WAAS UPCOMING EVENTS

Social Power Roundtable/PG Course
Oct 31-Nov 2, 2016 at Inter-University Center,
Dubrovnik, Croatia

PG Course on Human-Centered Economics
Jan 31-Feb 3, 2017 at Inter-University Center,
Dubrovnik, Croatia

Anticipation, Agency and Complexity
April 6-8, 2017 at Trento, Italy

XIV International Colloquium
May 10-12, 2017 at Cape Town, South Africa

Inside this Issue

Part 2 of this issue focuses on social power—the invisible elephant in the room that which energizes, directs, shapes and determines the results of all human activities. For decades the effort to formulate universal, positivistic, value-free principles in the social sciences led to neglect of this all-pervasive, all-important issue. Social power is the underlying source of humanity's creative social energies and unlimited potential, which social organization channels and converts into myriad different forms of effective power. The patterns of distribution of that power politically, economically, socially, intellectually and culturally determine the overall vibrancy and creativity of society and its capacity to generate freedom, security, welfare and well-being for its members. This issue contains a selection of articles prepared for the upcoming WAAS-WUC colloquium and PG level course on Social Power to be held at the Inter-University Centre, Dubrovnik and live online from October 31 to November 2, 2016. **Garry Jacobs** traces the historical evolution of diplomacy from military and political negotiations to mutually beneficial economic, social and cultural relations and calls for establishment of an international institution on human security for further thinking and policy formation from the new perspective. **Emil Constantinescu** explains how time warp is affecting our lives at the level of values and how a change in the way we think is necessary so humanity may march forward without the unnecessary stumbles that usually accompany ignorance. Human connectivity is the main theme of **Janani Harish**'s paper. She looks to history as a guide to trace historical precedents and explains how effective logistics can accelerate human progress. **Herwig Schopper** emphasizes the necessity for the common citizen to be aware of scientific knowledge and raises an important question: What role can international scientific institutions like WAAS play in addressing global issues? **Murugesan Chandrasekaran** makes an insightful remark on the nature of reality and the mind's tendency for dualistic thinking and explains that the subjective and objective dimensions of reality are interdependent and inseparable. **Saulo Casali Bahia** questions the origin of social power and how legal power is generated by the society.

We hope you enjoy this part.

The Editors

Post-Graduate Certificate Course on
Social Power

October 31-November 2, 2016

Inter-University Centre, Dubrovnik, Croatia

This program is intended as an original exploration of the origins, nature, expressions and consequences of social power. This trans-disciplinary post-graduate course will examine ideas and issues of immense importance to humanity, which are often overlooked in our efforts to address pressing social challenges.

The practical aim of the program is to identify ways in which the enormous untapped and underutilized social potential can be more fully converted into effective power to address pressing global challenges and enhance human security, development, welfare and well-being. The issues addressed apply to all dimensions of social life—political, legal, economic, academic, scientific, social, cultural and psychological.

This transdisciplinary lecture series will explore the sources, expressions, determinants and consequences of the creation, distribution and exercise of social power in politics, economy, society and individual psychology.

It will examine the different forms in which power develops and acts, including military, government and political parties, law, commerce, communication, transportation, media, religion, technology, science, education and other social expressions. It will also examine the process by which social potential develops, gets organized and channeled for social progress, as well as the process by which power is usurped or diverted for the benefits of smaller elites.

Course Directors and Coordinators

Goran Bandov: Associate Professor & Vice Dean, Dag Hammarskjold University College of International Relations and Diplomacy, Zagreb, Croatia.

Garry Jacobs: Social Science & Management; Chief Executive Officer, World Academy of Art & Science and World University Consortium.

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Click here for more information.

Integrated Approach to Peace & Human Security in the 21st Century*

Garry Jacobs

Chief Executive Officer, World Academy of Art & Science;
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Abstract

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

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

1. Missed Opportunities

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

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

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

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

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

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

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

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

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

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

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2. Evolving Concept of Human Security

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

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

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

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

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

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

3. The Evolution and Unification of Social Organization

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

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

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

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

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

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

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

4. Nuclear Weapons and Cooperative Security

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

6. Right to Peace

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

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

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

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

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

7. Social Foundations of Human Security

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

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

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

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

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

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

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

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

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

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

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

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

8. Role of Economic Development

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

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

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

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

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

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

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

9. The Right to Employment

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

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

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

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

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

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

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

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

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

10. The Evolution of Diplomacy

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

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

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

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

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

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

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

11. Cultural Diplomacy

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

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

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

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

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

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

12. Theoretical Foundations for Peace and Human Security

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

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

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

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

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

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

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

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

13. Need for Integrative Thinking

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

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

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

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

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

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

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

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14. Peace as an Emergent Property

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

15. Proposal

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

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

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

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

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

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

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A Flat World with Deep Fractures

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Abstract

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

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

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

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

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

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

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1. Different Chronological Horizons

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

2. The Galápagos Tortoise

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

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

3. The Shock of Change as a Personal Experience

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

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

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

4. Paradoxes in Today's World

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

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

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

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

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5. Space and Time on Planet Earth

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

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

6. Conflicting Values and Interaction

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

"We need to change our way of thinking."

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

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

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

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Human Connectivity: The Key to Progress

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Abstract

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

1. Social Power

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

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

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

2. Specialization

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

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

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

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

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

3. Transportation

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

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

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

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

"The greater the human connectivity due to better transportation and communication, the faster has been the growth in GDP."
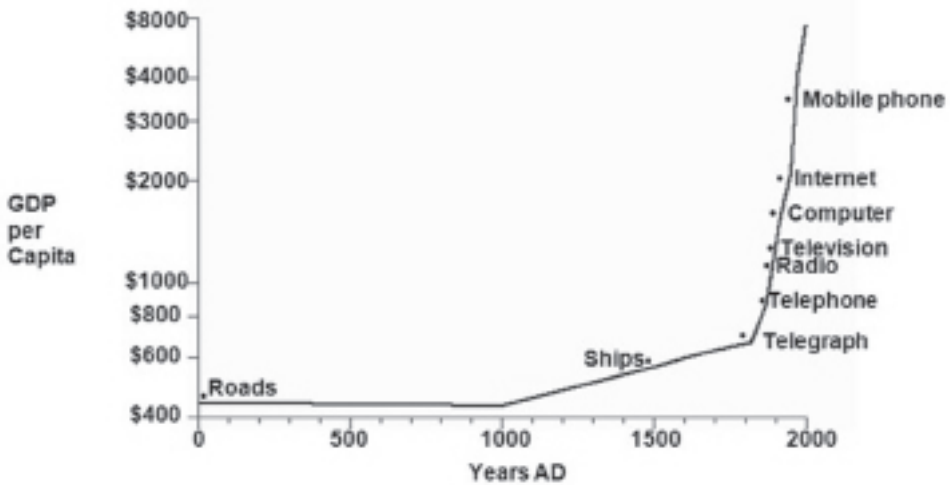
4. Communication

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

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

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

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

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

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

5. Urbanization and Multiculturalism

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

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

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

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

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

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

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

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

6. Conscious Connectivity

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

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

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

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

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Notes

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2. Eugen Weber, *From Peasants into Frenchman* (Stanford: Stanford University Press, 1976)

Scientific Knowledge and the Citizen

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Abstract

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

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

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

1. Does the normal citizen understand how science works?

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

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

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

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

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

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

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

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2. Truths in the natural sciences and other human domains

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

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

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

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

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

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

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

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

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

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

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

3. Education and Political Decisions

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

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

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

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

4. Science and Human Values

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

"Could WAAS play a greater role as far as global issues are concerned?"

5. The Public and the Role of Academies

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

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

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

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

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Unifying Subjectivity and Objectivity*

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Abstract

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

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

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

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

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

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

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

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

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

Over time, the bank crisis subsided.

This famous event teaches us several important lessons.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2. *Deterministic Mechanism*: Modern science led to the conception of knowledge as a set of immutable, universal laws determining the functioning of a static, mechanical universe. Consequently, Knowledge of reality became synonymous with certainty and predictability. It was challenged by the discoveries of quantum mechanics three centuries later. Outside physics this premise remains largely unchallenged. The Newtonian quest for immutable, universal laws of Nature was later extended to identify immutable, universal laws governing polity, economy and society. For the past two centuries social scientists have attempted to reduce human behavior and interaction to external factors and mechanistic processes governed by universal principles. This attempt has obscured the unique role of the individual in social development, innovation, discovery and creativity. *The mechanistic view of reality has led to the rejection of human free will as an appearance and neglect of individual uniqueness.*

3. *Specialization*: The strengths of modern science are Mind's capacity for division and analytic thinking. They led to the creation or emergence of separate disciplines, later to specialization and compartmentalization of knowledge. The consequence is immense. Over the last five centuries, the number of intellectual disciplines has multiplied from five to around 1000 disciplines and sub-disciplines.[1] As the study of reality is divided into smaller and smaller pieces, specialization has led to increasing fragmentation of knowledge. Viewing each field independently has generated precise knowledge of the parts, but has obscured the complex interactions and relationships between parts that are essential for knowledge of the whole.

4. *Quantification of Knowledge*: Modern science led also to the quantification of reality. This resulted in the confusion of data and information with real knowledge, and the misconception that mathematical models and statistical probability are true and accurate representations of the real world. Mathematics is an extremely powerful tool for the discovery and validation of knowledge. But increasingly the valuable tool has come to be regarded as knowledge itself. The awarding of two Nobel Prizes in economics for development of computer algorithms that model the functioning of financial markets is only an extreme example of a widely prevalent phenomenon. Its consequences during the financial crises of 1998 and 2008 underline the extreme danger of mistaking models for reality and mathematical formulas for knowledge.

5. *Measurement of Uncertainty*: An unintended consequence of the Scientific Revolution has been to redefine the notion of chance. The conception of the universe as a giant mechanism subject to universal laws of causation made it possible to also postulate its very opposite, a complete absence of causality, pure randomness. The development of probability theory originally aimed at obtaining knowledge about complex causal processes, but later was applied to situations assumed to be characterized by a total absence of causality. The merger of probability and statistics in the early 20th century

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

In the field of economics, the construction of mathematical models similar to those in physics has fostered a basic misconception regarding the factors that govern economic systems. For nearly two centuries the Newtonian concept of equilibrium in a static universe that dissipates energy and tends toward the lowest possible energy state prevailed almost unchallenged in economics. The extension of the principle of scientific laws has fostered passivity and resignation before social injustices, political oppression, economic inequality, and other social ills. The vastly disproportionate distribution of the world's wealth, the political influence of the rich, the displacement of human beings by machines, the subordination of women, and the social exclusion of minorities are the results of human choice. They are not the results of natural law.

> *"Subject and object constitute an integrated whole."*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Social Power, Law and Society

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Abstract

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

1. The Rise of Institutions

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

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

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

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

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

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

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

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

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

2. Law and Institutions

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

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

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

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

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

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

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

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

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

[**] Idem, p.40.

3. The Political Power

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

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

> *"The source of political, social and legal power is the collective."*

4. Consent of the Governed

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

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

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

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

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

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

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

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

[†] Idem, p. 49

5. Human Rights and Distribution of Social Power

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

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

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

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

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

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

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[*] Idem, p. 38.

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

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The XIV International Colloquium calls for novel thinking and action in relation to the need for a truly human-centered and sustainable economic and social system, one that ensures adequate attention to human needs, economic prosperity, fair distribution and a balanced relation with our environment.

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