation that lead to the pursuit of instrumental access through negotiations or invasion. From the perspective of the people in the initiating nation, it is up to external peoples to protect themselves and their economic activities. If they are unsuccessful at this, it is only evidence that the initiating people are superior and in the right to make use of the external peoples and their economic activities.

It should be noted that people who are not economically active and do not have a culturally legitimate reason for not being economically active are deemed to be external to the national economy. In status, they are also foreigners, even when they live in the same communities as those who are part of the national economy.

4. The External Status of Nature

Technically, humans are part of the natural world, but the people of a nation who are engaged in economic activities effectively define themselves as separate from nature. Nature is a separate and external form of existence.

The things of nature are not forms of wealth; the things of nature have no wealth value until people have done something with those things to give them market value (collected and delivered them; processed them into something else). Nature is also a dumping ground for waste and discarded wealth, even when the part of the natural world that is being used by a people for that purpose is within the national boundaries of the nation of those people. Waste never becomes part of the internal world (the economy) and wealth that is discarded is no longer considered to be wealth, so it is part of the external world.

External peoples are also seen as part of nature. They exist, but they have no wealth value until the people of the initiating nation do something with them – teach them, change their culture, and assimilate them into the nation as various forms of human capital.

5. Externalities and Technological Optimism

The inequalities of power and worthiness in the relationship between an economy and its external world facilitate a belief that the external can and should be used to solve problems encountered by the participants in an economy. In turn, this belief drives a continuing effort to create technologies for doing just that.

In the histories of the affluent capitalist nations, technologies to manipulate and process the external world have been used with considerable success. Extraction and transportation technologies have been used with great success to transform elements of the earth into material wealth. Weapons technologies and social control technologies have been used to gain access to elements of the earth in external lands and to control and use external peoples. This history of successes has imbued Western people with an almost unshakable technological optimism.

It is an easy intellectual move from technological optimism to optimism about economic growth. Whatever problem is holding up the restoration of a high rate of economic growth in the world economy can be fixed with technological advances. This optimism is nicely captured in the words of an academic professional and mother:

> *"When I was pregnant with my second daughter, I had a terrible, apocalyptic dream about a global water crisis. … My second thought was Johns Hopkins will fix this. … But I'm ever hopeful that science will find its way, that as my daughters grow up and have their own kids, they can worry about something else."*[8]

6. Conceptualizing an Alternative View

Seeing the world through the economics concept of externalities is not the only way to see it. Taking guidance from those who advocate an integrated approach to developing a new paradigm suited to the challenges of our times, we can also see the world as an integrated whole that must be studied and understood as a system. We can discard concepts that fragment the world and disconnect the pieces and turn to concepts that include and reconnect the fragments the prevailing paradigm has handed down to us.

The concept employed here is the concept of an inclusive world economy. This is a concept intended to shift analytic practice away from defining all problems and solutions in terms of geopolitical, geophysical, and ecological entities toward defining some problems in terms of processes that transcend those boundaries.

By adopting an inclusive point of view, we weaken lines of reasoning that depend on the concept of externalities, but we also strengthen other lines of reasoning. In particular, we

strengthen lines of reasoning that grow out of efforts to produce understandings of the world by integrating insights from multiple disciplines.

In the case at hand (examining prospects for continuing high rates of economic growth), adopting the concept of an inclusive world economy considerably undermines optimism about economic growth. Possibilities that are visible from the perspective of the limited world of the internal become less salient when they are considered alongside possibilities that become visible when the internal and external are united and system wide processes are given greater attention.

7. From a World Economy with Externalities to an Inclusive World Economy

The concept of externalities belongs to a bygone era. Without selecting a particular year or decade, we can say that the history of capitalism is divided into two periods. The first period (roughly the 16th through the 19th centuries) was a dynamic period in which capitalist nations and their emissaries and armies incorporated more and more of the world's peoples and territories and resources into the expanding system of nation-states and capitalist markets. That period roughly coincided with the activities widely referred to using the terms colonialism and imperialism. For convenience we can call that period the expansion period in the development of the world economy.

The concept of externalities belongs to that expansion period because significant numbers of the world's people and significant amounts of territory and resources had not been incorporated into nation-state jurisdictions; all aspects of life had not been organized around commodity markets, not even in the capitalist nations and not even by the dawn of the 20th century. Dividing the world into hierarchies of the internal and external was a strong fit with a world of capitalist and pre-capitalist societies, limited interactions across geopolitical and societal boundaries, political systems based on royal families and property rights, and limited understandings of the impact of human activities on the environment.

That world disappeared over the course of the 20th century. We are living in the second period of the history of capitalism and the concept of externalities does not fit the circumstances that now prevail. In this period there are no true externalities, no inputs from outside the system, and no outputs and outcomes that are transferred outside the system. There is a continuum from core to periphery in the system – core processes to peripheral processes, core nations to peripheral nations, core markets to peripheral markets, etc. In this world, the sources of inputs and the destinations of outputs and outcomes are politically defined as internal and external, but in reality they are only distributed unevenly among politically defined territories, populations, and ecosystems. No matter the distributional map for inputs, outputs and outcomes, they are internal to the world economy, not external to it. The earth and everything animate and inanimate that resides in, on, and above it constitutes the world economy. The current period can be called the inclusive world economy period.

Describing the contemporary world in this way is not new. In his book, *Something New Under the Sun*, J. R. McNeill writes an environmental history of the world economy that sets

off the 20th century as a new phenomenon because of the unprecedented scale of human activities and the unprecedented impact of those activities on the environment: "…for the most part the ecological peculiarity of the twentieth century is a matter of scale and intensity."[9] In a similar vein, Herman Daly, an economist and advocate for a steady-state economy, notes that "The most important change in recent times has been the enormous growth of one subsystem of the Earth, namely the economy, relative to the total system, the ecosphere … The closer the economy approaches the scale of the whole Earth the more it will have to conform to the physical behavior mode of the Earth."[10]

Describing the world in this way is also well aligned with calls for a new paradigm for understanding society that transcends disciplines. The concept of an inclusive world economy explicitly defines the world economy to consist not just of human activities and interactions among humans, but to also include non-human realms of activity and interactions between human institutions and those other realms of activity. Interactions among these various realms of activity and their consequences for human wellbeing cannot be fully understood without data and insights from the disciplines on all sides of those interactions.

8. Empirical and Interpretive Support for This View

Much can be said in favor of adopting the concept of an inclusive world economy. A growing body of empirical data shows that the peoples of the world are linked together in numerous ways. A popular expression of the "smallness" of the world is the idea of six degrees of separation between any one person and any other person on the planet.

9. Evidence of Global Integration

The high level of integration of the world's economic and geopolitical activities is demonstrated by numerous statistics. For instance:

- In 2010 the daily volume of currencies traded was 220 per cent higher than that in 2001, and 65 per cent of the transactions were cross-border — up from 54 per cent in 1998. Between 1990 and 2011 foreign direct investment increased more than six fold.[11]
- The ratio of world exports of merchandise and commercial services to world GDP in current dollar terms was around 32 per cent in 2012, up from 22 percent in 1990 and close to its peak value of 33 per cent in 2008.[12]
- The movement of people across national boundaries is increasing. In 2013, 232 million people (3.2 per cent of the world's population) were international migrants; in 2000 the number was 175 million and in 1990 it was 154 million.[13]
- International travel is growing. From 2010 to 2013, outbound trips increased by 22 percent. In 2012 arrivals exceeded one billion.[14]
- New technologies are spreading across the world at an accelerating rate.*, [15]

* See Information Technology, Globalization 101, SUNY Levin Institute http://www.globalization101.org/information-technology/

- Since World War II the world has gained numerous international organizations – the International Monetary Fund, the World Bank, the Organization for Economic Cooperation and Development, the Group of Eight, European Union, the World Trade Organization, and others.
- The World Trade Organization reports that regional trade agreements (RTAs) have become increasingly prevalent since the early 1990s. As of June 2014, 379 RTAs were in force.*
- Membership in the United Nations has grown from 51 in 1945 to 193 in 2011.†
- Centralized control of the world economy has been increasing, as shown by a study of the ties among owners of international corporations that found that "transnational corporations form a giant bow-tie structure and that a large portion of control flows to a small tightly-knit core of financial institutions."[16]

The International Monetary Fund (IMF) has produced a number of studies of economic spillovers from one country to another. From one such study: "The size and composition of spillovers across countries is one of the many issues that have resurfaced in the wake of the Great Recession. It is now apparent that events in some countries can have profound spillovers elsewhere which are not limited to their immediate neighbors but can ricochet around the globe."[17]

Other IMF studies report evidence of shortcomings in policy effectiveness when sufficient transnational coordination is missing. This quote from the summary of a study illustrates this point: "In cross-border cases, misaligned incentives and lack of robust mechanisms for resolution and cross-border cooperation left some country authorities with little choice but to take unilateral actions, which contributed to the high fiscal costs of the crisis and resulted in disorderly resolution in some cases."[18]

Increasingly, nature is being pulled from the external world into the world economy through activities that effectively assign monetary value to various aspects of nature. Examples of this process include investments in wildlife preserves, wilderness areas, endangered species protection, wet lands protection and reclamation, and many other forms of nature protection and management. Assigning a price to carbon dioxide to discourage emissions is equivalent to assigning a monetary value to climate stability. Markets in which nature futures are bought and sold are now as much a reality as markets for corn and hog futures.

10. Interpretive Support

In addition to the empirical data, interpretive support for an inclusive world economy is increasingly coming from economists and other experts. Michael Spence, Professor of Economics at NYU's Stern School of Business and Nobel laureate economist, observes that national "policies (or policy shifts) are increasingly affecting other economies and the global

* See World Trade Organization http://www.wto.org/english/tratop_e/region_e/region_e.htm

† See http://www.un.org/en/members/growth.shtml

system, giving rise to what might be called "policy externalities" – that is, consequences that extend outside policymakers' target environment."[19] Javier Solana, president of the ESADE Center for Global Economy and Geopolitics and Distinguished Fellow at the Brookings Institution, concludes that the nations of the world have become so interdependent that "one country's policies, whether pertaining to work, the environment, public health, taxation, or myriad other issues, can have a direct impact on others."[20] Moisés Naím, senior associate in the International Economics Program at the Carnegie Endowment for International Peace, warns that "politicians should do a much better job of explaining to their constituents' that what happens beyond the borders of their country or city has implications for what happens inside their homes."[21]

"The concept of economic growth captures only one component of the development of the inclusive world economy; measuring economic growth has only limited use as an indicator of changes in human wellbeing."

Stefano Bartolini, Associate Professor of Economics, University of Siena, inadvertently makes the case for adopting the concept of an inclusive world economy with an argument that the "growth process generates extensive negative externalities which reduce the capacity of the social and natural environment to furnish free goods." Put another way, externally sourced goods (free goods) are disappearing. As they disappear they must be replaced with produced (not free) goods. Since produced goods have an assigned value, they are counted as wealth.[22]

11. Implications for Evaluating Prospects for Economic Growth

Discarding the concept of externalities and adopting the concept of an inclusive world economy gives us a different set of propositional statements on which to base an evaluation of prospects for economic growth in the current period. In general, this view elevates the importance of defining and observing global processes and discovering and measuring all of the outcomes associated with those processes. It leads us to describe and explain the activities and trends we observe in the world and the likely consequences with reference to system components, system processes, and system development outcomes.

Derivative propositions associated with economic growth include:

- The concept of economic growth captures only one component of the development of the inclusive world economy; measuring economic growth has only limited (and thus error prone) use as an indicator of changes in human wellbeing.
- The products and byproducts of global processes are distributed across the entire world economy through the network or relationships that make up the world economy; the products and byproducts of so-called national economies are only components of global products and byproducts.

- Problems and solutions associated with supply and demand, economic activities and growth, societal outcomes, and conditions in the world of nature are properly defined as aspects of the development of the inclusive world economy
- The global rate of economic growth in the current period is determined by world economy level processes; the global rate is not the sum of national rates; national rates are components of the global rate.
- The global rate of economic growth in the current period constrains national and local rates of growth; national policies affect the distribution of global economic growth much more than they affect the global rate of economic growth – to a great extent, one nation's gain in economic growth is another nation's loss.

This conceptualization transforms the options available to the world's institutions. Unilateral action is less efficacious. The information derived from defining processes as national and local becomes less informative for creating public policies for enhancing and protecting human welfare; public policies based on national and local measures of economic performance can even be counter-productive.

12. Technological Solutions in This View

Technological optimism is much more difficult to maintain with the concept of an inclusive world economy. Technological solutions in this view are responses to problems that are defined with an artificially limited scope; the consequence is that technological solutions are limited solutions and often illusionary solutions.

Particular institutions and organizations of people can use technologies to manipulate the distribution of harmful outcomes and developments to other institutions and organizations of peoples, but they cannot eject them from the inclusive world economy. Nor can they eject consequences of the actions of other institutions and organizations of people from the inclusive world economy. Everything done travels through the network of relationships among institutions, groups, and ecosystems that make up the inclusive world economy; everything done contributes to the historical development of the whole.

Within an inclusive world economy, nothing can be added or taken away through the use of technology. Technological fixes (including resource substitution) only change the symptomatic form of a problem so that it displays in another time and place in the world economy and/or in another form. They only create the illusion in a given place that certain effects of human activity have been safely contained in an external part of the world. They can push some consequences off into the seemingly external future, but, unfortunately, the future quickly becomes the present; its function as an illusory externality dissolves and yesterday's exiled consequences come back into our midst.

13. Prospects for Economic Growth in an Inclusive World Economy

The inclusive world economy view leads to a conclusion that prospects for economic growth are now much more constrained than during the expansion phase of world economy

development. The reason is that the key drivers of economic growth during the expansion phase are disappearing and barriers to economic growth that did not exist during the expansion phase or existed only in limited, manageable forms are now emerging. These new barriers are formidable and resistant to technological fixes.

Economic growth consists of more or less simultaneous increases on the supply and demand sides of the world economy. It takes place when owners of production facilities increase the volumes of goods and services they produce and introduce into the world's markets and businesses and consumers buy those additional goods and services. Increases on the supply and demand sides are usually out of sync, but over the long run both have to increase by close to the same amount.

In the normal course of things, investors and owners of businesses make responsive investments to meet demand that exceeds available supply or make anticipatory investments, betting that demand to match those investments will develop in the near future. On the other side, businesses and consumers increase demand by making additional purchases using current additions to income or by borrowing against anticipated future income growth.

The rate of economic growth is determined by drivers and barriers on the supply and demand sides of the world economy. Economic growth increases when the power of the drivers of economic growth exceeds the power of the barriers. When investors, business owners and consumers perceive that this is the case, they engage in activities that grow the world economy. When they perceive that the barriers outweigh the drivers, they pull back on those activities. In the worst case, existing investments are demobilized and business and consumer incomes are shifted from purchases to various forms of savings.

Perceptions get a lot of attention from economists and investment experts, but perceptions cannot go far afield for very long because objective factors always force corrections to misguided perceptions. Over the longer term, objective factors are the relevant drivers and barriers to economic growth.

14. Drivers and Barriers During the Expansion Period

During the expansion period of capitalism the incorporation into the world economy of lands, resources, and peoples outside the system was a major driver of economic growth. That dynamic process played a key role in generating new market demand. Waves of new consumer demand were created through a process of moving communities of people away from producing goods and services for themselves (no monetary value attached) to buying goods and services in the marketplace. In this process, economic enterprises did not so much expand the volume of goods and services being produced as take over existing home and community based production of goods and services and assign market values to them.

Most visibly, this was facilitated by bringing external peoples under the control of western nations through the imposition of colonial governments and later through the formation of dominant state-client state relationships. As is well documented, bribery, laws that enable

deception and exploitation, intimidation, violence, and war played large parts in this history. Over and over, indigenous peoples were set to work transferring the indigenous resources of their own lands to the agents of imperialist nations in exchange for wages. Cut off from indigenous communities and associated production practices, and with no time left over after performing wage labor to engage in production for themselves, those peoples could only use their wages to buy the things they needed from the same or other agents of the imperialist nations. Thus, the monies paid to indigenous peoples pressed into wage work returned to the imperialist nations as new consumer demand (alongside the new flows of indigenous resource wealth).

The external world of peoples and resources was enormous in the first centuries of the era of expansion. Using their technological advantages in transportation and warfare, the emerging capitalist nations rapidly incorporated indigenous peoples and resources, fueling high rates of economic growth. For example, the slave trade mobilized the labor of millions of Africans in the Americas.

One estimate is that 6.5 million immigrants survived crossing of the Atlantic to the Western Hemisphere between 1492 and 1776. Of those, only 1 million were Europeans; the remaining 5.5 million were enslaved Africans. On average, 80 percent of these enslaved Africans were put to work as field-workers.[23] By the end of the slavery era, almost 12 million Africans were brought to the New World.[24]

Slaves did not become consumers because they were not paid in money. However, the products of their work were sold on capitalist markets by the slave owners. Rapid income growth turned slave owners and ancillary shop keepers and craftsmen into consumers of goods produced in Europe and North America and into suppliers of the raw materials and food items that fueled the growing industrial and commercial centers of Europe and the Americas.

Another example of the role of external peoples and resources in driving economic growth was the economic impact of the flow of gold and silver from the Americas to Europe. According to one source, "Imported gold and, more significantly, silver probably affected the European economy more than all other foreign goods … the bullion bonanza ... increased the profits of merchants selling on a rising market, thus greatly stimulating north European capitalism."[25]

In that era of expansion, insurmountable barriers to economic growth did not exist in practice or in theory. Input shortages, political upheavals, wars, and supply and demand imbalances did produce interruptions to economic growth, but the worst case was (and seemingly would always be) a temporary and localized slowdown in economic growth. Untapped stocks and deposits of resources and populations of potential workers and consumers were just an explorer, a bribe, a military campaign, or a technological advancement away. Restoring the balance between supply and demand was just a policy intervention away. Growing both the supply and demand sides of the world economy was assured.

15. Disappearing Economic Growth Drivers and Emerging Barriers

The efficacy of incorporating external peoples and resources to drive economic growth in the world economy began to diminish in the 20th century. By the end of the century, the Western capitalist world had virtually completed the work of bringing everything and everyone on the planet into the world economy. Today, almost every square inch of the earth's surface and every resource deposit above, below and on the earth are now under the control of a nation or an agreement among some set of nations; almost every person must answer to a national government; and almost every person participates in markets directly or indirectly to obtain a livelihood. The only frontiers (territories not yet fully incorporated) left are parts of the arctic regions, the bottoms of the open seas, and outer space.

The disappearance of a world of people and resources that is external to the world economy disabled the most powerful drivers for supply side and demand side growth. The burden of generating economic growth now falls almost completely onto governmental policy interventions that boost consumer incomes and facilitate technological innovations that expand access to resources and reduce resource use inefficiencies.

On the demand side of the world economy very few communities of people who live mainly by producing goods and services for themselves still exist, and those that do are very small. Today, new consumers are added almost exclusively through births.

This is an incremental process of consumer demand growth that is not keeping pace with the world's growing production capacity because most births are in lower income families with very little purchasing power. In most cases, each new addition to the world's population adds only a minimal level of consumer demand.

On the supply side, the growth of the nation-state system to encompass the entire earth has mobilized enormous resources for developing and implementing production technologies that displace human labor. For much of the expansion era, a large part of the energy used in producing goods and services came from humans, so increasing production required increasing the number of people at work. This was the supply side problem that slavery addressed. As slavery ended, wage workers provided more and more of the human energy used in production processes. Wage workers became consumers, so as production expanded consumption could expand as well.

Today, every national government and many subnational governments use tax money to subsidize and drive the development of new production technologies. Those efforts have increased the pace at which production technologies that displace human labor are being developed and implemented. These advances are rapidly destroying the role of supply side growth in driving demand side growth. They ramp up the production of goods and services much more than they ramp up consumer incomes.

Alongside the disabling of classic economic growth drivers, barriers to economic growth have emerged that are neither temporary nor localized; they are global in scope and epochal. And, they are formidable and becoming more resistant to policy interventions and less amenable to technological fixes with each passing year.

These barriers are the finiteness of the earth, entropic constraints, and insecure investment environments.

16. Finiteness of the Earth

The primary impact of the finiteness of the earth is on the supply side of economic growth. We have now reached a point in time when the list of resources essential to production that might become temporarily or permanently scarce, and thus much more expensive to exploit, is getting quite long. Among these resources are fossil fuels, fresh water, fish stocks, arable land, and water, land, and air masses that can safely absorb and disperse the byproducts and waste of global affluence.

We may succeed in developing alternatives to resources currently in use as they become more scarce, but transitions from currently used resources to alternatives cannot drive economic growth to the same extent that exploiting newly acquired, easily exploited resources can. One reason is that input substitution too often requires a wide-ranging overhaul of industries, technical skills, legal environments, and consumer behaviors. This absorbs much of the value of the substitute resource.

We are facing this reality now, with the efforts to replace fossil fuel vehicles with vehicles powered by electricity or hydrogen. Not only does this effort require oil and gas companies to write off the value of oil and gas fields and associated equipment, it requires training a new generation of automotive technicians, dismantling pipelines and storage tanks in a way that protects the environment, massive investments in whole new industries, and changes in the way people operate and maintain their cars, trucks and other vehicles.

17. Entropic Constraints

Every form of wealth degrades as time passes. Some forms, like perishable food, degrade quickly, others are more durable. The scientific term that captures the notion that the degradation of the world's wealth is unstoppable is entropy. A nice overview of this issue was written by John Scales Avery in 2012.[26]

Entropy constrains economic growth through its impact on decisions about which goods and services to produce and on how we use the wealth we create. The items that make up a stock of wealth must be repaired or replaced at the rate at which they degrade. Otherwise, the stock of existing wealth diminishes. Thus, to maintain the public and private stocks of wealth at current levels, a portion of the economic activities that make up an economy must be devoted to repairing and replacing items of wealth that are being lost to degradation and destruction. For the world economy, repair and replacement costs have become a substantial and growing barrier to economic growth.

This barrier has emerged because the stock of global wealth has been growing for several hundred years and increased enormously in the last century. Most visible to us is the accumulation of manufactured wealth – hundreds of millions of automobiles, thousands of skyscrapers, hundreds of thousands of production and service facilities, endless miles of

roads and bridges, hundreds of millions of homes and household appliances, billions of personal items, etc.

This stock of wealth is enormous, so the volume of economic activities that must be devoted to offsetting degradation and destruction is very large. More importantly, that volume is growing rapidly because the global stock of wealth is aging and because much of that stock of wealth was not designed to endure the extreme weather events that are now upon us or to endure the destructiveness of riots and wars.

Human creations are not the only kind of wealth that we must devote our income to maintaining, and possibly not the most costly to us. With each passing year, we are learning that the earth's atmosphere, oceans, ecosystems, and species are increasingly a part of the stock of global wealth that must be maintained. Human activity has become such an enormous source of "damage" to these parts of the earth system that we must now count these things as wealth and invest income in maintaining them. Even the world's most formidable mountain (Everest) now has maintenance costs because it has become an economic asset that is used and damaged by human activity.

Maintaining this enormous stock of human made and natural wealth consumes a very large and growing share of the world's annual production of goods and services. The negative impact on economic growth is clear. The larger the proportion of total economic activity that must be devoted to maintaining current levels of wealth, the smaller the proportion that can be devoted to providing each new member of the global population with an average share of wealth.

On the supply side, investments in developing resource substitutes, exploring for new resource deposits, and constructing new production facilities are constrained. On the demand side, businesses and consumers are increasingly forced to devote more and more income to repairing and replacing the cars, computers, washing machines and other existing goods rather than to purchases that actually add to their wealth and wellbeing.

18. Investor Insecurity

The world economy's basket of acceptable production investment opportunities is shrinking. In the first place, the slowing rates of demand side and supply side growth discussed above are reducing investment opportunities. In addition, the remaining investment opportunities are becoming more and more risky. Also, rising inequalities of income and wealth are increasing the amounts of money and other liquid assets being held by investors that must be matched with suitable investment opportunities.

In recent decades, risk levels for production investments have been rising and investors have been moving their investment funds into non-production investment areas in the search for good returns and reasonable risk (government securities, real estate speculation, intangible assets, even cash).* The cause of this shift is an accelerating breakdown of the

* "Right now, for instance, regulators across the globe are warning about inflated prices for potentially risky assets ranging from U.S. junk bonds to the debt of economically shaky countries such as Spain and Greece to real estate in China and London." See Lisa Abramowicz, "Watching for Bubbles," *Bloomberg* http://www.bloomberg.com/quicktake/watching-bubbles/

effectiveness of the predictive tools and strategies used by investors to estimate levels of risk and return in the production investment arena. This breakdown can be traced to four key factors: a) global climate change, b) the intensification of competition among producers of goods and services that has come with globalization, c) the increasing rates of innovation on both the supply and demand sides of the world economy, d) the continuing failure of governments to create conditions for economic growth.

"Economic growth can and will continue to take place, but it will not follow the pattern established in the 20th century."

19. Conclusion: A Slowing Rate of Economic Growth and Unprecedented Challenges to the Human Imagination

The concept of an inclusive world economy does not completely fit the world economy as it is today. The incorporation of everything and everyone into a single, all-inclusive economic system is not fully complete. This process is, however, sufficiently complete to warrant abandoning the concept of externalities and adopting the inclusive world economy concept as the better tool for analyzing the dynamics of change in the world today.

Remnants of the expansion phase of the development of the world economy are still with us, so the constraints on economic growth are not total. Economic growth can and will continue to take place, but it will not follow the pattern established in the 20th century. Over the long term, the world's economic growth rate will decline. It is even likely that the world economy will enter more and more prolonged periods of economic contraction, periods in which the production of wealth does not keep up with population growth and the degradation of existing wealth, periods when the global stock of real wealth actually declines.

No one wants this conclusion about the future of economic growth. It is very difficult for any of us to imagine a world in which peace prevails, in which efforts to move more and more people out of poverty can succeed, and in which life in the middle class can be truly satisfying without a high rate of economic growth. It is much easier to imagine that a world without sustained and substantial economic growth is a world that is doomed to a fate of rising poverty, inequality, and conflict.

We imagine this fate is the only possibility because we are informed by an economic paradigm in which economic growth is a necessity for human wellbeing. That paradigm constrains our vision. It does not allow us to imagine an acceptable world in which economic growth is slowing toward zero because it assures us that the link between economic growth and increasing human wellbeing is unbreakable. Yet, we have very likely entered such a period of history, so we must be able to imagine that humans can still thrive. We must develop imaginations that can invent the institutions for a world without economic growth. Trading in the concept of externalities for the concept of an inclusive world economy can help us do that.

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European Transition into a Socio-ecological Market Economy

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Abstract

The European Union has introduced the Europe 2020 Strategy and Horizon 2020, which contain several elements for a transition into a Socio-ecological Market Economy. But their implementations are mainly hampered by the unduly large financial sector and the political striving for high economic growth. A turn into low growth equilibrium needs a reduction of total capital inputs, which are composed of financial, man-made and natural capital. Whereas the reduction of financial capital needs a strong, but actually lacking political will, the reduction of man-made and natural capital depends on a real capital saving innovation system, which should partly be financed by a transfer of financial capital to the real productive sector. Beyond a strong reduction of financial capital and depending on existing ecological, social and economic problems, the innovation system should save man-made and natural capital accordingly. In all cases these innovations need higher qualification by means of a human-centered educational system. Higher educational investments, i.e. augmented "human capital," are decisive for a transition into a Socio-ecological Market Economy for two reasons: First, higher qualification will augment the wage-profit relation and second, capital saving innovations will reduce productive capital inputs without reducing the profit rate on the reduced real capital stock. Increasing "human capital" intensity will accelerate the transition into low growth equilibrium with a higher consumption-investment relation, which creates more domestic final demand and needs lower export surpluses. Starting from existing high productive and financial capital intensity, during the transition saving surpluses in Europe will decline only step by step; they should not be allocated in financial markets, but for a considerably more human-centered education and real investments in Europe and the Third World.

1. Economic Crisis and Socio-ecological Market Economy

The European economic crisis has suddenly interrupted a fairly good economic development, wiped out nearly all economic progresses made since the last decade and caused a setback of several advances towards a Socio-ecological Market Economy (SEME).[1] After the introduction of the Currency Union, Europe was firmly determined to establish a socially and ecologically sustainable economy and implemented – although the Lisbon Strategy was rather deceiving – a variety of corresponding measures, which made it the global forerunner in developing an SEME.[2] Following the crisis, the European Union introduced the Europe 2020 Strategy and its collateral programme Horizon 2020 for re-activating and strengthening

initiatives for longer term sustainability. In different respects Europe 2020 is regarded as a strategy to overcome simultaneously the economic crisis and accelerate Europe's transition into an SEME, which would also assure global economic competitiveness. By this, the European Union intends programmatically to create a "new economy", by which it can and should regain and enlarge its role as a global player.[3] But the European approach to a transition refers only marginally to the importance of higher "human capital" and contains no coherent concepts for reducing the financial sector and a strategy for a turn into low-growth equilibrium, which are constitutive for an SEME.

In contrast, we will argue that European economic welfare can be assured by low economic growth, if prevailing high total capital intensity will be reduced in favour of considerably higher "human capital" investments, by which qualification and innovation can assure a smaller financial sector and a real capital saving productive system. It will be shown that the creation of high "human capital" and not ever augmenting financial and real capital accumulation can bring about economic, social and ecological sustainability. During the transition high saving surpluses should not be invested in the financial sector and not transferred as financial aids to economically less developed European countries, but for education and real productive investments in those countries and partly for real productive investments in emerging countries instead of further strengthening prevailing financial globalization.

2. Capital Intensity and Low Economic Growth

The European economic policy intends to augment economic growth by higher labour productivity derived from higher total capital intensity.[4] It follows the classical idea that more capital equipment for a working place augments labour productivity by this economic welfare. It does only marginally consider that economic welfare can be increased by higher "human capital" investments and less financial and real capital investments. In a purely economic perspective, it neglects the profit squeezing effect of permanently augmenting capital intensity. The visible consequence of this profit squeeze in the real sector is the growth of financial investments, which in turn accelerates crowding-out of real productive investments. Low productive investments augment unemployment and public deficits, which can only be marginally reduced by export surpluses. The largely unproductive financial investments are a burden for the productive sector, because "financialisation" augments the money value of real capital. Consequently, the real sector reduces wages to compensate for the increasing cost of financial and real capital. Growing total capital intensity in Europe and the demanded returns on real and financial capital reduce wages and domestic final demand. A further reduction of wages would aggravate European economic development. The remedies are not lower wages, smaller public budgets and higher export surpluses, but the reduction of total cost for capital inputs.

From a macroeconomic perspective, total capital inputs are the sum of financial capital, man-made capital and natural capital and real productive capital is the sum of man-made and natural capital. Therefore, a reduction of financial capital would contribute to lower capital intensity and reducing man-made and natural capital would give room to higher wages and final demand without reducing the profit rate on the reduced stock of productive capital.

Consequently, a lower stock of productive capital would increase economic sustainability, which is mainly defined by a sufficient profit rate. It also augments social sustainability to the extent that lower real capital inputs increase employment. And finally, lower natural capital inputs increase ecological sustainability. Reducing total capital inputs instead of reducing wages augments simultaneously economic, social and ecological sustainability.

A European transition into an SEME is confronted with the growing dominance of the financial sector. European high saving surpluses are a consequence of the uneven income distribution. Together with up-stream savings they have created a speculative financial system with high interest rates, which increases the profit squeeze in the productive sector. On a first view, low real economic growth in Europe seems to be in favour of the above sketched sustainability, because it reduces the consumption of man-made and natural capital. But European economic growth is far from the equilibrium, visible in high unemployment and the increase of purely financial wealth. Saving surpluses and easy money from central banks accelerated financial wealth inflation with minor productive effects in the past. Total economic wealth in Europe consists mainly of high financial wealth and low consumption. Under these conditions, not the real, but the nominal value of the productive system increases and reduces wages and employment. As a result the European economy has a low "consumption productivity of total capital inputs" as well as a declining employment efficiency of the productive system. Evidently, the remedies are not less consumption and employment, but a smaller financial sector and a reduction of productive capital inputs. As productive capital inputs determine real economic growth, a reduction of man-made and natural capital paves the way to low growth equilibrium.

The transition into an SEME is bound to a step by step reduction of real investments and a higher consumption-investment relation. During a transition the volume of total output declines and the relative volume of consumption will increase if the consumption-investment relation increases more than the output-investment relation. In any case, the higher consumption-investment relation needs a change of income distribution towards wages, which depends on higher employment and/or higher wages per hour. If labour is remunerated according to its productivity and the latter does not primarily depend on the reduced capital intensity, but on higher qualification, wages will augment without a parallel increase in capital inputs. This implies that labour productivity will decline because the volume of output will be reduced by lower capital investments. And capital productivity can – depending on the output-investment relation – be increased by a politically targeted capital saving innovation system. Higher qualification augments the volume of work executed per hour and reduces labour productivity for a given volume of output. And capital saving innovation augments capital productivity for a given physical volume of output. This is in conformity with the result that a transition into an SEME is bound to a higher growth rate of capital productivity than labour productivity.[5]

The Europe 2020 Strategy has introduced the flagships Digital Agenda, Resource Efficient Europe and several microeconomic capital saving initiatives, but has not questioned the macroeconomic strategy to augment economic growth by higher capital intensity. By this, capital saving effects are overruled by striving for higher financial and real capital accu-

mulation and the role of "human capital" is down-sized to facilitate more real investments for higher economic growth. Moreover, the Europe 2020 Strategy has not strengthened the regional dimension beyond existing Structural and Cohesion Funds. Economic disparities between Member States have increased since the financial crisis and reducing disparities cannot be expected from high growth in the European region. The region needs not only more productive investments in economically less developed Member States, but above all higher qualification and innovation. Purely financial help packages can – as experiences in the last decade demonstrate – neither have significant employment effects, nor create a more homogeneous European economy.

3. Capital Accumulation, Innovation and Qualification

The key for a transition into an SEME is the augmentation of total capital productivity by means of higher "human capital" inputs. Although a vigorous reduction of financial capital is necessary for a transition we concentrate here on the reduction of productive capital. European economic policy has to refuse the prevailing striving for permanent high economic growth by higher labour productivity via higher real capital intensity. But one has to be clear that this would be a refutation of the classical concept on which traditional economic welfare is based. Historically, high economic welfare was gained by the growth of capital stock, which augmented employment, wages and consumption in the past. But we are at a turning point, because real investment opportunities in Europe have been shrinking, social problems have been increasing and ecological limits have started appearing. Certainly, the "end of the world is not at hand" (Solow), but already for a long time, ever-augmenting real capital accumulation has run into difficulties. After longer waves of increasing capital intensities it had to be reduced by "creative destructions" of new technologies and innovations which emerged as a precondition for new economic growth. It was mainly the economic profit squeeze, formerly without reference to ecology, which needed temporary reductions of financial and/or real capital.[6] Approximately the same destructions were needed in short run business cycles, even during the Great Crash in the past and in the recent economic crisis. If we look further, high economic growth after great wars has its roots in disastrous destructions of economic resources. To prevent over-accumulation following crises, which is inherent in our "economic machine" (Keynes), economic growth has to be tamed. This is only possible through a capital saving technological progress, i.e. a transition into lower capital intensity.

The European growth policy does not consider the positive consequences of a capital saving technical progress. On the contrary, it follows neoclassical growth theories, which support capital augmenting accumulation.[7] They neglect longer term diminishing returns, which results in a falling profit rate in every type of growth model.[8] Then, all advantages of a large real capital stock cannot be earned by consumers. The lack of final demand can only temporarily be compensated by higher public demand and export surpluses. Finally, it is the decline of profitability of over-accumulated real capital, which needs capital saving innovations for a given level of output and increased labour inputs as compensation. In Keynesian growth models the supposed constancy of capital productivity (Harrod) can only be assured by higher labour inputs. Precisely these additional labour inputs prevent a decline of capital productivity and reduce the capital-labour relation. The same follows in neoclassical theories

where permanently augmenting capital intensity converges on a labour augmenting technical progress.[9] Counterbalancing the decline of returns on capital cannot be derived from price substitution, but needs a politically targeted innovation system.

But innovation has become a wizzleword, becoming increasingly irrespective of its positive or negative societal consequences. For example, "financial innovations" have considerably contributed to the recent financial crisis and "planned obsolescence" is not to the advantage of consumers. To enhance the transition of the European economy into an SEME we have to target innovations towards higher capital productivity and not towards higher labour productivity. Increasing capital productivity cannot be accomplished by higher capital intensity, but only by higher labour intensity.[10] As innovation always springs from human brains, more labour – both in terms of hours and qualification – is needed so that these innovations are labour augmenting. In an innovation-oriented economy labour plays generally an increasingly significant role.[11] If human resources are largely targeted to prevent a decline of capital productivity, real production becomes a new character and traditional capital investments lose importance, i.e. real capital intensity declines. This "scientification" of the productive system is in accordance with trends typical of dematerialization and the service economy at large and has distributional consequences.[12] If labour and capital are remunerated according to their contribution to total output, the wage-profit relation has to increase. During the transition into an SEME the wage quota and final demand increase and economic growth reduces without a decline in the profit rate on the reduced real capital stock. And "scientification" assures international competitiveness, because prices of traded commodities can be stabilized by lower capital costs instead of lower labour costs.

The most convenient way to augment real capital productivity is to slow down capital accumulation, which augments marginal and average capital productivity and at the same time reduces the rate of real macroeconomic growth. But whatever the strategy for low growth is, there is the question of total volume of work. Traditionally, it is measured in hours without reference to quality of work. In face of the enormous educational investments for decades, the executed volume of work has to be measured both in time and quality and rough estimations show that qualified work furnishes about double the volume of simple work.[13] Looking at the formal economic sector, – without referring to growing informal and unpaid work – public and private qualification may have augmented the volume of work considerably and the relation between labour and capital may have risen. As higher qualification is mainly mirrored in salary schemes which seem to have risen, the volume of wages per hour has also risen, but much less than the nominal value of real capital equipment. The increase in nominal capital intensity is the result of growth of the financial sector. In physical terms, the relation between labour and real capital may have risen by qualification. Although employment in hours has grown less than total output, the increase in the volume of work may have surpassed the increase in physical productive capital inputs.

Europe 2020 and Horizon 2020 stress verbally the importance of higher qualification both for getting a job as well as for more R&D and innovation. In Horizon 2020 Excellent Science should augment global scientific competitiveness; Industrial Leadership, industrial competitiveness and Social Challenges should alleviate from burning societal problems, which

can be considered as market failures. All three mutually reinforcing priorities have some capital saving and labour augmenting effects. But estimations for the year 2030 show that the combined effects of the three priorities augment economic growth with low employment efficiency.[14] Horizon 2020 intends still – although with little success – to augment economic growth and create little more employment. Therefore, Horizon 2020 in its present configuration contributes only marginally to the transition into an SEME.

4. A New Regime of Accumulation and Income Distribution

The European economic policy outlined in the Europe 2020 Strategy aims at a "new economy" by modifying reluctantly the content of economic growth, but it does not question growth itself. By discussing capital saving innovation and labour augmenting qualification we found that Horizon 2020 has some potential for turning into a low growth path. But even these moderate contributions are neutralized by the macroeconomic concept of Europe 2020, which intends definitely to augment economic growth by higher real capital inputs. The real capital intense supply has – under conditions of restricted public demand – to be absorbed by a large financial sector with high debts so that "financialisation" has to assure economic growth on the demand side. As the supply-demand relation has lost contact with real production, we have to abandon the neoclassical circular relation between capital and labour in favour of investigating primarily productive capital accumulation. This corresponds to post-Keynesian growth models, which refuse production functions, the most curious of which are Cobb-Douglas versions. Capital and labour have to be considered separately, with capital split up into man-made and natural capital, which comes close to Schumpeter`s view that only labour and nature are productive.[15] Then, man-made capital is just an intermediary transformational instrument between nature and final consumption. Keynes, who did not directly refer to nature, went further and had sympathy for the labour value theory, which considers only labour as productive.[16] In face of the strongly increasing importance of innovation and qualification which are intimately connected with human activities and their creativity, economic welfare increasingly depends on labour. Certainly, both man-made and natural capital play an important, however declining, role in an SEME, which is visible in a step by step reduction of real capital inputs. Consequently, education and "human capital" become the main driver for a socio-ecological transition.

Therefore, the transition into an SEME needs a new regime of capital accumulation, income distribution and economic growth. The new regime follows from "scientification" of real production. Already in the Lisbon Strategy, knowledge-based development had priority and is now partly reinforced by Europe 2020 and Horizon 2020. At the microeconomic level the European economic policy goes programmatically in the right direction. The reluctant steps towards an SEME are mainly neutralized by the macroeconomic policy for higher economic growth instead of structural changes, which ultimately concerns the composition of the capital stock and the resulting income distribution. In fact, prevailing distribution of productive and financial capital and the demanded rates of profits and money interest absorb too much of the total income. Labour is – enhanced by weak bargaining powers – not remunerated anymore according to its continuously increasing contribution to overall real production. To ensure a transition, income distribution has to be changed towards wages; a

higher consumption-investment relation and the new low growth equilibrium would reduce the volume, but not the rate of profits.

"Transition into an SEME needs a conscious societal evolution and full development of the human potentials for active learning and knowledge transfer."

The new regime is bound to have higher investments in education, research and innovation, i.e. in "human capital". European educational policies intend to increase spending in the public and private sectors, but actually in most countries such investments are reduced in favour of financial investments. Moreover, reflections of the traditional concepts of qualification are urgent and this may lead to a new paradigm of human-centered education.[17] Transition into an SEME needs a conscious societal evolution and full development of the human potentials for active learning and knowledge transfer. It is not through primarily capital equipment, but through educational investment in people at all levels of the economy that societal welfare can be derived. Innovation in material and immaterial equipment produced by highly qualified workers is just a means for higher welfare and the final target should be human development. It is the enhancement of people themselves and their personalities – on which depends a peaceful human-centered development – which can bring about economic, social and ecological sustainability.

5. Real Capital Globalization instead of Financial Capital Globalization

The prevailing European economic crisis, which may continue for at least a decade, is a setback in its role as a global player, comparable to the setback of Japan since the 1990s.[18] To play an important role in the coming multi-polar global economy, Europe's chance is a transition into an SEME. Such a transition would reduce imports of natural resources and energy from the Third World and augment employment by higher qualification and innovation without the need for high economic growth. During the transition into a new regime of accumulation and distribution, saving surpluses, including up-stream savings, have to be transferred to economically less developed European countries for education, innovation and real investments and not as financial aids. Remaining saving surpluses should be transferred to the Third World for education, innovation and real investments and not as financial investments. Europe has to develop its own financial markets to join the coming multi-polar currency system and to globalize its productive activities.[19] At the global level the European transition into an SEME is now hampered by a belief in welfare that augments free trade and free financial globalization. In contrast, a more harmonized global development can be expected from more equally distributed "human capital" and real production globalization. Already in times of mono-polar globalization real foreign investments represented the solid background. The dominant global role of Great Britain until the First World War was mainly based on its real investments in the Commonwealth from which it derived its financial strength.[20] The change of global leadership to the USA also went by large foreign real

investments and later by non-material investments, including the US microeconomic model in real production. Certainly, the global dominance of the Dollar stabilizes the global role of the US economy, which is underpinned by increasing outsourcings and vast international financial investments. In a multi-polar world, real production globalization becomes more important and trade can diminish accordingly.

> *"Europe's mid-term chance to become an important global player does not lie in a competition with economies with high capital intensity and high economic growth, but in a vigorous transition into an SEME (Socio-ecological Market Economy)."*

But Europe is proud to be the biggest trading block in the world and adheres still to the old idea that more trade is always advantageous for all and reduces global inequalities.[21] In face of the global similarities of production technologies, it is the globalization of production which augments Europe's role as a global player. During the European transition into an SEME, more sustainable technologies can be exported and less natural resources imported. By this, increasing disequilibria in international trade, which are an important source of conflicts, can be reduced.[22] The chances for developing countries to implement their own socio-ecological development strategy would increase without being disturbed by prevailing financial globalization. Europe's mid-term chance to become an important global player does not lie in a competition with economies with high capital intensity and high economic growth, but in a vigorous transition into an SEME.

6. Summary and Outlook

Summing up the basic arguments for a transition into an SEME we find that, historically, high total capital intensity has not assured economic, social and ecological sustainability. Further augmenting material capital intensity will have a squeezing effect on the real sector's profit rate; it will not create high employment. It will finally augment environmental deterioration. In contrast, lower material capital intensity by way of less man-made and natural capital inputs will stabilize the profit rate, create more employment and reduce consumption of natural resources. A transition cannot rely on price substitution, but needs real capital saving innovations, which are bound to have higher "human capital" inputs furnished by an enlarged human-centered educational system. Higher qualification enables capital saving innovations and changes real production to a higher labour intensity. The main obstacle for a transition is the undue large financial sector, resulting from the uneven income distribution and the speculative behavior of financial markets. High and mainly unproductive financial capital is a burden on real production and canalizing it to the educational system would be in favour of capital saving innovations .The new regimes of accumulation and income distribution result step by step in a low growth path with higher employment and less man-made and natural capital without reducing the profit rate in the real sector. The core of a transition

strategy is more qualification and innovation by creating higher "human capital" instead of financial and productive capital.

Looking at the feasibility of such a strategy for socio-ecological transition, one has to take into account prevailing vested interests. The over-boarding influence of the financial sector creates more and more fictional money value and has little interest to reduce this burden on the real sector. As the latter has the possibility to compensate for this burden by lowering wages, there is an implicit agreement between both sectors. In face of high unemployment and worsened social conditions, labour has low influence to change capital accumulation and income distribution. But historical experiences show clearly that ever-augmenting capital accumulation produces a heavy crisis during which capital is devaluated and partly destroyed.[23] A recent comprehensive analysis of longer term accumulation dynamics forecasts that there would be an increasing and more unequal accumulation of financial and productive capital and that only heavy taxes can prevent large economic and social crisis.[24] Both treatments suspect, like many other investigations, that a far-reaching crisis might be the consequence of high total capital accumulation. Reducing economic growth by augmenting "human capital" will contribute to a socio-ecological transition and thereby to a human-centered economic development.

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New Paradigm in the Service Economy
The Search of Economics for Scientific Credibility:
In between Hard and Soft Sciences

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Abstract

After the very long cycle (about 10,000 years) of societal and economic development based on agriculture, followed by a short cycle in which the industrial revolution became the prime mover (for less than 3 centuries), the world has entered a phase marked by the growing and determining importance of service activities (both monetarized and non-monetarized) . This transition is a key to understanding many of the current 'crises' confronting humanity and to benefitting from and promoting emergence of a new era in human development. The right starting point is to redefine the notion of value on which the Wealth of Nations is now more and more based. This is not simply a technical issue concerning the growth of services over purely industrialization processes. It implies a fundamental change. In a modern service economy, the production of value starts long before the actual point of manufacturing with fundamental research, continues through numerous stages of technological and social process, and extends beyond the time of sale through a prolonged period of utilisation of products and systems – the true basis for measuring added value), and finally ends with waste disposal (a negative value). All this happens during a period of time largely based on uncertainty and management of all sort of risks (foreseeable and unforeseeable). From this perspective, all the pretentions of classical economics to generate and measure value based on the idea of static equilibrium appear more and more antiquated and inadequate. Prices and costs have to be estimated based on hypotheses including the future.

1. Introduction

The Economic Wealth that has to be developed in the future must, inevitably, take account of the context of the New Economy which is characterized by the predominance of services as factors of production. This, rather than the limits to the industrial revolution, is the key change in economics as the basis for building the wealth of nations. The Club of Rome achieved worldwide renown, sometimes stimulated by strong criticism, after the publication of its report on *Limits to Growth* in 1972. This was a very critical time since, after World War II the high rate of growth of the economies of most of the industrialized countries had, until then, been around 6% per year. From 1973 until the present this rate of growth has declined, on average, to about 2% and less per year. The "scandal" of the Club of Rome consisted in

the fact that doubts were expressed as to the possibility of a continued and, as one would say today, a "sustainable" growth.

This article summarizes another point of view: during these years there has been a fundamental change in the way in which wealth is produced. The industrial revolution, based essentially on investment in new machines, tools and products, had, in all sectors of the economy, given way to the emergence of service functions as the key factors of production. This issue therefore is essentially a view from the supply side of the economy. Through the Club of Rome a series of reports were proposed to support this analysis based on the experience of over two decades in the manufacturing sector as well as in the traditional service sector.[1]

The difficulty, which persists today, is that classical and neo-economic analysis is still bound essentially to fundamentals linked to a reality in which the manufacturing system would be dominant. When services become the determinant in the production of the wealth of nations the very basic notion of economic value changes its connotations and the issue is, in the end, philosophical: value can no longer be defined as the result of an equilibrium system where disequilibria have to be considered a matter of imperfect information. In the service economy such information is bound to remain constantly imperfect because it involves the utilization of products and systems in time. An ever larger part of costs in the performance of such systems in time is linked to future events where even the duration of utilization is uncertain. The value system, therefore, is basically dependent on the uncertainties of reality.

The assumption is that the deterministic model, which is still dominant in the traditional macroeconomic analysis, has in fact given way to indeterministic systems. As a major consequence, the key economic issue today is that of understanding and managing risks, uncertainty and vulnerability as fundamental problems. Today, the main problem is to redefine value as the basic point of reference for the wealth and welfare of nations.

2. The Legacy of the Industrial Revolution

2.1 Producing Tools and Goods to Increase the Wealth of Nations

Of course economic analysis and even economic theories had existed long before Adam Smith. But it was Adam Smith who, in 1776, laid the foundations of economics as a specific discipline or science, as distinct from more general societal or historical analyses. So why Adam Smith? His impulse was by no means exclusively intellectual. It was prompted essentially by a new economic revolution brought about by the descendants of Adam and Eve in their struggle against scarcity. Indeed, during his lifetime Adam Smith experienced the birth of the Industrial Revolution – the big switch from an agricultural to an industrial economic system.[2] This transition is very well illustrated by his opposition to the views of Francois Quesnay, Madame Pompadour's illustrious doctor, and a physiocrat (the French school famous for the saying "laisser faire – laisser aller") of even greater celebrity status.

The dispute between Adam Smith and Francois Quesnay focused on the origin of the Wealth of Nations.[3] Both had an explanation. For Quesnay, looking at the main source of wealth in France, it was obvious that the wealth of nations derived from a flourishing

agricultural system. Adam Smith, however, was more concerned with the new development of manufacturing activities he saw around him in Scotland. Since Adam Smith's times, the industrialization process has come to be seen as a crucial weapon in the fight against scarcity, as the road of progress leading, in a sense, back to the Garden of Eden. After all, Adam Smith was essentially a moralist, like many other great economists such as Thomas Malthus and Alfred Marshal would later be.

Concentration of production meant that production-consumption for own use began to diminish: specialization increased and with it the need for trade and the exchange of products. It was this phenomenon of the specialization of manufacturing activities and the growth of an independent structure (i.e. a market) to make them available, which provided the empirical background to Adam Smith's conclusion that the real wealth of nations can be built through the development of the manufacturing process, i.e. industrialization.

The key to industrialization was the increase in productivity, i.e. the ability to use scarce resources so as to produce more goods with fewer resources. Industrial technology had thus moved to centre-stage in the struggle to increase wealth and welfare, in a situation in which both human culture and environment proved capable of developing it and putting it to use in an efficient way.

It is important to note here that the technical leap at the beginning of the Industrial Revolution was not a qualitative, but a quantitative one. Technology has always existed in the form of tools since man first became active. One could equally apply the notion of technological performance to artifacts developed in the animal kingdom (a bird's nest, for instance).

Intrinsically there is no major difference between the technology of the prehistoric "engineers" who specialized in shaping stones in order to produce arrowheads or cutting tools, and the "engineers" of the first Industrial Revolution who developed tools, which by contemporary standards would be deemed extremely simple. In fact most of the inventions of the first industrial revolution have been designed in such a way that almost anyone of us, without specific university or scientific education, could probably reproduce the same design with the tools available in most hardware stores. The "steam engine" is in fact nothing more than a sophisticated system for controlling the increased pressure produced by a volume of water transformed by heat into steam in a given space. The common pressure-cooker, which many people now use in their kitchen, is based on the very same principle. The real problem is to produce the materials, recipients and related mechanisms, capable of resisting the pressure and controlling its release. Similarly, the notion of the flying weaver-shuttle is very simple: the problem was how to produce a fixed hammer capable of hitting the shuttle with enough force to send it to the other side of the loom.

Only much later, towards the end of the 19th century, did the manufacturing of tools and products start to depend on scientific knowledge, i.e. on the examination and understanding of problems and materials beyond the immediate perception of our senses. We know how to cut a piece of wood and we understand how boiling water transforms into a larger mass of steam. However, we need scientific research to discover that the same molecules found for instance in cotton fibres can be reproduced in a similar, although by no means identical,

way by using oil as the raw material. Scientific research and the exploitation of technology based on science thus started to gain ground at the beginning of the twentieth century and have come to be fully and professionally exploited only during and since World War Two.

Up to the middle of the 1920s there was no consistent investment in research laboratories in industry or elsewhere. The cost of production, till then, could be accounted only in terms of the cost of labour and capital. It is only since the 1930s that more and more money has been invested in research and development and this activity has achieved professional status. Nowadays, research and investment, frequently ten to twenty years in advance of actual production, can in some cases cost a company twenty five or even thirty per cent and more of its total sales income.

The period of the Industrial Revolution has witnessed tremendous evolution, punctuated by many discoveries and new technological adventures. The main discontinuity has been the changeover from the sustained period of development of traditional technology that had lasted throughout human history up to the end of the 19th century to a new period in which the main, although not exclusive, impulse has come from the coupling of technological applications with the advance of scientific knowledge. This new process or marriage reached its peak of full maturity after World War Two and has been responsible for twenty-five years of continuous high growth rates in most industrialized and industrializing countries. In terms of quantitative economic growth this has been a unique phenomenon in the entire history of mankind.

The legacy of the Industrial Revolution as a whole has been, then, one of a series of victories in the struggle to increase the wealth of nations giving priority to the production of new tools and products in an increasingly economic way, i.e. enhanced product output for diminished resource input.

2.2 The Monetarization of the Economy Developing Capitalism

The second essential characteristic of the Industrial Revolution has been the monetarization of the economy. Money has, of course, always existed in some shape or form, either directly (gold or silver or copper coins), or indirectly (exchanging three goats for one horse implies the existence of an exchange-value component which is one of the typical connotations of money). However, until the beginning of the Industrial Revolution only a very minor part of all economic activities had entered the monetarized system.

In a pure agricultural society the vast bulk of production and consumption does not enter the exchange system where money has its origin. Trade in fact gives rise to money. Even if we take into account the glorious histories of the caravans, which times past travelled Europe and the rest of the world or the numerous towns of Renaissance Europe which flourished as international market places for certain parts of the year, its quantification will show that a very limited part of all the goods produced and consumed in those times was exchanged within a monetarized system.

It has been calculated that up to the 16th century, no more than 1% of the average life of a European was organized in a monetarized system (the time spent in selling his time for

money or using his time for trading).* Today, the corresponding percentage would be at least over 16%.

It is also very revealing that, at a time when kings and aristocrats were the rulers they often possessed little money since money was not an indicator of real power. The fact that banking activities could often be developed by marginal groups which did not really belong to the upper classes, shows that, up to the beginning of the Industrial Revolution, money was still a secondary tool in societal organization, something that could be left to those who did not form an integral part of that organization.

In the past money has always been linked to limited (by modern standards) trading activities and, until the beginning of the Industrial Revolution, very little or no recognition was given to it as a means of stimulating production.

It is not because Pope Gregory XII in the 13th century was particularly conservative or exceptionally moral, that the notion of interest on money was condemned by the Catholic Church. It was because money lending for interest, not being linked to any productive function, was equated with usury, which was simply a way of making the poor poorer. Before the Industrial Revolution, having debts was always "bad". Today, in most instances it is the very nerve of investment.

Here again we must recognize the importance of Adam Smith and the social weight of his moral convictions. In his book on the *Wealth of Nations* he completely reverses the "moral" attitudes of the past centuries. He clearly states that the God-loving person, one who avoids sin and endeavours to cultivate the most acceptable moral and social attitudes, is the person capable of saving. Savings, which were potentially a sin before the Industrial Revolution had, with the beginning of the new era, become a measure of moral worth especially in those countries which witnessed the first waves of the industrialization process.

Saving, hard and virtuous saving, is then the prime capitalist virtue: through his accumulated money the capitalist is able to buy the machines or tools which the new Industrial Revolution needs if it is to develop within a specific environment outside the farm or cottage.

Increased specialization depends on more trade; and trade increases require more money. Greater availability of money makes it possible to save more and therefore to create capital for investing in new production activities. This, then, is how the mechanism works, through a process which has monetarised the industrial world on today's vast scale.

As we have seen, the development of new moral and cultural attitudes parallels the emergence of new production processes and technologies. There can be no question that Adam Smith succeeded in making a virtue out of saving. One hundred and fifty years later, with John Maynard Keynes, even dis-saving (creating debts) would, in his time (when the situation was clearly deflationary), come to be considered a virtue rather than a vice.

Only during the second half of the 19th century did banks, which up to 1800 were mainly involved in trading, start to contribute to the saving and investment functions of the Industrial

* Evaluation made by Ivan Illich in a paper on Shadow Work, presented to a conference at the University of Kassel, September 1980.

Revolution. In Adam Smith's day, money used for investment amounted to no more than 5% of total sales in a given industrial activity. During the 19th century this percentage (as a function of increased concentration and productivity of the new technology) approximately doubled. Various savers (capitalists) joined together to share the ownership of a new industrial venture. Thus the "corporation" or sharing of ownership came into being. Corporations grew and started to spread their shares beyond the restricted circle of new enterprise initiators. Banks then entered the picture as a professionalized system for collecting savings from all sectors of the population and then began to function as intermediaries in channeling those savings towards productive activities.

It is important to distinguish between the forms that monetarization took before and after the Industrial Revolution. Before the Industrial Revolution, monetarization of the economy was a relatively marginal phenomenon. Its acceleration and development as an element essential to the functioning of the manufacturing process, however, are typical of the Industrial Revolution. Parallel to this, a shift of power occurred as society moved from the pre-industrial to the industrial state. In the latter case the very control and availability of money became an instrument of power, both social and political, whereas in pre-industrialized society power could be, and indeed was, exerted outside the direct control, and independently, of the few directly monetarized activities in social life.

In this sense, when we speak of capitalism, we are merely alluding to the sociological and economic aspects of this fundamental phenomenon: the monetarization of the economy as an essential part of the Industrial Revolution. The Industrial Revolution, therefore, cannot but be capitalist. The only important political question we need to resolve then is to what extent capitalism (the monetarization of economic activities) is compatible with, or even requires, a specific degree of political democracy. In any case even a Communist society, undergoing an Industrial Revolution is, in this sense, of necessity, capitalist to some extent.

This analysis of the process of monetarization born of the Industrial Revolution also suggests that there is an equilibrium somewhere between those activities which are more efficiently developed and managed through a monetarized system and those outside it.

Clearly, the process of improving and diffusing monetarization has still a long way to go at the planetary level. Nevertheless, we can today put forward some new questions: which type of productive activities (in a general sense) can be better stimulated through a monetarized system and which through a non-monetarized one? Which blend of monetarized and non-monetarized contributions would be most suitable for each of the main types of productive activity? How far should, and can, monetarized (and non-monetarized) systems go?

2.3 The Utopia of Certainty

The constantly renewed and increasingly efficient struggle against scarcity initiated by the Industrial Revolution can be traced to the search for a paradise lost, free of any anxiety about the need to fight for survival. As a general rule, the idea of progress is defined as utopia, where the normal uncertainty of real life will have been replaced by the dream of achieving some form of eternity through universal truth based on definitive certainties.

Before the European Renaissance this type of progress was essentially linked to a religious vision in which the churches played various intermediary roles between the ultimate certainty (the problem of death) and uncertainty (the reality of life).

"There appears to exist a constant pulse, a striving towards certainty which precludes any acceptance of uncertainty, probably caused by the persistence of ancestral fears."

With the spread of Cartesianism, i.e. the development of scientific knowledge verified by experimental evidence, with the further development of positivism and benefiting from the evidence of the great advances in scientific discoveries of the last centuries, western civilization had lived a specific type of dream. It believed that by mastering reality "scientifically", piece by piece, one would one day come very close to the universal truth.

Pascal once said: Science is like a ball in a universe of ignorance. The more we expand knowledge the greater the ignorance encountered by the ball's expanding surface.

In fact we measure the advance of science by the growing number of questions we seek to answer. Science is more about man's ability to frame questions than his capacity to provide guarantees about the veracity of the answers given.

In addition, so-called scientific observations and analyses always reach the point where, as they fail to apply under changing conditions, their limitations begin to be apparent. When philosophers, who are after all the fathers of physics, believed that the earth is flat, this theory was perfectly valid for a humanity moving on foot, at low speeds and over a limited part of the earth. The fact that the earth is round was of no particular use during the Roman Empire. The knowledge that the earth is almost round and that it is rotating in a certain way is clearly necessary for organizing air traffic. In the same way, to take the matter one step further, the knowledge that outer space is curved is of no immediate interest to local air traffic on earth, but is essential to space travel. From the standpoint of its application, no knowledge has to be a universal truth to be valid. It is its relevance and application in given space and time conditions, which make it valid and valuable.

At the political level, the Industrial Revolution introduced an assumption that every nation should have its independent state. It is too soon to judge, but overall this has probably been a useful historical step. On the other hand the definition of a nation in modern times is probably less clear-cut than it was when nations were simply tribes. In the modern world the notion of what constitutes a nation has become increasingly vague. The difficulty is that nationalism grows in particular in those who do not feel integrated among the people with whom they live and who, in trying to compensate, go too far. There appears to exist a constant pulse, a striving towards certainty which precludes any acceptance of uncertainty, probably caused by the persistence of ancestral fears. After all, in the course of the Industrial Revolution, political and ideological manifestations of the principle of certainty (frequently in the guise of nationalism and Communism) have provided justification for the unleashing

of some of the most barbaric trends in human history. The mass-production achievements of the Industrial Revolution, when pressed into the service of barbarian impulses, have become awful mechanisms. That this was possible at all was due to the habit of looking for certainty and universal truth, which can all too easily be used as instruments for singling out those who are "beyond the ideological pale", who do not subscribe to the "truth".

"Certainty and nihilism are twin brothers: both fail to accept reality, the possibility of change, of contradiction."

Enthusiasm and idealism for achieving new goals are essential to man's development provided it is always the "better" that is sought and allowance is made for changing the conditions which will permit "even better" or "better still" at some subsequent stage. The quest for the "best possible" which automatically rules out any change or alternative is no more than man's desperate attempt to eliminate human anxiety by applying the principle of certainty beyond its limits of applicability in time and space. The search for certainty, very much a part of the mobilizing utopias of the Industrial Revolution, is also a source of nihilism. Certainty and nihilism are twin brothers: both fail to accept reality, the possibility of change, of contradiction, or of modification of even the most advanced scientific ideas, those of Einstein included. As the sun sets over traditional western-born ideologies which for two centuries have conditioned the world, the utopia of worldly certainty provides a platform from which to launch a final attempt to secularize religion and metaphysics.

Uncertainty provides the raw material for searching, for asking, for developing, for creating, for doing. When uncertainty reaches intolerable levels, of course, it must be reduced. But the most intolerable level of uncertainty in life is that of full definitive certainty, because this is the point of death and here the choice will depend on what each and every one of us believes as individuals.

3. The Limits of the Industrial Revolution

3.1 Production is not isolated from the Non-Monetarized World

Common sense people, and even economists, have always admitted and considered it a fact that a substantial part of productive activities in life and in society are performed within a non-monetarized context. Most of the great classical economists from Adam Smith to John Stuart Mill have devoted a considerable part of their writings to the notion of productive labour and of value broadly inclusive of non-monetarized activities.

In fact, however, the very notion of value upon which Adam Smith founded the first comprehensive synthesis of economic theory has, in practice, led to the exclusion of a non-monetarized contribution to the creation of wealth in industrial societies.

Given the priorities and functioning of the Industrial Revolution, given also the type of scientific and philosophical ideas dominant up to the beginning of last century, this attitude was ultimately both legitimate and theoretically justified.

First, there was the problem of managing what was a clear priority: It was obvious that the wealth of nations could be developed in an unprecedented way, thanks to the advance of industrialization. The main social mechanism for promoting this process, which meant specialization, increase in trade and investment, was the development of the monetarization of the economy. Money was clearly, and often still is, the tool in social engineering which can solve the complex logistic problems which accompany the development of industrialization.

Second, at a more theoretical level the notion of value proposed by Adam Smith was derived from a measurement system based on a market price born of the interplay between supply and demand. The price, the monetarized value of goods, is the clear, easily quantifiable yardstick by which economics has seemed able to measure its own performance in an unambiguous way. But this is not all. The reference price of a good, defined by its monetarized value, is a type of measurement which has had a great advantage over other parameters in social sciences. It is a quantified, apparently precise reference, which avoids the vaguer statements, indicators and performance evaluations used in other social sciences. In this way economics came very close to the dream of having at hand an instrument by which to measure value (price), which would bring this discipline much closer to natural sciences where phenomena are normally more clearly defined and frequently enjoy self-evident systems of measurement. In this sense the monetarized economic value derived from price could be considered the equivalent of measuring the speed of light, the weight of a body, the boiling point of water or the thermal inertia of a metal.

To summarize: convenience, practicality and reference to the scientific method of analysis, combined during the Industrial Revolution, focused attention on monetarized activities as the key tool for developing the wealth of nations.

Today, in the new service economy, the predominance accorded to monetarized activities has to be placed in a broader perspective. The mastering of monetarized phenomena and the smooth functioning of the monetarization process are a key condition in situations where increasing the quantity of tools and products and their utilization is the prime priority. Another phenomenon becomes fundamental: the crossing back and forth of products and services over the line separating scarce (priced) goods from free ones.

One has to also consider the fact that criticism of "money" during the Industrial Revolution very often derived from pre-industrial attitudes: from philosophies and cultures of an essentially conservative nature, even when presented in "progressive" terms, which always retained some abstract reference to the past. As a result many socialist thinkers, even the young Karl Marx, tried to envisage a society "without money". Such visions, while purporting to address the future, were in reality the product of social inertia and nostalgia for a time when – prior to the Industrial Revolution – monetarization was limited to a small part of economic life, and when the accumulation of money was socially unproductive. However, it was a more mature Marx himself who, as one of the last classical economists, was to lay to rest the discussion on 'use-value' (including both monetarized and non-monetarized activities). In *The Capital* he reduced it to the idea that "use" simply refers to the destination of goods, and thus finally eliminated any residual interest in the actual non-monetarized activities of economic life.

Later, neo-classical economists did, from time to time, return to the notion of non-monetarized economic activities, but always explained them by analogy with the monetarized system (for example, the practice of attributing "ghost" prices to non-monetarized transactions).

"The transition to the modern Service Economy represents in fact a basic shift in the notion of value."

The transition to the modern Service Economy represents in fact a basic shift in the notion of value: the importance of restoring to non-monetarized activities full economic value is at last beginning to be acknowledged. The notions of "human capital" and "sustainability" are cases in point.

"There is a price for every good that is scarce. If it has no price it cannot be scarce, but must be freely available". This typical economic assertion applies to many situations: air is essentially free whereas a piece of bread costs money. But it completely obscures the process whereby a good might become free or, vice versa, become scarce. When resources, which were once free or available at very low cost, become an increasing cost component within the industrial production system, we realize that, after all, the monetarized economic system has had, and continues to have, an effect on the non-monetarized one, that, in the drive to reduce scarcity through increases in productivity in the monetarized system, scarcity is sometimes produced in the non-monetarized sector (and at best "internalized" only after the scarcity producing process has started). On the other hand, we may start to consider today that some technological advances (e.g. the use of the computer) as well as some modifications in social behaviour can result in the transformation of scarce products and services into free goods.

The limits to the Industrial Revolution – as an efficient system for increasing the overall wealth of nations – thus become apparent when the increase in scarcities in the non-monetarized world offsets or over-compensates the decrease in scarcities in the monetarized one. This also means that these two worlds are interdependent. Clearly, a system for accounting and monitoring increasing scarcities in the non-monetarized sector must, more than it is at present, be built into our overall accounting systems (using existing pollution tax schemes might be one way of achieving this).

This should also be the basis for integrating, in a wider vision, the goals of economics and the ambitions of the environmental movement in their quest to promote the wealth of nations.

Within this framework the very notion of sustainable development is based on the best use and preservation of resources, human and material, taking into due account the notions of utilization in time and the issue of uncertainty.

4. The "Service" Economy

4.1 The Growth of Services in the Production of Wealth

As our society becomes more complex, so do the regulations governing human interaction including product utilization and safety limits.

In pre-industrial society very few people could, or needed to read. In the service society however, most people will need to be "computer literate". Mass education has been among the service functions which, throughout the Industrial Revolution, have undergone a period of rapid expansion, so that today it constitutes a large sector with great potential for improvement.

As vast as and, in some cases even larger than the education service in the modern economy are the health and national defence sectors.

In order to understand properly and evaluate the modern Service Economy, it is essential that one bears in mind that the growth of services is the result of the specific and successive evolution of the production process itself. The development of technology, which changed production processes in order to enhance efficiency, produced the great development of service functions at all phases of the transformation process.

All the services we have mentioned are essential in planning, accompanying and supporting production up to the point-of-sale as well as products during their period of utilization. The maturing Industrial Revolution however, has brought to light another important service to be added to the list: the management of waste.

Waste has always been the by-product of any type of human activity and production: by peeling a banana we produce waste; the same is true when we cut an arrow from a piece of wood. When the Industrial Revolution set in motion a vast trend towards the concentration of production and its specialization, waste inevitably also started to be concentrated and to accumulate. This is not necessarily a negative phenomenon. During the history of the Industrial Revolution waste had often been turned into usable by-products and even major new products such as, for instance, nitrogen fertilizers as by-products originating from the explosives industry or phosphorous as a base for detergents and fertilizers from waste produced by the iron and steel industry. At its most advanced stage, when the principle of product specialization had been stretched to its limits, the Industrial Revolution created a growing number of problems because of waste which could not be economically transformed into useful products.

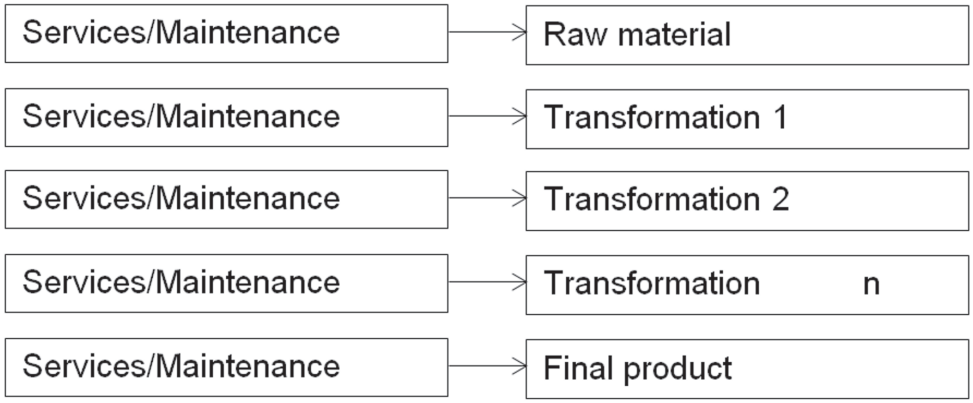
Concentration, specialization and increased levels of dangerous secondary effects are therefore the negative outcome of the use in various sectors of more sophisticated and advanced science-based technology. Parallel to the increase in industrial waste, the extension of conspicuous consumption to a constantly increasing number of people has also meant an enormous increase in the amount of waste produced by millions of consumers in both quantitative and qualitative terms.

Every product ends up as waste in the long run! Most materials, including our own bodies, become waste at the end of their production and utilization cycle and some of that waste can be transformed into new raw material. In some cases this transformation process occurs naturally (as with organic waste), in others, only after a lapse of time involving recycling intervention by man. The recycling of waste is in most cases limited, either by "economic entropy" (when the cost of full recycling would be prohibitive) or by physical (absolute) entropy (when full recycling proves impossible for physical reasons).

Waste prevention and recycling are therefore one of the key economic concerns of the Service Economy.

Figure 1 indicates that, in a situation typical of the Industrial Revolution, the production process was considered to be complete the moment a product or tool was available for sale on the market. In the Service Economy, the real issue in terms of economic value appears to be the maximization of the combined utilization of products and services during their lifetime, an operation which takes into account a series of costs prior to, during and after production.

Figure 1. Services and maintenance in the production sector†



On the one hand the traditional notion of economic value is linked to the existence and marketability of a product. On the other, the notion of economic value in the new Service Economy is extended to include the period of utilization and the costs incurred, including those for waste treatments. The notion of value in the Service Economy is in essence linked to the value of any product (or service) in terms of its performance or result over time. It is this utilization value during the utilization period which is the key issue: the effective performance (value) of an automobile as a mode of transport has to be accounted in terms of its period (and frequency) of utilization, and the effective benefit (value) of a drug has to be accounted in terms of the level of health achieved. Whereas, in the industrial economy, the key question was: "What is a product's 'monetarized' value?" The Service Economy asks another question: "What is a product's 'utilization' value? What function does it serve, how well and for how long?"

The development of the Service Economy in the future has to be thought of as a global process involving the whole economy following on from the Industrial Revolution, rather than simply the result of growth of the traditional tertiary sector.

In fact, service functions are integrated into all productive activities in the industrial as well as the agricultural sector. It is essential to note that modern technology has, in most cases, greatly reduced manufacturing costs and increased service costs. The distinction between the

† Source: Orio Giarini, *Dialogue on Wealth and Welfare, an Alternative View of World Capital Formation* (Oxford: Pergamon Press, 1980).

functions performed in a modern computerized office and a control centre in a production factory is often rapidly disappearing. This fact has led some authors, when describing the characteristics of the contemporary economy, to speak about a "super-industrial" economy or a "Third Industrial Revolution" instead of the "Service Economy". These authors cite those sectors where the technology is most advanced and then point out that what is in fact happening is a process of industrialization of the traditional service sectors.[4] This is clearly an important phenomenon but it overlooks the spectacular increase of service functions within the traditional productive sectors.

The development of telecommunications, of banking and financial services, of insurance, of maintenance and engineering, cannot be accounted for in terms of their being merely new kinds of "production", extensions of what had already occurred in textiles, iron and steel and the chemical industry. Selling a product (i.e. a machine) once (i.e. at a given moment in time) is a different business from fulfilling a maintenance contract over an extended period of time, during which the seller remains contractually committed to the consumer for the utilization of the "product". The relevant issue here is really one of understanding, of what the selling of products in a Service Economy actually involves. We switch from an "Industrial Revolution" mentality to a Service Economy mentality, when we add to the cost of producing products that of maintenance (washing and possibly repairing) during their lifetime, plus the cost of their disposal and replacement when we assess their value in terms of their actual utilization.

4.2 The Horizontal Integration of all Productive Activities: The End of the Theory or the Three Sectors of Economic Activity and the Limits to Engel's Law

Traditional economic theory still distinguishes between three sectors: the primary or agricultural, the secondary or industrial, and the tertiary which includes all services, sometimes subdivided further to produce a quaternary sector.[5] Such a theory focuses essentially on the industrialization process where predominantly agricultural societies are those which are not yet industrial, and where the tertiary sector is frequently no more than a "trash can" used to classify all those economic activities which simply cannot be called industrial.

In reality, for all three types of society – agricultural, industrial and service – the relevant issue is the choice of priority in stimulating the production of wealth and welfare. In an industrial society, agriculture does not disappear. Quite the contrary. Agricultural production becomes more and more efficient thanks to its industrialization. Industry does not develop as a completely separate productive activity from agriculture, but influences the traditional way agricultural products are produced and distributed. In the same way, the Service Economy is not an outgrowth completely detached from the industrial productive structure, but permeates that structure, making it predominantly dependent on the performance of service functions within (as well as outside) the production process. The real phenomenon therefore is not the decline and growth of three vertically separate processes or sectors, but their progressive horizontal inter-penetration. In other words, the new Service Economy does not correspond to the economy of the tertiary sector in the traditional sense, but is characterized by the fact that service functions are today predominant in all types of economic activity.

With every fundamental switch from one priority mode of wealth and welfare production to another, there is a modification in the perception of needs or demand. The very definition of what constitutes a basic need also changes.

In an agricultural society, the agricultural (pre-industrial) system of production was obviously perceived as addressing the problem of satisfying basic needs. After the onset of industrialization, and in line with the history of economic theory, which until then had coincided essentially with its development, primary needs were defined in terms of what basic needs the manufacturing system (integrating key agricultural production) could satisfy. Engel's law states that services are secondary in most cases because they only fulfil non-essential needs. In this approach the Industrial Revolution is supposed to be an efficient method of providing people with food, shelter and health. Only once these basic needs are satisfied can the consumption of "services" commence.

In reality, however, the true impetus towards the Service Economy has been precisely the fact that services are becoming indispensable in making available basic products and services which fulfil basic needs. Services no longer constitute a mere secondary sector, but are moving to the forefront of economic activity, where they have become indispensable production tools in meeting basic needs and the essential means whereby the wealth of nations may be made to increase.

The insurance industry is a typical example. Until a few decades ago everybody, including those in the insurance industry itself, accepted that insurance policies covering, for example, life risks or material damage, were a typical secondary product in the economic sense that they could only expand once basic needs had been satisfied by material production.

However, during the years following 1973, when the growth of GNP in the world dropped from an average of 6% to less than 3% per year, the overall sales of policies continued to grow at about 6% per year. If insurance consumption was of secondary importance the slowdown in other activities, and in particular in manufacturing would, according to Engel's law, have produced more than a proportional reduction in the sale of insurance. The explanation for this continuous growth of insurance activities, even in periods of declining growth, lies precisely in the nature of the modern production system which depends on insurance and other services as key tools to guarantee its proper functioning, based on the availability of products and services. At a very advanced technological level of production, where risks and vulnerabilities are highly concentrated and represent an essential managerial challenge, insurance has become – increasingly so in recent decades – a fundamental pre-condition for investment. Similarly, at a more general level, social security, health and life insurance have by now achieved the status of a primary good in most "industrialized countries".

4.3 From Product Value to System Value

Another key difference between the industrial economy and the Service Economy is that the former attributes value essentially to products which exist materially and which are exchanged, while value in the Service Economy is more closely related to performance and real utilization (over a given period) of the products (material or not) integrated in a system.

Whereas during the classical economic revolution the value of products could be identified essentially with the costs involved in producing them, the notion of value in the Service Economy is shifting towards evaluation of costs in terms of the results obtained in utilization.

The first approach considers the value of a washing machine per se, the second evaluates the actual performance of the washing machine, taking into account not only its cost of production but also all other kinds of costs (learning time for those using the machine, maintenance and repair costs etc.). The applicability of the two approaches is, in most cases, inherent in the technological complexity of the product: in the case of simple products and tools, the assessment of value can be limited to the tool or product per se. Nobody buying a hammer would think it necessary to take courses to learn how to use it. In the case of a computer, however, the cost of learning how to use it tends to exceed the purchase cost of the machine itself, especially where the former includes the cost of essential software.

Similarly, people buying goods such as dishes or even a bicycle might not consider signing a maintenance contract. With purchases of electronic typewriters, photocopiers, or even television sets, however, maintenance contracts – even for individual consumers – are more and more common. In the Service Economy it is not a tool that is being purchased, for people are buying functioning systems, not products. People buy performance.

System evaluation, i.e. the organization of tools and persons in a given environment to obtain desirable and economically valuable results, must also take account of various degrees of complexity as well as vulnerability in systems' functioning.

The notion of systems becomes essential then in the Service Economy. Systems produce positive results or economic value when they function properly. The notion of system operation (or functioning) has to be based on real time and the dynamics of real life. Whenever real time is taken into consideration the degree of uncertainty and probability, which conditions any human action, becomes a central issue.

The economics of the Industrial Revolution could, in contrast, rely on the fiction of a perfect equilibrium theory (outside real time), based on an assumption of certainty. During most of the economic history of the Industrial Revolution, risk and uncertainty have been the meat of historians and sociologists. The first systematic study to give timid though serious consideration to risk and uncertainty was that carried out by Frank Knight during the 1920s.[6]

Any system working to obtain some future result by definition operates in a situation of uncertainty, even if different situations are characterized by different degrees of risk, uncertainty or even indetermination. But risk and uncertainty are not a matter of choice: they are simply elements of the human condition.

Rationality therefore is not so much a problem of avoiding risks and eliminating uncertainty, but of controlling risks and of reducing uncertainty and indetermination to acceptable levels in given situations.

Furthermore, the very systemic nature of modern economic systems and the increasing technological developments requires an ever deeper economic understanding and control of

the increasing vulnerability and complexity of these systems. The Siberian railway accident of June 5, 1988, when a leak from an LNG pipeline led to an explosion that destroyed two trains, killing all passengers, can serve as an example of systemic risks.

Unfortunately, the notion of vulnerability is generally misunderstood. To say that vulnerability increases through increase in the quality and performance of modern technology might seem paradoxical. In fact, the higher level of performance of most technological advances relies on a reduction in the margins of error that a system can tolerate without breakdown. Accidents and management mistakes can still happen – even if less frequently – but their effects now have more costly systemic consequences. Opening the door of a car in motion does not necessarily lead to a catastrophe. In the case of a modern airplane, it will. This shows that the notions of system functioning and of vulnerability control become a key economic function within which the contributions of, for example, economists and engineers must be integrated. In a similar way, problems of social security and savings for the individual have to take vulnerability management into account. Thus the notion of risk and the management of vulnerability and uncertainty become key components of the Service Economy.

4.4 The Notion of Risk in the Industrial Revolution and in the Service Economy – Moral Hazards and Incentives

The first great economists did not study risk-taking in detail. It was rather taken for granted by the cultural environment of the time, even if Schumpeter made more explicit reference to the risk-taking entrepreneur. It was not until 1992 that the first comprehensive study of the subject was made, by Frank Knight in his *Risk, Uncertainty and Profit*.[7] But even Knight tended to confine himself to a discussion of risk of the entrepreneurial type. The field of pure risk linked to the vulnerability of systems was still considered too secondary to be given priority among the managerial objectives of firms.

The activities of the service sector and of insurance in particular, have traditionally been regarded as secondary or marginal in the national economy, even if they have existed for centuries. Theories and even attitudes have not yet adjusted to the new facts in this field. Some types of non-entrepreneurial risk are nevertheless now seen as more important due to changes in social philosophy. This applies to risks covered by social security and workers' protection in industrialized countries. Indeed as early as the 1850s the government of Prussia had organized the first compulsory insurance scheme for miners. But at the time of the great depression in 1929 this type of risk management was still in its infancy.

The development of social security can be attributed mainly to changes in social philosophy, which in turn is conditioned by the changing levels and characteristics of the risks and vulnerability produced by the modern environment. Indeed, the growth of risk and vulnerability, interwoven into the functioning of the economic system, largely explains why we now experience a new risk dimension and a fundamental change in our expectations concerning the possibilities for traditional growth.

The connotation of risk in the Service Economy covers a much wider area than the notion of risk in the Industrial Revolution. With the latter the main risk area involved was the so-called entrepreneurial or commercial risk; while the Service Economy has to be extended to include so-called 'pure risk'.

An entrepreneurial risk is one where the people involved in an activity can influence its purpose and manner by deciding to produce, to sell or to finance etc.

Pure risk is beyond the control of those involved in an activity. It depends on the vulnerabilities of their environment or of the system within which they work, and it will materialize by accident, by chance. This notion of pure risk is exclusively related to the notion of the vulnerability of systems we have been discussing in the preceding paragraphs and is a hallmark of the Service Economy.

One of the great differences between neo-classical economics and the new Service Economy is that not only is "entrepreneurial" risk taken into account (as in the case of Frank Knight), but that the notion of economically relevant risk is extended to include the notion of pure risk. Globally the notion of risk, therefore, has two fundamentally different but complementary connotations.

Today, in any significant economic endeavour, equal strategic importance must be given to both types of risk (both being linked to the concept of systems vulnerability).

Many people when discussing risk management (meaning the management of pure risk) do not make a clear link with the global strategy of risk. Therefore, instead of showing clearly how the two risks are correlated, they tend to confuse or confound them.

The distinction between pure and entrepreneurial risk is also to be found in the notion of "moral hazard".[8] This notion has long been familiar to insurers when they have had to face damages occasioned by those who have exposed themselves to risk for reason of profit. Take for instance the case of somebody who burns down his own home in order to collect the insurance (the cause of over 20% of fires!).

4.5 The New Entrepreneur in the Service Economy

Managers and entrepreneurs in the service economy must be able to take a broad view of risk, one which embraces both forms (the entrepreneurial and the pure) of the phenomenon. Even the most advanced management schools today are often lagging behind in this respect, whereas the reality of pure risk has long since begun to impose enormous burdens on managers.

Risks have to be understood at all levels and controlled as to their level of manageability. Vulnerabilities can, and must be diminished and checked. Only then can a strategic vision be developed and new challenges discovered.

Should their vision of the real world be partial or inadequate, both the entrepreneur and the public at large will be beset by the feeling of being overwhelmed by the risks and vulnerabilities of modern life. Yet that sense of powerlessness, of inadequacy, is rather the result of

our cultural inability to identify, adjust to and accept the realities of our contemporary world. Thus, it is very much a question of attitude. This inability to adjust leads to pessimism and fatalistic paralysis, like the sailor who, instead of using the winds to steer his boat, allows them to determine the direction in which his boat is pushed. It is crucial that we be able to identify these new winds blowing within the Service Economy, and that we recognize the challenges posed by the new risks, and by our increased concern for product quality and utilization value, for what they really are: opportunities for defining new directions, for stimulating renewed activity in our quest for real economic and social growth.

4.6 Tradability and Homogeneity of Services

Much of the literature on the Service Economy quotes two specific issues which reflect current difficulties in defining its characteristics. In most cases these difficulties stem from an underlying psychological attitude which views services or more precisely the Service Economy, as a kind of new "product" manufactured by a new type of "industry".

Our difficulties in clearly stating the problem once again stem from the cultural or theoretical frame of reference used for analysis rather than from the problem itself. A particular point in case is the notion of tradability and homogeneity of services. It is often said that an analysis of the Service Economy is almost impossible because services refer to such disparate entities as haircuts, telecommunications or maintenance and health activities. But the same can be said of products; there is little homogeneity between a pullover, an airplane, orange juice and a watch. In fact all "industrial products" are homogeneous only insofar as they are viewed from the standpoint of the production system, i.e. the manufacturing methods of production developed and improved by the Industrial Revolution. If one looks at services with an "industrial" mentality one will inevitably discover that some of them can easily be assimilated to an industrial product while others cannot. However, the exercise is pointless since it tries to fit empirical evidence into an obsolete frame of reference.

The real difference between the industrial and Service Economies, upon which homogeneous theoretical references can be built, is economic value. During the Industrial Revolution economic value was linked to a product's existence and to improvements in productivity that derived essentially from improvements in the manufacturing process. Economic value in the Service Economy, on the other hand, is derived from the functioning of a system, the productivity of which can only be measured in terms of improved and increased performance as related to the costs in the entire cycle from raw material to waste. The reference is not to the "product" but to its "utilization", i.e. its proper and useful functioning process.

Increases in productivity in the Industrial Economy are measured by the costs of the inputs used for producing a tool or a product. In the Service Economy, measuring the same costs of inputs without reference to specific performance (not necessarily products) is very close to nonsense. The productivity of a health system is in "producing" healthy people. In both cases measurement of the result has to inevitably integrate qualitative "stock" parameters. This can be achieved fairly easily with common sense and a minimum of consensus. Measuring the performance of educational systems must inevitably be linked to an evaluation

of the quality of the trained student in relation to the purpose of his or her learning. No indicator of the salaries of the teachers or investment in school buildings will ever suffice to properly measure educational productivity.

Living and working in a Service Economy also means looking at industrial products from a service point of view, i.e. looking at the function of tools, at how well such tools are used in practice, and at the results achieved with them.

In economic terms the Industrial Economy is about the evaluation of production of wealth in terms of added exchange value, while the Service Economy is all about the measurement of utilization value. If, therefore, the notion of homogeneity, or its absence, is used in our analysis of both the Industrial and Service Economies, such notions reveal maladjustment of the conceptual framework. It might of course be quite legitimate to choose one or the other. But it all depends on how efficient one evaluation system or the other is and in which direction the empirical evidence is moving. When we look hard at services as functions and performing systems within the Service Economy we find great variety in the activities pursued (and this is as typical of the Service Economy as it was with a wide range of goods of the Industrial Economy), but not necessarily absence of homogeneity. In the Service Economy, a restaurant performs the function of providing food for clients, a function which is, of course, very different from that of teaching or entertaining. But whatever its nature, the function always aims at achieving certain results that in each case can be readily identified.

The same problem arises with tradability. Many service functions are tested or considered in a way which assumes they can be fitted into the analytical framework developed for analyzing trade in industrial products.

Since the Service Economy is about producing results where the customer or user happens to be, it is clear that the notion of trade when applied to this context must alter radically. We can no longer distinguish between trade in services and the movement of production factors or investment as was the case in "industrial" economic theory. In many cases trade in the Service Economy inevitably combines and confounds the two. For many companies, and especially for those in traditional "service sectors", the equivalent of local or international trade in products is the organization of delivery systems where the customer is located.

While a traditional producer of a machine will export a "product" to any place in the world, the exporter of a service will have to rely much more upon an established office or point of distribution at the place of use. In both cases a transition from a classical industrial to a Service Economy occurs when, for example, the sport of a machine must be accompanied by so much software that what was formerly the simple "physical" transfer of a product now becomes an on-site investment operation in order to guarantee the proper functioning of a product at the place of its use.

The question of trade in services and their tradability is representative of a more general movement which has characterized the development of society and the economy over the last few centuries: from locally closed and largely autonomous production units with small markets to ever greater interpenetration in a world market. During the Industrial Revolution

the explosion in trade essentially concerned hardware (products). What we are now witnessing as the spread of service-performing systems is an entirely new chapter in the annals of trade, involving not only the movement of physical tools and products but also of the ways and means of their use and co-production.

At first sight then, inherent in this spread of the World Service Economy is a mechanism for more balanced world development, based more and more on increased trade and investment.

4.7 Material and Immaterial Values in the Service Economy

Numerous books and articles on the Service Economy (as well as on the "information" economy), have suggested that in the present economic system we are increasingly faced with so-called "immaterial" goods and values.

This notion of "immaterial" comes from the observation that during the classical Industrial Revolution the production process had mainly to do with material (hardware goods and tools). In our present service information society, however, goods are very often "immaterial" (software), as for instance an item of information or a computer programme (the support or transmission system remains "material").

Whether merely implied or explicitly stated, contained within this approach is the claim that the Service Economy is less "materialistic", more open to "immaterial" values: Similarly the word "quality" is used as an analogy for "immaterial" and is frequently related to the notion that a higher degree of education is an essential prerequisite of proper production. All these analyses in fact maintain a dichotomy between tools and their utilization. Today, the notion of "knowledge society" has become fashionable. It has been forgotten that the civilization process has always been based (since the Stone Age) on more "knowledge". What is new, in fact, is the acceleration of this process.

At the risk of repetition it should be emphasized that in the Service Economy priority is given to functions, the primary concern being with result-producing systems. However it is equally obvious that these systems (even if they produce abstract artifacts like communications) are heavily dependent on material tools.

A function or a "system" is immaterial per se, just as a machine tool is "material" per se. Industrialization required a different level of investment in knowledge than traditional agriculture, but knowledge per se is nothing new. Even the man who invented the bow and arrow was an "intellectual".

Once this becomes clear we are more likely to describe current higher and increasing levels of education not as something new, but simply as something more appropriate to present economic development.

The notion of "immaterial" values stems basically from the sense that values are produced, and go beyond what is normally measured by current (industrial) economics. If in some cases we can identify "deducted values" (the example of the economic system overestimating the

real increase in wealth), there are also many cases in which the results, in terms of the real wealth of modern technology, are underestimated.[9]

This takes us back to the problem of measuring the results against the costs (monetarized costs) of production, and of the absolute necessity of measuring value by some accepted indicators of personal and national wealth.

5. Value and Time in the Service Economy: The Notion of Utilization

5.1 The Product Cycle: from Raw Materials to Recycled Materials

The "life" of any product can be divided into five distinct phases: research, design and conception; production, involving a transformation of natural resources; distribution (transport and packaging, marketing and publicity); the useful life over a variable period of time (the utilization period); and the disposal of the discarded good (recycling or waste disposal). This whole process can be referred to as the Product-Life Factor.[10]

The fast replacement of goods has been a persistent trend in economic history, and has gained momentum in our fashion-based consumer society (the syndrome of bigger-better-faster new products), as economists have become preoccupied with production optimization, economy of scale and fast depreciation and replacement. The success of such industrial production has been measured in terms of flow at the Point-of-Sale (expressed for example in the GNP), while the notion of the use of a product over time, its utilization, has been largely neglected.

However, it is precisely this utilization period which is the main variable in wealth creation! Who determines the length of the utilization period?

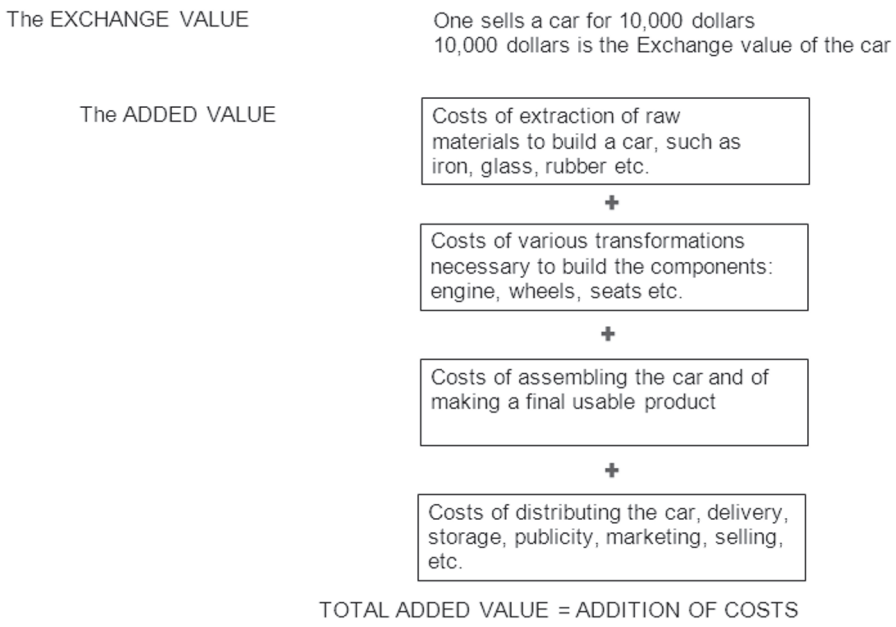
5.2 Accounting for Value in the Service Economy

Measuring Value in the Industrial Revolution: The Monetarized Flow

We have attempted to show that price is the yardstick, the reference criterion, around which we organize a measurement system capable of quantifying economic phenomena and results within the framework of the industrial process.

Price is given by exchange and the money obtained from each transaction is then used to remunerate all those who have contributed to the production of that which is transacted, i.e. goods or services. Labour is paid wages or salaries, and capital (representing an accumulation of labour in terms of tools made available for production, e.g. plant, machinery, systems, knowledge levels and managerial capacity) receives interest. Each contribution to the various steps in transforming raw materials into usable products or functions represents a "value added". Adam Smith built his notion of value on this idea of "value added" and considered it equivalent to the "exchange value". Figure 2 summarizes these notions. However the notion of value added has not simply remained historically a basis for economic theory. In recent decades it has become a reference for the fiscal system through the introduction of value added taxes.

Figure 2: The classical economic concept of value in the industrial society: The example of an automobile.‡



It is essential to understand that the measurement of value added in economics refers to the measurement of a flow. Although reference is made to the "selling price" (which could give the impression that it is the measurement of a result), the reference to the cost of the production factors is conceptually linked to the measurement of what contributes to the production of wealth, and not to the measurement of wealth itself. This can best be explained as a bathtub with two taps.§

Over recent decades we have seen the emergence of a new type of problem linked to environmental and ecological constraints, which strongly suggests that the monetarized flow does not always lead to additional wealth, for the monetarized flow contains a non-negligible element of pollution which does not add to, but destroys wealth. The measurement of growth as expressed in the Gross National Product is precisely and exclusively the measurement of such a monetarized flow at the macro-economic-national level. It excludes the standard accounting practice used by all industrial companies and individuals: an accounting of the total assets or stock available and total liabilities incurred (the Balance Sheet), of which an analysis of the flow of activity performed during a given period of time (the Statement of Income and Expenses) is an integral part. At the microeconomic level it is a matter of

‡ Source: Giarini, Dialogue on Wealth and Welfare.

§ For a detailed description see Orio Giarini and Garry Jacobs, "The Evolution of Wealth & Human Security: The Paradox of Value and Uncertainty," *Cadmus* 1, no.3(2011): 29-59.

common knowledge and, indeed, of common sense that the differential in the total value of assets (e.g. stock) does not necessarily coincide with the volume of activity performed over a given period of time. The accounting of assets is a process which reveals an accumulation from an activity over a longer period of time, rather than simply indicating whether the monetarized flow over the same period has increased or decreased.

During the Classical Industrial Revolution it could be assumed that the amount of the monetarized flow largely corresponded to increases in the stock of wealth. In the Service Economy this is no longer true. The real level of wealth (i.e. the stock) depends also on non-monetarised contributions and deducted values. In the past too, value added coincided largely with the real utilization value and as such became the primary indicator of growth in wealth. But the notion of utilization value itself refers to the assets (stock) and the way they are used, in contrast to the notion of added value which refers to the flow of monetarized production.

The measurement of such stock can of course only be approximate and will be partly subjective. This means that decisions about what has value then become partly a matter for political consensus, similar to the estimated "goodwill" in a company's Balance Sheet. The choice in future may well be between a system of flow measurement which is quantitatively precise but increasingly devoid of significance, and systems of asset measurement which might be less precise but will be more relevant to the real world. The quantification of non-monetarized wealth components can be achieved through adequate indicators. This is a crucial topic, as any method of asset accounting would also make possible a better definition of riches and poverty, and thus avoid the perpetuation of a higher level of wealth than officially recorded, for the non-monetarized contributions to the wealth of one country may be higher than those of another.

5.3 Old and New Shortcomings: Wealth and Riches, the Paradox of Relative Prices, Deducted Value, and Non-Accounted Value

Classical economists, and in particular Ricardo, were well aware of the methods for the accounting of economic wealth that they were devising were not really comprehensive of the real level of wealth of an individual or a country. A clear distinction was made between the notion of riches on the one hand and wealth on the other. There was even an implicit acceptance that there could be situations where an increase in wealth would not correspond to an increase in riches.

However, these considerations remain secondary because the main problem during the Industrial Revolution was to identify the most dynamic system for increasing the wealth of nations via the industrialization process, and to concentrate on its development. Discrepancies between wealth and riches could be considered of minor importance. The writings of classical economists and some of their later commentators were very much influenced by the fact that the first formulation of economic theory was a description of the industrialization process: the priority, which was quite adequate for this purpose, was to measure a flow of goods and the value added, whether supply or demand-based.

In the Service Economy, where the industrialization process per se is no longer identified as the prime mover in increasing the wealth of nations, the problem is quite different and the contradiction between wealth and riches much more important.

"The present accounting system is inadequate, even in the positive sense, for measuring many increases in real wealth."

The divergence of the notion of riches from the notion of wealth corresponds to what can be called the development of deducted values in the modern economy. Increase in these deducted values stems from the increasing higher allocation of economic resources to activities which do not add to the real level of wealth (or of riches), but which are in fact absorbed by the rising costs of the functioning of the economic system.

Air and water pollution are obvious cases of diminishing real wealth (or of diminishing riches). If money is invested to depollute water or to develop alternative solutions such as bottled water, special reservoirs for drinking water, or swimming pools next to polluted seashores, we are once again confronted by "catch 22" situations where investments are necessary to compensate for riches lost through, for example, pollution: these investments are not net added value to our wealth!

The growing discrepancies between levels of wealth and riches (or the contradiction between economically accounted wealth and real wealth) clearly indicate the need to refer increasingly to stock, i.e. variations in real wealth, as a substitute for the measurement of productive flows (the bathtub example). Furthermore there is also a problem of matching real added values to deducted values. A new conceptual approach for measuring the real results will have to replace the simple analysis of the costs of an isolated activity.

The notion of deducted value implies the need to take into consideration the notion of negative value. In terms of economic analysis this is already a step in the right direction, given that in many cases the negative side of economic activities has simply remained unaccounted for. Diminishing increase in an economic situation has to be in fact distinguished from a net negative process. Measuring wealth through flows that do not fill a bathtub, or even worse, that are shut off, excludes the notion of negative flows. Only by looking at the stock can positive and negative variations be measured and a decision taken as to whether the flows produce values added or values deducted.

We should also bear in mind that the present accounting system is inadequate, even in the positive sense, for measuring many increases in real wealth. This phenomenon relates to certain paradoxes concerning the notion of relative prices.

Relative prices and the changes they undergo are one of the major indicators of whether a new technology or production system has really been effective in a given sector. When there is great progress in a new sector the cost of products not only diminishes per se, but their price, relative to other products on the market, also falls steeply. Thirty years ago, the price of a small calculator was the equivalent of 500 kilos of bread. It is now sometimes the

equivalent of less than 1 kilo of bread. This means that, in terms of bread, the relative prices of pocket calculators have fallen sharply.

At the level of the individual, the substitution of a rare and expensive product (as, for instance, calculating machines fifty years ago) for a cheap product greatly increases one's riches, but can diminish wealth. The fact that we can buy products today, such as pocket calculators which thirty or forty years ago we could not afford to buy for private use, is an indicator that, in real terms we are much richer today. But in terms of the monetarized wealth at our disposal, any person who could afford such a machine thirty or forty years ago was considered to be much richer than we are today, when we need little money to buy it.

At the macro-economic level, this phenomenon may be less contradictory. If, today, the price of pocket calculators is $1/10^{th}$ of what it was twenty years ago, and if, instead of selling ten calculators thirty years ago, it is possible to sell 1,000 today, we have increased the sales value ten fold in terms of money. But the real wealth of people has increased much more: some of the revenues generated through the expansion of the pocket calculator market can be used for buying those goods which have remained expensive, i.e. the relative price of which has remained high.

In measuring our real wealth, merely knowing if and by how much the world has grown richer is by no means sufficient. While in some ways we have become poorer over the last twenty years because we must pay more for previously free goods or services such as uncontaminated drinking water or swimming in non-polluted water, we have, in other ways, become richer by having pocket calculators and video cassettes available for the equivalent of a few hours, or even minutes of salaried work. And we can afford to see high quality operas and plays that in Moliere's day were reserved for Kings and Emperors.

Our attempts to measure the value added and to examine the mechanism of relative prices lead, therefore, in terms of evaluating increases in wealth, to conclusions that are much more complex than first expected. The easy way out is to measure the levels of real wealth available (its utilization value) with approximate indicators. The complication of "Industrial Revolution accounting" is nicely described by the paradox of hell and heaven, when applied to the notion of scarcity. Heaven, being probably blessed by an infinite stock of goods and services of all sorts (material and spiritual), knows nothing of scarcity. Economics and the economy therefore do not exist. There are no prices and there is no money since everything is readily available without any restriction or work. Heaven, then, must be something very different from earth, but it is also a place of zero GNP. Hell, as the opposite of heaven, is a place which consumes a lot of energy in maintaining its celebrated image and presumed activities. Therefore, it probably needs to develop a huge value added which nobody has ever tried to measure. GNP must be very high indeed!

On our earth, the maximum possible achievement in the fight against scarcity is to create abundance in as many sectors as possible. But human and economic development also entails identifying and coping with new scarcities. Scarcity is ultimately the hallmark of the system of disequilibrium within which human endeavour is destined to operate: it is the sine-qua-non of man's quest for fulfilment.

5.4 The Bathtub Systems: Measuring Results through Indicators

One of the major paradoxes in value accounting and in defining the development of wealth is that an increase in real wealth corresponds in some cases merely to an increase in the cost of pollution control (e.g. investment for waste control and environmental purposes which is clearly a deducted value type of cost), while on the other hand, many real increases in value are underrated. For instance GNP growth figures published by governments each year indicate that the economy has grown by so many percent. However, a large part of this growth is in fact absorbed by factors which do not necessarily add to our wealth, while other factors that represent net increases in our well-being are not, or only inadequately taken into account.

Furthermore, the transition to an economic system and theory which go beyond the traditional notion of economic (added) value requires acceptance of a certain degree of uncertainty where measurements are concerned. This uncertainty stems from the fact that the very question of what wealth should be entails defining certain goals and expectations. The definition of a level of wealth is a function of time and history in evolution and, as such, a relative construct.

Another source of uncertainty in the notion of real wealth and welfare relates to the fact that many riches are conditioned by climatic conditions. Countries with cold climates will always need to develop more sophisticated heating systems than those with milder ones. In the former, more monetarized activities have to be developed in order to provide artificial, man-made sources of heat that can be stockpiled for winter. In milder areas heating involves less provision and less expense. But which type of country is the poorer and which the richer: those that have to spend a lot of money on heating or those which have no heating at all?

We should never forget the paradox of hell and heaven: less scarcity leads quite naturally to less economic monetarized wealth. However, where constraints are stronger, the stimulus to avoid hell in order to survive is probably greater. Many potentially poorer people have in the past become more industrious and richer than those who inhabited a more blessed environment. In all parts of the world this is as true for individuals as it is for nations. But it is a historical process and can be reversed. Furthermore, not all advantages are necessarily species-specific, for where life is exuberant and easy it is so not only for the human species, but possibly for competing biological beings such as viruses too.

This whole domain is hard to define. Indicators of whatever kind, of the level of wealth, health, happiness, knowledge and the availability of material tools and means, are all concepts affected by uncertainty and change. The notion of value added happens to be much simpler apparently and has the additional attraction of having been proposed and used as an instrument of universal management, as a standard that can be applied everywhere.

Is it not the wisest way to always start by using the simplest system in science as in other activities including economics?

The problem is that the universal validity of the concept of value added resides essentially in its use as a measurement of an industrial production process. The establishment of a

sound statistical basis for the measurement of the stock of wealth and its variation by means of an appropriate range of indicators which may differ from one part of the world to the next (but which do not preclude a minimum level of homogeneity for purposes of comparison), are not necessarily more complicated than the measurement of value added. After all, there are already plenty of economic indicators in use which are periodically redefined, such as the consumer price indices that serve as a base for the determination of the level of inflation in many countries. These indices contain within themselves a number of well-weighted elements.

They are not, by definition, identical in all countries as they reflect the evolving structure of consumption. Why not define the real level of wealth or of riches in a similar way and allow the definition of wealth to vary much as the definition of the typical consumption pattern varies from one country to the next?

In the mature Service Economy this type of index might be politically more appealing, especially if it succeeds in closing the gap between measurements of GNP which do not reflect the reality of real wealth variations, and the perceptions of individuals, the "prosumers", who already have practical experience of what it means to become richer in contemporary economic conditions.

There is a lot of work to be done to update "Economics", and to better identify indicators and goals to define wealth and welfare policies.

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A World Parliament and the Transition from International Law to World Law

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Abstract

World civilization depends on the provision of global public goods such as tackling climate change, ensuring international financial stability or peace and security. Yet, the intergovernmental system of global governance is not capable of delivering the required results. At a fundamental level, the change necessary to achieve functioning world governance consists of a transition from international law to world law. A key element in this is the development of a global legislative system that includes a democratically elected world parliament. The establishment of a UN Parliamentary Assembly would be a pragmatic first step.

1. Introduction

As science and technology advance and new technological applications spread throughout society, culture needs to adapt and develop ways of how to deal with them. In the process, social change and social conflicts occur. Cultural adaptation takes place with a certain delay and is regularly outpaced by technological development. Because of the rapid speed and the huge extent of technological change, cultural delays may accumulate. In addition, as William Ogburn explained in 1922 in his pioneering theory of cultural lag, the various parts of culture are not adapting at the same rate.[1]

Today, all human beings are part of a single, highly integrated world system that expands over the entire globe. Never before were communication and exchange of information possible in such an immediate, deterritorialized and inexpensive manner. Industrialization and population growth have made human civilization a force of geological proportions. Climate and environment are transformed by human activities. To acknowledge this, scientists have suggested that a new formal epoch should be introduced: the Anthropocene.

For the Earth system to remain as habitable for human life in the future as it has been during the Holocene in the last 10,000 years, planetary boundaries need to be respected.[2] An effective and responsible management of global commons such as the atmosphere, particularly by controlling carbon emissions, is critical to achieve this. Runaway global environmental change poses a serious risk to the functioning and maybe even to the survival of world civilization. The same applies to nuclear weapons of which an arsenal of over 18,000 still exists.

In 1957, Ogburn described the inability of humanity to adapt to this technology, for instance, by abolishing nuclear weapons, as an extremely dangerous cultural lag.[3]

2. Global Public Goods and Global Governance

The advancement of technology, the high degree of global interconnectedness and human impact on the Earth system have led to the dependence of world civilization on the provision of global public goods. A task force initiated by France and Sweden identified six global public goods "whose provision is critical: preventing the emergence and spread of infectious disease; tackling climate change; enhancing international financial stability; strengthening the international trading system; achieving peace and security, which underlies and is essential to all the others; and the cross-cutting issue of knowledge."[4] One global public good that for sure needs to be added to this list is ensuring global food security.

"The most critical cultural lag of our time that fundamentally undermines the provision of global public goods is the inability of humanity to overcome the age-old Westphalian intergovernmental system and to establish functioning supranational world governance."

However, the intergovernmental system of global governance is not able to deliver the required results. The most critical cultural lag of our time that fundamentally undermines the provision of global public goods is the inability of humanity to overcome the age-old Westphalian intergovernmental system and to establish a functioning supranational world governance. This transformation is the cultural evolutionary leap that is necessary to achieve a stable and sustainable world civilization. It is of overarching importance because it affects the global regulatory capacity as such.

This is by no means a new insight. In the years after the Second World War and the first use of nuclear weapons, the concept of a federal world government enjoyed considerable public and intellectual support.[5] Albert Einstein was one of its most prominent advocates at the time. Many founding members of the World Academy of Art and Science, such as the Academy's first President John Boyd Orr as well as Bertrand Russell, Brock Chisholm, or Robert Oppenheimer, had championed the idea. As the Cold War set in, the proposal eventually lost traction.

In his presidential address at the 50th anniversary convention of the International Studies Association in 2009, Thomas G. Weiss asked what had happened to the idea of a world government that once was endorsed by so many of the world's leading intellectuals and lamented the "abject poverty of our current thinking."[6] While the idea of a world government was banned from mainstream thinking for a long time, it is now getting more and more serious attention again.[7, 8, 9]

3. The Necessity of Paradigm Change and the Distinction between International Law and World Law

The global challenges that humanity is faced with in the age of the Anthropocene make it necessary to question established paradigms. Earth system researchers who are at the forefront of scrutinizing human impact on the environment, call for a "fundamental reorientation" of international institutions. While their recommendations focus on specific reform measures, it was emphasized in an important article published in *Science* magazine that bold and comprehensive steps are needed: "The world saw a major transformative shift in governance after 1945 that led to the establishment of the UN and numerous other international organizations, along with far-reaching new international legal norms on human rights and economic cooperation. We need similar changes today, a 'constitutional moment' in world politics and global governance."[10]

The process of world state formation, the development of supranational world governance and possible shapes of a world government naturally involve many complex issues and different viewpoints that have been debated for decades. Nonetheless, at a fundamental level, the major change consists of a transition from international law to world law.

The following paradigmatic differences are playing a key role:

- The main unit in international law is the *state* whereas in world law it's the individual *citizen*. World law is rooted in the notion of world citizenship which implies that individuals are legal subjects with immediate duties and responsibilities. According to Rafael Domingo, "The human person, and not the state, should constitute the cornerstone of global law … Uniquely situated as spectator, spectacle, legislator, and target of all normative precepts, it is the concept of *person* in all its richness that constitutes the first principle of the global law."[11]
- The basic paradigms of international law are *national independence* and the *sovereign equality of states* whereas in world law it's *global interdependence and the equality of all human beings*. World law assumes a global responsibility for matters of global concern. Ultimately, this includes a responsibility for individual well-being. Even if global challenges of the magnitude of anthropogenic climate change wouldn't exist, this would not diminish the reality of a planetary civilization and the need for planetary regulation and decision-making.
- International law is based on intergovernmental treaties that states can *optionally join or not join* whereas world law would be *universally binding* not only on states, but in principle also on individuals and other entities such as corporations.
- Rulemaking in international law is based on *consensus* and on the principle of *one state, one vote,* whereas in world law there would be democratic decision-making based on *qualified majorities* that are derived from the principle of *one person, one vote*.
- Representation in the intergovernmental system that is based on international law is achieved through officials who are *appointed by the executive branch of national*

governments whereas in a system of world law representatives are *democratically elected by the world's citizens.* The right to vote in free and fair *planetary* elections of this kind perhaps constitutes the most emblematic expression of world law and a *democratic* system of world governance.

- The perspective prevalent in international law is *national interests,* or the raison d'etat, whereas in world law it's the *planetary interest,* or the raison d'humanité, an expression originally coined by Yehezkel Dror.[12] World law assumes the unity of humanity as a natural collective of all human beings. It is concerned not only with individual well-being but with the well-being and survival of the entire species and its natural habitat, the Earth. A body of democratically elected world representatives would be a mechanism that continuously allows determining the best interest of humanity. Domingo suggests that a system of global democracy that puts humanity on center-stage could be called an 'anthroparchy'. Furthermore, he argues that "Because parliament is the democratic institution par excellence and the cradle of true democracies, only a Global Parliament … could legitimize the anthroparchy."[13]

Traces of world law can already be found in the international legal system. This concerns, for example, the universally binding character of decisions of the UN Security Council based on Chapter VII of the UN Charter, the concept of common heritage of mankind in the Law of the Sea, the dispute settlement mechanism of the World Trade Organization, the International Criminal Court that is prosecuting *individuals* for the worst possible crimes, or the emerging principle of the Responsibility to Protect.

Nonetheless, the problem remains that international law actually lacks the features of what is considered a legal system: There is no generally binding system of law-making, obligatory settlement of disputes at courts, or means of enforcement. These are exactly the elements that characterize world law in contrast to international law.

4. A Hybrid Global Legislative System

In particular, world law would need to be based on a global legislative system that, in principle, is capable of determining universally binding regulation in areas of global concern. As Grenville Clark pointed out, "the word 'law' necessarily implies the law of a world authority, i.e., law which would be uniformly applicable to all nations and all individuals in the world."[14] The procedure, participants, and the scope of decision-making of such an authority are of primary importance. To a high degree, it is the structure of this decision-making that determines the level of democratic inclusion, legitimacy, and accountability as well as the effectiveness of the system. For this reason, the proposal of a democratically elected world parliament as a core institution in a global legislative system addresses one of the most important aspects of the transition.

In the transition from international law to world law it is long overdue to begin with an incremental process towards the establishment of a global legislative system. In this process it needs to be taken into account that without direct representation of the world's citizens in

the global system, it is impossible to implement the principles of world law. The development of an elected world parliament thus is an indispensable long-term goal.

As states will continue to be the most important entities of governance and while vast gaps prevail in the level of development throughout the world, a global legislative system necessarily will have to be a *hybrid* of international law and world law that manages to find the best possible balance between the principles that characterize the two.

With a view of the "balkanization of the world" that went along with the emergence of ever more independent nation-states, Wilfred Jenks for example has already spoken of a paradox "parallel progress of interdependence and independence" and the requirement to "reconcile in a responsible manner the greater concentration of political authority required by the progress of interdependence with the wider diffusion of political freedom implied in the progress of independence."[15]

As Vaclav Havel pointed out in his speech at the UN's Millennium Summit, global legislation in a reformed United Nations thus would "probably have to rest on two pillars: one constituted by an assembly of equal executive representatives of individual countries, resembling the present plenary, and the other consisting of a group elected directly by the globe's population in which the number of delegates representing individual nations would, thus, roughly correspond to the size of the nations."[16]

Additionally, it is imaginable that for global rules to become universally binding, it would be useful to include another layer of decision-making. It could be provided that regulation passed by the UN General Assembly and the directly elected body would have to be approved by a certain majority of national parliaments as well, so that the traditional process of ratification is not entirely abandoned but partly included in the new system. To be more effective, it might be better to give a certain majority of national parliaments the possibility to overrule global legislation within a certain period of time after which it otherwise would automatically enter into force.

With regard to overcoming the principle of consensus decision-making in intergovernmental negotiations, Frank Biermann suggested that "We could think about different majority and voting rules for different issue areas. We can think about multiple, complex, combined, or layered majorities. And surely, we need to clearly define institutional guarantees that protect smaller countries."[17] Implementing the requirement of different qualified majorities for different issue areas in different decision-making bodies and layers is a good approach for binding decision-making in a global legislative system.

5. A United Nations Parliamentary Assembly

At this point, a pragmatic first step would be the creation of a United Nations Parliamentary Assembly (UNPA).[18] As should be clear by now, this wouldn't just be another UN body. It would be the *first body in human history* mandated to represent the world's citizens as such. Members could be directly elected or *initially* be appointed from among national parliaments. They would be grouped according to political affiliation rather than by national origin

and thus would transcend one-dimensional national interests. Unlike government-appointed officials and diplomats, UNPA representatives would not be subject to the authority of government executives.

"It is finally time to recognize that major change is unlikely to be initiated and spearheaded by governments."

For political reasons, the formal powers could be largely consultative at the beginning and be expanded over time. Still, the assembly would be in a position to deliberate on all issues of global concern. Its recommendations and proposals would carry moral weight and could pressure national governments to adopt programs and solutions that deliver better outcomes in the common global interest. Article 22 of the UN Charter enables the UN General Assembly to establish a UNPA. No cumbersome reform of the UN Charter would be required in the initial stage.

In formulas for the apportionment of seats, population size would have to be taken into account in some way in order to reflect the democratic equality of the world's citizens. According to most models for the distribution of seats, it is evident that a majority of the assembly's delegates would come from electoral democracies which would ensure that the democratic character of the assembly essentially is maintained.[19, 20]

A more balanced distribution of voting power might be a key to allow methods of qualified majority voting. Earth system scholars have rightfully pointed out that "governance systems that rely on majority-based rule are quicker to arrive at far-reaching decisions and that consensus-based systems limit decisions to the preferences of the least ambitious country."[21] The illusion of the equality of states that is formally implemented in most international bodies is an important cause of the dysfunctional character of global institutions and decision-making.

The European Parliament that began as a consultative assembly composed of national parliamentarians is now a directly elected legislative chamber of the European Union which provides an instructive example for how a UNPA could be developed. It takes majority decisions and the distribution of seats is based on the principle of degressive proportionality. This means that on a sliding scale, smaller countries are allocated relatively more representatives per capita than larger countries.

6. UNPA as an Agent for Global Change

Just as the European Parliament proved to be an important player that pushed European integration forward at crucial points, a UNPA could become a key political catalyst for global change and the transition to world law. Calls for a major restructuring of global governance have been made for decades. In 1976 for example, the Aspen Institute and others promoted the "Declaration of Interdependence" authored by Henry Steele Commager and Harlan Cleveland who argued in favor of a "Third Try at World Order."[22] When the Cold War had passed, the Commission on Global Governance in 1995 called for a World Summit on Global Governance to take place in 1998 that should reconsider the whole system and whose decisions should be implemented by 2000.

It is finally time to recognize that major change is unlikely to be initiated and spearheaded by governments. Despite successful campaigns for the Anti-Personnel Mine Ban Convention and the International Criminal Court, so far civil society, too, has not managed to address the need for systematic change in global governance in any adequate manner and, more importantly, the little effort that is spent on this issue is badly coordinated.

As Dieter Heinrich reasoned, the best thing UN reformers could do "would be to stop dissipating ourselves in trying to promote this or that isolated policy to deaf governments and their equally unhearing, unimaginative and unambitious foreign ministries. Instead we might try uniting our meager energies behind just one common goal that would serve all our causes, that of creating a consultative assembly at the UN. We could hope that once founded … it could recapitulate for us at the UN the course of events followed by the European parliament."[23] A UNPA thus would not only be an embryonic element of a post-Westphalian order but also its most important agent.

7. Conclusion

The World Academy of Art and Science's initiative for the establishment of an international Consortium on a New Paradigm comes at the right time and it's exactly the approach that is needed: strengthening civil society's efforts towards systemic change through better networking and coordination. The establishment of a UNPA as a first step towards a world parliament and a transition to world law should be a key goal.

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The Double Helix of Learning and Work*

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Editors' Note

The Double Helix of Learning and Work by Orio Giarini and Mircea Malitza is a report to the Club of Rome first published by UNESCO in 2003. It advances fundamental paradigm-changing ideas in the field of education. Drawing inspiration from the double helix structure of DNA, the authors seek to strengthen the relationship between education and employment in order to bring 'The Knowledge Society' within reach. This article is an abridged version of the third chapter of the report. Successive chapters will be carried in subsequent issues of *Cadmus.*

Chapter 3
"I Work, therefore I Am"

3.1. The Millenial Equation of Work

Authors find it difficult to resist the temptation of an anthropological insight when it comes to a social issue. The image of Homo antecessor, the ancestor clad in an animal skin and carrying a club in his hand, is still haunting us. Films, literature, and research keep that image alive as a memento of the long road human civilization has trodden so far.

This suggested conceptual scheme attempts to consider what is known or suspected. At the beginning, it was the need to survive that pushed humans to work for their basic living. They worked for food, shelter, and instruments to protect themselves and their groups. From the very first moment, their work differed from that of animals.

Humans were at a disadvantage compared to animals. They could not completely rely on their instincts, and they were overwhelmed with fear because they were physically weak and non-competitive. In exchange, they developed vaguely natural qualities: symbols and language that shaped their culture, group solidarity conducive to social contract, and tools

amplifying their strength and dexterity. Trial and error attempts succeeded after a number of failures and disasters.

What is striking in this picture is the artificial and original quality of the niche that humans built for themselves as their own environment. Their hesitating instincts guided them through a virtual world of symbolic links and signs, from where they returned with the schema of a hunt carved in stone. Fear induced humans to live in groups that gradually became structured and cemented owing to language. And so the bear, although stronger, fell prey to the ingenious tools and traps of humans.

In order to get their work done, humans needed to know, and in order to know, they needed to train. The labour of humans did not "get through" as raw labour but as labour backed by tools and training. Human observations leading to change came out of the laboratory of daily practice that enhanced the effectiveness of tools and the productivity of work.

There is something strange about human needs: once satisfied, humans change and develop new needs.* Inadequate work in the process of meeting these needs activates the loop of innovative learning and technology and eventually provides satisfactory solutions. This entire picture teems with loops and feedbacks. Always researchers, humans started from technology, innovation, and education applied to the individual, to their fellow-beings, and to society to build specific theories regarding them. In the Learning and Work scheme, work holds a central place. Education appears as a particular form of work, temporarily directed towards knowledge and skill acquisition to come back to the same perennial goals of producing goods and services, and acquiring wealth in the adult phase. Although the education period takes ten to twenty years, humans will spend forty years in a life of work. School is the anteroom of factories, companies, and institutions.

How does the centrality of work in the lives of humans hold up to the continuing depreciation of the idea of work in the history of humankind? To receive an answer to this question, it suffices to refer to the opinions of the philosophers of antiquity. Workers ranked lowest in the social hierarchy. Next came the merchants and the soldiers. The aristocratic élite of the wise men of the city were at the top. The dark centuries of the Middle Ages registered an increase in the dignity of labour. The guilds of craftsmen and traders commanded almost as much respect as the artists and master builders.

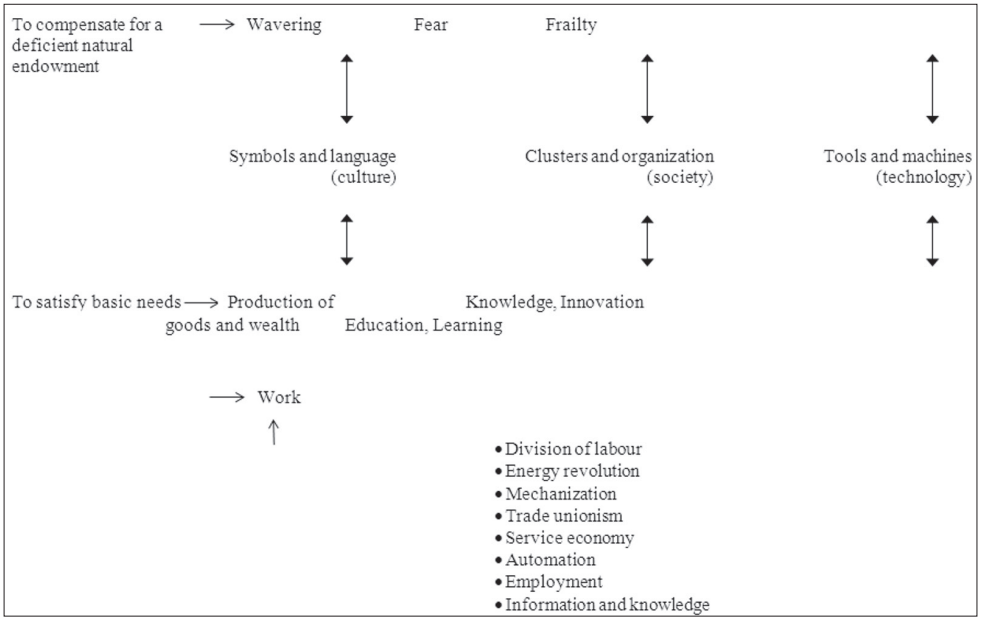
Still, the biblical curse lived on: banished from the Garden of Eden, Adam and Eve were condemned to live lives of human toil and sweat. The free gifts of the Garden were no longer within reach. Everything would have to be earned through labour. It was imposed by circumstances, and therefore it became inescapable. The division of labour increased the efficiency of human effort, but it also propelled a privileged stratum to the top of the social pyramid. It also lowered the status of raw, manual labour, based on pure muscular strength, which was even more despised as it was at least partially performed by slaves.

* An eminent logician, who was also very fond of wine, once told his students, to justify his weakness, and also to teach them a lesson in recurrent reasoning: "Every man is entitled to a glass of wine, but after he has drunk it, he becomes a new man, and is, therefore, entitled to another glass of wine, and so on".

The energy revolution came much later. For millennia, people and domesticated animals provided the energy that was necessary to produce goods. Another degrading association occurred: hard labour was used as punishment, for example on galleys or in mines. The social image of work was always negative: punishment for original sin, and alongside animals and slaves, raw and unrewarded effort.

Division into social classes followed the same pattern: the lowest stratum comprised manual workers, while the highest stratum was reserved for noble occupations such as decision-making, creative pursuits, command, and leisure.

Figure 1. How humankind compensated for physical frailty with intellectual development



The successive revolutions that modified the structure and social condition of work were triggered by technical factors (energy, mechanization, automation, computerization), scientific factors (knowledge), social and legal factors. Cultural elements also made essential contributions (*e.g.,* religions). After the dissolution of the Roman Empire, the monasteries became centers of agricultural production, hard work, and order, to wit, genuine anti-entropic knots in an anarchical environment. At the time of the Reformation, Jean Calvin established the major role of work and effort in achieving spiritual salvation, with considerable economic effects. This relationship induced Max Weber to trace the origins of capitalism to the ascetic ethic of work introduced by Calvinism.

It was energy, however, that changed the nature of work, removing its association with rudimentary and tiresome human effort. A new name should be invented for the man endowed

with energy: the *enerman.* The progress of civilization was marked by the steps forward in harnessing energy: agriculture and food owing to solar energy converted through photosynthesis, transport using draft animals and the wheel, and mills driven by wind or water. In modern times, society came to depend on steam, electricity, the internal combustion engine, and atomic power. It is inaccurate to say that people work alone. Humans are always assisted by powerful "slaves" that work for them.

Let us make a simple calculation starting from the equivalence suggested by Fourastié (1972) according to which a ton of coal is equivalent to the energy consumed by ten people working over a 300-day year. Before the industrial revolution, each person had only one energy servant, one *enerman.* During the past century, a person had 100 such slaves in the United States and thirty in France. Some 4.6 billion tons of coal were added to the power of every person in the world yielding fifteen auxiliaries in 1961 and twenty-two, in 1984. In 1990, total energy consumption provided each of the 5.3 billion people of the world with twenty-four invisible auxiliaries.

The human species owes its success to billions of *enermen.* These conventional creatures also have to be fed, alongside humankind, using the resources of the planet. Without them, humankind would never have reached a life expectancy about four times larger than in the early days of the species. One should add the amenities of the habitat, improved hygiene, more time for education and leisure, transport and communications, and many other benefits that are now taken for granted by a hedonistic and wasteful generation, which hates civilization and despises science and technology. The forecasts for 2020 predict a quasi-doubling of energy for a population of up to 8 billion. The most ambitious are the continents with smaller populations of *enermen* (Asia, Africa, Latin America), while higher consumption is envisaged in the developed countries. Nevertheless, even in the happiest of cases, energy use per capita will fall behind the leading platoon of North America and Europe by 1:3 or even 1:10.

The hunger for energy, as vital to civilization as food is to humanity, puts the learning society and the promoters of knowledge to a serious test. The reserves of fossil fuels are coming close to depletion. Non-conventional sources of energy, including the sun, the ocean tides, and the wind, are expected to take up the relay in this century. For now, the rises in the price for a barrel of crude oil are not particularly alarming.

In terms of power use, the human of modern civilization has finally taken his revenge on the human of the natural state, who used to be so severely disadvantaged when the species started to fight for its life.

3.2. The Man-And-Tool Symbiosis

We have gotten so used to the writings on the "impact of technology upon work" that we have reintroduced the loop of mutual dependency with certain reservations about the ascertained one-way determinism. Machines were born of the pressures of work. They are ingenious mechanical imitations of human gestures, substitutes for manual work. Special homage is owed to the human hand, which comes next to the human brain as nature's own cre-

ation. At first, industry was manufacturing, *i.e.,* making by hand. Before the advent of industry, there was the self-sufficient household, in which food and its storage, animal breeding, building the house and the stables, and weaving the cloth were all accomplished by hand, assisted by simple manual tools.

The symbiosis between man and machine goes back quite far. It probably began with the spinning wheel, which fascinated Plato. Tools have always inspired metaphors in the minds of philosophers. After Plato's spindle and shuttle, the clock was the philosophical metaphor for cosmogony. More recently, the computer became the point of reference and inspiration for brain researchers, while computer science was assimilated to the "nerves of the governance" (Deutsch, 1963).

A genuine affective bond was established between man and his tools, and that special intimacy is quite visible at the level of a handicraft workshop or in rural households.

In the age of mechanization, the human-machine symbiosis firmly established humankind in a position of unprecedented power, a fact that should have enhanced the dignity of work. At that point, the physical force required for the accomplishment of a task was amplified, and even manual technical operations became more effective. The worker acquired more hands than Shiva, the Hindu god. But the history of the man-machine symbiosis was an agitated one, filled with controversies and disputes. At an early stage, it was marked by worker uprisings against machines. The introduction of the mechanical loom in England caused a revolt of the workers who were afraid of losing their jobs. The Luddite movement became violent; its leaders were eventually hanged. Ever since that time, that destructive reaction has been remembered whenever highly efficient technology has improved human productivity, while rendering certain of the older tools useless.

During the industrial revolution, the first generations of machines required the frequent intervention of a supervisor who had to perform a sequence of operations before handing over to the machine. Who assisted whom? The fact that the man-machine linkage, whereby human work combined with that of the machine in a series of mechanical gestures, had to keep to a certain pace diminished the claim to dignity of the machine-ennobled work.

Things became more serious once the production line was introduced. A conveyor moved a part of an assemblage in front of workers who were expected to perform certain operations on it within a short period of time. The image of Charlie Chaplin driven to exasperation and madness, as he was compelled to perform the same simple operation at an increasing speed, was a most merciless criticism of intensive mechanization as an attack on human dignity. Sociologists promptly denounced "le travail en miettes" (Friedman, 1956). The economic crisis of the 1930s and the Second World War that followed were not able to bring any remedies.

Towards the end of the Second World War, the file on the dehumanization of work was eventually re-opened. When automation enabled the machine to take over repetitive operations, the worker acquired an ability to see the whole picture of the process, to understand

the significance of various operations, and to establish a co-operative relationship with his or her colleagues. The "team" formula suggested by the so-called Scandinavian experiment began to gain acceptance. IBM was one of the first large companies that applied it. The workplace was freed of the stress of mechanical motions. It became the site of team formation and collective responsibility. The rapid pace of technological change prompted managers to introduce refresher programmes or additional training. Many of them adopted the "learning corporation" formula in response to the perceived need to consider the work process as a learning process involving the workers as conscious participants.

After 1950, the new trend of cybernetics began to identify common processes in machines and in living organisms. This development was paralleled, at a practical level, by the progress of automation and the advent of the era of robots.

While the deeper division of labour, coupled with an enhanced use of energy and mechanization, significantly altered the nature, position, and functions of work in production processes by continuously reducing the number of people required to perform a given job and increasing qualification requirements, automation also began to threaten the very existence of traditional jobs. It brought along the menace of a complete substitution of the person by enabling the machine to perform as well as him or her and even better.

Technology took a step forward in imitating and surpassing human work. In the first stage, it focused on the muscles, the arms, and on sheer strength. In the next stage, it addressed dexterities through the use of fine mechanics. Finally, technology began to replicate human senses: it was able to see, hear, feel, and even smell. Ultrasensitive sensors and ultraprecise measurements allowed control over all the thresholds between operations, no matter how minute, calling for more sophisticated technical interventions, beyond the level of discrimination of the human senses and human observation.

Automation confronted the notion of work with new problems. On the one hand, man was empowered to control, supervise, and monitor the work performed by machines. On the other hand, automation threatened to reduce the employment possibilities of humans. In terms of qualification, the requirements remained unclear. Some managers claimed that such requirements could be minimal (supervising the machines amounted to pushing buttons without necessarily understanding the complex underlying processes). In the phase of computerization, new jobs began to be created, which demanded precise qualifications (*e.g.,* programmers and system analysts) for the maintenance of complex systems that covered and unified the entire activity of a company.

When referring to technologies, it is necessary to include scientific research. Various analyses of the industrial revolution seemed to indicate that technological advances were more indebted to the experience and competencies of the practitioners than they were to scientific laboratories and universities. Today, the boundaries between science and technology have grown fuzzy. The two occur together in organizational charts (Research and Development) or in great strategy debates (Science/Technology and development (see UN Conference on Science and Technology for Development, Vienna, 20-31 August 1979)).

All the branches of science, not only the more spectacular ones such as physics and biology, made notable progress with significant practical applications. It would seem that, once the mechanics of solids and fluids had said everything that had to be said to industry, aviation, and navigation, new branches tended to emerge such as the mechanics of wheels, of dust, of sand, or of mud. All these had important applications ranging from the mechanics of derricks to the chemical and the food industries.

"Technology does not eliminate jobs; it simply moves them."

The tandem, S/T, contributed to the development of electronics, which produced the microprocessor, the basis of automation. It also ushered in the computer and the explosive development of the telecommunication industries. It all started from the observation that diodes and electrical circuits functioned according to a Boolean, linear logic. That was the case with the early computing machines and with arithmetic calculus. The advantage was decisive: enhancing computation speeds. Miniaturization, owing to the use of transistors and to program storing on microchips, brought about the most rapid and sweeping changes of which any technology could ever dream. The binary calculus of computers spanned all analogical technologies. We are now in the era of digitalization, of representing information through binary calculus (image, sound, text).

3.3. The Service Economy

The new activities and jobs follow a principle deriving from the experience of the past decades: technology does not eliminate jobs; it simply moves them. Jobs disappear from or decrease numerically in the "classical" sectors (agriculture, manufacturing, and services), and they appear in fields that did not exist before in that form. Nothing is more relevant for the transformations that occurred in the nature of work than the shifting proportions of the active population employed in the three classical sectors. At the end of the Nineteenth Century, Germany was an industrial country with a population distribution of 40/35/25 (percentages of the active population in the three sectors). At the end of the Twentieth Century, the figures were 5/45/40. In all the developed countries, mechanized, chemicalized, and irrigated agriculture employs a maximum of 5 percent of the active population. The manufacturing industries now represent 45 percent or even less in some developed countries. The greatest leap forward was taken by the service industries, which moved up to first place, employing more than 50 percent of the active population.

The progress of civilization thus appears to be a constant process pursuing precise trends: the proportion of the employed population active in agriculture and the primary resources has gone down from 90 percent to less than 10 percent today. The manufacturing industries remained in second place, employing about one-third of the active population. Services absorbed over half of the workforce. We have entered a new phase, that of the service economy. In the course of a century, we have seen how the visible hand of technology dislocated humans from one sector and moved them into another, as machines made raw or less qualified work unnecessary or useless.

Table 1. Employment trends from agriculture to services

Primary	→ Secondary	→ Tertiary
Over 90%	Less than 5% ↑	Less than 10 %
	Around 50% ↓	↑ Around 33%
Less than 5%	Around 33%	↑ Around 66%

Note: Historical trend: workforce in the three sectors.

This table provides the key to the unemployment problem, which is nothing but a bottleneck. The labour force in the primary sector is not prepared to work in either the secondary or the tertiary sectors, nor are the tertiary or the secondary sectors open to workers who do not have the necessary qualifications. The sectors that are tending to reduce their labour force (always the primary sector and, more recently, the secondary sector) have only one outlet, *i.e.,* services. Still, it is very difficult to move from cattle-breeding to programming the holidays of other people on a computer inside an office!

The key to inter-sectoral mobility lies in education. We may accept the explanation that high unemployment, in many developing countries, is linked to the fact that the educational system does not function properly. Why then does this phenomenon persist in countries with strong educational systems, such as the European countries? It is because those systems were designed as splendid instruments for a time of slow and incremental change. In our world, these are no longer adequate.

There is no distinct and clear-cut delimitation among the three sectors. A mechanized and automated farm poses the same operational problems as any industrial unit. The secondary sector itself is now quite different from the old manufacturing industry. We are talking here about production systems in which services absorb up to 80 percent of all manpower and financial resources in such fields as R&D, storage, maintenance, control of vulnerabilities, financial activities, repair systems, monitoring, distribution, customer service, and waste management.

The advance of services has highlighted another alteration in the nature of work: a vastly increased hunger for increased monetary remuneration. When money is the main form of remuneration, the system is monetarized. During the Industrial Revolution, money became the essential key for organizing the production system. Before the Industrial Revolution, most of the resources, which were mainly produced and consumed in the agricultural sector, were related to a system of self-production and self-consumption in a non-monetized system.

In the monetarized part of the economy based on exchange, the money may appear explicitly as the value of the goods exchanged (monetized) or implicitly, when there is a potential value attached to them that could be calculated in monetary terms, but is not.

In light of the distinction between monetized, non-monetized, and non-monetarized activities, the essentially agricultural society can be defined as predominantly non-monetized.

When commercial exchanges take place, we are in the realm of monetized activities. An example of non-monetized but monetarized (reference to money) was the type of exchanges performed by the ancient Greeks around the Black Sea (oil and weapons in exchange for grain and honey).

Now, the methods used in the classical industrial period, which associated productive employment with remunerated (monetized) work, have become a subject of debate. Early in the Twentieth Century, Arthur Pigou (1908) revealed the paradox according to which a bachelor employing a woman as a housekeeper caused the aggregate national income to fall when he married her. Work that previously had been remunerated would now be unremunerated.

The case of the kindergarten is also relevant. The education it provides can be supplied either through an organized (paid) system or through grandmothers, grandfathers, or other relatives who can do the equivalent job free of charge. In the first case, the work done by specialized teachers in kindergartens counts as productive work, which adds to the GNP, while in the second case, the work is not viewed as such.

The Service Economy has changed the manner in which this kind of work is analyzed. A growing part of the non-monetized activities is viewed as a form of productive work, which contributes to the wealth of nations. The optimum equilibrium of the monetized and non-monetized activities is still to be explored in order to arrive at new synergies and mutual integration.

There is another new trend: producers of goods and services try to pass part of the work on to the consumer. The production system includes not only distribution or disbursement, but also utilization. The consumer is actively involved in the utilization phase by putting up a non-negligible quantity of work. The introduction of self-service restaurants that transfer the ordering and serving process to the individual consumer instead of employing a waiter, or the substitution of a bank attendant by automated teller machines – expecting a higher usage knowledge at the level of clients – are just two examples. The consumer is transformed, according to Alvin Toffler (1985), into a "prosumer". It is now quite common for most citizens or families to drive cars themselves, without hiring drivers, to repair electrical or water connections without calling the electrician or the plumber, to tend the garden without a gardener, or to cut the children's hair without going to the barber. Those are all instances of non-monetized activities.

This overall picture leads to several conclusions that are pertinent for the Learning and Work analysis.

The first one of these is that all of society is working, even though one is used to thinking that such a description applies only to the active and remunerated part of the population. Beyond the established categories of paid work, beyond the low and the high age limits, beyond the legally assigned work hours, people are working and producing goods and providing services.

Second, the three identified forms of work (*i.e.,* monetized, non-monetized, non-monetarized), which broadly match the three forms of education (*i.e.,* formal, non-formal, and

informal) add up to a lifelong working system with recurrent phases that operate according to the same prerequisites that apply in the case of lifelong learning.

Third, the human-machine relationship should not be reduced to the substitution of the work of a person by the work of the machine; it should be viewed as a new type of work: a person's symbiotic work with the machine. Surrounded by the artificial environment of their tools and machines, humans work in order to use them. They train and qualify with this aim in mind; they continue to produce those special goods and to supervise them during the phase of utilization.

Fourth, the service economy introduces a new perspective on the value of a product or a service (*i.e.,* its performance value) measured in terms of its functioning over a period of time. The cost-benefit ratio is no longer estimated by comparing the production costs to the selling price. The costs comprise the design, the manufacturing, the distribution, the utilization, and the disposal or recycling. The benefits are now measured by the performance during the period of utilization. Therefore, should consumer training not be included in the cost? Should we not recognize that this argument supports the Double Helix project?

3.4. The Management and Legal Framework

In the second half of the Twentieth Century, "crisis" was the term most frequently used to describe the state of social life. This term applied to all domains, and it was followed by successive "revolutions" that opened new paths. The titles of successful books heralded the "death" or the "end" of all classical concepts, from history to man. Seldom have new trends of thought come successively into the limelight as during this period. It is worth noting that most of these trends have had a direct impact on the relationship between education and work. One of the above-mentioned "revolutions" was the one that occurred in the sphere of management. Until then, the latter had been quietly dozing inside Business Administration courses. It would soon become a doctrine, a discipline, and a universal panacea. The main idea was that the way processes were conducted and administered was the most important element in the science of organization and its capability to control and command. Resources, capital, and even work were relegated to a secondary position.

It seems paradoxical that it was a mathematical method developed to maximize the effects of bombing raids during the Second World War that inspired this new managerial school. Starting from the question, "How many bombs of each type should be launched during each operation?", the "Danzig" linear programming was born. It produced an entire mathematical theory on the optimization of non-linear programming, which preserved the name of its original military destination: operations research.

The method was successful when applied to the optimal mode of how to distribute machines in factory halls, how to organize the equipment, how to establish a production plan. Linear programming invariably called for the elimination of certain products or processes in order to enable the remaining ones to fall within an optimized goal. The euphoria caused by the first wave of calculus-based management lasted for about two decades. Game theory, queuing theory, equipment theory, stock theory, and quality theory were added to programming. At

that stage, the effect on work was the same as that of mechanization. Job loss, however, was not determined by the introduction of new machines, but rather by their disposition, which was decided by a competent manager.

In exchange, an idea supporting education gained ground. Management was turning into a science that had to be learned. Up until then, the leader had had to possess inborn qualities and acquired experience, while management had been viewed as an art and a combination of skills rather than as a package of transmissible information. Work was still generally approached under the influence of the tension between art (talent, experience, skill) and science (knowledge that could be systematized and theorized).

The favourite topics of management pertained to the production process: quality, reliability, productivity, and profitableness. A good manager was supposed to deliver growth in all those sectors. Increased competition led to the use of similar techniques in marketing as well.

Creative societies:

The other great innovation of the first decade of the new millennium was the recognition and funding of types of activity that offer an alternative to traditional work. All Europeans were given the right to devote several years of their working life to collectively useful tasks that would not find a buyer in a strict market economy: services of general interest, cultural events, work in a non-profit association, services for the poor or even rearing children. This entitlement has been set at five years full-time throughout the Union. It is left to individuals to decide how to split this time up over their lifetime, depending on their plans and commitments (some will prefer to take periods of sabbatical leave, others will continue to work but will set aside a third or a quarter of their time for non–remunerable activities). (European Commission, *Scenarios: Europe in 2020: One Europe – Five Destinies***,** 2000).

Marketing became so important that it developed into an autonomous body of knowledge and techniques. Together with price strategies and capital assets management, calculus-based methods enhanced the degree of knowledge that had to be invested in management and organization.

The effects were considerable. Suffice it to mention the role played by quality management in building the industrial power of Japan. The ability of the Japanese to use sophisticated techniques in controlling complexity was also demonstrated in the utilization of fuzzy logic in transportation planning for big cities. No matter how highly the virtues of the Japanese labour force were praised for producing the economic miracle, the rigorous and detailed application of certain mathematically based procedures and knowledge was really decisive.

The turning point in the orientation of management science was not late to come. The potential of calculus might have been exhausted after making the most of the optimization processes. Parallel to other social developments, the large numbers of people working under the orders of managers suddenly came into the limelight. They acquired a new importance

with the understanding that the success of their corporations or industries increasingly hinged on them. That accounted for the enhanced role of decentralization, communication, participation (in connection with decentralization), and innovation. Finally, management was dethroned by entrepreneurship.

A company that had made use of all the recipes of optimization to reach a maximum level of efficiency discovered that it was the prisoner of that ideal organizational solution the flaw of which lay in its fixity. Perfection and excellence thus hindered the continuing process of adaptation to the ever-changing market conditions, techniques, and demands. The traditional pyramidal organization formula proved to be exceedingly rigid and therefore vulnerable.

The savings achieved as a result of curtailing the chain of command and excessive centralization did not provide guaranteed protection against accidents: the failure of a node in a tree-like graph triggered the blockage of the entire subsumed sector. Thus, an era of decentralization began, *i.e.,* pushing responsibilities, competencies, and even initiative downward along the line. Companies became increasingly flat. Services acquired autonomous status; entire departments became quasi-independent. The pyramid became a network.

Communication was essential for the functioning of horizontal structures. The network could not be reduced to obeying the disposition transmitted vertically from a command node to another down to the workplace. A massive and complex communication system, which prevented possible mistakes and accidents by means of redundancy, was able to take advantage of the facilities provided "just in time" by the information revolution.

The decentralization of the structure and the multiplication of the nervous strings that ensured its unity opened the way for the involvement of workers in the management process. The newly created self-control teams began to take technical decisions and to rotate individual roles, freeing individuals form the burden of repetitive work or overspecialization and involving their understanding and support of the larger projects of the company. That was a most significant step forward for the work factor in the hierarchy of value and dignity.

What did the company gain in the participatory stage from decentralization and communication, viewed as factors that no longer belonged to the classical formula "resources-technology-capital"? It gained flexibility and readiness to adapt. Rather more than "the Adaptive Corporation" (Toffler, 1985), it became "the learning company" (Botkin, Dimăncescu, and Stata, 1982).

There remained one more bastion to conquer in order to increase competitiveness: innovative capacity. In order to win in the market it was not sufficient for the products to be the best (in point of quality, durability, functioning, safety, and price). They had to be new. Enormous investments in research and development were no longer able to quench the thirst of consumers for novelty. It was discovered that the participatory involvement of a well-trained labour force could be a precious source of ideas, suggestions, and proposals.

Innovation started to be viewed as the essential factor of modern production and the fundamental prerequisite of success. What happened to innovation had also happened to management sometime earlier. Once viewed as an art, it gradually became a science. Its source

was no longer considered as a special gift or an inexplicable illumination. "It is capable of being presented as a discipline, capable of being learned, capable of being practiced" (Drucker, 1989). The human resources of a company or institution started to be measured according to their capacity (*i*) to learn and (*ii*) to innovate.

Innovations also penetrated the school curriculum, as well as the huge number of circles, courses, foundations, institutes, and magazines seeking to enhance creativity in general and innovation in particular (especially in technology). According to Drucker (1989), the random character of external events, the incongruity between existing and desirable reality, the needs surging from ongoing processes, the changes in industry and market structures, and three other external changes involving demography, mentality and perception, and knowledge are the seven pillars of innovation. This new characteristic feature of the present or foreseeable trends in wealth creation is upgrading the role of education in its endeavour to meet the exacting new requirements for well-trained working people.

It is important to refer to Peter Drucker for an understanding of the current stage of the management science. From the end of the Second World War to the mid-1980s, his books were regarded as guiding lights in management, which he always described as "useful knowledge" or "social technology". He claimed that, after 1955, "the entire development of the world experienced a management boom". However, in 1985, he suggested that a new phase was setting in. He described it in *Innovation and Entrepreneurship* (1985), developing for it a logic that he had previously used for management: its principles, practice, and discipline. While the Americans believed excellence in management to be one of the driving forces of their economic supremacy, Drucker (1985) viewed the United States as maintaining the same role during the entrepreneurial phase. He constantly gave more credit to management and entrepreneurship than to technology in enhancing economic performance.

The transition from management to entrepreneurship also highlighted another departure from reliance on technical recipes for optimization. It was the discovery of the cultural dimension of organization arising from non-quantitative factors: values, attitudes, styles, beliefs, and mentalities. Under the title of "organization culture", it even flourished as a reaction to the technical, scientific, and measurable conception of management by emphasizing the human factor. Instead of a universally valid management, the prize went to the management that was adapted to a particular place and which became specific precisely because it differed from other cultural environments. One may say that the new school answered the needs of companies, especially the transnational ones, to expand to other countries and continents. Leaving aside its abhorrence of "universal" patterns, the cultural trend gave working individuals a new perspective compared to that of management science: their own distinct identities as people with their own language and beliefs, history, and habits that resisted the blind permutations of the global market.

At the end of the road, when we utter the word, "work", – at least in the developed countries, but also in a growing number of other situations – we have in mind an entirely different image. It is certainly not that of the industrial economy, no matter how much it has improved in the past three centuries.

The image is that of an agent possessing a high professional culture based on learning and experience, attested by diplomas and certificates, freed from the servitudes of physical effort. The working person of today lives in a symbiosis with the machine (a mutual assistance pact), shouldering responsibilities, producing innovations, and enjoying a remuneration that places him within the middle class. The hourly wages of a skilled worker are actually higher than the average earnings of clerical staff.

The position that work holds among the other social activities is not solely determined by the conscience of the public fora, the wisdom of the managerial class, or the clear-sightedness of the business community. It is also the result of long fights waged by labour unions to gain certain rights that were gradually written down and then acknowledged in national and international legislation. Since the end of the First World War, relevant legislation has started, progressively, to cover work rights and conditions, insurance, and fair remuneration.

At the International Labour Organization, this process currently takes place in a triangle involving government, employers, and employees, that is, as a recognized institution in the functional structures of certain advanced states, such as Germany or Switzerland. A large number of countries have ratified the existing international conventions banning discrimination in the workplace (*e.g.,* women's rights or the protection of certain vulnerable categories, for instance, children or the disabled).

Still, there is a dark spot in this picture. Workers who enjoy so many rights find it increasingly difficult to enjoy the security of their employment. Unemployment has become the chronic disease of underdevelopment, making emigration the only solution in sight. Work has received the mantle of nobility, but it cannot be performed. This nightmare also haunts those, who, even if they have had an opportunity to learn, cannot make use of their knowledge. This situation prompts us to take a closer look at the relationship between education and work. What is striking is the similitude not only between the deficiencies of the two twin spirals but also between the available remedies.

3.5 Learning and Work: A Parallel History

A close examination of the components that make up a pair of "inseparable antinomies" (as one author described the dichotomic and contrasting polarities that are still inextricably linked, such as education and work) reveals an unexpectedly complex picture of relationships. Even if one calls "education" one thing and "work" another, as two distinct activities that only succeed each other, they actually have many things in common.

First and foremost, they are both long and compact stages covering large portions of a person's life: education for 10-20 years and work for 30-40 years. Other than early childhood and the years of retirement and old age, the two stages stand for the entire significant life of an individual.

They both take place *intra mums,* behind closed doors, and in relative isolation. The schools, on the one hand, and the enterprises or offices, on the other, are more or less clearly delimited enclaves. A homogeneous population displaying common features inhabits each

of them: pupils for one, workers for the other. They both have strict disciplinary rules that specify precise obligations and exclude or limit liberties. Barracks and the hospitals are probably the only comparable enclaves. Until it is understood and accepted, discipline is imposed from the outside and is perceived as an encroachment on personal freedom.

The reaction of the "natural" human is comparable to that of an animal subjected to domestication. The pupil is like a young horse about to be saddled, while the worker is like a horse pulling the cart. Evading the rules brings public opprobrium on the rebellious child and on the socially unadapted individual alike. Education and work are socialization and professionalization processes. What would a child or a worker have felt for centuries, when brutally awakened from sleep in the morning in order not to be late for school or work, other than the unpleasant pressure of coercion?

However, neither of the two structures is a caprice of a society bent on controlling its members by sheer terror, nor is it a gratuitous demonstration of power on the part of the controlling institutions. Individuals do need to become familiar with the symbols and tools that make up their own environment. The only serious problem is that poorer countries cannot afford to transform those imperative requirements from tough constraints into enjoyable and ludic activities.

The two structures are eminently hierarchical, vertical, pyramidal, with supreme leaders and intermediaries whose authority cannot be questioned. They give orders; they do not make recommendations. Both activities are programmed and standardized (the curriculum, on the one hand, and the production programme, job description, and operations manual, on the other). Incentives, motivations, and rewards play an important part in both of them, but there are also reprimands, punishments, and fines. The pupil is provided for by his family or by the State, while the worker earns his own living. The attitude of society is gentle (in principle) towards pupils, who are viewed as the future of the nation, but it is less affectionate towards working people (they are not told that they are the wealth of the nation).

Both activities have been increasingly regulated through legislation. They are supervised by rather bureaucratic institutions that function within a complex legal system. Road maps, performance evaluations, personal files, certificates, and permits have been devised for those two stages of an individual's life (education and work). It is not only the rigidity of the laws that makes them conservative; there is also an engrained loyalty deriving from affiliation with a certain school or company. Each of them provides the individual with its own reasons for taking pride in being "one of us": history, tradition, and recognized accomplishments. There are élite schools and "blue chip" enterprises. Both are deemed to pursue quality and excellence.

Pupils in schools have fewer means to resist inequity, exploitation, or abuse compared to workers in enterprises (*e.g.,* crippling strikes). Working people are adults with legal rights, while young people have guardians and cannot, therefore, have recourse to the law. There are other differences as well. The unforgiving laws of the market sweep away inefficient enterprises by driving them into bankruptcy, while schools are seldom closed for reasons of poor performance.

The schools are closely watched by government inspectors; their budgets are under constant scrutiny; but they do not have an acute sense of competitive pressure, which is crucial in the sphere of work. The parallel is restored, however, when reference is made to the social environment. Neither education nor work can break out of the parameters of a society's level of civilization; they cannot ignore the constraints of existing resources. General mentality, attitudes, values, and beliefs specific to a particular culture are the limits to which both teachers and managers voluntarily subscribe; so do the pupils and the labour force. When a culture is adverse to innovation and change through an addiction to traditionalism or mythology, arbitrary policies, futile constraints, and abusive suppression of fundamental human rights, the task of both education and work becomes impossible. The outcome is stagnation and paralysis.

"The information revolution – which ranks third after the agrarian and the industrial revolutions – is about to change education at least as much as it has changed industrial production or the service economy."

The parallel between education and work as described so far can be identified in the evolution of the classical economy. In the second half of the Twentieth Century, the pace of change was reflected in what we call the technological, social, and economic revolutions as well as in the value scale of mentalities and culture. The question here is not so much about historical similarities but rather about the way the two activities have responded to the great challenges of the time.

Far-reaching processes such as division of labour and specialization have an impact both on education and on work. School programmes tend to restrain generality and to encourage specialization, the same as work does. Neither the increased use of energy nor mechanization has influenced schools, even though they have transformed the nature of industry and work. One cannot claim that trade unions have only affected work, since teachers have been quite vocal in their demands concerning the organization of education. In exchange, the information revolution – which ranks third after the agrarian and the industrial revolutions – is about to change education at least as much as it has changed industrial production or the service economy. The explanation is simple: the computer is a tool of the intellect with a decisive role not only in knowledge application but also in knowledge assimilation. It is the tool that assists learning.

Here is a relevant example. What we call ICT (information technologies combined with communication technologies) has reached a level of development and accessibility that make two simultaneous processes possible: distance learning (DL) and distance work (DW). Both de-localize activities from their time-honoured sanctuaries: the school and the factory.

The Universal Declaration of Human Rights introduced the idea of dignity as a goal of the accomplishment of humankind. This goal is another common feature of education and work. The new trends in the analysis of work accuse the old schools of neglecting dignity. The behaviorists also denied the importance of dignity as a quality that gave meaning to work.

At the level of motivation, dignity plays an important part in education as well as in work; it gives a sense of satisfaction beyond material rewards or social recognition.

Currently, learning and work are two activities that are not only related, similar, comparable, and interdependent – as they used to be throughout their long and troubled history – but they have also become partners that are capable of playing interchangeable and complementary roles.

3.6. Learning and Work Programmes: The Initial Phase

The concern of education not to separate itself from work – as a final goal, an additional pedagogical instrument, or a link to real life – is old and topical at the same time. This duality is also visible in the way it has found its place in the edifice of knowledge. Let us examine the other perspective, that of work and of the way it has moved closer to learning in practical terms.

Primary and secondary education were the objects of early experiments in this respect. Up to the end of the Twentieth Century, the political map was divided into three distinct worlds: (*i*) the developed world; (*ii*) the socialist world; and (*iii*) the developing world. In the charts of international organizations, these worlds were identified either with numbers (1, 2, 3) or with letters (A, B, C). During the entire postwar period, which was dominated by the Cold War mentality, the Learning and Work idea functioned differently in each of the three worlds in terms of reasons and solutions. It was known as the EWP ("Education with Production").

Let us begin with the Third World. There was an ideological precedent here. According to Gandhi, village crafts, such as spinning, were reliable methods to build character and to cultivate self-reliance. Some Third World leaders, such as Julius Nyerere, interpreted idea as a means of shedding the colonial heritage. Then the notion of self-reliance moved into the area of economic necessities and rural transformation and acquired the status of a prerequisite for development. In 1975, all schools in Tanzania established their own production units. In Cuba, schools were allotted large crop fields to tend (especially of pineapples). The curriculum and the production plan became equal targets of school activities.

> The challenge of each individual, as subject of the learning process, is to acquire and maintain his own "employability", fully assume his responsibilities and compromises, enhance his culture and completely exercise all his rights, all pointing to a permanent or recurrent education during the entire life. Thus, each student also has the duty and the right to ask himself, according to his circumstances and possibilities, to what extent the educational offer and his own learning opportunities lead to the accomplishment of his life projects, instead of following a study program in order to obtain a degree, hoping to get a job, besides the cultural opportunities and of social involvement it can offer (Ricardo Diez Hochleitner, *Apprender para el futuro)*.

In the socialist countries, ideological motives took precedence because the worker was assigned the role of an ideal social prototype. His leading position was established in the

cultural superstructure that also comprised education in the organization of production and the fundamental institutions of the state. In the Soviet Union, those functions were reflected in production strategies; in the German Democratic Republic, in the polytechnic centers; and, in Romania, in the school-production-research triad. The ideological rationale also took precedence in China: production activities were sometimes performed in centers that allocated half of the time to work and half to study so as to impart the "right" attitudes.

In the West, the interest in Education with Production also had philosophical roots: pragmatism always attempted to balance a leaning towards theoretical elaboration with experiment and practice. Never before had school and production been so close to each other. But the forays of schools into productive activities rarely produced tangible benefits, other than the realization of certain social, cognitive, and moral goals (orientation, information, and familiarization).

Several reliable surveys indicated that, despite their multiplicity, the Education with Production experiments yielded negative results in all of the three worlds. The resistance of both parents and young people to manual labour, the fact that they viewed education as a means to escape the hard toil of rural life, the skepticism of teachers, the lack of enthusiasm on the part of enterprises that considered that their routines were being disturbed by this new complication, the exaggerations bordering on absurdity, that drove entire schools to harvest grapes, corn, or potatoes, seriously affected the credibility of Education with Production and slowed its application. The lack of clear guidelines, the absence of material conditions in schools and of educational conditions in enterprises, and the difficult assessment procedures contributed crucially to the decline of the Education with Production approach. The greatest obstacle was the rigid curriculum, which was unable to adapt and innovate in terms of knowledge and skills and stuck to the familiar path of teacher-based theoretical education.

The interest in Education with Production resurfaced in the last decade of the Twentieth Century. In the developing countries, now freed from the doctrines that consecrated underdevelopment rather seeking ways out of it, a new wind of realism and modernization began to blow. The trend was illustrated by the Rural Education and Agriculture Program (REAP) in Belize, the Self-Help Action Plan for Education (SHAPE) in Zambia, and the Polytechnic Education Support Programme (PESP) in Tanzania.

In those countries, where "scientific socialism" collapsed, following a period of rejection of anything that might have evoked the "cult of socialist work", schools entered the phase of computers, management, marketing, and exposure to new market economy conditions.

The most significant revival of the Education with Production idea took place in the developed countries. It happened because of a combination of reasons including the need for schools to establish contact with their social environments. The new concept was reflected, first and foremost, in integration within the community, a target of utmost importance for Western society. But schools were also interested in establishing partnerships with enterprises in order to obtain their support for additional financing of education – an increasingly difficult task. A new definition of knowledge in relation to its usefulness and applicability began to gain ground.

A vast amount of literature is available on this subject. Sociologists considered it to be an ideal angle for the study of class divisions within society, perpetuated through education and consecrated during one's working life. The new formula assigned to the school the task of reproducing the hierarchy and the power relations in society by means of a system of values, norms, and languages. The emphasis was on inequality and discrimination in the field of work, for which school is a mere rehearsal. Some American authors – free of European ideological accents – adopted a functionalist perspective and offered the vision of a society that is busy preparing young people to become competent adults, *i.e.,* training them for their future jobs: organization, control, and hierarchy, which are replicated to this end by the school.

One might well ask from where the increasing degree of nonconformity that dominates schools and the vindictive trend that troubles the harmony of life has come. The variety of opinions is huge once one considers a cultural perspective, which also includes ideology. If one seizes the more neutral ground of information, the approaches appear less controversial. The normative theories speak of a school of "social efficiency". The Learning-Work link presented is that vision of the school as training "workers in the appropriate numbers, with suitable skills and behaviors to serve the system of production". At the opposite pole, we have Dewey and the "progressive school", according to which education should not be assigned goals with a specific output. Without completely ignoring the specific professions, education should also consider the free development of the child's personality, talent, and resources, and therefore it should provide him with a variety of stimulating experiences.

The main positive input in the development of theory did not come from either philosophers or sociologists but, rather, from the economists. In 1965, the United Nations Economic and Social Council (UN/ECOSOC) adopted a resolution concerning "human development", a dimension that had been neglected during the heated debates on the new economic order initiated by the developing countries in 1964, in Geneva. The issue would subsequently rank high on the agenda of international organizations. The UNDP "Human Development" series has been issued ever since. After the Social Summit in Copenhagen (1995), a new session dealt with "humane development", thus introducing new ethical concerns. As long as the concept was not used as a counterweight to inaccessible or undesired technology, the idea of human development enhanced the efforts of developing countries in the area of education. It was eventually accepted as a policy guideline for all countries.

The opening of the "human development" chapter was the most significant contribution to economic theory, firmly establishing a bridge between education and work. It is a quite different chapter now. "Physical capital can always be repossessed and resold.... Human capital cannot be repossessed and resold" (Thurow, 1999). Ultimately, education is an investment in the development of skills leading to higher workplace productivity and to higher earnings on the labour market.

The literature on that specific subject tackled two aspects. One is the worker effect, that is, greater literacy and knowledge results in enhanced productivity (speed, quality, etc.) in the workplace. The second effect, which eventually also has an impact on productivity, refers to the improved judgment of workers regarding decisions on resource allocation and time

management. Basically, the whole question has to do with the ability of humans to obtain access to information and to process it sensibly. This new skill enables workers to take up the participatory role required by the new organization of enterprises. The question here is that of a management requirement that is understood and accepted by the investor.

At the level of principles, the Learning and Work literature is more abundant and advanced than it is at the practical level of implementation. It stresses the need to overcome the inflexibility of the curricular and diploma systems. The individual with a diploma acknowledging his or her educational accomplishments finds him- or herself in a limbo at the threshold between education and work. The debate over the "Diploma Disease" reveals how imperfect this junction is.

An entire school of thought evolved from a book, bearing that title, written by Ronald Dore (1976). It acknowledged the historical importance of educational certificates that came into being at the beginning of the modernization process. But it also pointed to the inflation of qualifications, and it questioned both the causal relation between educational qualifications and earnings and the value of credentials as indicators of the ability of people to perform productively on the job.

No one denies that literacy is a precondition for modern work and that schooling yields social and private returns. Nevertheless, the enthusiastic thesis about the value of human capital comes into question when it becomes necessary to demonstrate that additional schooling leads to productivity gains or that scholastic ability is relevant to the needs of modern sector jobs. It is, of course, a frustrating experience for those who have their experience and abilities in the workplace defied by a young graduate who, by virtue of some diploma, claims a better job, a higher salary, and rapid promotion.

As a reaction to the "human capital" school, which invests in education because it embraces its formative virtues, the practicist "screening" trend, based on skills and aptitudes, has developed more recently. It focuses on reducing the abundance of required reproductive ratings and on the substitution of tests for diplomas when processing applications for jobs.

To those looking for new and innovative solutions to the Learning and Work relationship, the content of that debate is just a symptom of an unsatisfactory state of affairs. Both sides of the debate are "right": (*i*) The role of the school in the formation of the labour force is justified, and educational certificates must not be banished from the selection or promotion procedures. (*ii*) Although the school does not provide sufficient input in regard to relevant training, the practical value of graduation certificates should not be questioned.

The development of a modular system of credits accumulated with a view to meeting a certain target *(e.g.,* a well-defined activity) would make the diploma debate pointless, even though the tensions between theoreticians and empiricists is likely to last forever.

3.7. Learning and Work Programmes in Full Swing

The conclusions to be drawn from the current phase of Learning and Work are well summed up in the following identified trends:

- The emphasis has shifted away from preparation for work in schools toward the concept of lifelong learning that is work-related.
- There is a realization that both technical and social and interpersonal skills are required in the workplace and that these need to be readily transferable.
- The old dichotomies between liberal education and vocational education and between education and training are breaking down.
- Preparation for a life of work has implications for curriculum content, pedagogy, and the organization of schooling.
- Rapid technical and organizational changes in the world of work have profound implications for education.

All these trends are valid and evidence-based, starting with the acceptance of the idea that the old dichotomy. Education *versus* Work has a new chance to be resolved in the framework of lifelong education. The conclusions lead to a new series of innovations that the present trends make possible.

In order to review the emerging opportunities, we shall resort to the double helix metaphor as well as to that of the zipper that brings them together. The starting point is the fact that both halves have progressed a great deal and have initiated (not necessarily corresponding) changes. The question as to whether or not the acquisitions of Education include suggestions for Work, and the other way round, may lead us to the schema of a much more daring programme as compared to the current period of research and experimentation, no matter how intense they may have been.

i. *Lifelong learning through Education still has no clearly determined equivalent in the sphere of Work.* A finite and closed segment of work seems to oppose lifelong education.

ii. *Distance learning and teleworking already exist, thanks to the same technology.* They open widows in a learning-work continuum, which allows transfers from one helix to another as well as the simultaneous performance of both activities.

iii. *Part-time learning and part-time work exist owing to the evolution of the labour market.* The growth of evening courses and distance learning systems indicate new trends in education. In France, the demand for part-time jobs is encouraged through measures such as the reduction of the social security contributions required of employers. A parallel evolution of part time activity is obvious in both Education and Work.

iv. *Alternation is a current practice in education, but it has no equivalent in Work.* It consists of the systematic inclusion, in educational programmes, of periods of work outside the institutions of learning. There are successful examples of alternation in education in Germany (the country that has kept and has modernized the apprenticeship tradition) and in the Netherlands. These are part of a series of efforts

to bring secondary and higher education into a functional relationship with the labour market. Nevertheless, the worker is refused the opportunity of a similar attachment to the formal educational system, even though on-the-job training and other forms of professional recycling inside the company have considerably increased.

v. *Modularization is a method specific to the organization of knowledge.* Its philosophy has long been applied in the production of parts and in assembly work as well as in flexible production and, more recently, in the manufacturing of tailor-made industrial goods. In education, it is used mainly in the sphere of vocational education, where its usefulness has been recognized. Vocational models are only a step away from practical training for machine handling. The technical know-how is still presented in the form of compact handbooks or operating manuals.

vi. Teamwork is much more frequently the object of experimentation by modern industrial managers than it is by educators. Nevertheless, successful projects have been tried out in elementary education (in Australia, for instance).

vii. *The most interesting and advanced initiative for Learning and Work is recurrent education.* It is the form of lifelong education which was once called "permanent education". No international debate has ever come so close to the real solution to the Learning and Work relationship. In 1968, Olaf Palme (then Swedish Minister of Education) presented the idea at an OECD meeting. In 1973, the Center for Educational Research and Innovation (CERI) of the OECD discussed a report on the implications of the new proposition. It sought mainly to promote the "complementarity between learning taking place in schools and learning occurring in other life situations. Such complementarity implies that degrees and certificates should not be looked upon as an 'end result' of an educational career but rather as steps in a process of lifelong education development across the life span" (Tuijnman, 1996). All the elements that are relevant today were foreshadowed in that study. At the end of an educational cycle, the student is provided with a curriculum giving him or her a real choice between further study and work. There is co-ordination between educational policy and public policy in general and labour market policy in particular. The system provides opportunities for adult education in universities, acknowledgment of the value of credits gained through non-traditional educational routes, abolition of terminal stages, so that all tracks lead to other programmes, alternation of education and work, possibility to pursue any career in an intermittent way, and alternative work and study.

Everything that is of concern to us today – unemployment, the social imperative of providing chances for success to the young, the aspiration for greater social equity and the fight against discrimination, the interest in the value of personal initiative – was also topical in 1968. Global conditions, however, changed in the decade of recessions. The innovative élan and the prosperity of the 1960s turned to bitter disappointment in the 1970s.

It would be interesting to review the obstacles that brought that remarkable initiative so close to utter failure. Besides the troubled and unfavourable historical environment, the following impediments can be listed:

- The institutions at which the new approach was aimed (schools and companies) were not ready to move away from a piecemeal and *ad hoc* approach to a long-term view;
- There was increasing reluctance to undertake new financial commitments out of fear of additional costs (applicable to both the state and to the private sector);
- The persistently closed nature of university programmes left them completely unprepared for continuing education and unfriendly to outsiders;
- Rigid legislation and an inertia-bound, traditionalist mentality opposed continuing education;
- There was complete institutional inability to elaborate, co-ordinate, and manage a comprehensive social project designed to redistribute educational opportunities and resources over the whole life-span of the citizen;
- A growing oppositionist trend glimpsed a conspiracy of the decision-making factors behind any new structure or technology.

Obviously, the original project cannot be taken literally and transplanted into the reality of today, given the considerable changes that have occurred in the past three decades. Still, the persistence of obstacles might provide an incentive for the development of a more effective strategy. The novelty of the more favourable global environment of today brings into play supplementary elements: a fresh emphasis on knowledge and human capital as crucial factors in the production of goods and services, falling school enrollments and declining birthrates, the advent of new technologies, increased competition in international trade, and the emergence of market models driven by private initiatives. Methodological maturity in the field of knowledge organization and teaching, also illustrated by modularization and the extensive use of ICT assistance, is a useful additional ingredient to the external factors.

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Can we still comply with the maximum limit of 2 °C?
Approaches to a New Climate Contract*

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Abstract

The international climate policy is in trouble. CO_2 emissions are rising instead of shrinking. The 2025 climate summit in Paris should lead to a global agreement, but what should be its design? In an earlier paper in Cadmus on the issue, the author outlined a contract formula based on the so-called 'Copenhagen Accord' that is based on a dynamic cap and an intelligent burden sharing between politics and the private sector. The private sector was brought into the deal via the idea of a voluntary climate neutrality of private emissions culminating in a 'Global Neutral' promoted by the United Nations. All this was based on a global cap-and-trade system. For a number of reasons, it may be that a global cap-and-trade system cannot or will not be established. States may use other instruments to fulfil their promises. The present paper elaborates that even under such conditions, the basic proposal can still be implemented. This may prove useful for the Paris negotiations.

1. Introduction

In view of the current climate-related negotiations and the "schedule" agreed therein, this text presents a suggestion for a global climate contract for the end of 2015, which is to become valid as of 2020 and allows us to **still comply with the upper limit value of 2 °C** in spite of the **moderate economic growth in the industrialized nations and fast (catch-up) growth in the remaining countries.** The presented ideas have developed from my suggestion on how to reach a new climate contract which is based on the extensive 2010 FAW/n report on this topic, originally issued on the subject of climate protection for the Global Economic Network Sektion Deutschland e.V.[1,2] The updates refer to criticism uttered by attendees of a workshop in September 2013 at the Institute for Advanced Sustainability Studies e.V. **in Potsdam** led by **Professor Klaus Töpfer** on the subject of my original suggestion.[3] The present text has been supplemented by the experience gained from the congress on "For the economy and society: Added value through more forests" held on 20th March 2014 in Berlin by the **Global Economic Network Sektion Deutschland – Senat e.V.** and the **World Forest**

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"It will be in particular the wealthy premium segment, i.e. the globally most powerful consumers and their companies, who will indirectly pay for the "restructuring of our civilization"."

Further development of the suggestion as presented previously weakens the required political decisions and thus the rigorous nature of a potential global climate contract as opposed to the initial suggestion in some decisive aspects.[4] In particular, the text no longer assumes that the nations of the world will reach any agreement as to a global cap-and-trade system based on the Copenhagen formula over the next few years: **Nevertheless, the basic structure of the agreement remains as per what is known as the Copenhagen Formula (going back to a US-Chinese compromise):** The industrialized nations will reduce their emissions by an absolute factor, the non-industrialized nations by a factor relative to their economic growth rate. **In this course, the nations determine individually and independently their respective reduction target values (pledges).** A **Green Climate Fund** of at least 100 billion US dollars annually, funded by the industrialized nations, to support climate-related action in the remaining countries, is another essential part of the package. All this addresses **questions to justify** appropriately among the nations with regard to the climate issue, which is the **dominant first justice dimension** in the public debate in the context of climate issues.

All in all, the Copenhagen Formula renders a **dynamic global cap**, which may even grow temporarily and which is parameterized based on the economic growth rates of the non-industrialized nations.

For this scenario, the initial suggestion I have assumed is that the described structure could be transferred into a global cap-and-trade system.[5] As already mentioned, this idea was objected during the IASS workshop since a consensus **would be hard to reach on the political level.** This text thus only uses as a basis the weaker requirement that the nations of the world shall implement their pledges under the Copenhagen Formula via various implementation mechanisms which cannot probably be integrated into a uniform cap-and-trade system. Individual implementation components at the governmental level could range from carbon taxation across forced technical standards all the way to regional/national cap-and-trade systems (such as the European system of certificates). Furthermore, it is accepted that there will most probably be no internationally coordinated and monitored standardized measurement and monitoring system for emissions. The text subsequently describes how the suggestion as developed previously can be modified and/or amended in such a way that the described restrictions can be complied with.[6,7]

Based on the status of international discussions, after conclusion of the prep conference in Warsaw in 2013, the basic structure of a climate contract is presented which, on the one hand, appears feasible under aspects of "negotiation mechanics" and the initial situation and, on the other hand, allows us to still comply with the upper limit value of 2 °C. In this course, we try to consider any additional restrictions and/or requirements regarding a climate contract as mentioned during the workshop in Potsdam (exceeding the assumptions mentioned earlier). At the same time we also try to consider the partially very diverse interests of the various nations as well as the "negotiation stand-off" and the narrow remaining time slot until the end of 2015.

2. Fundamental Considerations Regarding a New Draft Contract

Subsequently, we will present a pragmatic proposal for a global climate contract. The proposal logically builds upon the Copenhagen Formula as described below and sees it in a positive light. We cannot expect a better result and this result is already a giant step forward. However, such a contract would not suffice on its own in order to comply with the upper limit of 2 °C. This would require further elements. In this regard, we place greater emphasis when compared to most literature on the potential of negative emissions (e.g. for time gain). Furthermore, the workload needs to be shared between the political and the private sectors (organizations, companies and private persons) and such a shared workload has become a conceptual objective. In this regard, the private sector greatly contributes in 2 ways: It pays (nations) either directly or indirectly for generating less emissions than acceptable per global climate contract in a certain national territory (e.g. by "withdrawing" emission rights). Altogether, this amounts to approximately 250 billion tons of CO_2 emissions by 2050 and it pays for "negative emissions" (altogether this amounts to max. 250 billion tons of avoided CO_2 emissions by 2050 which will be withdrawn from the atmosphere). This will happen in particular through means of biological carbon sequestration, primarily as large-scale reforestation projects on degraded tropical soil. However, it will also happen in the form of grassland management with forced humification and is about wetlands maintenance and management.

The central element to allow this great contribution in facts and funds is the concept of **voluntary climate neutrality** of important players (organizations, companies and private persons) against the background of an increasing "**moralization of the markets**" and an ever-strengthening CSR orientation of brand companies in simultaneous interaction with intelligent and high-performance consumers (e.g. known as LOHAS) in the context of a **sustainable marketing management**.[9,10] This concept furthermore promotes **technical civilization restructuring** by reducing emission rights and the corresponding **Green Race** in the field of climate-friendly technologies and can largely contribute to filling the **Green Climate Fund** for the benefit of developing nations. As of 2020, (a minimum of) 100 billion USD shall be available in the fund per year, however, its funding principle is yet unknown. Further financial contribution affects the promotion of developing nations, i.e. in the context of reforestation projects to generate negative emissions, which, in some aspects, feature cha-

racteristics of a **Global Marshall Plan**.[11] This is one of the pillar concepts of the highly successful kids' and youths' initiative named **Plant-for-the-Planet** on this issue.[12] Industrialized and non-industrialized nations have different responsibilities. The (voluntary) climate neutrality of many economic high-performers allows an important **2nd justice dimension** in climate related activities to gain significance, namely the responsibility of powerful consumers – and their suppliers when compared to other people – in the realm of climate issues.[13] Attention should be paid to the fact that these high-performing consumers (approximately 2% of the global population) are spread **all over** the world with partially very high emission volume levels of up to 100 tons of emissions per person or year, even in poor countries. It is also in such countries that we partially encounter extremely wealthy people.

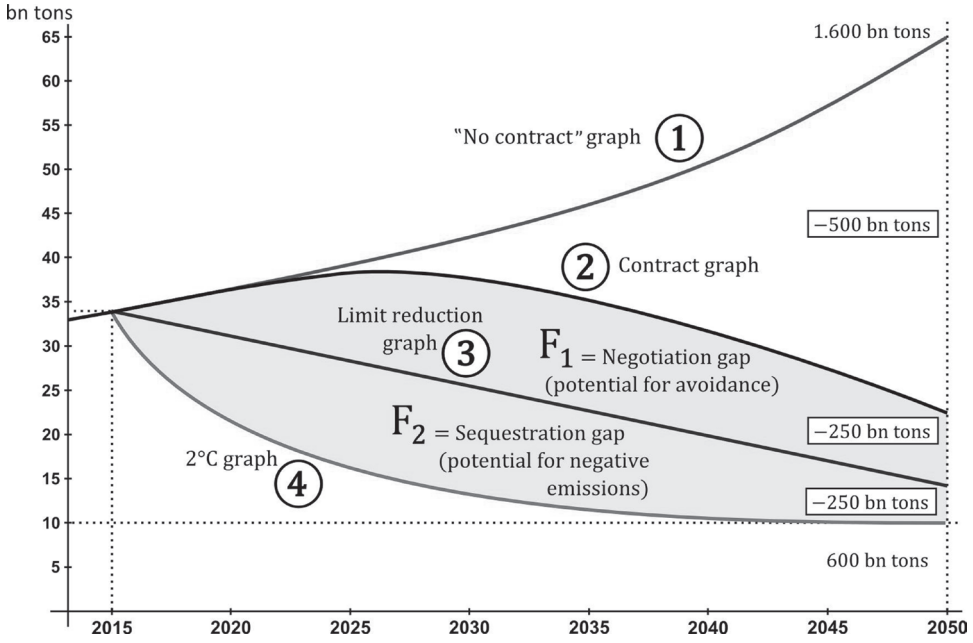
Please specifically note that I consider the reduction of existing emission rights at a certain point in time in the future as well as the funding of negative emissions through high-performers of the private sector (organizations, companies and private persons) who intend to position themselves as climatically neutral, which is **a decisive approach** if we still aim to comply with the upper limit value of 2 °C.[14,15,16] It will be in particular the **wealthy premium segment**, i.e. the globally most powerful consumers and their companies, who will indirectly pay for the "restructuring of our civilization". As already indicated, apart from the north-south issue this affects a second important dimension of justice which needs to be considered as a solution to the climate problem.[17] To make it even clearer: A typical Hartz IV recipient (*Translator's remark: Hartz IV = German concept for financial support for long-term unemployed people or people who need to rely on social welfare from the government*) in Germany cannot be expected to pay for the climate costs caused by an Indian millionaire's lifestyle. This would never find consent. On this issue, please note the important cognition from Chakravarthy et al., stating that the upper limit value of 2 °C may yet be comparatively easily complied with if all people were to maintain their individually allocable climate gas emissions today, if those are below 8 tons of emissions per year, and otherwise limited their emission levels to a maximum of 8 tons annually. The premium consumers, who in part generate more than 100 tons of CO_2 emissions per year, should thus in particular take **voluntary** action in climate protection. Positioning oneself **individually** and **voluntarily** as climatically neutral is an attractive (and affordable) option in this regard. This was a core topic in an erstwhile article of mine and Chakravarthy et al., and will be subsequently elaborated even further. The required contribution from the private sector, added up until 2050, could make up for a volume balance of approximately 500 billion tons of **avoided CO_2 emissions** and/or **CO_2 withdrawal from the atmosphere**. The costs for this endeavor could be about USD 5,000 billion, i.e. annually approximately USD 140 billion. This is a drastic but bearable amount for this group.

Approximately 2% of the global population will be affected in particular either directly or indirectly, i.e. the top-earners with a financial volume of approximately EUR 1,000 per capitum on an annual average. The thus generated financial volume would apparently suffice to largely top up the Green-Climate-Fund through suspension payments.

3. Balances, Emission Graphs, Potentials – Contractual Components

The following approach discusses the structure of a potential climate contract in 2015, to be valid as of 2020, and about potential measures for the period until 2020. A graphic image of the expected and/or desired emission graphs and emission graphs achievable through various instruments will be used as a basis (see figure 1). This is a development of a previously used image.[18] It includes 4 graphs: (1) the **"no-contract" graph**, (2) the (expected) **contract graph**, (3) the (pragmatic) **limit reduction graph** and (4) the **2 °C graph**. Until 2040, the curve of the no-contract graph is mostly compatible with the statements as recently published in *International Energy Outlook 2013*.* The 2 °C graph is oriented towards what is known as the **WBGU budget equation**.[19] The structure of the graph is generic. The described approximated graphs are **obligatory** on principle if the upper limit value of 2 °C is to be complied with in one way or another. In this case, the core questions are: Will we solve the climate issue? What will the **exact** curve of the mentioned graphs actually look like? We have merely shown **principal graphs** here.

Figure 1: Various Development Graphs for Climate Gas Emissions until 2050



* See World carbon dioxide emissions by region, Reference case, 2009-2040, www.eia.gov/forecasts/ieo/ and www.eia.gov/oiaf/aeo/tablebrowser/#release=IEO2013&subject=0-IEO2013&table=10-IEO2013&region=0-0&cases=Reference-d041117

4. The Copenhagen Formula as a Basis

Just like the initial contract suggestion, the currently suggested contract is geared by the **Copenhagen Formula**: The industrialized nations will reduce their emissions by an absolute factor, the non-industrialized nations by a factor relative to their economic growth rate. In this course, the nations determine individually and independently their respective reduction target values (**pledges**). A **Green Climate Fund** of at least annually 100 billion US dollars, funded by the industrialized nations, to support climate-related action in the remaining countries, is another essential part of the package. There is hope that certain agreements already affect the period between 2016 and 2020.

5. Resulting Dynamic Cap

The implementation of the Copenhagen Formula renders a **dynamic global cap** (the contract graph (2)), which may even grow temporarily and which is parameterized based on the economic growth rates of the non-industrialized nations.

6. Non-homogeneous Set of Instruments from the Government

As per the Potsdam workshop, we cannot expect a homogeneous global cap-and-trade system in 2020. Instead, a **non-homogeneous set of instruments** from the nations for the implementation of their contractual obligations will be considered and will include the following points:

- Regional cap-and-trade systems
- Carbon taxation
- Forest protection and reforestation
- Promotion of renewable energies
- Enforcement of energy restructuring
- Stipulations as to energy mix
- Investment promotion in the field of restructuring
- Interventions in the field of energy
- Balancing of fossil energy carriers
- Promotion of a climate-oriented green race in the field of technology

7. 500 Billion Tons of Anticipated Decrease in Volume

Based on the above arguments, politicians are expected to achieve a decrease from the non-contract case of an estimated 1,600 billion tons of total climate gas emissions from fossil resources by approximately 500 billion tons of emissions to 1,100 tons of emissions via the described global climate contract by 2050 as opposed to the scenario where the states of the world cannot agree on a global climate contract at all. (Transition from the no-contract graph (1) to the negotiation graph (2) in figure 1).

8. Continuation of Proven Instruments

The adaptation and continuation of the proven instruments of emission trading, joint implementation and CDM of the Kyoto contract under the new framework conditions as an integral part of the global climate contract are proposed and assumed.

9. Central Integration of the Private Sector

The added-up volume of CO_2 emissions from 1,100 billion tons of fossil fuel emissions by 2050, which is to be anticipated upon government interaction, still exceeds the value of approximately 600 billion tons of emissions that would still be compatible with compliance with the upper limit value of 2 °C as per the **WBGU budget equation** by approximately 500 billion tons.[20] For this, the **private sector** (organizations, companies and private persons) is strongly called upon to cooperate with politics in order to close this gap through **voluntary action**, as assumed in the author's initial suggestion. Politics must set a framework for such action. On the one hand, by means of the described **dynamic cap** for total emissions at the approximate 1,100 billion tons of emissions and, on the other hand, by allowing for and/or promoting action in the private sector in order to close the remaining gap. This affects, for example, the fiscal treatment of such contributions by companies as business expenses. The voluntary contributions from the private sector are of crucial importance if we are yet to comply with the upper limit value of 2 °C. In terms of volume, such contributions will have to amount to the same volume as the direct contribution from politics, i.e. approximately 500 billion tons of emissions by 2050.

Especially the two subsequent approaches as described below offer the private sector opportunities for decisive contributions to climate protection, namely **withdrawing** emission rights and "generating **negative emissions**".

"Voluntary funding for negative emissions generation is a feasible option. Negative emissions remove CO_2 from the atmosphere. This can be achieved especially through biological carbon sequestration."

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10. "Withdrawal" of the Private Sector

Funds can be raised voluntarily by the private sector in order to further reduce the allowable emission rates in cooperation with the nations, e.g. by withdrawing emission certificates from the market without using them under a regional cap-and-trade system. This is theoretically possible as long as the reduced emission levels remain compatible with further (moderate) economic growth in the OECD nations and quick catch-up growth in the other nations. The political side of the issue focuses on this aspect.[21,22] We will probably not be able to fully exploit the estimated potential of maybe 300 billion tons of emissions by 2050

since the precise fixing of the existing potential (known as **limit reduction graph**) turns out to be difficult. However, avoiding approximately 250 billion tons of emissions by 2050 seems possible and **pragmatically feasible** (lowering of the negotiation graph (2) down to the (pragmatic) limit reduction graph (3) in figure 1). These approaches and considerations on the procedure may be found in more detail in the unabridged version.[23]

"We need to advocate a climate neutrality movement in the private sector in order to implement the mechanisms of emissions "withdrawal" and "negative emissions generation" on a broader scale."

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11. Generation of "Negative Emissions" by the Private Sector

Voluntary funding for **negative emissions** generation is a feasible option. Negative emissions remove CO_2 from the atmosphere. This can be achieved especially through biological carbon sequestration. This includes efficient forest protection, grassland management, wetlands management, and **in particular international reforestation programs** in the tropics. The generation of negative emissions must render a reduction of atmospheric stress by approximately 250 billion tons of CO_2 emissions by 2050 if the upper limit value of 2 °C is yet to be complied with (transition from the (pragmatic) limit reduction graph (3) to the 2 °C graph (4) in figure 1). This is very ambitious, however, still feasible with great efforts. In terms of reforestation, the above calls for the reforestation of 500-1,000 billion hectares of degraded soil. As per analyses carried out by the World Resources Institute, areas of this size are available worldwide, especially in the tropics.[24]

12. (Co-)Funding of the Green-Climate-Fund / Funding of International Cooperation in the Climate Sector through the Private Sector

There is an extensive funding for the **Green-Climate-Fund** via contributions from the private sector, in particular in the context of "withdrawing" emission rights.[25,26,27] At the same time, developing nations are promoted under the framework of climate partnerships via the funding of negative emissions generation.[28] As described above, the **justice gap** between **premium consumers** with per-capitum emissions rates far beyond 8 tons of emissions per year and the other citizens in terms of climate issues will thus in particular be closed.[29] This amends the closure of the **justice gap** in the climate sector between the developed and the developing nations by way of the targeted global climate contract.

13. Advocating a Climate Neutrality Movement in the Private Sector

We need to advocate a **climate neutrality movement in the private sector** in order to implement the mechanisms of emissions "withdrawal" and "negative emissions generation"

on a broader scale. Already today, there is a strong movement towards this direction in the context of CSR action and an orientation towards sustainability in companies. This is even promoted by the shopping behavior of enlightened consumers in the context of "moralization of markets." (**issue of reputation**)[30]

14. Proposal for a "Globally Neutral Program" of the United Nations

We encourage the United Nations to quickly initiate a (voluntary) **Globally Neutral Program** analog to the Global Compact. This program is to motivate companies worldwide to position themselves **climatically neutral** based on an individual schedule over a maximum of 10 years, on a voluntary basis and exceeding legal stipulations. Apart from the increase in energy efficiency, the use of green energy and a change in behavior, the instruments of "withdrawal" and "negative emissions generation" are particularly useful in this regard. The annual reduction increments towards climate neutrality should at least be linear, if not larger. This means, for example, that the climate gas emissions of a company which participates in the GLOBALLY NEUTRAL program must be cut at least by half over the first 5 years.

The 2013 **Klimaneutralitätsbündnis Vorarlberg** is a good example for such a program.*

15. Border Tax Adjustments

We need a stipulation of a regime of **border tax adjustments** in a manner that is compatible with the **WTO requirements** on imports into contract nations of the targeted global climate regime from nations which do not participate in a global climate regime.[31] In this way free-riding will lose its economic charm in the climate sector. Nearly all nations are expected to participate in the agreements on border tax adjustments against free-riding under a global climate contract. This is important since the cross-border, trade-induced, indirect exchange of responsibilities in terms of climate gas emission generation continues to gain importance.[32] What is more, in the way described, we will finally be able to achieve a **carbon-leakage-free international climate regime**, which is not even the case within the realm of the European Union today.[33]

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The Future of the Atlantic and the Role of Africa in International Development

Summary of the 2014 Report of the US Association for the Club of Rome

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Abstract

The 2014 USACOR report forecasts that economic cooperation across the Atlantic will increase through the implementation of free trade agreements such as the Transatlantic Trade and Investment Partnership (TTIP) and the development of free trade areas in the African continent. Such agreements shall be complemented by multilateral security cooperation to prevent conflicts, asymmetric warfare and also to guarantee food and water security. The report recommends that free trade agreements be supported by fair labor and antitrust laws to protect working and middle classes, common environmental regulations and multilateral mechanisms for dispute resolution.

The report underlines the vast availability of undiscovered mineral resources, especially in Africa, and the need for public-private partnerships to exploit such resources. It stresses the importance of environmental protection in the exploration and extraction of resources to preserve the fragile ecosystem.

The main priority for economic development in Africa is the improvement of the health condition of its population. The education is essential to promote religious tolerance and harmony in a diverse religious environment.

The report also recommends limiting factory fishing within territorial waters and reforestation through soil enhancement techniques. The use of genetically engineered photosynthesizing bacteria would increase the production of electricity. Many types of algae and bacteria can flourish in salt water, conserving fresh water for saline-adverse crops.

Vaccination and water sanitation are the two factors that would improve the health conditions in Africa. Investments from the private sector in conjunction with public institutions are

* The biographies of co-authors can be found at www.usacor.org

necessary to implement such techniques and to foster sustainable economic development in Africa.

1. Legal and Political Issues

(a) The Development of Free Trade Agreements in the Atlantic Region

Francesco Stipo

Although the beginning of the third Millennium was characterized by a shift in the world's economic growth from the Atlantic to the Pacific region, the Atlantic is still the center of world's economic prosperity. In fact, as of 2012, the European Union and the United States had respectively the first and second highest GDP in the world, which contributed to 40% of the world's economic output.*

> *"The development of a Transatlantic Trade and Investment Agreement can boost the global economy and increase cooperation among countries with homogeneous political systems and economies."*

Strong international trade between America and Europe induced the countries in the Atlantic region to open their economic borders and launch in 2013 negotiations for a comprehensive trade and investment agreement called TTIP (Transatlantic Trade and Investment Partnership).

The European Commission estimates that the TTIP could boost the European economy by 120 billion, the U.S. economy by 90 billion and the rest of the world by 100 billion euros.† The agreement covers several aspects of bilateral U.S.-EU trade such as "market access for agricultural and industrial goods, government procurement, investment, energy and raw materials, regulatory issues, sanitary measures, services, intellectual property rights, sustainable development, small- and medium-sized enterprises, dispute settlement, competition, customs/trade facilitation, and state-owned enterprises."‡

The development of a Transatlantic Trade and Investment Agreement can boost the global economy and increase cooperation among countries with homogeneous political systems and economies. However, to develop sustainable economic growth, it is our recommendation that this agreement includes provisions for fair labor and antitrust laws to protect working and middle classes, common environmental regulations and multilateral mechanisms for dispute resolution. We also recommend that the TTIP not be restricted to the North Atlantic region

* See World Bank, http://data.worldbank.org/indicator/NY.GDP.MKTP.CD

† See European Commission, http://ec.europa.eu/trade/policy/in-focus/ttip/

‡ See European Commission, http://trade.ec.europa.eu/doclib/press/index.cfm?id=941

but also extended to countries in Latin America and Africa that share the same values as their North Atlantic counterparts.

(b) Security Cooperation across the Atlantic

Keith Butler

The major transatlantic political and security entities that currently exist include the North Atlantic Treaty Organization (NATO), the European Union (EU), and the North American Free Trade Association (NAFTA). While NATO is the only defense treaty organization among countries in the North Atlantic, there exists the potential for expansion of defense and trade organizations into the South Atlantic countries, both in Western Africa and South America. The Organization of American States (OAS) and the African Union (AU) are the two major political treaty organizations in the South Atlantic that are involved in transatlantic relations with NATO, the EU, and NAFTA.

There are a number of persistent security, political, and economic issues that have a direct impact upon transatlantic relations. Of particular note is the issue of food scarcity, which continues to be a major factor that has caused destabilization in North Africa, and could affect West Africa and South America in the future. Access to fresh water is another issue that affects almost all transatlantic nations, and may impact the future of agricultural production among both developed and developing countries among the transatlantic community. Economic growth has slowed down significantly among the developed countries in the region since 2008, and a general malaise in trade flows persists. The illicit trafficking in drugs, weapons, and people across transatlantic borders continues despite efforts by various governments to reduce illegal activity. While there are bi-lateral trade relations among a number of countries (such as that between NAFTA and the European Free Trade Association, or EFTA), most of the trade mechanisms among the transatlantic community exist within the larger World Trade Organization (WTO).

Overall, there are significant issues that affect the political, economic, and security relations of nations within the transatlantic region. While the North Atlantic countries have strong political, economic, and security treaty organizations, the South Atlantic countries have an opportunity to better integrate their regions with the larger Atlantic community. It is highly doubtful that the South Atlantic countries will integrate into, or promote the idea, of a transatlantic defense security and economic regime. However, as the regional blocks in South America and Africa develop, then perhaps a more comprehensive transatlantic community will emerge.

(c) Food Security and International Development in Africa

Roberta Gibb Welch Esq.

Agriculture has been a major area of development in Africa.

The complex interlocking patterns of land acquisition and ownership that are fundamental to development are global in scope and mutual and multifaceted in nature at one end of

the spectrum, with impoverished subsistence farmers operating at the other end. Africa possesses the largest reserve of undeveloped, agriculturally amenable, common lands in the world.

"Perhaps the biggest threat to African development comes from Africa itself."

Worldwide, land is at a premium. As the price of food escalates, driven by demand and by commodities speculators, the contest for land intensifies. Both Africa and South America are relatively land rich, while China, India and Europe are relatively densely populated, so there is a North-South asymmetry as well as an East-West asymmetry. North American-based multinational corporations are buying up and leasing agricultural and forest lands in Africa and South America. European and Chinese corporations, both private and state owned, oil-rich Middle Eastern countries and South East Asian corporations are also scrambling to buy land in Africa, South America and to a lesser extent in the Middle East.

The cultivation of microorganisms as a source of fuel and food will serve to expand our food and energy resource technology and to provide a foundation for food production in the future. Bacteria and algae are potent sources of food for humans and for livestock. Genetically engineered photosynthesizing bacteria can also double as a means of producing electricity. Many types of algae and bacteria can flourish in salt water, thus conserving fresh water for saline-adverse crops. Moreover, advances in protein research have made it possible to grow animal protein in cats. This is a technology that can lend itself to development in Africa and will also attenuate the need for huge tracts of grazing land for livestock and grain production.

The future of food production and development in Africa will no doubt involve a mixture of large agribusinesses, small and medium sized farms, urban and suburban gardens, fishponds, fish farms, microorganism crops and vat protein production. The development of all of these technologies in Africa is a road to the future that will help Africa and Africans to flourish and also provide resources for the world.

Perhaps the biggest threat to African development comes from Africa itself; first in the form of terrorists and terrorist organizations that disrupt governments and wreak havoc on civil societies; second in terms of tribal, religious and ethnic hatreds that burn out of control as over-population, poverty and the extremism born of fear, false beliefs, hunger, and mental, emotional and physical illness which drive massive acts of genocide; and third, in the untrammeled power of brutal dictatorships and corruption that are an anathema to democratic civil and human rights.

2. Energy and Environment

(a) The Underlying Natural Resources & their Function within the South Atlantic

Anitra Thorhaug

The South Atlantic is one of the world's largest water bodies containing the second largest global ecosystem. The total Atlantic Ocean (106.4 million km^2) covers approximately

20% of the earth's surface and is second in size to the Pacific, but its terrestrial drainage is 4 times greater, creating a much greater effect of terrestrial activities (pollutants and soil loss) on Atlantic estuaries. The South Atlantic's deep waters and surface equatorial waters both affect the circulation and heat of the North Atlantic and its nations. The South Atlantic is the second youngest ocean existing since 130 million years ago when Africa's tectonic plate pulled away from South America's plate. The South Atlantic's surface circulation includes water moving westward from the Bight of Benin toward the South American coast where one portion circulates northwestward through the Caribbean Sea while a second portion flows westward to the Guyanese/Brazilian coasts turning southward toward Argentina. At the far south (below 60 degrees South), this water meets the Antarctic surface current, circulating around the Antarctic continent. A deep water current of far greater volume circulates from the North Atlantic Ocean sinking from surface waters near Iceland and Norway and flows to the South Atlantic, taking multiple centuries to pass from north to south Atlantic. The net surface heat transport northward replaces this sinking water from the northern Atlantic Ocean the heat of which keeps Europe temperate along with heat from the Gulf Stream current passing from mid-Atlantic through the Caribbean to Europe.[1]

Enormous migrations of human populations are well-documented to presently be occurring on the East Atlantic side from Central Africa northward to Morocco and Europe and also southward toward South Africa. The migration takes place supposedly due to degrading natural resources which were previously sustaining these populations. The intense extraction of resources and industrial development in the African Atlantic nations do not appear to be adequately solving the needs of those in extreme poverty, despite the overall increase in GDP due to extractive resources.

(b) Recommendations

1. No factory fishing either inside or outside the territorially limited waters of the Central and Southern Atlantic region.
2. Forests must be sustained throughout the South Atlantic and Caribbean regions and reforestation must occur on marginal areas decimated previously. Ground cover plants must be placed on degraded areas (especially along river and creek edges where forests have been removed) to stem soil erosion and turbidity entering the estuaries from upland. A variety of soil enhancement techniques must be used to enrich and retain the soil.
3. Need for substantial national and local work on cleansing effluents of all types so that only clean water enters rivers and coasts. This is critical for regaining sustainability of marine fisheries and biodiversity of estuarine and marine ecosystems.
4. Excellent planning and assessment for sustainability with detailed calculations for both catching fisheries and breeding fish must be created nationally for introducing catch limits to national local fish industry and artisanal fisheries industries or for selling fishing rights to non-national corporations.

5. Industries and infrastructure developing shorelines and rivers for petroleum and other extractive products must respect the vegetation of habitat and fisheries.
6. Poverty, pervasive in the east and west south Atlantic, needs microenterprise rather than simple microfinance. Major efforts to train villagers should occur throughout these regions (excellent success story is Burkina Faso). Microenterprise poverty alleviation must work toward self-sufficiency and excess profit spread should assist others in poverty, replacing the present donor-dependent attitude. Forest industries must be facilitated by producing sustainable forest products and not turning forests into agricultural lands.
7. Fresh water security is required for agricultural and human consumption, especially in the eastern South Atlantic.

3. Health and Religion

(a) Religious Trends in the Atlantic Region

Marian Gh. Simion

In determining the particular role that Africa plays in the future of the Atlantic region, religion ought to be viewed in close relationship with socio-economic indicators such as human development, income, corruption, education, literacy, and access to the Internet. All these socio-economic indicators demonstrate that North America and Western Europe rank the highest, while the African continent ranks the lowest; it is mandatory that sustainable development in the South should be regarded by the North as an investment opportunity, particularly as North-South relations have become part of the everyday life of the globalized world.[2]

Today, on the African continent, religion is present in various forms, ranging from primitive forms of religious life such as animism, totemism, fetishism and ancestors' cultism, to religious syncretism, agnosticism and atheism, with a significant presence of transplanted Hinduism. Nevertheless, the dominant religions are Christianity and Islam.

Considering the protracted ideological attrition between Islam and Christianity, religion and religious identity become a strong factor for discrimination and conflict. The strongest clashes between Muslims and Christians took place in the Republic of Sudan, which led to the 2011 independence of the Christian-dominated Republic of South Sudan, from the Muslim North. Nevertheless, these regional clashes in Sudan predate the arrival of Christianity and Islam, as North African Arabs have maintained close ties with Saharan and Sub-Saharan Africans through religion, trade, war and diplomacy. While the expansion of Islam in West Africa was largely peaceful, it was only later that Sudan became a theater for a "scramble for souls" between the indigenous religionists, colonizing Christian missionaries, and the hegemonic Muslims.[3,4]

As the current projections of religious demographics indicate, over the next 40 years Muslims are expected to increase significantly, and the Christian population will see a slight

increase as well.[5] Therefore, fear of poverty and destitution can only lead to further competition for resources, where, in addition to ethnic identity, religious identity can become a source for further discrimination and human rights abuses. North Africa is strongly subjected to the unpredictable results of the Arab Spring, along with a series of jihad movements and rebellions of nomadic tribesmen in West Africa. So, it becomes vital for the Global North to increase its involvement in Africa through sustainable development, both for humanitarian reasons, as well as for reasons of security.[6,*]

(b) Health Issues in Africa

Jack Allison and Ryan Jackson

Ignorance, poverty and disease are intertwined in keeping Africa from emerging more rapidly as a third world continent. Poor health prevents one from working to full capacity and from receiving an adequate education; furthermore, improved education is associated with enhanced income and bolstered health status, so the vicious cycle in Africa is indeed ominous.

According to a WHO report in 2006, Africa's health problems are actually getting worse: "Although Africa has 11% of the global population it has 60% of the world's HIV/AIDS cases and 90% of the world malaria cases, mainly in children under 5."[†]

A major issue is that African governments do no deem healthcare expenditures a priority in terms of annual GDP. Another distressing concern is that malaria, HIV/AIDS, and many other health problems in Africa are preventable!

Two other pervasive public health issues are access to clean drinking water and availability of proper sanitation. Unsafe water and lack of basic sanitation kill more people annually than most forms of violence, including war. [‡]

Worldwide, 800 million people do not have access to clean water, the majority of whom are impoverished…, and 84% of water-deprived Africans live in rural areas.[§]

Sanitation is a tougher problem because universally it is discussed far less than access to clean water – it tends to be a taboo subject although all of us are naturally required to go to the toilet. It is estimated that 40% of the world's population (~3 billion people) do not have access to toilets.[¶] And although both concerns of water and sanitation are approached separately, they are actually one enmeshed global issue – it is difficult to have one sans the other for optimal health. Unfortunately, funding for improving access to clean drinking water is easier to acquire than for sanitation-related initiatives.

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* See also Joshua S. Goldstein and Jon C. Pevehouse, *International Relations* (Ninth Edition) (New York, Longman, 2010).

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¶ WHO/UNICEF, "Diarrhoea: Why children are dying and what can be done," 2009.

In summary, Allison et al., provide cogent suggestions for improving health of Africans throughout the continent:

> *"Perhaps the awarding of the first ever Nobel Prize in Global Health awaits the prescient researcher who succeeds in bringing both camps [Western medicine and African traditional medicine] together to foster meaningful, focused, validated health education, i.e., the best educational vaccine, for the prevention of HIV/AIDS [and other preventable diseases], through utilizing music, dance, drama, poetry, painting, videos, and/or storytelling in combination with a titrated tincture of medicinal magic. Until that august time, hope does indeed continue to spring eternal."*[7]

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Humanity-Craft for New Epoch Leaders

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

Avant-Garde Politician: Leaders for a New Epoch

Yehezkel Dror (Professor Emeritus of Political Science, Hebrew University of Jerusalem). Washington: Westphalia Press (Policy Studies Organization), April 2014, 350p, $17.50pb.

[With Comparative Comment on **Henry Kissinger** *World Order* (Penguin, Sept 2014) and Ross Jackson, *Occupy World Street: A Global Roadmap for Radical Economic and Political Reform* (Chelsea Green, March 2012).]

Hundreds of books have been written about leadership, mostly about business leaders.

But few if any, place the tasks of leadership in the context of our rapidly changing times and the growing need for some better form of global governance. This "flagship" book by a former senior staff member of the RAND Corporation, and a long-time observer and advisor to heads of state in Israel and other countries, provides the context in extensive, future-oriented detail. Dror is also author of 15 books in ten languages (see concluding comment), Founding President of the Jewish People Policy Institute in Jerusalem, an Honorary member of the Club of Rome, and Fellow of the World Academy of Art and Science.

His book is intended for a global audience: all who are interested in politics and policy studies writ large, political leaders and their advisors, and "the large variety of non-political leaders and decision-makers who desire to impact the future of humanity for the better."

Dror's distinctive style of providing long and provocative lists of points to support his wise arguments (sometimes with numbered items, sometimes not) is certainly apparent in this encyclopedic tour de force. It is not easy reading (I found myself dipping into the book on four different occasions), but the wealth of well-documented insights deserves multiple visits. Unfortunately, there is no index. So, to avoid missing any topic of substance, reviewing the chapters "by the numbers" is especially appropriate in this instance.

Introduction

The fateful leap in human capacities to shape its future in interaction with the environment started around the mid-20th century with the atomic bomb. This was only a beginning: the leap in human capacities has become a quantum jump, and now includes rapidly escalating capabilities to destroy humanity. Citing Donald Michael's 1968 book on **The Unprepared Society**, Dror warns of "Unprepared Humanity," cascading into an epoch of metamorphosis. Yet, the vast majority of humanity is not aware of the existential challenges, and "the vast

majority of political leaders are sleepwalkers," suffering from significant mental blind spaces which assure disasters.

Given this diagnosis, this book fuses two leitmotifs: 1) the need for a novel "Humanity Constitution," together with constantly expanding global law; and 2) bringing to the fore a novel type of "avant-garde" political leader with the qualities needed to cope with an era of metamorphosis, including founding the required Humanity Constitution. Dror explores the qualities of mind required by these politicians, and offers guidelines for becoming one. A new cohort of innovative moral, value, and spiritual leaders is also needed, "as illustrated by Pope Francis."

Part One: Humanity: To Be, What To Be, Not To Be?

1. **Channeling Metamorphosis.** Discusses the evolutionary perspective ("humanity is rushing into a radically new phase"), disruptive technologies (advanced robotics, next-generation genomics, new materials, advanced oil/gas recovery, etc.), leadership for metamorphosis, general prospects for humanity, *desirable scenarios* (climate engineering saves the environment, release from wearisome work enables cultural thriving, reduced dependence on scarce materials), *disastrous scenarios* (devastating pandemics, nuclear or other mass-killing wars, activated doomsday devices, irreversible damage to the environment, continuous breakdowns of the global financial system), *problematic scenarios* (brain enhancement technologies, cloning of humans, worldwide surveillance, artificial production of multicellular beings), and the Second Axial Age ("likely to be driven by the capacity of humanity to destroy or transform itself"; prudence takes pessimistic contingencies seriously).
2. **Circumscribed Global Leviathan.** "Some approximation of what is presented below is probably essential for the future of the human species for an interim period of a couple of generations." (p.31) Dror imagines an Executive Report of the fictional Omega-Alpha think tank of 15 select persons with different backgrounds, charged to make proposals on the needed form of global governance. The Report calls for a vigorous but strictly and narrowly circumscribed Global Leviathan based on a Humanity Constitution and related global law and institutions, with most ordinary governance tasks left to states on the principle of subsidiarity. *Three existential imperatives* are axiomatic: human species survival, human enhancement controls, and advancement of pluralistic flourishing. The new governance requires a 16-member Global Authority, a global surveillance system to assure detection of potentially dangerous activities, a monopoly over all types of mass-killing weapons, a Council of 16 eminent persons to serve as checks and balances and as a science court, and a Global Constitutional Court.
3. **Raison d' Humanitie.** Dror repeats and rephrases the three existential imperatives: 1) *Survival Imperative* (deserving absolute priority to assure long-term survival and prevent serious harm to many); 2) *Species-Changing Inhibition Imperative* ("production, diffusion, and use of species changing knowledge and technologies for human enhancement should be rigorously controlled on a global scale"); 3) *Human Flourishing Imperative* (subject

to the two imperatives above, strenuous efforts should be made to advance long-term pluralistic flourishing of the human species, while taking care of short-term human needs; "free choice should be given to different societies in choosing their ways of flourishing, as long as they do not impair the free choice of others and respect universal human rights.") The first two imperatives constitute "*raison d'humanitie*, radically distancing it from raison d'etat. It should receive absolute priority when issues of importance for the future of humanity are at stake." Painful value changes are likely to be essential in the service of *raison d'humanitie*, e.g. values of state sovereignty have to be partly abandoned, the value of freedom of research needs subjugation to selective regulation to prevent potentially dangerous knowledge, free markets have to be strictly regulated to prevent black markets, etc.

4. **Value Compass.** Lists 14 important *components of the "raison d'humanite compass"*: humanity as the measure, protecting essential physical conditions of the planet, panhuman communality as part of a maturing humanity, eradication of absolute evil, elimination of large-scale warfare and violent conflicts (including large-scale cyber-attacks), use of measured violence when essential, responsibilities and duties added to human rights, balance between individualism and social/humanity belonging, right to live and die, increasing elimination of extreme poverty, maturing humanity to enable flourishing (which requires avoiding many vices), creativity subject to minimal censorship, expanded pluralism to counter growing global homogenization, a good measure of compassion, and reducing moral hazards by imposing personal responsibility on those causing avoidable damage (e.g. unessential wars, polluting activities).

Part Two: Being An Avant-Garde Politician

5. **Total Calling.** Discusses the idea of "calling" as central to an avant-garde politician, virtues (total commitment, praxis-directed solitary contemplation, gravitas, mental hygiene, wakefulness in that "adequate quality sleep is absolutely necessary"), 12 *vices to avoid* (e.g. extreme narcissism, King Lear Syndrome surrounded by sycophants, Othello Syndrome seeing enemies everywhere, Faustian delusion viewing minor successes as great achievements, etc.), and a 25-point *Code of Personal Ethics* (constant self-improvement, accepting full responsibility for errors, accepting criticism without hostility, cultivating other avant-garde politicians, having the courage of your convictions, leaving your position if impaired, etc.)

6. **The Mind Is Your "I".** The mind is at the core of an avant-garde politician and the location of the needed qualities. Explains "greatness" and intelligence, brain and mind, how the brain can acquire new capabilities based on activities, issues of the will, emotions and mental composure, plasticity, psychological interventions, seeking maximum internal autonomy in many domains ("including readiness to engage in iconoclasm of what is held dear and is deeply rooted in the mind"), and exposing oneself to a variety of cultures and readings.

7. **Core Qualities.** Articulates 9 *"bundles" of a leader laying foundations for a novel future*: multiple personas (composer, visionary, entrepreneur, pedagogue, conductor), hybrid

hedgehog-fox (including the better parts of the fox who knows many things and the hedgehog who knows one big thing), bondage to the past (not a total hindrance because there is much continuity to partly make the past into a helpful guide for the future), "foresight intuition," Eureka effects (sudden insights, breakthrough mental events), "reading" minds of others, generalist-professionalism (a macroscopic view of broad domains), good executive function, and strict but not over-demanding self-assessment.

8. **Historic Prototypes.** Profiles of Konrad Adenauer, Mustafa Ataturk, David Ben-Gurion, Osama bin Laden [!!], Fidel Castro, Winston Churchill, Deng Xiaoping, Mahatma Gandhi, Charles de Gaulle, Mikhail Gorbachev, Dag Hammarskjold, Adolf Hitler, Ayatollah Khomeini, Juscelino Kubitschek, Lee Kuan Yew, Vladimir Lenin, Nelson Mandela, Jean Monnet, Pope John Paul II, Margaret Thatcher, Harry Truman, and Zayed bin Sultan Al Nahyan. Concludes with a list of 12 *shared attributes* of these "proto-avant-garde politicians," including devotion to the embraced mission, a realistic vision of substantive improvement, much pondering, high-quality improvisations, unconventional thinking, a good dose of self-confidence, capacity to inspire and gain support, and iron will.

Part Three: Worlds in the Mind

9. **Comprehending Reality.** The three types of reality—historic reality, future possible realities, and virtual realities (including fictional situations)—exist as "worlds in the mind", images cognized by the mind and mapped in different languages. Of all the caves in which one unavoidably lives, the most influential and insidious (but also necessary and sometimes ennobling) are ideologies, including all systematic belief systems. The three existential imperatives also constitute a kind of ideology. Also includes a list of 14 *caveats about theories* (past-based theories are often misleading, tacit theories are important but suffer from bondage to the past, many issues have competing theories of part-validity or less) and 9 *specific warnings* (big data can be helpful but also very misleading, concepts such as "unemployment" are often fuzzy and misleading, the situation is much worse with surveys and polls—and doubly true for security intelligence and analysis, the Internet makes access to information easy but separating little wheat from much chaff requires a lot of knowledge).

10. **Humans.** The multiple natures of humanity and its contradictions are outlined in 9 points: individualism vs. being part of packs, sublime peaks of art and science/technology vs. simplistic thinking and barbarism, animalistic drives vs. sainthood, unequal vs. equal, etc. Humans are very problematic. Reflections follow on collectives and mass psychology, tribalism and fundamentalism, increasing autonomy of individuals, good and evil, causes for pessimism and optimism ("it is quite amazing that reputable thinkers view humanity as clearly on the way to benevolence"), future families, and sociability in an age of globalization and the Internet (likely to change radically).

11. **Alternative Futures.** A chart lists 19 *desired aspects of humanity in 2100* (no mass-killing fanaticism, pluralistic with many basic human values, increased carrying capacity of earth and stable population, serious economic crises avoided, much improved global political leadership) and 19 *"moderately dismal" futures in 2100* (more sordid mass

culture, constant clashes of civilizations, no signs of a Second Axial Age, failed controls on science/technology, some upgrading of the UN but still very inadequate, some serious natural catastrophes without real learning on taking care of the human species). Also discusses predictive vs. prescriptive futures, short vs. long-term horizons, low vs. high realization likelihood, and four outlook approaches (extrapolation, theories, tacit knowledge of experts, imagination).

Part Four: Composing Humanity-Craft

12. **Pondering.** "The most important activity of an avant-garde politician is composing humanity-craft," a transformed version of "statecraft" applied to the long-term future of the human species. This is expressed in a series of grand policies, translated into more specific policies and plans. The central process for composing humanity-craft is pondering, which involves thinking and intuiting. A list of *34 grand-policy conjectures* follows: expanded and strictly enforced "responsibility to protect," preventing all forms of mass atrocities, help to prevent states from failing managed under the Global Authority or a revamped UN organ, a global forest policy, geoengineering to ward off or compensate for planetary changes, preparation for avoiding or containing large natural disasters, radical revamping of employment/unemployment concepts (probably with some form of assured minimum income), a global refugee policy, elimination of all tax havens and anonymous bank accounts, obligatory contributions by the wealthy to public causes, global enforcement in stages of a minimum list of basic human rights, a Universal Declaration of Human Responsibilities and Duties to supplement the UDHR, universal obligatory two years of service in a "humanity corps," systematic efforts to develop humanity-committed leadership, and much more. This is followed by 7 *exercises of possible dilemmas* that might be faced (e.g. a "crazy" country with nuclear bombs, a novel technology prolonging life expectancy to 120 years of good health at a cost of $500,000 per person, a cheap but habit-forming drug that produces ecstatic happiness without health damage, a new brain-imaging technology enables fully reliable findings as to whether a person is lying), and elements of a possible rise and decline of humanity. In turn, for those not yet exhausted, a list of 17 *appropriate guidelines for pondering on domains undergoing metamorphosis* is added, including thinking in novel dimensions, much attention given to current and expected science/technological innovations and their likely impacts, careful monitoring of value changes, constant awareness of the likelihood of unforeseen events, rejecting politics as "the art of the possible," and application of multiple perspectives.

13. **Schemata.** This includes "perspectives, schemes, frames, modalities, models, templates, structured heuristics, checklists, considerations, formalized principles, trains of thought, concept packages, procedures, and formats." Recommended schemata include realistic visions along with nightmares to prevent balancing values with reality, prioritization ("a lot of time and energy goes to activities that lack real significance or at least political utility"), avoiding too much "now time" by adding three time horizons (the next 5 years, 10-20 years for most pondering, and up to about 100 years for select critical choices),

developing a more holistic field view, dialectic pondering between opposing points of view, opportunity seeking, and constant but not paralyzing doubt.

14. **Debugging.** Explores 25 *serious and widespread cardinal fallacies* that endanger humanity-craft: exaggerated trust in "rationality," misuses of "common sense" and "pragmatism," the tendency to expect linearity, selective and biased evaluation of opinions, wishful or fearful distortions, erroneous attribution to deal with causes, intolerance of ambiguity, dithering in the face of problems that get worse, dissonance reduction, misplaced preference of a golden mean (i.e. that the midpoint between two extremes is preferable), concentrating on what is easy to know, following fashions, and forgetting Murphy's Law Expanded ("everything can and much is very likely to go wrong"—of profound importance as a counterweight to overdoses of optimism).

15. **Swerving History.** The possibility of very desirable and totally dismal alternative futures necessitates switching the trajectories of history—a demanding and speculative endeavor that is inherently a fuzzy gamble. But not trying to swerve future history is also a choice, and probably one of the worst options. "Successful redirecting of future-shaping historic processes is possible, but failures come frequently and easily." To help thinking-in-history to serve historic processes, Dror provides 47 *Theses on History,* e.g., understanding the past is difficult because "facts" are infinite, philosophies of history differ from each other, broad theories of historic processes such as "rise and decline" are helpful but culturally biased, large-scale natural disasters continue to be significant but very unlikely to end humanity, all deliberate efforts to bring about a "new human" by change in social institutions have failed, main drivers of the future are ongoing metamorphosis and peak creativity in science/technology, leaders are sure to become more important drivers of the future for better or worse, there is no reason to assume that "progress" is built into the processes of history, values should be expected to change radically as they did throughout history, the leap into a new epoch driven by science/technology "is likely to require and bring about radical changes in at least some major values," rises and declines in hegemony are sure to come (with Asian civilizations becoming increasingly important and probably dominant).

16. **Bounded Fuzzy Gambling.** Engaging in fuzzy gambling for the high stakes of human existence and welfare is troubling, because many important choices are much fuzzier than a lottery, where ranges of outcomes and their probabilities are partly knowable. Thus "maximal efforts to improve fuzzy humanity-craft gambles are imperative; an avant-garde politician must understand the nature of thick uncertainty and of choices as fuzzy gambles." Discusses upgrading approaches, constant adjustment, coping with leaping environments, the importance of timing, and cloaking the true nature of fuzzy gamble choices from the public.

Part Five: Personal Resources

17. **Public Interest Machiavellianism.** "Writing this chapter was an exciting, challenging, but not pleasant chore." It deals with "the unavoidable necessity of avant-garde politicians to behave to some extent immorally in order to mobilize and maintain the

power essential for fulfilling their missions." The main cause of the decline of the public standing of politics is the failure of political leaders and institutions to deliver what the public wants and needs. And the overall decline in "capacities to govern" hinders coping with important issues. Dror considers 19 *strategies for the praxis of public interest Machiavellianism,* such as camouflaging necessary but unpopular action, being visibly different from other politicians, unique promotion to provide a competitive advantage over mainstream politicians, looking authentic and frank even when not fully so, revealing yourself as much as possible, conveying a true picture when crises strike to limit panic, downplaying commitment to humanity-craft when essential, scripting in your mind how to address the public while looking spontaneous, delicately playing on the "hero" theme, giving special attention to global forums (crucial for the future of humanity, but don't identify with the rich and cosmopolitan), being on the side of the many in need without alienating the powerful if possible, and engaging in a lot of "give and take" to mobilize necessary money (but remain strictly within the law).

18. **Helpmates.** Discusses the disparate "global avant-garde humanity elite," partners, personal "pondering networks," a well-run office and a reliable Chief of Staff, intelligence units (but beware "turf wars"), spouse and children (can make or break a politician), a "hermitage"(private study or retreat), informal private advisors ("grey eminences" acting behind the scenes), special advisors (spiritual advisors, security advisors, political/marketing advisors, human species advisor), professional advisory staffs (none are adequately equipped). A list of 16 *principles to get the best out of your personal professional staff* suggests an inner circle of 10-15 persons, all advisors with comprehensive perspectives, strict exclusion of friends, good collegial relations despite disagreements and competition, different perspectives within shared commitment to the imperatives, dismissing "Yes Sir" advisors but not tolerating impudence, rewarding good work, a senior advisor accepted by all to coordinate work, and cost consciousness (all implementation requires adequate resources).

19. **Innermost Philosophy.** Considers 14 *main facets* including personal orientation to the future, being dominated by the mission and calling, tenacity, facing the certainty of death and preparing for exit when appropriate, consciousness of being a partner in creation and genesis (but aware of the dangers of hubris: "toxic rulers throughout history who viewed themselves as Masters of History are a red light"), humbleness and gratitude, a strong sense of belonging to an aristocracy of merit, working for a better human future as the intrinsic and only worthwhile reward, a large measure of stoic enthusiasm (expecting many failures), a stout inner citadel, much but not full trust in reason ("renovated enlightenment"), tolerance for what one does not like or understand, containing anxiety and fear, and being "somewhat hopeful about the future of humanity in order to cling to the missions."

20. **Afterglow.** However well one is doing, "exit is unavoidable." But there are several modes of exiting, ranging from the honorable to the brutal. Discusses conflicts of interest, preparing successors (a very significant part of the job), easing the change-over, continuing missions when out of office, and full retirement (leaving the public arena).

In sum, "developing an improving type of politician…is essential for the future of humanity." (p.314) It is hoped that the "best of the best," both young and old, women and men, will consider seriously serving humanity as a high-quality politician, more or less in line with the model proposed here. Concludes with a five-page biblioessay of Recommended Readings and an impressive but poorly edited Bibliography of about 500 items.

COMMENT

A thoughtful and important guide that should be closely *studied* by current politicians (who won't have the time to do so), would-be politicians, and the myriad types of advisors to avant-garde politicians and those seeking a "new paradigm" for human affairs. Unfortunately, the text is marred by an inordinate number of distracting typos, which will hopefully be corrected soon in a new edition.

Many of the themes in this book are prefigured by Dror's two most recent books. **The Capacity to Govern: A Report to the Club of Rome** (London: Frank Cass, 2001) has a leitmotif of "Guiding Global Transformations," and chapters on Unprepared Societies and Obsolete Governance, Fostering *Raison d'Humanite,* Rulership, Empowering People with Public Affairs Enlightenment, Deepening Policy Reflection, Fuzzy Gambling, Making Global Governance More Resolute, Augmenting Oversight, and Gearing Governance for Crises. Many of these themes are elaborated in Dror's 2014 book**.** More recently, **Israeli Statecraft: National Security Challenges and Responses** (London: Routledge, 2011; Global Foresight Books "Book of the Month," Sept 2011), defines "statecraft" as applied to Israel, but also has excellent chapters on *likely ruptures ahead* (the necessity for global action on climate issues, more rapid change in violence modalities, increased standing of Asian countries, and increasing power of civilizations and faiths not based on the Bible) and *ten long-term global mega-trends* (e.g.: intensified faith, rising Islam, more non-state actors, radically novel science/technology impacts, more competition for resources, diminishing US hegemony).

The back cover of **Avant-Garde Politician** brags that this is an "iconoclastic book," and, in the introductory pages, Dror hopefully states that "this book will cause some controversy." The carefully-introduced Chapter 17 on "Public Interest Machiavellianism" may well provoke complaints from progressive purists (who seldom get elected to any position because of their purity), and Chapter 2 on a "Circumscribed Global Leviathan" will surely upset many others, especially firm believers in state sovereignty and scientific freedom of inquiry. (Is the scary image of "Leviathan" really needed to promote better global governance and tame science/technology?)

But viewed through another lens, this book is not so iconoclastic (although several icons are questioned) or potentially controversial. Rather, it is timely, sensible, pragmatic idealism. Chapter 3 on "Raison d'Humanitie" deserves to be pondered and introduced into policy discussions as equal to or greater than "raison d'etat" (e.g., the response to the ebola epidemic in West Africa is clearly unvoiced "raison d'humanite"). Chapter 4 describing 14

components of the humanity value compass (e.g. protecting essential physical conditions, ending large-scale violence, eradicating evil, and expanding pluralism) is perfectly reasonable and unremarkable. Chapter 11 listing 19 desired aspects of humanity in 2100 (e.g. pluralism, stable population, increased carrying capacity, no serious economic crises) also provides sensible goals to strive for (perhaps fitted under the attractive banner of "sustainable development", which Dror unfortunately ignores). This positive future is offset by 19 dismal futures to avoid.

Part 3 offers five chapters on ***Composing Humanity-Craft***, including #16 on Dror's original views about "fuzzy gambling" for the high stakes of human existence and welfare. Most important, the ponderous Chapter 12 on "Pondering" includes a list of 34 "Grand-Policy Conjectures" related to the three existential imperatives and the Chapter 4 "value compass," dealing with critical humanitarian issues, restricting radical human enhancement research, expanding and enforcing the responsibility to protect ("R2P") doctrine, preventing states from failing, containing greenhouse effects, protecting biodiversity, a global refugee policy, eliminating tax havens, promoting education programs to strengthen human communality, compensatory payments to countries harshly damaged by global warming, and much more. In other words, it's a perfectly reasonable and useful progressive agenda incorporating many current prescriptions.

Another way to position Dror's thinking is to consider it on the axis of global urgency and anger. At one extreme is Ross Jackson, author of **Occupy World Street: A Global Roadmap for Radical Economic and Political Reform** (Chelsea Green, March 2012; GFB Book of the Month, Sept 2012, 315p; www.occupyworldstreet.org), which views the current global structure as dysfunctional, undemocratic, corrupt, and exploitative of the environment and developing countries. In contrast to Dror's relatively modest planetary "metamorphosis," Jackson (chair of the Gaia Trust in Copenhagen) views civilization in the midst of a painful "global collapse that will continue for several decades." This is supported by chapters about the assault on nature, the drivers of destruction (economic beliefs, neoliberal ideology, deregulation), the "corporatocracy" in charge, the Kennan Doctrine as a blueprint for empire, growing inequality, etc. This radical view leads to a call for Gaian economics and an elaborate and idealized "Gaian World Order" scheme including a Gaian Trade Organization, Gaian Development Bank, Gaian Congress composed of delegates appointed by Gaian League governments, a Gaian Resource Board, and a Gaian Council of elected wise elders. Jackson's "global roadmap," which includes a small-state "breakaway strategy" for getting there, is endorsed by Maurice Strong, David Korten, Dennis Meadows, and Hazel Henderson. Although there is some overlap with Dror's relatively tame "Circumscribed Global Leviathan," there are many differences along an idealistic/pragmatic axis.

At the other end of the axis of urgency and anger is Henry Kissinger's reflective **World Order** (Penguin Press, Sept 2014, 420p), with chapters on the global Westphalian system dating back to the 17th century (no true "word order" has ever existed), today's European order ("suspended between a past it seeks to overcome and a future it has not yet defined"), Islamism and the Middle East as a world in disorder (the region is "pulled alternately toward joining the world community and struggling against it"), the US and Iran, the multiplicity of

Asia (with no common religion and deepening ethnic and cultural differences), China and world order, the historical US concept of order ("acting for all mankind"), the US as ambivalent superpower, the challenge of nuclear proliferation (any further spread of weapons "multiplies the possibilities of nuclear confrontation"), cyber technology and world order (Internet technology has outstripped strategy, and it is easier to mount cyber attacks than to defend against them), and the question of "World Order in Our Time," in a world of multipolar power in "unprecedented flux" and increasingly contradictory realities, with lack of an effective mechanism for the great powers to consult and possible cooperate on long-range strategy. "Reconstruction of the international system is the ultimate challenge to statesmanship in our time," requiring "a coherent strategy to establish a concept of order within the various regions, and to relate these regional orders to one another." (p.371) In sum, "A world order of states affirming individual dignity and participatory governance, and cooperating internationally in accordance with agreed-upon rules, can be our hope and should be our inspiration." (p.372)

Given the preceding topics, this vision seems reasonable. Yet it is very limited. Other than a passing reference on page 2 to "environmental depredations" and "the spread of new technologies threatening to drive conflict beyond human control or comprehension," Kissinger makes no mention of climate change, global warming, new biotechnologies and human-enhancing technologies, growing inequality, or any form of global governance. The fact of these omissions should be controversial! Yet the book is favorably reviewed on the front page of *The New York Times Book Review* (Sept 14, 2014) by the like-minded editor-in-chief of *The Economist*, who calls it "a book that every member of Congress should be locked in a room with—and forced to read before taking the oath of office."

Suffice to say that all members of the US Congress, and national leaders and would-be leaders everywhere (along with leading editors and relevant academics), should spend a week with **Avant-Garde Politician** if we are to get serious about world order in an undeniable age of metamorphosis and possible global collapse. It won't happen, of course. But the slim possibility of a maturing humanity would be improved if this were so, and if we could acknowledge the structural problems that keep us from learning about—and seriously debating--more appropriate worldviews for our turbulent times.

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Transition into an SEME (Socio-ecological Market Economy) needs a conscious societal evolution and full development of the human potentials for active learning and knowledge transfer.

Erich Hoedl,
European Transition into a Socio-ecological Market Economy

The maximum possible achievement in the fight against scarcity is to create abundance in as many sectors as possible.

Orio Giarini,
New Paradigm in the Service Economy

The development of an elected world parliament is an indispensable long-term goal.

Andreas Bummel,
A World Parliament and the Transition from International Law to World Law

The information revolution – which ranks third after the agrarian and the industrial revolutions – is about to change education at least as much as it has changed industrial production or the service economy.

Orio Giarini & Mircea Malitza,
The Double Helix of Learning and Work

We encourage the United Nations to quickly initiate a (voluntary) Globally Neutral Program which is to motivate companies worldwide to position themselves climatically.

F. J. Radermacher,
Can we still comply with the maximum limit of 2 ^{o}C?
Approaches to a New Climate Contract

The development of a Transatlantic Trade and Investment Agreement can boost the global economy and increase cooperation among countries with homogeneous political systems and economies.

Francesco Stipo et al.,
The Future of the Atlantic and the Role of Africa in International Development

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Unification in the Social Sciences: Search for a Science of Society

The more the efforts to develop the discipline of anticipation proceed, the more the traditional walls separating the social sciences will break down.

Roberto Poli,
Anticipation: A New Thread for the Human & Social Sciences?

A trans-disciplinary science of society that studies the formation of society, the generation of social power and the empowerment of the individual members for personal and collective accomplishment is essential for a new human-centered development paradigm that can solve all the problems that confront the world today.

Janani Harish,
Society & Social Power

The world is beset with problems that appear insoluble largely because we are unconscious of the social capacity that already exists and the social potential waiting to be developed.

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Fictitious capital has the tendency to create, like a spell, money that becomes more money, richness which prompts more richness in an uncontrolled spiral.

J. R. Teixeira & P. F. Ferreira,
Fictitious Capital & the Elusive Quest in understanding its Implications: Illusions & Paradoxes

Disciplinary and conceptual boundaries don't just focus attention; they also inhibit the discovery and study of processes that transcend those boundaries and bias public policy development in certain directions.

Jim Lunday,
Replacing the Concept of Externalities to Analyze Constraints on Global Economic Growth

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