PROMOTING LEADERSHIP IN THOUGHT
THAT LEADS TO ACTION

THE WEALTH OF NATIONS REVISITED

CADMUS

NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

Commemorating the 60th anniversary of the
World Academy of Art & Science and
the 10th anniversary of Cadmus Journal

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Inside This Issue

OUR VISION

The world is in need of guiding ideas, a vision, to more effectively direct our intellectual, moral and scientific capabilities for world peace, global security, human dignity and social justice. It needs evolutionary ideas that can spur our collective progress without the wake of destructive violence that threatens to undermine the huge but fragile political, social, financial and ecological infrastructures on which we depend and strive to build a better world. History has recorded the acts of creative individual thinkers and dynamic leaders who altered the path of human progress and left a lasting mark on society. Recently the role of pioneering individuals is giving place to that of progressive organizations inspired by high values and committed to achievement of practical, but far-reaching goals. This was the intention of the founders of the World Academy of Art & Science when it was established in 1960 as a transnational, transdisciplinary association to explore the major concerns of humanity. No single organization can by itself harness the motive force needed to change the world, but a group of like-minded organizations founded with such powerful intentions can become a magnet and focal point to project creative ideas that possess the inherent dynamism for self-fulfillment.

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2020-2021 is a period of momentous events with unforeseen consequences. The COVID-19 Pandemic has altered the rules in countless ways, overthrowing conventional wisdom and long-established practices in a desperate attempt to cope with the unexpected. The celebration of the UN's 75th anniversary during the Pandemic with climate change crises around the corner reminds us just how essential a strong multilateral system is for the future of humanity.

This issue features three sections commemorating the 60th anniversary of the World Academy of Art & Science and reaffirming the essential need for integrated, transnational, transdisciplinary approaches to pressing global challenges.

Cadmus@10 commemorates the 10th anniversary of the founding of this journal with a special section entitled "Seed Ideas" containing 24 thinking pieces addressing a wide range of issues of critical importance in our times.

Other articles focus on important planetary issues and opportunities of critical importance for global social transformation.

We hope you enjoy this issue.

Editors

Help us improve Cadmus Journal with your comments and suggestions. Your feedback matters to us! Please take this quick survey online.

WAAS@60

CADMUS, Volume 4, No.4, June 2021, 1-31

Retrospective and Reflections on WAAS@60

Garry Jacobs, President & CEO, WAAS
Donato Kiniger-Passigli, Vice-President, WAAS
Winston Nagan, Chairman of the Board of Trustees, WAAS (2013-2019)
Ivo Šlaus, Honorary President, WAAS; President, WAAS (2011-2013)
Alberto Zucconi, Chairman of the Board of Trustees, WAAS

Abstract

Solution to the complex nexus of problems confronting humanity exceeds the capacity of any individual or small group of individuals or organizations. But it does not lie beyond the capacity of the collective aspiration, intelligence and determination of humanity. The world needs aspirational leadership that transcends the partisanship and limitations of self-interested political, economic and cultural perspectives. It needs people and organizations committed to think on behalf of all humanity, not simply themselves. It needs leadership that brings people together rather than divides us into competitive factions and warring camps. It needs transdisciplinary thinking that spans all boundaries, in search of truths that complement and complete rather than compete and negate one another. It needs education that enlivens and inspires, awakens creativity and fosters true individuality, rather than egoism. We need individuality that identifies with and works for the common wellbeing of all. The World Academy of Art & Science is a network of committed individuals from around the world working with other like-minded individuals, organizations and networks as strands of a universal network of networks with the collective power to unleash a global movement of conscious social evolution.

1. Leadership in Thought

Seventy-two years after the first atomic bomb was dropped on Hiroshima, the United Nations Treaty on the Prohibition of Nuclear Weapons (UNTPNW) officially came into force on January 22, 2021 after Honduras became the 50th nation to ratify the 2017 treaty. Three days later the world commemorated the 75th anniversary of the first UN resolution, adopted by consensus on January 24, 1946, establishing the UN goal of the elimination of nuclear weapons and other weapons of mass destruction. These two events symbolize the acts of a great many individuals and organizations over the past eight decades. They have a story to tell which is directly relevant to the past, present and future of the World Academy of Art & Science and to humanity as a whole.

The origins of both events can be traced back to the letter written by Albert Einstein to US President Franklin D. Roosevelt on August 2, 1939, which led to the establishment of the Manhattan Project under the leadership of Robert Oppenheimer, the atomic bombing of Japan on August 6 and August 9, 1945, the start of the Cold War, the division of Europe into

rival military blocs, the invention of the H-Bomb in 1952 and onset of the nuclear arms race, which eventually led to the production of more than 125,000 nuclear arms weapons. That history includes the imminent dangers of the Cuban Missile Crisis in October 1962 when US Assistant Secretary of State and later WAAS President Harlan Cleveland conveyed messages back and forth between Dean Rusk at the UN Security Council and John F. Kennedy at the White House trying to avert nuclear war and later efforts by Cleveland, as US Ambassador of NATO, to convince NATO member countries that nuclear war was unwinnable.

These momentous external events mark but also conceal another story of equal or greater significance that has occurred in the minds and hearts of human beings during the 75 years since we entered the Nuclear Age. They are marked by the release of the Russell-Einstein Manifesto in 1955 warning of the catastrophic dangers of nuclear war with such heart-wrenching declarations: "*Renounce war or perish! World peace or death!"*, and "*We appeal as human beings to human beings: Remember your humanity, and forget the rest."*[1]

The Manifesto was followed by an international conference in 1956 on Science and Human Welfare in Washington DC in 1956, the first of the Pugwash Conferences in 1957 and the establishment of the World Academy of Art & Science in 1960, with Oppenheimer and four of the eleven signatories of the Manifesto—Einstein, Russell, Joseph Rotblat, Hermann Muller—among its founders. Muller became the Academy's first Vice President.

This second line of events in the consciousness of countless human beings also had momentous consequences. It led to the first Limited Nuclear Test Ban Treaty in 1963, the Nuclear Non-Proliferation Treaty in 1968, the Strategic Arms Limitation Treaty in 1972, the International Court of Justice's advisory opinion in 1996, the signing of UNTPNW in 2017, and to the decision of Russia and USA to extend the new Strategic Arms Reduction Treaty in late January 2021. It is marked by the gradual rise of the nuclear non-proliferation movement fueled by the unceasing efforts of thousands of dedicated individuals and NGOs over the past half century, as evidenced by the awarding of the Nobel Peace Prize to WAAS Fellow Linus Pauling (1962), the International Physicians for the Prevention of Nuclear War (IPPNW-1985), Rotblat and Pugwash Conferences (1995), IAEA (2005), and the International Campaign to Abolish Nuclear Weapons (ICAN-2017) for their unceasing efforts to ban the bomb.

WAAS was a child of these events—founded by many of its founders—and always striving to keep alive the flame of its inspiration. WAAS President Harlan Cleveland picked up the earlier threads of this work with a book entitled *Birth of a New World: Open Moment for International Leadership* and release of *Uncommon Opportunities: An Agenda for Peace and Equitable Development* by the International Commission on Peace and Food (ICPF) at the WAAS General Assembly (Minneapolis 1994), and again with ICPF in Delhi (2004).[2] It was included on the agenda of the NATO workshop on terrorism at the WAAS Zagreb GA (2005). WAAS collaborated with Global Security Institute on three events in 2006-07 and through several events of the Middle Powers Initiative, and provided a major grant for an initiative involving presidents Mikhail Gorbachev and Jimmy Carter. Then WAAS Fellow Jasjit Singh organized an official international conference of the Government of India on nuclear abolition with addresses by the Prime Minister and other top officials (Delhi,

2008).[3] WAAS partnered with The European Leadership Network for a conference on nuclear threats and for a NATO meeting of ambassadors in Croatia (2012). Several seminal articles were authored on the illegality of nuclear weapons in Cadmus.[4,5] And extending far beyond the direct reach of the Academy, WAAS Fellows heading other organizations including Parliamentarians for Nuclear Non-Proliferation and Disarmament, Nuclear Age Peace Foundation, and numerous leading members of Pugwash have all played very visible, significant roles in fostering progress on nuclear abolition during the past few decades.

This timeline carries within it an imperative message to be perceived rather than explained. Its essence is the irresistible and inevitable power of persistent human aspiration and values to accomplish in the past, the present and the future yet to come. The countless individuals and organizations who contributed to the evolution of global society from two world wars, cold war and the nuclear arms race to the UNTPNW exemplify the motto of the Academy 'Leadership in thought that leads to action'.

"If man is to take the future evolution of body, mind and civilization in his own hands it is imperative to find more effective ways of integrating what he knows with what he does."[6]

2. The Double-Edged Sword

For WAAS, the nuclear arms race was an issue of immense importance but it was not its *raison d'etre*. Pugwash Conferences was established by some of the same individuals and countless other organizations were founded subsequently with the explicit mission of addressing the threat of weapons of mass destruction. WAAS was not. The founders of the Academy had a wider mission in view, of which their work on nuclear abolition was a very important part, but not its defining purpose. For they perceived that nuclear weapons were only one expression of a much greater issue of immense relevance and importance to all aspects of human existence—the role of knowledge in the evolution of global society.

The idea of founding an international association for exploring the major challenges facing humanity in a nongovernmental context grew out of many interactions that took place among leading scientists and intellectuals in the years following World War II. It assumed concrete shape at the First International Conference on Science and Human Welfare in Washington, D. C. in 1956. The main subject of the conference was the future of humankind. Its first and foremost aim was to chart a peaceful course for global social progress, toward a "future in which all mankind will be able to enjoy the immense achievements of the human brain." Its strategy was to create a permanent transnational forum in which this objective could be pursued on a non-political, impartial, scientific and highly ethical basis.[7]

The decision they took was to establish a global Academy of Art and Science, "an institution of the highest scientific authority held in the highest esteem by all peoples as a strictly objective advisory body for countries and peoples, and gradually growing into an influential position in all questions decisive for the future of mankind."[8] The conference led directly to the formal establishment of WAAS on December 24, 1960 with the call "Non-Scientists and Scientists alike! Let us all help to make this forum a true Agency for Human Welfare."[9]

While the global scope encompassed by the World Academy's mission is shared today by many organizations, at the time of its founding it marked a moment in which history ceased to be the history of single peoples, states or groups and humanity became an indivisible whole.[10] The divisions wrought by political frontiers were rapidly vanishing even as the number of nation states multiplied nearly three-fold within a few decades. The UN system was already 15 years old at the time, but it remained as it still remains today, an organization directed by the will of independent nation states, more than by the aspirations of humanity as a whole.

"Solutions to complex, wicked social problems require interdisciplinary, multidisciplinary and intersectoral knowledge of the interdependences between different fields of knowledge and social activity."

These were heady times of rapid change. Advances in air transportation and telecommunications had begun to increase the speed, reduce the time and multiply the number and frequency of international contacts and relationships. The world was shrinking. Marshall McLuhan would soon coin the term "global village". DARPA, America's Defense Advanced Research Projects Agency, had been founded two years earlier in 1958, and soon began work on the computer networking project which eventually gave rise to the Internet.

The dilemma posed by the scientific breakthrough that created nuclear weapons was not unique. Already there was increasing awareness that scientific knowledge, in general, could be a double-edged sword. Also in 1956, Jacob Bronowski, a mathematician who had studied the effects of the atomic bombing of Japan, published his famed lecture *Science and Human Values*.

"*Science has improved our lives in many ways… On the other hand, it has also given us the capacity to ravage the environment on an unprecedented scale and obliterate our species altogether.*"[11]

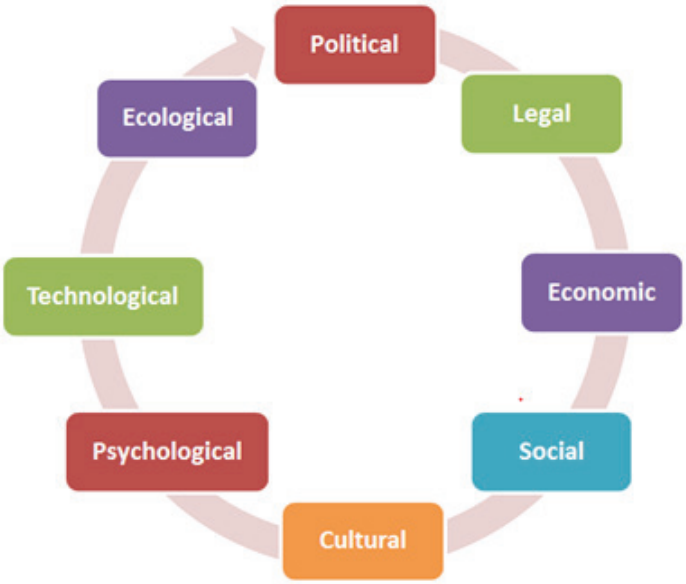
In parallel with the invention of ever more powerful weapons of mass destruction, science brought succor to humanity in the form of life saving antibiotics and vaccines, such as the polio vaccine developed by WAAS Fellow Jonas Salk. Who could imagine at the time that such a sacred, life-giving gift could have such dire life-threatening consequences? Yet it soon became apparent that falling death and infant mortality rates were a principal reason for unparalleled expansion of population which resulted in widespread famine and uncountable numbers of deaths. The severe impacts of population explosion spurred a major research project in the Academy, which led to the publication in 1965 of *The Population Crisis: Implications and Plans of Action*, edited by WAAS Fellows and including contributions by more than 20 scientists.[12]

3. Integration of Knowledge

Rapid population growth could not be addressed merely by applications of science and technology in the form of antibiotics and vaccines. It also necessitated unprecedented efforts to increase the supply of food to feed the rapidly expanding populations. Massive efforts were needed to raise food production by adoption of high yielding varieties of foodgrains, another wonderful scientific breakthrough.[13] These efforts required not merely scientific knowledge and technology to raise production, but a much wider range of expertise to rapidly introduce and disseminate it among illiterate or poorly educated populations in developing countries. It required complex integrated strategies involving creation of new institutions, changes in laws and public policy, agricultural extension and demonstration programs to persuade hundreds of millions of farmers to adopt the new technologies, alterations in education and training, rapid development and revamping of health care systems, public intervention in food procurement and pricing to prevent hoarding and speculation, improved transport and storage of surplus production to reduce waste and ensure farmers a ready market for surpluses in food deficit regions, import of hybrid seed and fertilizers, increased capacity for processing of farm produce, price supports, infrastructure investments, and coordination of scientific research within and between disciplines.

In other words, it required a very broad multidisciplinary approach to applying science and technology to complex and very often wicked social and cultural problems that defied solution by application of new technologies based on narrow disciplinary theories, fragmented strategies, specialized institutions and piecemeal approaches.

Figure 1: Multi- and Trans-disciplinarity



The power of an integrated approach was powerfully illustrated in the late 1960s when India adopted a comprehensive development strategy that incorporated all the dimensions of knowledge, policy and institutional support needed for rapid growth of food production, processing, distribution and consumption. Over the next decade it enabled tens of millions of mostly uneducated farmers across the country to double India's food grain production and transform a famine prone nation into a net food exporter, in what came to be known popularly as the Green Revolution.

Solutions to complex, wicked social problems require interdisciplinary, multidisciplinary and intersectoral knowledge of the interdependencies between different fields of knowledge and social activity.[14] But it also requires another kind of knowledge which transcends disciplinary boundaries. It requires new ways of thinking and knowing[15] that not only interlink and combine multiple perspectives and forms of knowledge but pierce beneath their surface differences to comprehend the underlying transdisciplinary social processes[16] that govern them.[17]

By the late 1960s, the Academy had already extended the scope of its work from peace, disarmament, population and food to even more challenging and more complex problems concerning the environment. WAAS conducted a five-day joint conference with the American Geographical Society which led to the publication of *Environment and Society in Transition* in 1970.[18] The topics included meteorology, population, fertility, family, food, water, energy, law, policy science, economics, waste management, health, education, electronic technology, and public order. The integration of environmental issues with these other dimensions has been a cardinal theme of the Academy's work since then, including three projects with the UN discussed later in this paper.

Two other current WAAS projects focus on monitoring the global political, social and ecological environment by publishing periodically updated editions of the Security and Sustainability Guide, a global directory of major organizations working on S&S issues and another reporting latest research findings regarding all dimensions of the COVID-19 Pandemic.

As Oppenheimer wrote, "Specialization in science is an inevitable accompaniment of progress; yet it is full of dangers, and is cruelly wasteful, since so much of what is beautiful and enlightening is cut off from the world."[19] He might have added that a vast amount of what is partial, incomplete and imbalanced is also cut off from the reality of the real world. The process of generalization in thinking, like the searching for patterns in big data, is largely a process of looking for correlations and commonalities, while ignoring facts that distinguish and characteristics that define individuality and uniqueness.

This is especially true in the social sciences, where the complexity of the reality being studied is infinitely greater than that of subatomic particles in a cyclotron. WAAS has been aided in understanding both the similarities and differences between the two fields by a strong contingent of physical scientists, especially Physicists, which has led to a fruitful relationship with CERN on complexity and more recently with IEEE on cognitive computing and symbiotic systems.[20]

The difference in complexity between the natural and social sciences was the subject of a fascinating colloquium organized by WAAS and CERN in 2014.[21] Thinkers from both disciplines concurred that the complexity of physical forces acting on inanimate physical objects pales into insignificance compared to the array of physical, biological, ecological, social, technological, intellectual, psychological, and cultural factors influencing the behavior of conscious individuals and social groups, such as the results of a national election, attractions between individuals, the popularity of a personality or performance, the outcome of a sporting event, or the fluctuations of financial markets.

"The latter half of the 20tfi century did not invent lofty human values. But it did more than any previous period in history to translate high utopian ideals into practical reality."

The challenges posed by complex, wicked problems in the 20th century gave rise from the mid-1940s to increasing interest in a form of trans-disciplinarity known as systems theory, which was the basis for the Club of Rome's analysis of resource constraints in *Limits to Growth* (1972). The publication of this report marked the beginning of a fifty-year relationship between WAAS and the Club, including a large overlap of membership and officers, e.g., five of the last seven presidents of WAAS have also been members of the Club. Orio Giarini attended the earliest meetings of the Club and later authored five reports to the Club with pioneering insights on economy, environment, employment, education and uncertainty before being elected to WAAS, becoming the founding Editor-in-Chief of *Cadmus Journal,* a key contributor to the Academy's New Economic Theory project (NET), and eventually a member of the WAAS Board of Trustees.[22,23]

The quest for transdisciplinary knowledge led subsequently to the exploration of more complex theories of society, such as the seminal work by the eminent social theorist Harold Lasswell, WAAS President during the 1970s, whose theory and model of complex social processes integrated political, legal, organizational, social, cultural, psychological perspectives encompassing the role of individuals, institutions, communication and most especially values.[24] On parallel lines this led WAAS to a study of paradigmatic change in a book of essays entitled *New Paradigm: The World 300 Years After Newton* on developments in Physics, Ecology, Economy and Art. Including among the authors was WAAS Fellow Ilya Prigogine, who was awarded the Nobel Prize in Chemistry in 1977 for his work on dissipative structures, complex systems, and irreversibility.[25]

This thread continued in the 1990s when Harlan Cleveland organized a series of conferences on the need for an integrated theory of social development at Vancouver (1998), Washington and Chennai (1999) leading to publication of a monograph on human choice.[26] The work was also carried forward in a series of articles published in *Cadmus* and *Eruditio*.[27,28] More recently, systems thinking has also been central to the work of other Fellows on the sciences of networks and complexity, as well as on the emerging discipline of anticipatory systems.[29,30,31,32,33]

4. Science and Human Values

The absence of disciplinary divisions and narrowly specialized programs has been one of the defining characteristics of the work of the Academy since its inception. But it was not the only one. From its outset, the work of the Academy also distinguished itself in another way from the vast and rapidly expanding body of research focused on global challenges. Along with the signatories of the Russell-Einstein Manifesto and other leading thinkers of the day, Bronowski realized that the relationship between humanity's role in nature and human values was not merely a question for philosophical inquiry. It had immense practical implications.

Seventy years ago, decision making regarding the use of the atomic bomb in Hiroshima and Nagasaki excluded the scientists and elements of scientific efforts, and control over the weapon passed to the military and ultimately, to politicians. Truman's decision to use the bomb was a political and military decision, not a product of major ethical and moral reflection, or scientific and intellectual insight. This probably explains why Oppenheimer was disgusted by the military and political establishment and why his concerns, joined with the concerns of Einstein, elevated the question of the importance of the morality and ethics of science. This raised the critical questions crystallized in the founding of the WAAS regarding the ethics and morality of science and weapon systems and, more importantly, the imperative of world peace and security. Thus was born the emphasis of the Academy on the social consequences and policy implications of advances in science and intellectual activity.

During the period in which WAAS was founded, the globalization of values was proceeding side by side with that of knowledge. The intentional lip-service paid to human rights in the UN Charter was partially compensated by the adoption of the Universal Declaration of Human Rights in 1948—a document that affirmed the highest ideas of individual freedom and equality, but fell far short of buttressing them with the force of law and mechanisms of enforcement. Subsequent decades gradually translated high ideals into political intention and social reality, until the rights affirmed in the UDHR eventually became the foundational principles and values for formation of the 17 Sustainable Development Goals (SDGs) in 2015. In *Transforming Our World: Necessary, Urgent, and Still Possible,* Ivo Šlaus describes the SDGs as a conscious action plan for each one of us and for humankind as a whole and achieving them is necessary and urgent.[34]

The latter half of the 20th century did not invent lofty human values. But it did more than any previous period in history to translate high utopian ideals into practical reality. Nearly two centuries after the Declaration of Independence and one century after the abolition of slavery in America, the US Civil Rights Movement was born in 1955 when Rosa Parks refused to move to the back of a bus in Montgomery, Alabama and a local preacher named Martin Luther King Jr. began his long march for equal rights for African Americans.[35]

The Academy was established with the explicit aim of marrying scientific knowledge with universal human values. Apart from the distinguished signatories of the Russell-Einstein Manifesto, the founders of WAAS included not only many other accomplished scientists, among which five were Nobel Laureates at the time, but distinguished international diplomats

as well: e.g. Joseph Needham, a co-founder of UNESCO; Lord Boyd Orr, the first Director General of the Food and Agriculture Organization (FAO); and G. Brock Chisholm, the first Director General of the World Health Organization (WHO). These individuals as well as others who contributed to the Academy's first volume of essays on *Science and the Future of Mankind* in 1961, all believed that science shared responsibility for the direction which humanity was taking and had an obligation to act. They realized that the ivory tower separating academia from the world around and the Cartesian divide arbitrarily separating logical thought from social reality were no longer sufficient to insulate the creators of knowledge from the consequences of its application in practice as well as in theory. They envisioned the need for a new organization that would help navigate the narrow and dangerous passages which separated the challenges and opportunities offered by emerging science and technology and help humanity evolve a more enlightened education, as discussed below, and more effective organizational structures for safe passage into a better future. WAAS was created as a transnational forum for this purpose.[36] The defining purpose for which the Academy was founded was not merely to transcend the limits of national perspectives. *Far more radically, it sought to transcend conventional thinking and seek out new perspectives integrating science with ethics and universal values.*

The concern for human rights, welfare and wellbeing has always been a central motivation of the Academy's work, but never so central that it does not require continuous reminders. This was the rationale for an international conference organized at the International Centre for Theoretical Physics in 2013 and for the high-level symposium co-organized by WAAS, CERN and UN at Geneva in 2015 on Science, Technology, Innovation & Social Responsibility, which included leaders of five UN agencies.[37,38]

Regardless of the topic or field of inquiry, the common thread has always been social impact on humanity—never simply on knowledge for its own sake, however valid or precious that knowledge may be. At first reading the validity of this perspective may appear so self-evident that it would constitute the guiding principle behind all academic pursuits—and indeed it may well be in principle, though not always in practice. For the nature of knowledge is such that it is possible to pursue paths of discovery without fully considering their impact on human beings, just like the thrill of an inventor in creating a faster or more powerful machine may become so great that it takes precedence over a disinterested reflection on its usage and potential consequences. Indeed, in a world in which the quest for political power and commercial profit are such powerful motives and drivers for scientific research, it is not surprising that science leads to developments with untoward ramifications, e.g. such as the destabilizing impact on global financial markets of computerized trading technologies based on the discoveries of two former Nobel Laureates or the development of advanced fracking technologies at precisely the time when fossil fuels pose an existential threat to the future of humanity.

5. Reliable Knowledge

In 2008, the WAAS Board of Trustees established a Strategic Planning Committee to

prepare a strategic plan for the future of the Academy.[39] And among the many issues the planning committee was asked to address, was the development of a program framework to characterize the type of work the Academy would undertake.

> *"WAAS was not an Academy founded for specialized knowledge in specific fields, nor for the pursuit of knowledge for knowledge's sake, but rather to study the impact of knowledge on policy and society, which ultimately means with reference and relevance to human beings and their life on earth."*

In-depth reflection on forty years of its earlier work and present occupations led to the formulation of a multidimensional conception of reliable knowledge which has guided its subsequent work over the past decade.[40] The committee's findings were presented and endorsed by the Board in May 2009 and then adopted at the New Delhi General Assembly in November 2011.

Being a World Academy composed of members drawn from the arts, social and physical sciences, humanities, business, public administration and civil society compelled the committee to pose fundamental questions:

- How could WAAS distinguish its mission from that of other national and regional academies?
- Is there really a common meeting point between art and science?
- Is there a unique contribution that WAAS can make to the world's knowledge?

Rather than distinguish itself by specializing in a particular set of disciplines, issues or geographical area, the framework formulated a comprehensive approach and integrated perspective of knowledge inclusive of all disciplinary perspectives and applicable to social problems and opportunities in all fields.

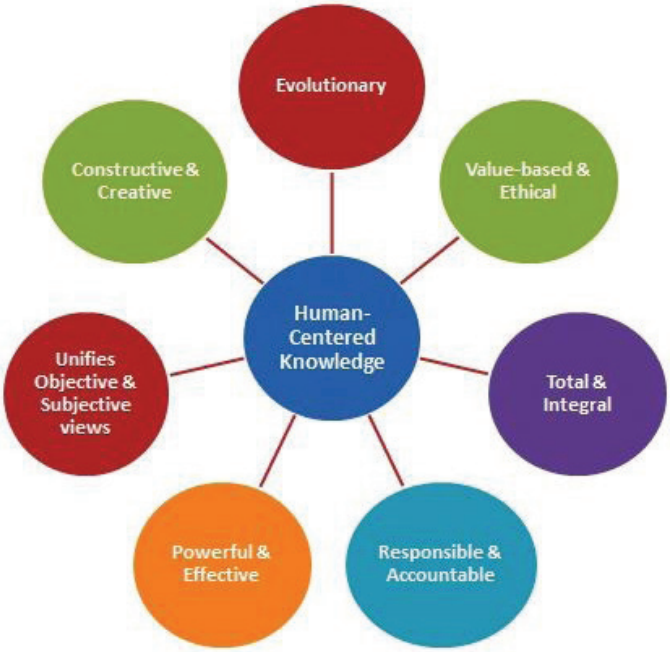
6. Human-centered Knowledge

The defining characteristic of this conception of reliable knowledge is based on a 1961 mission document by the founders placing emphasis on the "policy implications and social consequence of knowledge".[41]

WAAS was not an Academy founded for specialized knowledge in specific fields, nor for the pursuit of knowledge for knowledge's sake, but rather to study the impact of knowledge on policy and society, which ultimately means with reference and relevance to human beings and their life on earth. In other words, it must be human-centered and seek to meet all the criteria required for knowledge to be reliably relevant, applicable and effective to the lives of people.

The application of the concept of Reliable Knowledge leads inevitably to a program of work which is global in scope, multi-and transdisciplinary, multi-sectoral, inter-generational, contextual, evolutionary, value-based and responsible, comprehensive, relational, integral, creative, practically powerful and effective.

Figure 2: Reliable Knowing



6.1. Human-centered Economics

The importance of this shift in emphasis is best illustrated by the Academy's work over the past decade on Human-Centered Economic Theory, which became the original impetus for the founding of *Cadmus*.

The very term human-centered Economics appears redundant, for to whom other than human beings does the subject apply—except as a metaphor sometimes applied to the economy of Nature? Yet the term conveys a profound truth that is too often forgotten by marketing analysts, investors, technology visionaries and public accountants trying to decipher the hidden patterns in quantitative data in a manner reminiscent of the quest of Newton to discover the mathematics describing the physical principles and natural laws governing motion and thermodynamics. The Economics of human beings is not defined by

laws of Nature. The laws of economy are strictly human-made. And the principles governing their action are not limited to physical or even biological factors. They reflect complex interactions between material forces, meteorological events, political developments, technological innovations, evolving social and cultural propensities, fleeting thoughts and rumors, transient psychological sentiments and moods.

Figure 3: Comprehensive Approach

At a deeper level they are powerfully influenced by even less tangible and measurable factors such as human aspirations, as Harlan Cleveland observed in coining the phrase "revolution of rising expectations"[42] to explain the factors responsible for the sudden rise of Asia in the 1950s. And still deeper and more ultimately, human behavior is a reflection of intangible, ethereal universal values that have persisted for millennia and yet are perpetually evolving.

For these reasons, predictions in Economics focus primarily on two ends of the spectrum—the very short term in which at least some of the most powerful determinants are assumed to remain relatively constant and longer-term macro level estimations such as those related to demography and environmental impacts. These observations are not intended as a criticism of Economic models or those applied in other social sciences. On the contrary they are intended to point to the tremendous challenges their study poses and the need for more sophisticated theories integrating and striving to understand the play of a much wider range of factors.[43]

But the real purpose of these observations is to emphasize the obvious point that Economics is not the study of the laws of the natural world, though the physical laws certainly do constitute an important factor. Economics is essentially a human activity—a social process—created and carried out by human beings to fulfill needs and aspirations and manifest values in a shared political, legal, social, technological and cultural context. And the laws governing this activity are human-made. So in addition to the conditions imposed by objective forces of physical Nature, it is also very powerfully influenced by the subjective forces of individual and collective social existence.[44]

This self-evident conclusion would not merit discussion if it were not for the fact that so much of prevailing thought, theory and policy in economics today is based on premises that subordinate human beings and their aspirations to economic objectives or value them in purely economic terms which ignore the true source of the direction, energy and power that determine and drive economic processes, and ignore or minimize the determining role of individual and collective social consciousness and the distribution of power in society.[45] Factoring in these elements leads to a perspective of economics that centers on meeting human needs and aspirations rather than complying with mythical formulations of the natural laws of economy.[46]

This long comment was deemed necessary to illustrate that the work of WAAS on economic theory seeks to challenge fundamental premises on which a true science of economy and of society should be based. It seeks to emphasize the importance of maximizing human wellbeing in order to realize the human values manifested by the 17 UN Sustainable Development Goals and 169 targets of Agenda 2030, as opposed to multiplying consumption and GDP. It points to the primacy of subjective human factors as not only goals, but also the primary determinants of their achievement. It focuses on a theory that maximizes the development of human capacities for creativity and resourcefulness, which are potentially unlimited, rather than focusing primarily on the exhaustion of finite material resources.

This project led to the formation of the New Economic Theory working group consisting of more than 50 members drawn from a wide range of disciplines. These and many related themes have been the subject of international conferences in Brasilia (2014), Gainesville (2015), Lisbon (2016), Cape Town (2017), and Paris (2018) as well as seminars and workshops at Trieste, Dubrovnik and other places.

A joint paper "Quest for a New Paradigm in Economics" was published in 2017 summarizing conclusions to date. It examined important premises and principles of a transdisciplinary framework for ecologically-sustainable, human-centered development founded on knowledge of the underlying social processes that govern human accomplishment and social evolution. It presents a holistic paradigm to reunite and integrate thinking about economy with the political, legal, social, organizational, ecological and psychological dimensions of which economy has always been an inseparable part. Its central aim is the formulation of a new paradigm of economics, which will generate effective public policies and solutions to existing crises; revolutionize textbooks and teaching of the discipline of

Economics around the globe; unleash societal potential for meaningful transformations to benefit the welfare and well-being of all humanity; and safeguard the planetary environment for future generations.[47] Another paper focuses on the values inherent in the concept of human capital in new economic theory.[48] These are just two of more than 60 *Cadmus* articles published on the subject over the past decade.

6.2. The Right to Employment

Building on research by WAAS Fellows under ICPF, the challenge of providing remunerative employment opportunities for all job seekers has occupied an important place in the Academy's agenda of work since the Minneapolis General Assembly (1995), a workshop on Future of Work (1996), and conferences in Delhi (2004) and Zagreb (2005), the Academy's first online conference (2009), and subsequent events leading up to special sessions at the UNOG-WAAS GL-21 conferences, two webinars in collaboration with Nizami Ganjavi International Centre (NGIC, 2020), and numerous articles in *Cadmus*.

The crux of this work focused on two fundamental questions which are closely interdependent:

- Should employment be considered a fundamental human right?
- And, Is full employment an achievable goal?

In answer to the first question, the Academy concluded that the right to employment in a market economy is the economic equivalent of the right to vote in democracy. Without assured access to paid work or social welfare coverage, human beings have essentially no economic rights, which is the essential condition for true democratic political rights.[49]

In answer to the second question, our research concluded that granted the political will is there to support the right to employment, it is not only feasible to ensure full employment but indeed that is the most economically and socially beneficial policy that is practicable.

This is true for three reasons:

- Studies confirm that the cost of unemployment far exceeds the cost of publicly created jobs, when the true economic, social, political and personal costs of unemployment and underemployment are taken into account.[50]
- Second, public job guarantee programs provide an effective counter-cyclical mechanism for stabilizing both economic performance and personal economic security offsetting the cyclical fluctuations characteristic of market systems.
- Third, funding full employment is economically feasible and sustainable through targeted public sector programs operating at the local level to support local economies.[51]

A human-centered theory and practice of economy must therefore recognize employment as a fundamental human right.[52]

6.3. Future of Money and Finance

The Academy's research on money arose out of a theoretical inquiry into the process of social development and the character of money as a social institution based on public trust. The theoretical and practical potential role of parallel currency systems was examined at a conference in Chennai (1999), continued in Zagreb (2005), and extended to examine the potential for a global currency at Hyderabad (2008).[53]

The study of money as a social institution and the role of financial markets in economic development have been recurring themes of the NET project over the past decade, most recently at the workshop on money and finance at World Bank in Washington DC and Dubrovnik (2019). It is based on the perspective that money is a networking device that plays a role similar to that played by language and the internet. Language enables human beings to communicate, interact, exchange information and relate in various forms in space and time. Money facilitates exchanges of goods and services between people and organizations. The Internet facilitates both of these functions at the global level with the speed of light.[54]

In other words, money is not a thing in itself. It is a symbol that represents the power and willingness of human beings to relate to each other. Outside a social context, it has no value at all. Among the many published studies were papers on money, debt, people and planet;[55] the evolution of wealth and human security;[56] the value of monetarized and non-monetarized wealth;[57] and cryptocurrencies.[58]

But whatever its nature, the power of money is very real. The world has no shortage of money. By one estimate less than 20% of the $350 trillion in global financial resources is used to meet real needs in the real economy. The problem is that the abundant power of money is not being consciously directed to meet the world's needs. In 2019 WAAS collaborated with UNCTAD and the UN Office for Partnerships in New York for a conference on Future Capital and joined an ongoing project examining the relationship between capital, consciousness and values involving several hundred participants, including many drawn from the finance industry and seeking ways to redirect investments for sustainable development.

This initiative has already led to three new publications. The first is a report on *Capital as a Force for Good* released at the GL-21 conference in Geneva (December 2020) which tracks the significant improvement in sustainable investment practices by 30 of the world's leading financial institutions.[59] The second is *Financing Our Future: Unveiling a Parallel Digital Currency System to Fund the SDGs and the Common Good,* a report to WAAS, which presents the findings of a multi-year WAAS project on the feasibility of utilizing central bank generated digital currencies to finance trillions of dollars in SDG related investments.[60,61] The third is *Integral Investing: From Profit to Prosperity,* another report to WAAS, which teaches entrepreneurs how to build successful and fundable start-ups that address the UN SDGs within Planetary Boundaries, which is backed by decades of the author's research.[62] This research is backed by 17 podcasts collaborating with a wide range of financial experts on issues related to the future of finance.

7. Global Governance

From the outset, the founders had intended the Academy to provide counsel and assistance to the agencies of the UN system. This was made possible by the number of WAAS Fellows among the founders of UN agencies and those subsequently elected with extensive experience in international diplomacy, such as the founding heads of FAO, UNESCO and WHO, present and former heads of state and ministers, ambassadors, other senior officials in government and international organizations with whom WAAS has collaborated. The list of past and present distinguished political leaders and diplomats elected to the Academy is far too long to replicate here, but its practical importance has been immense.

Over the decades its work has included many projects and meetings directly or indirectly related to global governance, including a series of workshops in USA during the period 1992-95 on Implications of Globalization, Global Surprise: Reframing Governance and Citizenship, Governance of Diversity, Cultural Identity and the Requirements of Civilization, and Global Governance in a Turbulent World. This led in turn to the focus on nuclear abolition, peace and security during the period 2005-10. And subsequently to three projects in direct collaboration with the UN, beginning with the New Paradigm Project in 2013.

The formulation of a comprehensive and integrated conception of global society has been facilitated by a comprehensive and inclusive program framework that takes into account the complex linkages and interdependence between all aspects and dimensions of human existence. The quest for integrated, transdisciplinary social theory became the basis for the Academy's project and major conference on "Opportunities and Challenges for the 21st Century: Search For a New Paradigm" in collaboration with the United Nations Office at Geneva (UNOG) in 2013, followed by conferences in 2014-15 in collaboration with Montenegrin Academy of Sciences and Arts (Podgorica), National University of Kazakhstan (Almaty), Nizami Ganjavi International Center (Baku), Bohdan Hawrylyshyn Foundation (Kiev) and CERN (Geneva). More recently it formed the basis for collaboration between WAAS and Club of Rome on what the latter has termed the Emerging New Civilization Initiative.[63,64]

The new paradigm project was an attempt to comprehend global society as a single integrated whole in which countries, disciplines and all fields of activity are treated not only as interlinked and interdependent, but actually inseparable and indivisible dimensions of an organic living whole, similar to the parts, organs and systems of the human body, which cannot function for a moment without reference and dependence on one another. The project focuses on tracing the multiple political, economic, social, cultural and ecological challenges confronting humanity to their common roots. It seeks to address the underlying fissures created by abstract theories, disciplinary boundaries, decontextualized education, institutional barriers, fragmented strategies, piecemeal policies and uncoordinated implementation between different dimensions, fields, levels and regions. The project has resulted in publication of more than 100 papers in WAAS journals on various aspects and dimensions of the social process and ways to influence its speed and direction.[65,66,67,68,69]

The project has led to five fundamental conclusions regarding the nature of the challenges and opportunities confronting humanity today: the issues are all interlinked and cannot be addressed independently from one another; all are global in nature and cannot be effectively addressed by individual nations or groups of nations as in the case of the COVID-19 pandemic and climate change; they are the result of the compartmentalization and lack of coordination between institutions, policies and programs; they are the result of specialized disciplinary theories and education; and they are all the result of mechanistic, reductionist modes of thinking that ignore the complex interrelationships that constitute reality in the real world. The project concluded that new approaches to all the major issues need to be addressed at all these five levels.

"The individual is a conscious initiator, catalyst and pioneer of all social change. The collective responds, imitates, replicates and organizes the innovative behaviors until it becomes part of the mainstream social existence."

Today WAAS continues to pursue this aim. Building on the momentum of the new paradigm project, in late 2019 WAAS entered into a second partnership with UNOG for a project titled *Global Leadership in the 21st Century* (GL-21) which was made possible by the active contributions of three current WAAS Fellows with distinguished careers in the UN system.[70] The second project continues its focus on the study of the complex social challenges generated by the rapid evolution of world forces. But now the emphasis is on applying an integrated knowledge framework to develop catalytic strategies to fill the apparent global leadership gap and overcome the inertia and resistance preventing the global community from effectively addressing these challenges.[71,72] This project involved the constitution of 15 working groups, two major conferences in collaboration with UNOG, and nearly twenty workshops, involving in all more than 350 experts and 70 partner organizations and including 11 collaborating UN agencies.[73] Recommendations emerging from the GL-21 project include creation of a model for multistakeholder, multidisciplinary, integrated research-policy-implementation institutions.

The Academy's program framework inevitably led it to a comprehensive approach to issues encompassing all 17 SDGs. Its effort to integrate these different dimensions arrived at perspectives closely paralleling those of the UN concept of Human Security which has been developed and promoted by the UN during the past quarter century. The Academy's work on an integrated approach to governance continues with the initiation of a project on Human Security. The project involves a survey of major stakeholder groups[74] on the efficacy of a human security approach in collaboration with the Human Security Unit, Inter-Parliamentary Union, Parliamentary Association of the Mediterranean, Inter-Academy Panel, CoNGO, WANGO and Youth Leadership Network.

7.1. Role of the Individual and the Collective in Social Processes

In its quest for quantitative scientific validity, in recent decades the social sciences have largely focused on phenomena that lend themselves to statistical analysis. One consequence is to minimize the role played by individuality and individual uniqueness in social processes and social evolution.

The Academy's concept of reliable knowledge leads instead to the recognition that the individual represents the conscious peak of the social collective and plays an indispensable role as the explorer, adventurer, inventor, entrepreneur, social catalyst, political leader, independent and original thinker, idealist and visionary. Instead of reducing the individual to a mere statistic, it has led WAAS to examine the interdependent and complementary roles played by the individual and collective in a comprehensive theory of change, social development and social evolution. In looking to the future of the Academy 27 years ago, President Harlan Cleveland referred to what he called the trilemma of "how to reconcile cultural human diversity with both individual human rights and the global opportunities that modern science and especially information technologies make possible."[75]

The individual is a conscious initiator, catalyst and pioneer of all social change. The collective responds, imitates, replicates and organizes the innovative behaviors until it becomes part of the mainstream social existence. Without freedom, the individual cannot innovate and create. Without rules and authority, the collective cannot organize new behaviors at the wider level of society. Thus, the tension between freedom and authority repeats itself in the constant tension between the rights of the individual and the authority of the collective.

Future knowledge must seek the elusive formula for not only establishing a compromise or balance between these apparently opposing forces, but also reconciling and integrating them to support higher levels of social evolution.[76,77]

8. Person-Centered Education

"If you were trying to create a global system of world-class higher education accessible and affordable to everyone, how would you do it?" This is the question WAAS posed at the UNOG-WAAS conference at Geneva in 2013. It was prompted by a UNESCO report projecting that demand for higher education would rise by 100 million students over 15 years, requiring an expansion of capacity by the equivalent of opening a few thousand universities the size of Harvard during that period. The conference occurred just at the time online learning was beginning to take off after the launch of Coursera, Udacity, edX and other platforms. Participants at this and subsequent conferences agreed that *whatever the optimal future model might be, it was not the present system of independent, degree-certifying, brick and mortar institutions*.[78,79,80]

After the Geneva conference, WAAS posed the same question to experts on online learning from leading universities in USA and overseas at a conference it organized on Future of Education at the University of California, Berkeley in October 2013. The conference examined the concept of an alternative model for meeting the world's expanding needs for higher education and endorsed the concept of a World University model.

The idea of founding a World University was not new to WAAS. The need for changes in education had been a recurring theme of discussion since the inception of the Academy.[81] Indeed, the Academy's founders had described their vision of WAAS as an "informal world university" and actually operated a prototype model of it in the 1960s and 70s through a distributed system of research centers headed by WAAS Fellows. In early 2014 WAAS revived the idea and founded the World University Consortium (WUC) in a meeting at the Library of Alexandria in partnership with nine other charter members, including the Library, Foundation for a Culture of Peace (Spain), Green Cross International and others. WUC elected as its first president, Heitor Gurgulino de Souza, Rector of UN University (1987-97) and WAAS President (2013-19).

From its inception, WUC has followed a multi-pronged strategy. The first focuses on development of new curriculum aligned to better meet the needs of the 21st century. It has involved the development of a syllabus for an integrated series of transdisciplinary Master's level courses based on fresh perspectives and insights generated by WAAS on a range of different topics. The topics vary widely but are all founded on common principles. Between 2014 and 2019, fifteen curriculum development meetings were conducted and videotaped at the InterUniversity Centre, Dubrovnik on topics such as the future of democracy, social power, individual accomplishment, mind-thinking-creativity, future education, theory of money, human-centered economics, transdisciplinary science of society and global leadership. A detailed outline for a course on history of mind, thinking and creativity was also prepared. The next step contemplated is to develop the prototype for the first full master's program on Global Leadership in the 21st Century, drawing on the research conducted during the GL-21 project with UNOG and to introduce it through partnerships with universities around the world.

The second WUC strategy focuses on development of a new paradigm for pedagogy for all levels of education. This has been a principal aim of the four international conferences on Future Education conducted by WAAS and WUC at Berkeley (2013), Rome (2017), Rio (2018) and Belgrade (2019). The fifth conference at Bucharest scheduled for June 2020 was postponed due to COVID-19. The new paradigm calls for a shift from subject to student, passive instruction to active learning, standardized mass to customized individualized curriculum, abstract to contextual experience-based knowledge, compartmentalized to inter-disciplinary content, mechanistic to organic conceptions, instructor-driven to peer to peer knowledge exchange, competitive to cooperative group learning, and memorization and understanding to thinking and creativity. The overall aim is a shift from transfer of mental information and skills to development of the student as a whole person.[82] The new paradigm is already being applied by WUC, IACP and MSS in India at two leading institutions—Primrose School in Pondicherry operated by MSS and Global Institute of Integral Management Studies, a vocational business college in Kerala, India, focusing on employment, entrepreneurship and leadership.

The third strategy, closely linked to the first two, is to focus on a reorientation of content, pedagogy and delivery systems to promote employability, self-employment and entrepreneurship. The relationship between education and employability is well documented

and was the subject of two reports by WAAS Fellows in the 1990s as well as of the Academy's work on strategies to accelerate employment generation in both economically advanced and developing countries.[83] This was the focus of the joint webinars with GlobalMindEd and sessions at the June 2020 GL-21 UNOG-WAAS conference. The goal is to address the vast and widening mismatch between the knowledge, social skills, values and motivation being imparted by conventional education and the human resources needed to meet social needs and adapt to rapid social evolution. New members of WUC include GIIMS and Global Education Futures, both of which are centrally concerned with this issue.

WAAS and WUC have concluded that rapid expansion of the educational system is feasible, affordable and absolutely essential to prepare youth for successful adulthood in the fast-changing economic environment. But it will require major changes in content, pedagogy, certification and delivery systems. The fourth WUC strategy focuses on development of models for complementary and alternative delivery systems. The remarkable advances in technology have opened up promising alternatives at a much lower cost than the existing model, but the conservative nature of educational institutions has retarded their widespread adoption. COVID-19 radically altered the situation in 2020.[84] The suspension of physical classroom education generated pressure for a sudden rapid transition to online learning at all levels of education around the world. Recent experience confirms that online learning has an important role to play in the future. But it also highlights the broad array of difficulties encountered in moving education online.[85] A major limitation to widespread adoption at the university level arises from institutional resistance to changing the learning model and the near monopoly which brick and mortar institutions enjoy over the certification process.

COVID-19 has also spurred other innovations in higher education that will facilitate emergence of alternative delivery systems, including micro-credentials, career certificates and nanodegree programs. More importantly, it has broken the monopolistic high-cost system for knowledge certification, which has been one of the principal reasons for the slow adoption of alternative delivery systems by existing brick and mortar institutions. The separation of knowledge delivery from credentialing will make it possible for many different types of institutions—public, private and CSO—to expand their educational offerings, since standardized, credible credentialing will then be available from independent sources, through government, universities, businesses in different fields of competence and independent expert agencies. At the same time, it will help mobilize vast underutilized educational resources, such as the expertise of retired teachers and professionals, and make them accessible on a global basis. The increasing competition will also increase the affordability of higher education.

9. Emerging Program Framework

The various lines of thinking and research that have emerged in WAAS over the past two decades all have their foundation and center in the concept of Reliable Knowledge discussed earlier. The programmatic and project themes represented in the diagram above reflect the Academy's most recent thinking on its emerging program of work, centered in the concept of Reliable Knowledge and framed to address the pressing challenges confronting humanity

today, which fall within the purview of the Global Leadership program and founded on an integrated multi-disciplinary, multi-stakeholder conception of Human Security. The elements depicted range from well-established programs to developed concepts and high potential project ideas which are in various stages of development.

10. Why Art & Science?

Six decades later, the choice of the Academy's name may not seem as obvious as it was at the time of its founding. For today the authoritative claims of science reign supreme in the world even as it is increasingly subject to the desperate attacks by the extreme fundamentalism of outdated orthodoxies, atavistic prejudices, ethnic bigotries, racial or gender chauvinism, and religious intolerance. Indeed, today many scientists regard their profession as under siege by reactionary forces in society at a time when opinion polls show that humanity places greater trust and confidence in science and scientists than in national governments, international organizations, business, civil society, the press or any other institution other than the medical profession.

So it may be difficult to recall how great was the trust in other social institutions at the time of the Academy's founding. Americans had not yet come to doubt the near divine right of America's mission to democratize the world. Before the onset of the Vietnam War or Watergate, they were far less prone to question the integrity or judgement of their leaders or the motives of their governments. Conventional religion enjoyed far greater allegiance than it does today. Now in many countries even the majority who consider themselves religious have lost confidence in the formal institutions claiming to represent their faith. At that time, the indiscretions of churches and their leaders were still a well-kept secret. In the West the truths of democracy and free market economies were still accepted by most people as self-evident and beyond dispute. Authoritarian communism and its milder socialist versions enjoyed far greater respect and allegiance than they do today. International organizations were more identified with the lofty ideals enshrined in their constitutions than the power politics and competitive self-interest of the nation states vying to assert the principles of universal justice without accepting UN authority over its own unlimited sovereignty.

Moreover, in the mid-20th century Art was in the midst of a renaissance spurred by the horrendous consequences of scientific warfare in two world wars. It was impelled by the quest for meaning and values in a world driven mad with violence and destruction in which mutually assured destruction actually appeared to many as the only rational choice. And in the freedom and prosperity of the post-war world, the burgeoning Middle Class sought for enjoyment and appreciation in aesthetic pursuits of beauty and joy that had long been denied through the dark decades from which it was just emerging. This was still a time when colleges and universities still cherished the ideals of a Liberal Arts education that included a sprinkling of natural and social sciences, humanities and the fine arts. It was also a time when the social sciences were still largely regarded as branches of humanities rather than science. Physicists turned macroeconomists were just beginning to invent the mathematical equations of Econometrics and launch the unquenchable thirst for Big Data.

Under these circumstances, the inclusion of Art in the title of the Academy can be understood and even justified, though the complete exclusion of actual artists in the list of its charter member still mystifies.[86] But these alone are not sufficient to explain why the Academy's founders listed Art before Science in the title. To understand that we need to turn to early writings by the founders and their activities for greater clarity.

"The inclusion of Art in the title of the Academy was not merely an attempt to broaden the range of disciplines of its members, but to foster a marriage of the objective and subjective dimensions of knowledge essential for cracking the 'genetic code' of consciousness and social evolution."

The answer comes from the closing lines of an essay by Hugo Boyko, the Academy's founding Secretary General: "Let us create the scientific basis which is necessary to enable us to live and work together peacefully! *Let us use all our imagination to make an art of living. Non-Scientists and Scientists alike! Let us all help to make this forum a true 'Agency for Human Welfare' irradiating hope and belief, and let us work together for a brighter future, a future truly adequate to Homo sapiens*."[87]

This central intention is reflected in the Academy's Mission: *"The World Academy of Art and Science is an association of committed individuals drawn from diverse cultures, nationalities, occupations and intellectual pursuits spanning the arts, humanities and sciences, conscious of the profound social consequences and policy implications of **knowledge**, and united by a common aspiration to address the urgent challenges and emerging opportunities confronting humanity today.*"

WAAS' founders had great faith in science. But they also realized that science alone is not enough to ensure human welfare. The knowledge required is not limited to that which can be defined by equations and quantified in mathematical formulas. It is a knowledge that encompasses the whole "art of living". It is not merely the objective knowledge obtained by analysis of the hard facts generated by observation of the external world. It depends also and perhaps more so on the subjective knowledge derived from the highest universal values, irradiated "by hope and belief". It encompasses not just material results but social consequences and policy implications. It requires not only reason but also "imagination", for the testimony of great scientists confirms that the highest knowledge has been generated by experiences of insight and intuition that transcend the linear logic of rational mental processes.[88,89] As Bronowski, a mathematician, saw it, "Truth in science is not different than truth in the arts. The facts of the heart, the bases of personality, are simply more difficult to communicate."[90]

The inclusion of Art in the title of the Academy was not merely an attempt to broaden the range of disciplines of its members, but to foster a marriage of the objective and subjective

dimensions of knowledge essential for cracking the 'genetic code' of consciousness and social evolution.[91] It reflects the fact that real knowledge is not arrived at independently from universal values. It is based on the realization that all human knowledge—that of the scientist as well as that of the artist and the theologian—is a social construction of reality and its efficacy depends on the values on which it is based and which it seeks to realize by application of what is known.[92]

In his comparison of the knowledge generated by Art and Science, Oppenheimer found only a thin thread connecting the two worlds and the inherent complementarity of the two views which so many regard as contradictions to one another. He was as conscious of the limitations of the abstract language and generalizations of science performed by people living in the ivory towers of academia, as he was of the relativity of the perspectives embodied in the value-based perceptions of the artist who lives and creates in intimate vital relationship with the world and people around him using a language intelligible to people of all nationalities and cultures. He was conscious both of the essential role played by specialization in science to obtain intimate knowledge of the specific, as well as the great disservice it plays by dividing and subdividing reality into smaller and smaller parts which become more and more separated and independent of one another in human conception, whereas they are inseparable in actual fact.

Harlan Cleveland identified the reconciliation of the two cultures of art and science as an important issue that has occupied the attention of the Academy in recent years. Leonardo da Vinci and other leaders of the Italian Renaissance seemed able to both contemplate and embody the marriage of Art and Science in their work. He noted that these two forms of knowing share two common characteristics. Art and Science are two supreme expressions of humanity's creative imagination. As Einstein said, "The greatest scientists are artists as well."[93] Both have universal relevance and appeal. The future of both is now threatened by power claims to exclusive and separate identity for cultural groups—at the expense of both individual worth and of universal ideals, motives and institutions. Both are vulnerable to suppression by the domination of a political creed, a religious credo, or the perceived cultural heritage of a dominant majority.[94]

Inspired by da Vinci's example, WAAS Vice President Eleonora Masini hosted a UNESCO supported workshop at Vinci, Italy in 1993 to study the relationship between the two human forms of expression producing art and science. She viewed both as expressions of humanity's dialogue with nature through creative processes that seek to reconcile its symmetries and ambiguities. Imagination and creativity are an unbreakable bond holding science and art together. As Bronowski said, "There is but a single creative activity, which is displayed alike in the arts and the sciences."[95] According to Oppenheimer, "Both the man of science and the man of art live always on the edge of mystery."[96] Both utilize signs and symbols to represent and decipher existence. Both science and art are powerful agents of social change and freedom: "freedom also implies the possibility of creating oneself."[97,98]

Universal values are another inseparable bond between them, for both art and science find their real meaning and utility in their contribution to humanity's quest for freedom, truth, harmony, beauty, love, joy and immortality.[99] Natural science and technology are forces

of immense power and consequences, yet they need to be related and interpreted by human consciousness to determine their ultimate value. The signs and symbols of art are a medium for mediating and critically illuminating their social and moral implications.

"From its inception the Academy has been a transnational network of individuals bound together by shared understanding, vision, and values committed to address global social challenges related to the social consequences and policy implications of knowledge."

Oppenheimer observed that the self-consistency of mental harmony among scientists in arriving at mutual understanding is a complement to the emotional harmony of the artist in the shared insight and elevation in consciousness experienced by other human beings through creative inspiration.

Oppenheimer perceived the marriage of art and science as the formula for human consciousness to strive for a "perpetual, precarious impossible balance between the infinitely open and the intimate", which humanity must strive to attain in the face of the speed and complexity of life in the 20th century.

11. Network of Networks

From its inception the Academy has been a transnational network of individuals bound together by shared understanding, vision, and values committed to address global social challenges related to the social consequences and policy implications of knowledge. WAAS has never been a conventional organization with a fixed headquarters, paid staff or endowments. WAAS has grown both in number, activities and reach through the decades based on an alternative organizational model.

It has never operated under the overt influence or authority of any particular nation. Founded in Geneva, its headquarters tended to move along with each transition to new leadership, and is now incorporated in California but operates in a highly decentralized manner with administrative and research facilities in India and its officers living in different countries.

Long before the concept of social networks had become commonplace in thought and usage, the Academy's leaders had understood that the power of human networks was the greatest power they possessed to effectuate change in the world. From a small core group, WAAS expanded within a few years into an Academy of 100, and then 400 by 1990, and has since then grown in number to more than 800 individuals, a good many of them past retirement age and about 100 now classified as Emeritus Fellows. But regardless of the age, occupation and activity of its members, the true wealth of the Academy still lies in the value of its people and the power of the network it represents.

"WAAS is part of a global social movement—its aim is global accomplishment rather than recognition."

That network extends far beyond the reach of a single organization with 800+ members. For each of our members is also the center and member of countless other networks of individuals and organizations. And it is through this dense and expanding fabric of relationships that WAAS has grown and continues to grow. Over the past decade some of these relationships have evolved into a network of permanent centers and active partner organizations. In 2011 MSS, a 50 year old social science and educational research institute based in Pondicherry, India, became the Academy's first official center. It remains the central hub for our research and administrative work and in 2020 was recognized as an official Center of Excellence of WAAS. Over the last decade, the network of centers and partners grew to include the Montenegrin Academy of Sciences and Arts, which has conducted five conferences since 2012 in collaboration with WAAS; the Inter-University Centre (IUC, Dubrovnik), which has hosted more than 15 WAAS-WUC conferences and workshops since 2012; and the Person-Centered Approach Institute (Rome), which has been a key partner in the Academy's educational activities from 2013 onward based on its important contributions to person-centered education. In 2017 the Institute for Advanced Studies in Levant Culture and Civilization (ISACCL) was established by an act of the Romanian Parliament as the first Center of Excellence of the World Academy. Other centers include the International Centre for Sustainable Development of Energy, Water, and Environment Systems (SDEWES, Zagreb) and, most recently, the Serbian Association of Economists (Belgrade), which has hosted and co-organized several important WAAS events since 2018 and became an active partner in the New Economic Theory project.

In addition to these permanent centers, during the same period WAAS has gradually built an expanding network of partner organizations[100] which actively collaborate with the Academy on important projects and events. WAAS was granted Special Consultative Status with ECOSOC in 2017 and is now actively partnering on major projects with UNOG and UNTFHS. The Academy was also granted Consultative Status by UNESCO in 2019 to promote collaboration on programming related to our other major partner, WUC. Since signing an MOU with CERN (Geneva) in 2014, WAAS has partnered on two major events in collaboration with the UN and two more related to science and social responsibility. Since 2014 WAAS has maintained active collaboration with NGIC (Baku) on a series of five major international conferences, including the inaugural event of the UNOG-WAAS GL-21 Project. In 2020 alone NGIC partnered on a series of ten webinars and two project proposals linked to GL-21. WAAS was accepted as a member of the InterAcademy Partnership in 2016 and is now collaborating with IAP on two projects related to the UN. Other active partnerships include the Foundation for a Culture of Peace (Madrid), Ethical Markets Media (St. Augustine, Florida), and The Millennium Project.

An old adage in organization theory holds that structure follows strategy. That has certainly been true of WAAS from the onset. A central strategy of WAAS was to seek holistic, multidisciplinary, integrated perspectives spanning all the academic and professional

disciplines in both art and science. Therefore, unlike traditional academies, WAAS was never organized based on disciplinary specialization and has no disciplinary boundaries. Rather its work was organized based on exploration of the complex interrelated dimension of global welfare and wellbeing from a multiplicity of disciplines.

The structure of WAAS reflects strategy in another sense as well. The Academy has never endeavored to carve out a unique niche for itself in any specific field such as economy, environment or technology. Rather the founders understood that the challenges they sought to address were too vast and complex for any organization to handle on its own. Instead of defining its mission or areas of expertise in terms of specific subjects or issues, it has sought to become a catalyst and facilitator of fresh thinking and creativity as an open network relating, linking to and collaborating with other individuals, organizations and networks for the common good. WAAS is part of a global social movement—its aim is global accomplishment rather than recognition. It draws on the creative insights of its Fellows and other thinkers around the world and shares its ideas in the hope that they will be received, processed, developed, improved, applied and evolved further.[101]

Instead of claiming its own originality or uniqueness, it has sought to become a platform and an open **network of networks** to attract and lend itself to project the best ideas, regardless of where they originated. Indeed, in the noosphere of the information age, ideas move at the speed of light, meet, combine and recombine and continuously reemerge in new forms. Who, then, can truly trace back their thoughts or deeds to their origin? The most important measure of results is global social evolution, not individual or organizational accomplishment.

Although the Academy has a governing board, executive committee and other committees, its structure and functioning resemble to some extent what Harlan Cleveland once termed an "uncentralized organization" in which direction and initiative are set by its members based on their own inspiration under the umbrella of the parent academy. The establishment of the New Economy Working Group (2015), Tao of Finance cryptocurrency project (2018), and the Security and Sustainability Guide (2019) are illustrative.

11.1. Youth Leadership Network

WAAS' newest partner is the Youth Leadership Network established with WAAS' active encouragement by a small group of aspiring youth with the aim of becoming a network of networks in its own right and at the same time a conduit connecting WAAS' network of networks of older generations and organizations with the energy, dynamism and creativity of the world's first fully networked generation.[102]

Both WAAS and YLN concur that what the world needs today is not more independent organizations but more exchange, connectivity and relationship between organizations spreading out into a vast web or fabric of increasingly close and harmonious relationships in constant motion and evolution joining together, exchanging their energies and thus multiplying their momentum to become an increasingly unified and harmonious forward movement of global society.

12. Conclusion

The founders of WAAS were mostly scientists who cherished facts and the rigorous methodologies of their disciplines. But more than that they were seekers of knowledge who knew the limitations as well as the marvelous powers of logic and reason and were too conscious of the relativity and social construction implicit in all forms of knowledge to claim a monopoly on the real. They did not try to defend the hard facts of science against other forms of knowing for they were too conscious that the greatest scientific knowledge was itself the product of intuitive processes that transcend logic and that the subjective perception of the idealist affirming universal values and the artist viewing the world from the subjectivity[103] of a very human perspective were as essential to a complete knowledge as were the measurable facts generated by the objective measurement. They understood, as Robert Oppenheimer put it, "If a prospect is not a prophecy, it is a view"—it is only one of many ways and viewpoints by which human consciousness seeks to grasp the unity underlying infinite diversity.[104] Both art and science seek for that underlying unity in Nature. Or as Coleridge put it, "unity in variety".[105]

WAAS today may be less qualified by the individual achievements of its members than its illustrious founders, but it is perhaps more conscious of the collective power of human aspiration and values to ultimately accomplish what no single individual or organization can ever do. Sixty years after its birth, the Academy remains much like all visionary ideas more of an aspiration than a reality, young, ambitious, hopeful—with the modesty and common sense to claim very little and the ambition to still aspire for very much—still inspired by the conviction that our reach should exceed our grasp.

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WAAS Retrospective:
Why WAAS?

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Abstract

In this short article, the author traces the sociological origins of WAAS and traces briefly the history of the scientists' nuclear abolition movement, which was a main reason for the founding of the Academy. A lot remains to be done by the world community to address the multifaceted problems we face today. WAAS has been playing a crucial role in this process.

In the sixties of the past century, I was a young scientist full of hope in a new world. Now I am a senior scientist with less hope in a better world. Not concerning the existence of a virus, as a scientist I am sure that we will stop it, but for the diffusion of social pandemics. Conflicts and wars are all over the planet; racial, religious, and national confrontations and inequalities have boomed. The gap between those who have and those who do not have is widening and so on. In this difficult situation WAAS with its human and intercultural potential can help.

But allow me to take a step back in time to remember the origins of WAAS and the reasons that led to its establishment.

In the fifties and sixties, when the world had just emerged from the devastation of the two world wars and the deadly consequences of scientific discoveries, the major issue was first of all to rebuild a scientific community (to this end the International Council of Scientific Unions was instrumental) and secondly, to reconsider the role of science within society itself.

These concerns were at the origin of the Russell-Einstein Manifesto and led to the birth of the Pugwash Movement. A pamphlet by Lord Charles Percy Snow, published in 1955 on the 'two cultures', showed how war had led to the dilapidation of unity and the need to contribute to rebuilding the unity of "culture" with all its facets, with an open and inclusive dialogue and towards an equitable and peaceful idea of progress. This is the specificity of our Academy, in which science and humanities together face the new world's evolutionary problems, promoting dialogue with the new generations through various universities and creating a World University.

Perhaps, the best way to evoke deeper motivation now is to remember events in those rather dramatic years from the '20s to '50s and '60s, and briefly tell the story of one of the founding members of WAAS: Robert Oppenheimer.

The scientific community emerged from 1945 eager to reestablish its international connections, its cultural independence and its ethical responsibility.

Before the war, we could witness an exceptional group of scientists—many physicists, many Nobel prize winners, all working together within a friendly community in a new field of physics: quantum mechanics.

"WAAS has succeeded in establishing various permanent contacts and joint programmes with the United Nations and its agencies together with many other international NGOs and strived to monitor and overcome some of the global problems we face today."

At the end of the twenties, in Germany, at the University of Göttingen, Oppenheimer was working on the new physics participating in the seminars of Born, together with Heisenberg, Fermi, Dirac, Hahn, Pauli, Teller and other scientists. With three great sponsors: Einstein, Bohr and Plank.

The golden era of this group of scientists, involved in "relativity" and quantum physics, ended suddenly in 1933 with the rise of Adolf Hitler in the very same Germany that had seen the birth of the new physics. Ideology overtook rationality. Jewish scientists were excluded from all German universities and a German physicist and Nobel Prize winner, Johannes Stark, close to Hitler, was defining the relativity theory as Jewish physics, and thus discarding it as false and dangerous.

The Second World War was getting nearer…

In 1938, the "nuclear fission" technique discovered by Otto Hahn and his team, opened the door to the atomic bomb.

This was the origin of the split in the community of atomic scientists. What had been an extraordinary community of science, broke up. Heisenberg, Oppenheimer's colleague, would become the director of Hitler's bomb project whilst Oppenheimer, with the help of many European physicists, including Fermi, would make the atomic bomb in the US. "Little boy" (the nickname of the first bomb), would later end up being dropped on Hiroshima on 6th August 1945 and the second atomic bomb on Nagasaki. Both killed 200,000 people and marked the end of the war in the Pacific, whilst in Europe the war had already ended, with millions dead.

Oppenheimer's embarrassment became apparent when at the first blast of the experimental bomb in the desert of Alamogordo, he exclaimed: 'The war is over!' to which, General Leslie Groves, responsible for the Manhattan project, responded: "No, well, we'll need a couple more."

In 1945, following the devastating conflict, everything needed to be rebuilt, from roads to houses, to scientists' souls, some of which had fallen into "the trap of ideology". Following

the war's distortions, there was a need to engage in a deep reflection on the role of science. (see atomic armament, the tragic story of Soviet genetics and Lysenko…).

At the end of the war, Oppenheimer, as Einstein and many other scientists, attempted to oppose nuclear rearmament and the construction of hydrogen bomb. Oppenheimer was excluded from any duties related to the atomic research for armament and placed under investigation for communist affiliations. Nevertheless, he continued his scientific career in the most prestigious universities and never gave up his civic engagement with the issues of atomic disarmament and world peace. In the 1960s, he became one of the most active founders of WAAS, in which he foresaw the possibility to establish a permanent dialogue, a forum for science and other disciplines in order to better stand up to the multidimensional facets of contemporary problems.

The Cold War is no longer there, but the world is full of conflicts. "Uncertainty", as foreseen by Monod, Prigogine, Heisenberg, just to quote a few, reigns as a sovereign. A lot remains to be done by the international community starting from the UN Reformation. WAAS has succeeded in establishing various permanent contacts and joint programmes with the United Nations and its agencies together with many other international NGOs and strived to monitor and overcome some of the global problems we face today. WAAS is an important forum and help for the world, which is becoming no less chaotic and governable, than it used to be.

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Reflections on Arts and Science

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Abstract

Albert Einstein said that art and science are branches of the same tree. Indeed, there is no dichotomy between art and science: they are an integral part of the same nucleon. Art is the ability to create, which implies inspiration and learning. Liberal arts, from medieval tradition till date, include humanities and physical, biological, and social sciences. There is no dichotomy here but a knowledge that is inextricably interlinked. Dante Alighieri, the supreme poet, summoned future generations thus: "Consider well the seed that gave you birth: you were not made to live like brutes but to follow virtue and knowledge." Ars Cognoscendi cannot be better explained.

Albert Einstein said that art and science are branches of the same tree. Indeed, there is no dichotomy between art and science: they are an integral part of the same nucleon; they are complementary like *yin* and *yang* in ancient Chinese philosophy. Einstein also said that imagination is much more relevant than knowledge, as knowledge has a very precise contour and dimension while imagination and creativity are boundless and surround everything else. Art is the ability to create, which implies inspiration and learning. It is made of intuition and capacity to transform material resources at hand. Art creates artifacts; through art we forge means for survival and we make tools for everyday life like Vulcan (the Greek Hephaestus), Roman god of fire and blacksmith, supreme manufacturer of art, jewels and armours.

"Creativity without science would not produce any fruits and cannot elevate human values and consciousness. Art is abstract knowledge capable of transforming itself into concrete applications through a systemic, scientific approach."

Artifacts, weapons, arms and beautiful ornaments are all expressions of a highly specialized form of knowledge aimed at the benefit of humankind. Creativity without science would not produce any fruits and cannot elevate human values and consciousness. Art is abstract knowledge capable of transforming itself into concrete applications through a systemic, scientific approach.

Let us be clear: This is not the sphere of "fine arts" of contemporary understanding; the etymology of the word, from Latin *ars* indicates the ability to create, to act, and implies

preparation and learning. Art is the mastery of celestial navigation, and some forms of traditional art extend to sports: boxing, for example, is a noble art since antiquity. A well celebrated 2000 years old Roman statue represents a boxer with his gloves sitting on a bench after a match, while controlling his breath, recovering, and contemplating how his own art impressed the public in the arena. That is an expression of the mind, which requires scientific preparation like forensics, art of poetry, art of living, statesmanship.

Craftsmanship, boxing and declamatory (rhetoric) skills have science in common. Science is the accumulation of knowledge, and art is the expression of science that begins with the contemplation of nature and inspiration. Leonardo da Vinci, the most celebrated artist and scientist, in his famous Vitruvian man, represented perfect proportions of the human body, which informed all his realizations, whether paintings, cannons or helicopters. He perfectly combined art and science and squared the circle, keeping humanity at the epicenter of his endless research.

Liberal arts, from medieval tradition till date, includes humanities and also physical, biological and social sciences. Again, there is no dichotomy here but a knowledge that is inextricably interlinked.

Dante Alighieri, in his epic poem "The Divine Comedy", summoned future generations thus: "Consider well the seed that gave you birth: you were not made to live like brutes but to follow virtue and knowledge."

Ars Cognoscendi cannot be better explained

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A Holistic Strategy for Achieving WAAS' Goals and Realizing our Common Vision

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Abstract

Facing the XXI century and its challenges means finding a concrete strategy, one that can make it possible for WAAS and its Fellows to reach their full potential. Sometimes what we do is look for new strategies to reach our goals, when the simple answer has always been right in front of our eyes: we need a non-original, organizational yet individual, holistic yet practical method for increasing our positive impact on the world.

The XXI century has started with challenges that are bigger than what most human beings would have expected a few decades ago. We all know, as WAAS Fellows, what these challenges are: there is therefore no need for me to list them all. This time, what I would like to draw the reader's attention to, is the solutions, not the problems.

"The right action is non-action: when we act not for ourselves, not for money, not for prestige, not for any personal interest but solely for the causes we are fighting for, then our power becomes infinite and the realization of our vision will be inevitable."

As WAAS Fellows, we cultivate big aims and share a common vision, a vision through the accomplishment of which all human beings will be capable of coming together and recognizing themselves by sharing common values which emerge from our diversity. Sometimes, this objective is so big that it scares us: we do want to realize a better world for everyone. We do want to realize a world based on freedom, equity, social justice, green economy, a world where all human beings are at peace with one another and with the natural world they live in. When we think about our objectives and then look at the world today, the path to get to our goal may sometimes seem too long to be walked on.

But today, I want to remind us all that all our efforts will not be useless if we keep improving as we have done in recent years in our creative global action. Yet, we need a strategy that can be adopted both by WAAS as an organization and by its Fellows as individuals. The strategy I want to propose is not original, yet only a few in the world concretely adopt it. It is based on three simple yet big pillars:

1. Mindfulness: having a vision is the very first step, yet it is not enough. Everyone in WAAS should be daily focused on that vision and consciously commit themselves to its realization. This would allow us all to not confuse the process with the vision and remind ourselves the true reasons why we do what we do.
2. Action: once we have become constantly mindful of our vision, the next step is to take every possible right action that will help us get to its realization. No matter how small or even meaningless that action might seem, if we do not procrastinate on anything and realize the significance of every single act, if we all start behaving like this, the effects will be exponential and the results, unimaginable.
3. Selflessness: How can we make sure we identify the right actions? On this matter, chapter 3 of the *Tao Te Ching* comes to our help:

   "When the ambitious is exalted, the people contend and compete.
   When exotic goods are traded and exalted, the desire to steal arises.
   When desires are constantly stimulated, the people become restless and confused.
   Hence, the wise person sets herself as an example emptying the mind, opening the heart, calming ambitions, abandoning desires, cultivating character.
   Having overcome cravings and wiles, she cannot be manipulated by anyone.
   Do with not-doing, act by not acting. Allow the order to arise on its own."

The right action is non-action: when we act not for ourselves, not for money, not for prestige, not for any personal interest but solely for the causes we are fighting for, then our power becomes infinite and the realization of our vision will be inevitable.

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Science as a Social Good*

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Knowledge is power and power lends itself for good or for evil. The World Academy was founded by eminent scientists deeply concerned by the realization that the invention of nuclear weapons posed an existential threat to the future of humanity. Despite their efforts, more than 125,000 nuclear weapons were built during the Cold War and the nuclear genie remains at loose.

Concerns regarding the governance of the powers of scientific knowledge remain equally controversial and even more widely prevalent today. The current pandemic has demonstrated the crucial role of science in dealing with a global crisis. The world is understandably obsessed with the urgent quest to extend the powers of science to save millions of lives. Here too, concerns are raised as to whether the right decisions are being taken by the right people for the right reasons to ensure that every human being enjoys the full benefits of the human right to the benefits of scientific progress. The pandemic exemplifies the potential for conflict between science, politics, economy, society and public opinion.

Throughout its history science has delivered astonishingly new capabilities without anticipating or highlighting their limitations. The benefits of steam, electricity, fossil fuels, and advanced weaponry were heralded long before their devastating consequences became apparent. Today new technologies exasperate inequalities and pose unanticipated dangers. The powers of digital technologies and artificial intelligence have vastly expanded both the potential benefits and threats posed by scientific advances to such an extent that they are reframing our concepts of national, political, economic, social and personal security. Trust in science is buoyed by its remarkable achievements. Simultaneously, fear of its impact on freedom, democracy, employment, food safety and pollution increases side by side.

Science and technology are also redefining the social reality we live in. The notion of security is radically undermined by the impact of fake news on public opinion and democratic processes, the intrusion of government into personal privacy, the power of digital attacks to shut down national infrastructure, and the application of algorithms to destabilize financial markets. The increasing reliance on opaque algorithms in decision-making heightens the challenge of building public understanding and trust.

* Based on WAAS Talk #2 on "Science as a Social Good", May 24, 2021 with contributions by Gérard Escher: Advisor to the Board, Geneva Science and Diplomacy Anticipator (GESDA); Anja Kaspersen: Senior fellow at Carnegie Council for Ethics in International Affairs; Georgios Theodoropoulos: Chair Professor, Dept. of Computer Science and Engineering, SUSTech and Ketan Patel: Co-founder and CEO of Greater Pacific Capital

The realignment of technologies demands regulation by governance principles to ensure that innovations contribute to human wellbeing and societal progress. New types of vulnerability require that we reconsider current concepts of resilience.

"The realignment of technologies demands regulation by governance principles to ensure that innovations contribute to human wellbeing and societal progress."

The existing paradigm for the management of scientific knowledge is grossly inadequate to manage the unprecedented power of knowledge. Disciplinary silos still foster the fragmented pursuit of specialized scientific discoveries. Even multidisciplinary consultations do not sufficiently ensure cross-pollination of ideas and integrated perspectives. It is still left to future generations to cope with the unanticipated consequences to our planet's ecosystem and climate.

Education remains concentrated on narrow specialized fields. It fails to equip scientists with the wider knowledge necessary to fully comprehend the interactions between different spheres. Both scientists and non-scientists alike fail to acquire the broader knowledge required to comprehend the social consequences and policy implications of scientific advances on individuals, society and the planet.

Who is responsible for making the decisions and managing the consequences? Who possesses sufficient knowledge? Who can be trusted to think and act on behalf of humanity as a whole? Are those making policy-decisions or allocating financial resources sufficiently informed? The complexity and ambiguity of the challenges we face make it difficult for policy-makers to comprehend the best choices and for politicians to navigate the complex maze of competing interests on which their decisions impact. The present system provides no clear answers.

Only piecemeal solutions are offered to regulate the vast proportion of scientific research conducted by commercial organizations primarily motivated by the profit motive. How can the powers of science and capitalism be reconciled in a multi-stakeholder model that includes people, politicians, financiers, consumers and humanity at large? How and by what process and institutions can we reconcile the demands of the planet with the unbridled aspiration for greater consumption?

What overriding framework can bring together and rectify these competing and contradictory objectives—freedom for scientific exploration, the benefits of commercial exploitation, health, safety, human rights, equal access, equity, job security, privacy and individual freedom? Our concepts of freedom and security are outdated and inadequate. A wider and deeper framework is needed to supplant narrow conceptions of both the threats we face and the rights we affirm.

Our existing institutional structures are incapable of bridging the gaps in the present fragmented system. Research is isolated from the real world and its social implications. Education is parsed into small pieces. Ethics is taught as an elective in disciplines where it should be mandatory. Only tenuous links exist between scientists and policy-makers responsible for regulating scientific applications and protecting society from its consequences. Implementation of decisions is carried out by specialized agencies ill-equipped to handle the complex interdependencies between different fields of social existence.

"Human Security is a comprehensive framework which encompasses all forms of security, social equity and human rights and the interests of all stakeholders. It unites and integrates the 17 Sustainable Development Goals."

None of the stakeholders by themselves possess the comprehensive knowledge required. None are sufficiently equipped or charged with responsibility of asking the tough questions raised by looking forward to anticipating the challenges and consequences of future knowledge development and its impact on society. The general public remains either naively optimistic or doubtful, unaware, indifferent, confused, suspicious and afraid.

A new paradigm is needed to build trust and confidence, enhance coordination and knowledge exchange. New institutional models are needed that bring together all stakeholders at early stages of the process of knowledge discovery and development rather than waiting until scientific development is complete before considering the needs, aspirations and concerns of people and the planet and the challenges of effective regulation and governance both at present and in the future.

The challenge confronting the world today is to evolve a comprehensive, integrated development paradigm encompassing the full spectrum of human security needs. Human Security is a comprehensive framework which encompasses all forms of security, social equity and human rights and the interests of all stakeholders. It unites and integrates the 17 Sustainable Development Goals. This will require evolving an institutional framework capable of reconciling the competing perspectives and interests of free scientific discovery, government regulation, political stability, commercial profit, social harmony, individual rights and ecological sustainability. This is the challenge and the opportunity presented to science, government, society and humanity as a whole.

1. Global Institute for Human Security

In response to this need WAAS has proposed the establishment of national, regional and global institutions that are multistakeholder, multidisciplinary, multisectoral and transnational in composition. These institutions would give centrality to the principles of Human Security as their governing values—encompassing the needs and aspirations of individuals, society

and the planet. They would provide an integrated platform for the implementation of the SDGs founded on the premise that effective achievement of each goal needs to be aligned and coordinated with all the other goals to ensure that the strategies adopted are mutually reinforcing rather than antagonistic.

The institutional structure envisioned would bring together research scientists from both the natural and social sciences, policy-makers and law-makers, governmental implementation agencies, business, civil society and community leaders. Integrated teams of stakeholders would examine social problems and scientific opportunities from a comprehensive perspective which focuses on their impact on human security, social development, human rights, wellbeing, social justice and sustainability. Ideally the composition of all teams would draw on expertise from around the world and take into account not only the best thinking available but also the wider implications for humanity and the planet.

Important elements of this model are exemplified by the Geneva Science and Diplomacy Anticipator (GESDA) established a few years ago by the Canton of Geneva and Government of Switzerland in collaboration with leading scientific institutions and a large network of scientists from around the world. Their focus is on identifying high potential emerging opportunities in science and technology, examining their long-term benefits and implications, and working with policy-makers to consider issues related to regulation and governance. Bringing in potential investors and corporate partners, civil society and community leaders at an early stage can help shape scientific research to anticipate problems and maximize the emphasis on beneficial applications of science as a social good.

Similar perspectives, values, structures, and design principles need also to be incorporated in research institutions, universities, government agencies, international organizations, corporations, CSOs, funding agencies and communities. A shift of this magnitude in thinking and action would constitute a radical change in the paradigm for science as a social good. But it is not unprecedented. Similar shifts have already occurred to integrate concerns from safety, environmental protection and human rights into institutions at all levels. This model would take the process further to fill critical gaps in the existing system.

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Reclaiming the Global Future

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We are today living not in a mere shifting environment but a pivotal moment. The essentials of eras change only every century or so, when the existing social and economic paradigm has exhausted itself and a new one emerges. The era we have entered upon began with the end of the Cold War. Yet, neither the end of an ideological standoff nor even the disappearance of a major empire necessarily makes a new era. Rather, some deeper event seems to be evolving in slow-motion, with the transition acquiring the outward features of an epochal change incrementally. It has clearly yet to run its course.

"The UN Office at Geneva is deepening its longstanding intellectual engagement with the World Academy of Art and Science, working jointly on projects to carve a path to a global vision that inspires a consequential consensus for progress in the 21st century."

As we enter the third decade of the twenty-first century humanity faces several increasingly complex challenges: a climate crisis wreaking havoc around the world; armed conflicts threatening millions; dire poverty in large parts of the world; refugee flows at record levels; intractable and broadening inequality both among and within countries; sky-high debt; threats to the rule of law; the dismantling of disarmament commitments; attacks on the media and civil society; growth in nationalist and isolationist politics of fear and resentment; the game-changing role of Artificial Intelligence and its potentially sinister side; the burgeoning role of technology and social media in international affairs; and an abysmal state of relations among the world's most powerful countries. And then there is the global pandemic—a defining crisis—with millions dead, the world upended, economies and countries undermined, millions pushed back into poverty, and the fate of the SDGs put at significant risk.

Global challenges of such magnitude require concerted, collective responses. Yet, the once vaunted 'New World Order' never materialized and the leadership we need from all quarters in order to develop a modern, inclusive multilateralism has not emerged. Indeed, as UN Secretary-General António Guterres observed, "Multilateralism is under fire precisely when we need it most!" World leaders speak of the need to 'build-back better' after

COVID-19. The WEF's Prof. Klaus Schwab goes further, pointing to the need for a 'Great Reset', so humanity does not merely weather the storm, but utilizes its collective intelligence to leverage the leading trends to gain greater control of its fate. But we do not see the makings of such a collective enterprise and articulated vision for the world on today's horizon.

While governments search within themselves for the one *sine qua non* condition of a new multilateralism—a change of mindset—the UN retains its role as the only truly global, neutral, legitimate table for all stakeholders. In that spirit, the UN maintains a valued interlocutor: civil society. Hence, the UN Office at Geneva is deepening its longstanding intellectual engagement with the World Academy of Art and Science, working jointly on projects to carve a path to a global vision that inspires a consequential consensus for progress in the 21st century. It is a tough job. But it is critical, and it is doable, if we will "be the change we wish to see."

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Achieving the SDGs through Green, Blue, Orange, Purple Economies and Frugal Innovation:
New Economics for Sustainable Development

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Achieving the SDGs by 2030 is still possible,* but it requires bold policies leveraging bold action. Luckily, we have the SDG and Financing for Development (FFD) framework to guide us. The SDGs unanimously agreed by all nations cover the world's most pressing social, environmental and economic issues. Yet despite unprecedented buy-in by governments and other stakeholders, their implementation has been slow and going in the wrong direction in the case of hunger, inequality, biodiversity, and climate change.

> *"We cannot waste another crisis. Grounded in solidarity and the realization that our economic, health and political systems are inter-connected, we also need to ensure the trillions in stimulus packages support circular and frugal innovation in the transition to green, blue , orange, and purple economies."*

Achieving the SDGs demands massive public and private investment in renewable energy, sustainable agriculture, and digital infrastructure, paired with policies ensuring equitable access—notably for women and vulnerable groups. It also necessitates replacing the neoliberal economic model with more people-centered, sustainable, and resilient models. Thankfully, 70% of the leading world economies have made strong commitments to carbon neutrality by 2050,† more investors and governments require businesses to disclose their plans to get there, many including nature-based solutions, which could be transformational.

But changing the way we innovate can also be transformational. Building upon existing innovation and technologies to achieve the SDGs turn inequalities, climate change,

* https://www.stockholmresilience.org/download/18.51d83659166367a9a16353/1539675518425/Report_Achieving the Sustainable Development Goals_WEB.pdf

† UN News. 'The race to zero emissions, and why the world needs it', 2020. https://news.un.org/en/story/2020/12/1078612

and pollution, among others, into business opportunities that deliver for people and the planet.* The COVID-19 pandemic has demonstrated that in times of scarcity, frugal innovation—doing "better with less"—delivers high-quality solutions at a fraction of the costs using less resources. Think of diving masks converted to respirators by entrepreneurs! These bottom-up innovations disprove the belief that only a bunch of smart scientists locked in their labs and protected by intellectual property laws can invent new solutions—most often unaffordable for the 100 million low-income people targeted by SDG 2, 3, 4, 6, and 7. Indeed, Open Innovation, where MSMEs and MNCs could share resources and knowledge to co-create solutions for SDGs that benefit entire industries (and populations), might just be better suited to uncover and roll out affordable solutions to face our urgencies.

We cannot waste another crisis. Grounded in solidarity and the realization that our economic, health and political systems are inter-connected, we also need to ensure the trillions in stimulus packages support **circular and frugal innovation** in the transition to **green, blue†, orange, and purple** economies. Doing so would avoid costly delay and stranded assets help workers transition to the new economy, and ensure low-cost high-quality solutions to the SDGs are supported.

Similarly, the **creative (or orange) economy (CE)** offers great opportunities for youth entrepreneurs, relying on human capital and digital technologies to create eco-friendly jobs based on creativity. The creative industries, such as fashion and media companies, also influence positive consumption choices as they are often operated by young people who tend to drive and support sustainability.

Every year, we miss out on 11 trillion USD from the 16.4 billion hours spent on unpaid care work every day—mostly by women‡. Hence, investing in the **care economy**—education and health provision for children, elderly, and disabled people—not only advances SDG 3 and SDG 4, but creates decent jobs and boosts economies while addressing gender-based inequalities.

Finally, **Social and Solidarity Economy (SSE)** could be a superior model to address exclusion by incorporating marginalized groups in supply chains and facilitating their vertical integration into the global economy. SSE also fosters community prosperity through shared ownership of assets and means of production, and promotes active citizenship, participatory democracy, bolstering social cohesion and sound governance (SDG 16) and resilience. Being an integral part of communities, SSE organizations have a vested interest to ensure the social and ecological integrity of their host communities.

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* N. Radjou and J. Prabhu 2014. What Frugal Innovators Do? HDR https://hbr.org/2014/12/what-frugal-innovators-do.

† Green economy concept adapted to our oceans – that could benefit island States and countries with long coastal areas.

‡ UN Women, 2020. 'Whose Time To Care? Unpaid care and domestic work during COVID-19' https://data.unwomen.org/publications/whose-time-care-unpaid-care-and-domestic-work-during-covid-19

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Invent the Future

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The time has come to take steps allowing us, before it is too late, to correct current trends on a global scale. Otherwise, we would not fulfill our inter-generational duties and the Earth's habitability would be seriously deteriorated.

In the past, social evolution used to be very slow. For centuries, power was in the hands of just a few men. Citizens had no voice and were deprived of the capacity to take action. Today the reins of global governance are still in the hands of just a few... but, for the first time in history, citizens are starting to have a voice of their own and, finally, "We the peoples" may become a joyful reality. Today it is possible to invent the future, and this is a duty that cannot be postponed.

> *"If we pay attention solely to the GDP, as advocated by the neoliberal approach, to economic growth at the expense of human development, we will not have at our disposal the human, technical and financial resources to be able to deal with natural and social issues... and yet we continue to invest huge amounts on military activities and the production and stockpiling of weapons."*

We need to be aware of what has happened, to learn the lessons from the past. We need an awareness of the current situation and, above all, a memory of the future, a memory that will show us how to behave today because the future is yet to come. Our responsibility and our hope both lie on the unique capacity of human beings to be creative.

Women are the cornerstone of the new era; for centuries they have been subjugated by male power and when they were present on the power scenario, normally due to dynastic reasons, they have behaved mimetically. Today, however, gender equality is an essential objective for the radical changes that are needed to achieve equal dignity for all human beings. Equal dignity! This is the basis of all human rights, the foundation needed to build a new coexistence. Regardless of age, skin colour, religion, ideology, sex... *all human beings are equal in dignity*. Therefore, for the first time, the great transition from a culture of imposition,

domination, violence and war to a culture of encounter, conversation, reconciliation, and peace is feasible.

It has now become clear and well acknowledged, thanks to the COVID-19 pandemic, that if we pay attention solely to the GDP, as advocated by the neoliberal approach, that is, to economic growth at the expense of human development, we will not have at our disposal the human, technical and financial resources to be able to deal with pandemics, fires and other natural disasters, and social issues like extreme poverty... and yet we continue to invest huge amounts on military activities and the production and stockpiling of weapons, without questioning the perverse proverb, which we have repeated since the beginning of time: "if you want peace, prepare for war". There are still arsenals crammed with bombs and garrisons of soldiers, while an increasing number of forests are devastated by fire, and there are not enough fire brigades and technical personnel to foresee and to fight fire efficiently.

The COVID-19 pandemic has given us the opportunity to reflect, to become aware of a lot of things that are considered in "normal life" as inescapable, and to see that the vast majority of citizens are not actors but rather mere spectators of what is happening, stunned and abducted by the media, most of whom try to encourage citizens to follow the guidelines of publicity and to pay for consumption and "well-being" that have both been designed at the highest levels of economic power.

It is time for action. It is essential to be vigilant. We can no longer be a passive audience, we must behave as committed actors and be fully aware that "we are—as rightfully mentioned by President Obama—the first generation confronted with this challenge—the climate change—and the last one that can cope with it".

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How to Promote People-centered and Person-centered Sustainable Relationships

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Sustainable development is just a nice word if it is not people and person-centered, which means that the values and actions taken for a sustainable future need to be based on respect, empathy, equity and responsibility—meaning developing the knowledge, skills, and attitudes to be response-able.

Respect for ourselves includes the awareness and acceptance of the different parts of ourselves, our different needs and way of being. Acceptance brings more capacity of contact, of self-containment and to choose priorities, as internal and external conditions keep changing. People who respect themselves respect other people, more or less are afraid to be spontaneous and are able to establish better working alliances in different settings and cultures.

The capacity for empathy enables us to understand and feel in contact with ourselves, and in so doing to be able to understand other human beings and other forms of life. The capacity for respect and empathy facilitates us to want to establish relationships that are equitable; there are no sustainable relationships without equity. Equity here in terms of equal opportunities, decision-making power, self-determination and self-representation. Equity fosters a more creative, healthy and prosperous society.

We need to apply scientifically validated people and person-centered approaches to sustainability in order to facilitate processes of change that are also the product of change. There are ample scientific proofs that people and person-centered approaches produce results that are more effective and are more cost-effective in the medium and long-term than the other traditional approaches.

In order to survive every life form depends on effective and rapid learning on how to adapt its behaviors to environmental changes. We need to retool and upgrade all levels of our education. Formal and informal education at any level needs to offer us the knowledge, skills and attitudes that will enable us to survive and even prosper in the present period of change by learning the needed skills for establishing sustainable relationships with ourselves, others and the planet.

In education, person-centered or student-centered learning is more effective than traditional learning. Research studies show that person-centered learning leads to better achievement of educational goals, better attendance, more student satisfaction, better morale, better self-

image, increased critical thinking, better problem solving, better relationships between students in the classroom and also outside school hours and less destructive behaviors or dropouts. Person/student-centered education has positive effects on all levels and grades of education, and also shows excellent results when applied to fields like molecular biology, biochemistry, pharmacology etc; or when one is using the hybrid or e-learning forms of education.

"Most of the presently proposed road maps for the governance of the Anthropocene Era are mainly focused on financial, technological variables, giving little attention to the psychological, social, political, cultural, organizational, and institutional variables."

In leadership training, people-centered and person-centered sustainable leaders are people that excel in listening more than in inflammatory rhetoric; they are masters of empowerment and proud to facilitate their pupils to gain confidence and self-esteem, to develop their potentialities and serve their communities.

In health, protection and promotion of people-centered and person-centered medicine empower people and communities to protect and promote their health and wellbeing where people live and work by promoting knowledge, self-awareness and empowerment and prevent iatrogenic damages.

Personal health cannot be separated from social health and social health cannot be separated from equity in accessing health education and health services. Personal and social health cannot be effectively promoted without giving importance to environmental health. If all those variables are taken into account and managed with a bio-psycho-social-spiritual framework and the actions taken are intersectoral and interdisciplinary, then person-people-environmental health protection and promotion produce prosperity. In green and blue economies, circular economies are much more effective than traditional economies.

Communicating these vital issues effectively to the various stakeholders and decision makers is a challenging task. We need to deal effectively with several variables interacting and influencing reciprocally: Lack of a systemic and interdisciplinary understanding of how the barriers to change are created and how to effectively deal with their abatement or mitigation. Most of the presently proposed road maps for the governance of the Anthropocene Era are mainly focused on financial, technological variables, giving little attention to the psychological, social, political, cultural, organizational, and institutional variables.

We not only consume more resources but we also squander and destroy human and natural capital; we are faced with an exponentially growing population with mounting consumeristic lifestyles burning more resources than our planet can regenerate each year. The risk of a

moral and ecological bankruptcy is becoming very real and is a blueprint for a man-made epochal catastrophe.

"We need to foster a new psychological literacy and psychological resilience, a sort of psychological compass: a more grounded way of being in order to navigate the rippling currents of change, and cope effectively in the Anthropocene era."

The anthropogenic burden has a global impact but it is neither created nor distributed equally around the world as a result of variability in resource availability and access, and of different consumption and pollution patterns among nations. These premises make understandable the reluctance of many developing countries and parts of the population willing and able to make a drastic change and start creating sustainable relationships.

Many stakeholders think and act in denial of the causes of our anthropogenic impact. The mechanistic and reductionist way of perceiving and managing reality generates problems at every level. Psychology shows some of the defense mechanisms used by neurotic people, institutions and cultures when they feel that their self-image is threatened by facing facts, they go in denial, and in so doing create barriers to awareness.

In this way, they disempower themselves from their ability to cope effectively with the threats facing them.

We need to foster a new *psychological literacy* and *psychological resilience*, a sort of *psychological compass*: a more grounded way of being in order to navigate the rippling currents of change, and cope effectively in the Anthropocene era.

The capacity to be empathetic and in respectful contact with ourselves, others and the world may be our most precious and needed psychological resource.

WAAS and WUC are leaders in promoting change by promoting epistemic capacities. They are united in diversity, and have been jointly collaborating with stakeholders offering and co-construing effective tools to understand and manage the challenges facing humanity and promoting a sustainable people-centered future.

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WAAS COVID-19 Pandemic Project

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The COVID-19 pandemic constitutes an acute global challenge at present, touching nearly all aspects of our lives. At its 60th anniversary conference, WAAS thus held a 2½ hours session on this issue, featuring an interdisciplinary line up of nine speakers and five respondents, and entitled: *The COVID Pandemic as a Systemic Crisis: What can we learn from a diversity of impacts, responses and failures for future crises?*,* convened and moderated by Prof. Thomas Reuter.

> *"Even if the pandemic is contained eventually, the lessons need to be extracted for the sake of ensuring better preparedness and greater resilience for facing future crises."*

Meanwhile, the WAAS Centre of Excellence ISACCL in Romania, under the leadership of President Emil Constantinescu, has initiated a project on COVID-19 also.† The proposal is to hold the first event at the new WAAS Centre of Excellence, which has not yet happened due to the pandemic. The event should be in late 2021 or early 2022, to be decided with an eye to the development of the pandemic in the meantime. Vaccinations should allow travel to resume by then.

Why is this important? WAAS is a global thought leader and cannot afford to be silent on an issue that has preoccupied everyone on the planet for the last year and likely for another year to come. Economic consequences will last a decade, at least in the developing countries that were hardest hit. Indeed, economic consequences have killed more people than the virus itself. And similar crises will happen again.

Even if the pandemic is contained eventually, the lessons need to be extracted for the sake of ensuring better preparedness and greater resilience for facing future crises.

The COVID-19 pandemic constitutes an external shock with a systemic and global impact. Similar shocks are in store for us this century, and indeed already, we see how climate change and COVID-19 negatively reinforced each other's impact, notably in India and sub-Saharan Africa. Factors such as social injustice and economic inequality cut across

* See Report to WAAS

† See https://institutlevant.ro/en/category/programs-and-projects/how-will-the-world-look-like-after-the-pandemic/

different crises, acting as accelerator fuels in a crisis. The compound effect of crises could lead to civilizational collapse, at least in parts of the world, and hence to migration and further conflict. The lessons of the COVID-19 crisis, properly understood and acted upon, could help prevent such a worst-case scenario. The aim of the project would be to prepare a list of key insights and an associated plan for action to be presented to the UN, EU and other global, regional and national political actors.

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On the Necessary Unity of National, Regional and Global Approaches to Science & Technology

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In 1954, the European Organization for Nuclear Research (CERN), Geneva, Switzerland, was founded. Today, it is the largest laboratory for particle physics in the world. A similar institution, the Joint Institute for Nuclear Research (JINR), was founded in 1956 in Dubna, USSR. Currently, it is one of the largest research centers in the world devoted to particle physics, nuclear physics, condensed matter physics, and radiation biology. The two organizations have been very successfully demonstrating advancement and excellence in science and technology on the global level for more than 60 years.

"In November 2016, the World Academy of Art and Science (WAAS) launched the initiative to create a large research infrastructure project that would focus on sustainable development of Southeastern Europe."

The CERN model was used in founding the TESLA Scientific Center (TSC) within the Vinča Institute of Nuclear Sciences (VINS), in Belgrade, Yugoslavia, in 1996 as well as the center under the name Synchrotron Light for Experimental Science and Applications in the Middle East (SESAME), in Allan, Jordan, in 2003. The former center, having the TESLA Accelerator Installation as its core, created to act in Southeastern and Central Europe was devoted to science, technology and medicine with ion beams. Its foundation was directly supported by CERN, JINR, the Oak Ridge National Laboratory (ORNL), Tennessee, USA, and the Government of Serbia. The latter center was established to act in materials science in a wide sense with a synchrotron light source. Unfortunately, TSC terminated its activities in 2006, due to refusal of the international community to support it. On the other hand, the use of SESAME began in 2017, as a result of serious support by the same community.

In November 2016, the World Academy of Art and Science (WAAS) launched the initiative to create a large research infrastructure project that would focus on sustainable development of Southeastern Europe. The funding of the project was planned to be carried out through the Berlin Initiative, established by the European Union. The initial idea was to devote the project to the completion of construction and use of TESLA. In December 2016,

the project was supported by CERN. As a result, in the succeeding several months, a fruitful exchange of ideas on the project started between VINS, the Ruđer Bošković Institute in Zagreb, Croatia, and the Jožef Stefan Institute in Ljubljana, Slovenia. However, soon after that, a well-known geopolitical decision that Serbia could not play any serious role in the region was confirmed. Thus, the WAAS idea to use TESLA for scientific and technological cooperation in Southeastern Europe, which would definitely provide very much needed cultural bridges between the nations in the region, some of them being in severe conflict since 1990s, was abandoned.

In spite of that, in March 2020, the Vinča Institute launched *the New TESLA Project: Research, Development and Education for the Fourth Industrial Revolution*, focused on the completion of construction of TESLA. The Project should be realized by the Government of Serbia in cooperation with the Central European Research Infrastructure Consortium (CERIC); JINR; the Brookhaven National Laboratory (BNL), Upton, New York, USA; and the Institute of Modern Physics, Lanzhou, China.

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Academies and Knowledge Management

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Science academies have several roles to play in contemporary information-rich society. The most important roles are: (i) to promote science and scholarship; (ii) to provide advice and expertise; (iii) to promote scientific understanding. The roles (ii) and (iii) are clearly related to multilateral activities because of the links to partners but (i) have a dual structure: partly purely scientific, partly multilateral related to societal needs. On the one hand, academies as well as academia should think in advance fostering research for broadening knowledge; on the other hand, there are so many challenges and societal issues like Sustainable Development Goals that need to be analysed, explained, and addressed. In addition, academies develop the trust in science and ethical behaviour needed for all scientific activities. These values are acknowledged by policy-makers: for example, the EU asked ALLEA to formulate the principles of Scientific Integrity that must be followed in all the EU-funded activities.

> *"In complex systems, there are many interacting constituents and the interactions lead to new qualities that might be unpredictable. In this context, interdisciplinarity plays an important role in studying complex systems."*

The activities of academies of science are characterized by the basic principles of science itself: Only scientific research based on transparent methodologies, and scientific arguments based on empirical facts and logical analysis bring us closer to the truth, while reflection, imagination, and creativity tell us where and how to explore further. In policy, political choices and joint visions are decided by voting and often compromises are needed, which is something that cannot happen in science. Without judgment, this is the difference between a scientist and a policy-maker, and it explains why the special advisory status of science depends on our commitment to impartial expertise. The strength of research relies on peer-review—all statements, advice, and ideas should be scientifically proved and widely accepted in the scientific community. This does not mean that everything in research goes smoothly—the discussions about new ideas and possible changes in paradigms can be taken as driving forces for new knowledge.

Academies unite scientists and scholars from various disciplines and therefore are the best to analyse the complexity of the world in all its shades and networks. In other words,

A. Einstein said that the Temple of Science is a multi-faceted building. Indeed, in complex systems, there are many interacting constituents and the interactions lead to new qualities that might be unpredictable. In this context, interdisciplinarity plays an important role in studying complex systems.

The present COVID-19 crisis has demonstrated the vulnerability of the world. WAAS has indicated the need for future research in a short summary (WAAS, 2020). The role of academies in times of crisis has been analysed by the Academy of Sciences of Turin (2020) together with ALLEA. The academies and their meta-organizations like ISC, IAP, ALLEA, etc. have formulated their missions to foster their ideas (see Engelbrecht, Djurovic, and Reuter, 2020).

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The Great Reset:
New Economics Rules for a Better Normal

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Economics is a science of context, the nexus of social conventions framing and directing the behavior of economic agents, while the economy is an aggregation of different forms of such behavior. The economy is a man-made system, highly nonlinear, with frequent paradigm shifts, with a set of rules explaining the behavior of economic agents.

"The first in line for undergoing changes is the economic system that has to be oriented toward the global commons."

The model of growth endorsed by conventional economic theory has largely ignored the operating principles of physical systems and biosphere, continually neglecting negative externalities, the depletion of resources, and inequalities. Anthropogenic climate crisis and recent microbe mutations have sublimated the negative consequences of these fault lines.

The orthodox model of growth is based on a linear model of production. The related policy platform stems from two assumptions, the linearity of economic system and pattern matching behavior of economic players. Therefore, unconventional policies and their unintended consequences have provoked some critics to say that Economics is a "dismal science", a toy in the hands of politicians.

In neoliberal capitalism, as the last version of free market capitalism, the economic policy platform has largely ignored the government's coordination role. Macroeconomic stability has been maintained through inflation targeting, as a major policy tool. This platform proposes one set of policies for the "good times" coming from the market fundamentalism mantra and another set of policies for the "bad times" relying on Keynesian deficit spending.

There is no exit strategy from unconventional policy measures. Money printing and fiscal stimulus inhibit creative destruction and force dependent sectors to act inadequately. When the number of start-ups is going down and the number of value-subtracting incumbents (Zombie companies) is going up, the economy enters free fall.

The economy in free fall cannot recover by itself and make the planet sustainable again. Not only to thrive, but to also survive, the economic system needs multiple and radical changes, the Great Reset.

Coincidentally, over the last four decades four leading trends have had a major impact on the paradigm shift in Economics: rise of Behavioral Economics, fall of market fundamentalism, intensification of technological change inspired by two industrial revolutions (3IR and 4IR), and growing awareness of the global commons.

The breakthroughs in Behavioral Economics have undoubtedly shown that people are not necessarily rational and consistent, not selfish by definition, and without a symmetric risk-reward relationship. Moreover, well-being is not the first derivative of egoism. Economics is not a natural science, such as Physics. So, the explanatory power of heuristics, trials-and-errors and feedback loops is greater than targeting based on optimization modelling. These days, nonlinear systems dominate in natural sciences and engineering. When universal connectivity is a new free good, the prevailing strategy of business leaders is "big and disruptive". The amalgams of different innovations and platforms make the emerging level playing field of competitive dynamics nonlinear, too. The first in line for undergoing changes is the economic system that has to be oriented toward the global commons.

Stakeholder capitalism, circular (and regenerative) model of growth, heterodox economic policy platform with industrial policies and automatic stabilizers from monetary and fiscal spheres, "net-zero" vision, and impact investments financed by "green" instruments, could be considered as the seeds of the Great Reset.

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The 'TAO of Finance'—Initiative of WAAS:
'Financing our Future = Future of Finance'

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The indispensable missing link in the debate on sustainability is the monetary system. To date, the Sustainability Development Goals (SDGs) have primarily been financed through private sector financing, conventional public sector funding (taxes and fees) and philanthropic commitment. However, these are not enough in scale and speed to finance our future.

"The introduction of a parallel electronic currency specifically designed to finance global commons goods would provide the necessary resources to achieve the SDGs while stabilizing the existing monetary system."

Currently, our opportunities and risks are driven by finance. If no money is available, opportunities such as new jobs, technological innovation, healthcare for all, infrastructure programs and education are simply not met. The same is true for risk assessment. If there is no money available, corporates will not invest in an unsafe environment and will reduce their commitment to searching for new drugs for cancer or infectious diseases, and governmental bodies will avoid setting up the right policy for infrastructure programs. So, while finance currently drives opportunities and risks, it should actually be other way round: unfulfilled opportunities and unchecked risks should drive finance to explore the most ambitious, elaborate, innovative and advanced financial engineering possible to satisfy both opportunities and risks at the same time.

Money is not a thing and Finance is not a natural law. Both resemble rather one of the most important human inventions. Finance is not a neutral veil, simply representing and measuring our real economy, it can literally transform a bag of sand into a PhD, a hospital or a kindergarten, depending on how it is designed. It is a convention for the good or bad of mankind, an operating system through which we can either accelerate or destroy our common future.

The introduction of a parallel electronic currency specifically designed to finance global commons goods would provide the necessary resources to achieve the SDGs while

stabilizing the existing monetary system. This could be achieved by giving Central Banks a modified monetary mandate to inject new liquidity into the system (top-down), or through corporate or communal (crypto or communal currencies) initiatives (bottom-up). By issuing a blockchain enabled parallel electronic currency earmarked for SDG-related projects and using channels for monetary flow other than the conventional system, our future could be financed in a different manner. Letting go of our current monetary monoculture would in the long run stabilize international financial markets, increase monetary regulatory efforts, reduce negative externalities, increase social pareto-optimum and stabilize democracies.

This is the "game changer". All this can be started in less than 6 months, if the 6 largest Central Banks agreed to create a parallel, optional complementary currency, to allow to generate the 5-6 trillion USD Bill necessary annually to finance our future. An international expert group of WAAS is exploring the possibilities with IGO (UN; WB), the corporate world (Banking, Insurance), regulators and central-bankers as well as politicians all over the world to make this happen.

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Get the entire argument: *https://www.amazon.de/Financing-Our-Future-Unveiling-Parallel/dp/3030648257*

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SDGs:
Do we need a Global Network of Implementation Models?

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The evolution toward a global human society depends on a variety of social movements. Parallelly, new societal paradigms emerge from time to time. The "Global Leadership for the 21st century" Project (GL21) is a catalytic initiative to create consciousness of high complexity of transformational processes. Implementation of SDGs will decisively be enhanced through creation of additional cryptocurrencies, which can be complemented through channelizing currently abundant financial means of the prevailing global financial system. For both financial sources, an "Implementation Science" will accelerate the transition into real productive activities. The global stream of financial means is primarily in the hands of capital owners. System Change Investment gives priority of wellbeing over capital return. A modified global financial architecture and a focus on implementation will enhance the evolution of prevailing global distribution of financial capital toward global sustainability.

"A global strategy enlarged through additional capital from crypto money and a revised global financial architecture will deepen interdisciplinarity. Creating a global network with highly diverse models of SDG implementation will accelerate the evolution toward global sustainability."

Abstaining from inherited views that the economy is the backbone of the society needs a change in the outdated Bretton Woods Agreement. The original concept of a new global economic order with fixed exchange rates, free trade and national political autonomy failed definitely in 1972 and afterwards IMF, World Bank and WTO came under the umbrella of Neoliberalism. Following recurrent economic, social and ecological crises, IMF and World Bank turn very reluctantly to some sustainable policy and WTO perceives failures of globally uneven working conditions. Redistribution of voting rights in governing boards will marginally contribute to an equal global evolution. A new "global contract" needs a fundamental change in the Bretton Woods Agreement. Effective stabilization of global financial markets by IMF has to include in its steering framework offshore financial capital, World Bank has to develop into a World Development Agency and WTO has to set binding

social and environmental standards. Raised money from reorganization of the Bretton Woods Agreement will be a complement to the needed global crypto-currencies.

Collecting money for achieving SDGs has to be coupled with the organization of implementation processes. Factual implementation of SDGs depends on an increasing awareness of local and national needs, project-oriented organization and infrastructure and co-financing with country-specific financial means. Cooperation between countries and channeling funds for real productive activities will ensure benefits for participating partners. The Marshall Plan, for which the USA spent up to 10% of its budget for European Reconstruction, benefited from employment of homecoming soldiers and taming Soviet expansion. Spending abundant financial means and additional cryptocurrency for SDGs will induce a comparable mechanism. For example, cooperation for SDG implementation in Africa will need beyond money transfer, less agro subsidies in Europe and fair trade of natural and industrial goods. To ensure self-selected priorities, African countries have to co-finance through taxation of high income and reduction of offshore investment. Sustainable development in receiving countries will contribute to fair public administration and spending countries will gain from increasing demand and reduction of migration.

Most urgent needs in developing countries and abundance of capital in industrial countries facilitate a retransfer of wealth resulting from former colonialism. Implementation of SDGs needs a vigorous improvement in educational systems, including entrepreneurial behavior and technological and organizational knowledge. Increasing scientific capacities result from establishment of interchanges through common platforms. Factual implementation of SDGs induces local and regional learning processes and initiates project-oriented cooperation with businesses in the industrial world. Fragmentary existing and mainly national networks of development agencies in industrial countries work in a partly interdisciplinary manner and cooperate with diverse social groups, but they have limited national and global impact. A global strategy enlarged through additional capital from crypto money and a revised global financial architecture will deepen interdisciplinarity and include contextual circumstances. Creating a global network with highly diverse models of SDG implementation will accelerate the evolution toward global sustainability.

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Democracy Needs to be Strengthened and Defended

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Democracy is under pressure worldwide from the outside and from within. Democracy's decline is destabilizing societies and the global order. It is high time we stepped up our efforts to make it stronger and to defend it against its enemies.

"Democracy is a universal human aspiration."

According to Freedom House, the global balance in 2020 has been shifting further "in favour of tyranny". For the 15th consecutive year, they have noted an overall decline in global freedom. In the 2020 edition of its democracy index, The Economist Intelligence Unit recorded the worst state since the index was first published in 2006. V-Dem, another leading research project, reported that in the previous year, autocratisation accelerated and "turned viral". They say that the level of democracy enjoyed by the average global citizen is down to that of around 1990.

Democracy is a human right and there are no human rights without democracy. It is the best system known so far that can make sure that government is responsive, inclusive, accountable and responsible in the best interest of all. As the Universal Declaration of Human Rights points out, everyone has the right to take part in the government, directly or through freely chosen representatives and the authority of governments needs to be based on the will of the people that is expressed in periodic and genuine elections.

Democracy is a universal human aspiration. Surveys indicate that large majorities of people in all world regions continue to believe in democracy. However, there is strong dissatisfaction with how it operates in practice. Governments are perceived to be failing to address major issues such as corruption, inequality, the needs of ordinary people or the threat of global warming.

A club of democracies could help identify common challenges and solutions. As many issues have a cross-border dimension, a transnational perspective is vital. An honest assessment of how to reinvigorate and defend democracy cannot be made by diplomats and political leaders alone. Such a club should include a network of civil society organizations and host a network of parliamentarians from pro-democratic parties.

The club should also consider convening a transnational citizens' assembly to produce recommendations on how to strengthen democracy. At the national level, there are good examples to draw upon.

Turning outwards, the club should be a platform not only for coordinating democracy promotion but also for common value-based policies, including joint smart sanctions against gross human rights abusers. The group should coordinate a UN democracy caucus to push back against authoritarian influence in the world organization.

Finally, as globalisation increases the need for global coordination and decision-making, democracy needs to be expanded to global institutions too. Leading proposals include a UN Parliamentary Assembly, the instrument of a UN World Citizens' Initiative and the creation of a UN Civil Society Envoy. Ultimately, a club of democracies will only be credible if it helps promote democracy at this level as well.

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Reflections on Education, Employment & Sustainability

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A dichotomy emerged about a little over a decade and a half ago polarizing the view of academic disciplines into two polarities: inter (cross, trans) disciplinarity, to aim for, versus autonomous fields of research & teaching, which have come to be labelled "silos", a term which I consider derogatory and manipulative, deployed to bias valuation and attempts at reform. The notion of "Silos" was turned into a negative characterization deployed to undermine disciplinary 'boundedness' and specialization. This became an obstacle against any objective valuation of the strengths of bounded disciplines. Disciplines and the specialized research tracks they engaged in are being blamed, without supporting evidence, for all that went wrong with the contemporary education system (El Guindi 2020).

"Education is best conceptually delinked from Employment, and both—Education and Employment—relinked with the notion of Sustainability as integrated fields for analysis."

Silos is why youth today are unemployed, why there is absence of skills compatible with the job market, why young people are turning their backs on universities, why learning became separate from teaching leading to an overall questioning of the educational process. Academic disciplines became silos, forming forbidding structures that turn academic fields into irrelevant, rigid barriers, unintegrated paths to irrelevant specialization, bridges that cannot be crossed, and walls that cannot be climbed. This exaggerated imagery of separate, unintegrated structures, which became hard to cross and connect, was deployed to account for an exodus from higher learning institutions. This combined with a trend toward 'entrepreneurship' of learning which began to grow among 'jacks of all trades' in reference to persons who do not specialize in a field but skillfully pick up vocabulary and rhetoric skills and tools which they borrow, and often misapply, from different fields and professions in a way best described by Claude Lévi-Strauss as "bricoleurs" (Levi- Strauss 1985 [1962]).

As a "Seed Idea" to reflect on, it is suggested that Education is best conceptually delinked from Employment, and both—Education and Employment—relinked with the notion of Sustainability as integrated fields for analysis. This way of reconsidering arenas which previously dominated the discussion separately promises to generate new insights. This reconceptualization is grounded in empirical experimentation and study which I have

engaged in and which has been published, using field data in all three arenas from Egypt and the Arabian Gulf, specifically Bahrain and Qatar (El Guindi 1985; El Guindi 1986; El Guindi 2014) as a way to contribute to a better understanding of all three.

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The Fifth Element:
Life for Learning, Learning for Life

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Out of engaging and fruitful conversations held with WAAS and other partners, the Club of Rome initiated in 2021 'The Fifth Element program' (T5E). Its name is a tribute to Life and the weaving of many threads we will need to face the existential challenges we face today: as much ancient wisdom as modern science, as much everybody's learning potential as expertise, as much arts, humanities, and social knowledge as natural sciences.

"T5E is about embracing transdisciplinarity and complexity, not about teaching them."

The Approach. T5E is an invitation to co-create new processes to get out of the non-learning societies in which we live. Living systems reconfigure themselves by learning new patterns which replace older ones, and T5E is about shifting our patterns of relationship with other humans, Life at large, and Time. Climate emergency and loss of biodiversity, growing inequalities driven by technology, the persistence of exploitative and colonial mindsets, the exhaustion of non-renewable resources, global pandemics, and so on are all signs of a growing divorce of human logic from how Life works. This brings us to a threshold beyond which we do not know what will happen. And **the unknown cannot be taught; it requires exploration.**

Those challenges are not abstract: they disrupt the everyday life of billions of people feeling helpless to shape their own future. T5E bets on **the capacity of everyone to learn**, in an exploratory and pattern-changing sense. People of any place can grasp by themselves the knowledge relevant to the challenges they face, and start collectively building new responses and developing pathways to sustainable wellbeing in their own contexts.

The Cracks. Hundreds of millions of people are literally struggling for survival. Modern technology and economic processes are not addressing this issue—rather the contrary. And crises add new layers of inequalities. The complexity of the challenges may plunge many into denial, anxiety, helplessness, and apathy. This is why it makes sense to put existing knowledge and experiences first at the service of people directly facing the challenges, wherever they are: vulnerable communities, the dispossessed, women, youth, and activists engaged at the frontlines of transformative projects.

The Grounding. T5E proposes that new learnings can happen through innovative engagement in which people are more than experts, stakeholders or students. Not only the questions addressed must change, but the staging, the roles of learners and "teachers", the processes of inquiry and evaluation, the exchanges across contexts and the responses to challenges will be different. Also, skills need to encompass all literacies, knowledge can be nurtured as much by African *Ubuntu* and *Ukama* and other indigenous worldviews as by leading-edge research on living systems, and the potential of attitudes can be liberated by co-design methods in lifelong and experiential learning in specific contexts. T5E is about embracing transdisciplinarity and complexity, not about teaching them.

Finding Warm Ways... Life inspires both a better understanding of the complex challenges of today and the competences people need to act on them. T5E intends to enable people of all ages and conditions to learn and act on humanity's existential challenges in their own ways. The future is deeply unknown but its exploration can be warm or tragic. T5E claims that ingredients exist to make it warm, provided we make it together.

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We should Combine the Climate and Poverty Problems

John McClintock
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My idea for creating a better world is to update the Paris climate agreement, combining it with a plan to put poor countries back on a growth path by modernizing their farming sectors.

Climate change is a case of global atmospheric pollution; but it is not the first. Twenty years ago, we were emitting CFCs which thinned the ozone layer, increasing the risk of skin cancer. Emitting countries reached an agreement which specified reduction targets and a timetable, with responsibilities clearly set out. There were no exemptions and no free riders. The world 'acted as one' and the ozone problem was resolved.

> *"If rich countries reform their farm policies, poor countries will be back on a growth path and will be more inclined to participate in a global climate plan."*

Alas, the Paris agreement is inadequate. The responsibilities of governments are not laid out. Governments are exhorted to announce their climate 'intentions' but intentions are not guarantees, nor do they necessarily add up to a global solution.

Why can governments not reach a meaningful climate agreement when it was relatively straightforward for ozone?

Because countries have different priorities. For rich countries, the priority is a worldwide cut in emissions. For poorer countries, which form the majority, climate change matters, but their top priority is to escape from poverty.

This position makes sense. Poor countries have long pointed out that the responsibility for fixing climate change lies, first and foremost, with rich countries. The bulk of greenhouse gases in the atmosphere are there because rich countries industrialised. Poor countries argue that they have not shared the wealth created by industrialisation. Why should poor countries pay to help solve a problem that they did not create? Especially as this could shut off their route to escape from poverty.

Until poor countries experience economic growth, they will be wary of signing up to a meaningful climate agreement. But the rub is that unless every country—rich and poor—is

onboard and playing its part, there will always be complaints that some countries are free-riding on the efforts of others.

A couple of generations ago, poor countries were on a growth path. Then rich countries started to artificially stimulate their farming sectors. They stopped importing farm commodities from poor countries and gave their own farmers subsidies. For the last sixty years, this has stymied the modernization of farming in poor countries. Farming has failed to 'take off', preventing overall economic growth.

The solution? Rich countries need to restore market access to poor countries. They also need to stop exporting subsidized farm products to poor countries. This is unfair and debilitating to poor countries. It undermines their farmers by taking their own home markets from them. If rich countries reform their farm policies, poor countries will be back on a growth path and will be more inclined to participate in a global climate plan.

We successfully resolved the ozone problem. Tackling climate change has proved, so far, intractable. But if we tackle the climate and poverty problems together, there is hope that we could meet the concerns of poor countries and bring them onboard a meaningful 'climate and anti-poverty agreement.'

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Global Constitutionalism

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Shannon Lahey
Research Assistant to Prof. Nagan

The range of interests of the World Academy of Art and Science is vast, but the Academy has yet to adequately engage with the fundamental idea of global constitutionalism.

Constitutionalism is one of the foundational principles for human peace and world public order. Yet, the work of our Academy has tended to avoid a deeper understanding of constitutionalism at both the national and the global levels and, correspondingly, has contributed little to the nature of constitutionalism as an essential foundation of the rule of law at every level.

"From a global perspective, we need a deeper understanding of the global process of effective power, and how it may be managed to reproduce constitutionalism as a global mandate."

Some of the most significant work on the nature of constitutionalism was pioneered by a former president of the World Academy, Harold Lasswell, and his longtime associate, Myers McDougal, a fellow of the World Academy. They provided insight into the nature of constitutionalism, its importance for public order, and its importance for world peace and security.

Today, a central weakness of the global system of public order is that it is underscored by a weak form of constitutionalism. States with democratic orders tend to have relatively strong forms of constitutionalism. The interdependence of peace, constitutionalism, and human rights, and democracy is in fact based on a deeper understanding of what constitutionalism is, how it functions, and its capacity for peace and security.

What is not well understood is the social process context of constitutionalism. This is a matter that needs to be more carefully expressed because the foundation of constitutionalism depends on the contextual understanding of the power process behind the community, be it on the state or international level. Constitutions are an outcome of the way in which the power process expresses itself. The power process comprises participators with perspectives of identity, demands, and expectations. These participators have to manage base values

that permit the institutionalization of power arrangements, and these power arrangements, if adequately managed, will express the allocation of powers and competencies within the body politic.

The constitution provides this kind of framework so that the competences between the political players can be revised and modified peacefully. The allocation of competences reflects the evolution of civil, political and human rights, and the promise of constitutionalism that these rights will be stabilized and that they will endure. This means that the dynamism of the system depends on the expectation of constitutionalized power arrangements, and of evolution in the public interest. The evolution of constitutionalism requires the management of strategic modalities of action, which includes negotiation, diplomacy, adjudication, and other methods of dispute management, including the possibility of managed forms of coercion.

The outcomes of the constitutional process, if managed optimally, reproduce human rights, peace, and security. But these issues must be viewed not only from a state-wide perspective, but also from a global perspective. From a global perspective, we need a deeper understanding of the global process of effective power, and how it may be managed to reproduce constitutionalism as a global mandate.

Naturally, this concept becomes even more vital as the world rapidly globalizes and becomes increasingly interconnected. The global interdependence of nations demonstrates the need for an authoritative set of expectations for the global community so that human rights, peace and security may be optimized.

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Welcome to One of the Most Important Conversations of Our Time

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While emerging from the emergency of the largest pandemic in a century, many of us are at the end of our emotional ropes and are longing for normality in an uncertain world. We are troubled by the lack of leadership, poor behavior, and the inability of governments to address a pandemic that could have been prevented, had we heeded the warnings of experts and scientists. We feel left alone and the last thing we want to hear is that COVID-19 could possibly be a dress rehearsal for more existential threats which could arise from climate change, unsafe AI, nuclear arms race, or other grand global challenges.

And we are right when we flock to those who give us hope and remind us that current challenges should not deter us from the irrefutable fact that humanity is on average better off today than ever before. Despite population growth over the past 100 years, we live during one of the most peaceful, progressive, and exciting eras in human history. Since 1820, global poverty has been reduced from 94% to 9.6% in 2015, and global income has increased on average tenfold with falling global child mortality rates from 18.2% in 1960 to 4.3% in 2015. Literacy rates have also increased—from 12% in 1820 to 87% in 2014—and most countries in the world now have democracy as their form of government. The majority of people have today a standard of living that is comparable to that of an average Westerner in the 1950s. This progress would have not been possible without exponentially growing technologies, human curiosity, creativity, fortitude, a willingness to grow beyond oneself, and a sense of wonder and purpose. While the technological complexity around us is accelerating making it difficult for us to keep up with it, the price of technology and its application in every area of life from transportation, to food, to education keeps dropping too. The technological explosion is not only exponential but also deflationary, which, in the light of the climate emergency, societal polarization, and loss of privacy, forces us to make it not only cheaper but also integrally sustainable for the planet and the people. The technological advances on the Internet have come with a price which we can and should no longer tolerate because the democratic discourse has moved from legally mitigated public domains onto private servers of profit-hungry and not tax-paying Internet-based monopolies. Through these AI-driven social media platforms, our psychological health is also controlled by these tech giants whose only goal is profit maximization. Our governments do not get it, but we, the people, have the power to replace them and to vote for awakened leaders who can harness the astonishing human capacity to cooperate toward addressing current challenges. We must vote for progressive and forward-thinking leaders who can act on the many cognitive biases

that twist the picture of reality, and who can separate the truth signals from the fake noise across political divisions.

> *"Evolution takes place with or without us. We can consciously participate in it and shift our minds to the next stage of evolution or regress and eventually be eliminated by more resilient manifestations of life. The choice is ours."*

Another critical acupuncture point that we must transform is our inflationary economic system. Since the financial crisis of 2008, the policy of quantitative easing has become the norm and must continue to grow to prevent its own collapse. It is based on debt and not on real assets and it is borrowing from future generations while devaluing existing currencies due to ongoing low interest rates. At the same time, it is failing to transform itself to become sustainable and it does not address humanity's grand global challenges, nor our existential threats. The economic system is inflationary, it creates inequality, and it is not sustainable long-term because it is barely meeting the needs of the current generation while compromising the ability of future generations to meet their needs. But it is not all bad. The great advantage of inflationary economics is the availability of capital abundance (through Venture Capital funding, Crowdfunding, Cryptocurrencies, or Sovereign Wealth Funds). The only question is who gets it and how to get it to fund the imminent transformation. Venture funding has been a more traditional source of startup capital over the past five decades, helping to birth household names from Apple and Google to Amazon and Uber, to name a few. Despite the pandemic, in 2020, U.S. venture capital investments reached the new staggering record of $156 billion (or about $428 million every day!), and increase from $136.5 billion in 2019; in Asia, VC capital ended up at nearly $80 billion, and European venture reached $40 billion in the same period. We can and must take advantage of this capital abundance to break out of the governmentally mandated austerity and fuel the economic development across all industries from transportation, infrastructure, energy, and education to entrepreneurship and other small and medium enterprises that provide more than 50% of jobs and more than 55% of GDP worldwide.

Transformation occurs whether we like it or not. It is accelerated by exponentially growing, AI-driven technologies and occurs within the context of inflationary economics that provides massive abundance of capital. We have the choice. We can use them to transform our current, outdated, and unsustainable systems to implement the UN SDGs within planetary boundaries within the next few decades or let them collapse and descend into another dark age as previous civilizations did. This radical transformation requires radical mind shifts toward the next level of consciousness. Times of crisis provide an indisputable opening for waking up the human spirit and for stepping up to the better angels of our nature because they remind each and every one of us that we cannot control the outside world, we cannot control other people, we cannot control the climate—and we certainly cannot control a pandemic. We can

influence them, at best. What we can control is our own psychological state, what we think, what we do, and who we become during a crisis. It may not be easy, but we can still choose. We can lose faith and despair and become a burden to others or we can become part of the solution, an inspiration, and a force for good. Evolution takes place with or without us. We can consciously participate in it and shift our minds to the next stage of evolution or regress and eventually be eliminated by more resilient manifestations of life. The choice is ours.

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System Change Investing

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The Sustainable/Responsible Investing (SRI) market is over $30 trillion and growing faster than traditional investments. Over the past 20 years, SRI and the sustainability movement in general have provided large benefits to business and society. But in spite of this good work, environmental and social conditions are declining rapidly in many areas. Clearly, new approaches are needed.

> *"As has occurred throughout history, all flawed systems change, usually by collapsing. Keeping current systems the same is not an option. Either we will change them voluntarily or nature and reality will change them involuntarily, probably through collapse."*

Nearly all SRI and corporate sustainability strategies focus on changing companies and addressing symptoms, such as climate change, poverty and other major environmental and social challenges. This work is essential, but not enough. Root causes must be addressed to resolve the major challenges in the UN Sustainable Development Goals (SDGs).

Reductionistic thinking and resulting flawed systems are the primary root causes. Flawed economic and political systems unintentionally compel companies to degrade the environment and society. Sustainability cannot be achieved unless the cause of unsustainability is effectively addressed.

A growing number of financial institutions are addressing system change. Approaches include assessing the portfolio, sector and economy-wide impacts of investing, addressing the SDGs, assessing impacts relative to planetary limits and science-based targets, investing in ecosystem restoration, and addressing poverty, gender equality and other social issues.

These approaches are highly beneficial, but still mainly focused on symptoms. For example, the solution to climate change and deforestation largely does not involve addressing these problems directly. It requires resolving the systemic factors that created the problems in the first place.

System Change Investing (SCI) switches the focus of SRI from company change and symptoms to system change and root causes. Over the past 20 years, investor interest

through SRI encouraged nearly all large companies to implement sustainability strategies. SCI uses the same proven approach. The process involves rating companies on system change performance, and then using this research for positive screening, negative screening, engagement and other ESG/SRI strategies.

SCI represents one of the most powerful short-term system change strategies available to humanity. It uses investing to engage the financial and corporate sectors in the most important sustainability issue. SCI represents the first investment approach that has the potential to achieve the SDGs because it focuses on root causes.

A large and growing number of investors want their investments to benefit society. SCI can provide the highest possible sustainability benefits. This will attract new investments and position asset managers as global SRI leaders. SCI also can substantially increase investment returns. It identifies systemic risks and opportunities that are not assessed by traditional financial and ESG analysis, and provides strong indicators of superior management and stock market potential.

System change traditionally has not been the responsibility of the financial and corporate sectors. But flawed systems are causing large problems for business and society. As has occurred throughout history, all flawed systems change, usually by collapsing. Keeping current systems the same is not an option. Either we will change them voluntarily or nature and reality will change them involuntarily, probably through collapse.

COVID-19, growing political division, and many other problems strongly indicate that our flawed systems already are in the process of changing. We probably do not have much time left for voluntary system change. Investors and companies are far better off taking a seat at the system change table and helping to guide the process in ways that protect business and society.

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Artificial Intelligence

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I think that one of the most important topics about which we all need to reflect is the future role of Artificial Intelligence. AI must be at the service of human beings, not the other way around. The same ethical conscience that we have developed in connection with nuclear weapons and other alarming results of scientific progress, capable of destroying humanity, must help us to properly regulate the power of cognitive machines, of thinking machines, of these wonderful fruits of our creativity that, left to themselves, can endanger the future of our species.

"The development of technology must run in parallel with the growth of our ethical conscience."

No one questions the need to control the number of nuclear weapons, until finally abolishing them, because only in this way will we eradicate the real danger they exhibit. The same could be said of bacteriological weapons, and of any other instrument of mass destruction. Fear of their effects does not completely protect us from these dark creations of human intelligence: only their abolition dissipates the extreme risk they pose.

Artificial intelligence can be even more destructive than these weapons. Machines much smarter than us could find far more sophisticated and deadly ways to destroy us. If an intelligent species like ours has produced nuclear weapons, what could a higher mind not invent? Therefore, no one should doubt that artificial intelligence cannot be left in the hands of engineers and computer scientists: we must all decide what to do with a technology whose consequences could be devastating for the very existence of humanity. The development of technology must run in parallel with the growth of our ethical conscience; otherwise, technology will eventually absorb us, and the means will become the ends. Blindly trusting that artificial intelligence, having theoretically achieved greater cognitive power than the human brain, would somehow learn to control itself in order to be beneficial to our species, is extremely naive. What if such superior intelligence decides to enslave us, or to dispense with us definitively? What if, after all, it turns against us?

Let us use artificial intelligence to improve the human world, not to destroy it. Let us control artificial intelligence so that it does not control us.

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Global Leadership Education:
Managerial and Economic Implications of SDGs

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- We are living through the Anthropocene era, an era where humans have become the major force affecting change on our planet. Environment and social risks are threatening the "thrive-ability" of our society.
- In combating these risks, we require trillions of dollars in investments annually. And we need them in a very limited time. Trillions mean that we require a thousand-fold of our current investments in the field, and much more projects. This requires an **unrecognized managerial input** and tremendous effort by the planners, engineers, economists, etc.

"Governments and business leaders are short-term thinkers. True leaders are ones with long-term foresight!"

- We warned of this need with a campaign called "**$B to $T by 2020**", prior to the United Nations declaration. This calls for a transformation of nations, what we call "**Trans-From-Nation**".
- The United Nations achieved a remarkable agreement—Paris agreement. All the countries committed to reach the SDGs by **2030**. The Sustainable Development Goals (SDGs) represent a paradigm shift, a global agenda. **The states are responsible for that agenda**, and the companies, NGOs and citizens are required to shoulder in the responsibility to achieve the goals. The countries have 10 years to reach the goal!
- The COVID-19 pandemic has proven that we are able to transform our world, industries, culture and work, which can change drastically and **within weeks**. But the problem of climate change and other environmental changes are long-term—while governments and business leaders **are short-term thinkers. True leaders are ones with long-term foresight**!
- How can we obtain the necessary funds? The pension funds need long-term investments to back up their commitments. If they were to invest in SDGs, **it would be a perfect match**! One condition: it should have a high interest rate.
- There is now a **conflict between the government** that should be advancing SDGs, **and central banks** who set the interest rate close to 0% (meaning that does not incentivize long-term growth and investments!). As a rule of thumb, people should save about 30% of their income. But in contrast the savings rate is close to zero!

- Also, each dollar invested in the SDGs will not bring high yields because of "**externalities**" that are not taken into account. The prospective investor only receives the **economic** profits, while others (government or the public) get the **environmental and social benefits**.
- We have **no economic model that properly incorporates social and environmental ideas**. In the basic system land, capital and labor are considered to be in shortage. However, in the new economy we have "digitization", which is unlimited. In addition, there is no perfect competition, the natural resources are not represented in supply or demand, and they become externalities. [The Nobel Prize laureate Joseph Stiglitz (2012) argues that the "invisible hand" is invisible—because it is not always there!]. This means that neo-classical economics must make slight changes to what is **valued, l**ike multi-dimensional **Economy, Society, Environment and Consciousness** (**ESEC**). If the SDGs are the business of governments (through regulation), they could do this by approximation, subsidies, or by revising in the national **accounting standards.**
- **This way, we solve three of the major risks to the environment: We finance the SDGs, and create pensions and jobs for Millennials and future generations**.

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Art and Science Interactions

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Art and science are complementary. At the highest level, artists and scientists converge at the level of the polymath, the renaissance man, and ultimately, to da Vinci.

As mentioned in the "Retrospective and Reflections on WAAS@60" paper, which has been remarkably well prepared: "Science has improved our lives in many ways… On the other hand, it has also given us the capacity to ravage the environment on an unprecedented scale and obliterate our species altogether". I think the real problem does not come from science or technologies. It is we—human beings, with a lack of global social responsibility, destructive decision-making approaches, who create negative impacts in our society and on our planet.

"The existing education system transmits dominantly an education of subsets and partial analysis. İt does not provide the methodology of linking subsets within an iterative approach of transdisciplinarity."

Global social consciousness and global ethics should remain constant at the level of individuals, institutions, corporations, nation-states and the international sphere. To deal with highly complex questions of the modern world, transdisciplinarity is mandatory to understand and solve these problems.

The amount of data produced and distributed through modern communication channels is huge. A remarkable percentage of this data is not genuine. That leads to a phenomenon called "information distortion". In preventing information distortion, the starting point, the initiator, the igniting constant should be ethics for the regulators and for information security practice.

A transdisciplinary approach to education is required to educate future generations, to deal with complex problems of the world. The existing education structure generally is based on a "department-centric system". It transmits dominantly an education of subsets and partial analysis. İt does not provide the methodology of linking subsets within an iterative approach of transdisciplinarity.

The dominant system of the world is driven by power and the power of money. I call it "System 2". The dominance of System 2 causes serious problems at the world level like conflicts, wars, human trafficking, degradation of use of natural resources, etc.

To prevent such problems and to solve the existing ones, there is an urgent need to convert to "System 1", which is based on science, art, technologies, innovation, value systems, culture, ethics, and global social consciousness driven decision systems.

Dealing with complex problems, global social responsibility, accountability, human centered decision-making, *endogénéisation* of transformation, anticipation of systemic change are necessary conditions.

Art, science, ethics, social global responsibility, human centered decision-making will converge at the level of solutions to existing problems based on anticipatory analysis for optimal humanity.

The real revolutions are in our minds, sensitivities, and aspirations.

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Change

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Change is inevitable, as Heraclitus said many years ago. Science has gone a long way towards predicting change in nature. However, change in society is much more unpredictable: it is governed by culture with its thoughts and beliefs about the world. This is because humans are blessed (?) with consciousness, something which allows them to accept or reject the findings of science, as well as those of religion, mythology, folklore, or whatever else passes for knowledge in any given society. Thus, the social world is always controlled by an ideology, resting in both the subjective and intersubjective world. Science can provide useful information in this respect, as long as it does not believe that it is discovering mechanistic truths about society, such as those discovered about nature, at least in the Newtonian framework.

"Neoclassical economic theory is an ideology that has been mathematized in order to present itself symbolically as a science."

Social change is both intended and unintended in this respect. Intended change is easy enough to ascertain, but unintended change is more difficult to explain because of the complexity of modern societies. After the Renaissance, a new ideology was necessary and science with its symbolic use provided that legitimation. This can be seen especially in neoclassical economic theory, an ideology that has been mathematized in order to present itself symbolically as a science. Here the assumption is that the "free" market will automatically establish an equilibrium beneficial to all of society and that government "interference" in the form of central planning will obstruct this mechanism. This assumption has been criticized extensively both by Marx, as well as in heterodox and Post-Autistic Economics. But this ideological debate still plagues the modern world and must be confronted in any attempt to make it more just and equitable.

This problem is further complicated by the fact that not all members of society will accept change. Here the question of power enters. Power grants the ability to some members of society to allow or block change. Power rests in a ruling class, a group of people designated as leaders because they have seized power by force or through ideological means, both of which require control over the means of communication and education. Thus, social change must confront both a ruling ideology as well as a ruling class.

The question is, can the need for power be understood beyond this framework? Recent research suggests that the consciousness of death, which "plagues" only human beings, motivates those with excessive need for power. Some humans believe that if they can control all things in nature and society, they will achieve immortality, and they block any movement that questions their power and threatens this illusion. This is a key additional element that must be confronted in any attempt to bring happiness to the world, something which Epicurus understood over 2000 years ago, when he insisted that people must not only learn to live simply but also confront the reality of death. Thus, confronting the money Gods and the fear of death must motivate any movement for social change in today's world.

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The Seville Statement on Violence, an Inspirational Scientific Step towards Peace

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After the 65th anniversary of the Russell-Einstein Manifesto, origin of the Pugwash Movement, and the 60th anniversary of the foundation of the World Academy of Art and Science, *Cadmus* is celebrating its 10th anniversary with a special issue with Seed Ideas on inspirational topics related to the commitment of WAAS to the application of Knowledge to address humanity's pressing global challenges.

"It is possible for us to end war and the suffering it causes. We cannot do it by working alone, but only by working together."

I would like to recall now the relevant message of the Seville Statement on Violence, presented 35 years ago by selected scientists of quite different disciplines—such as anthropologists, biologists, physiologists, political scientists, psychiatrists, psychologists, and sociologists—and from the four corners of the world, on the occasion of the VII CICA Conference held in Seville. The UNESCO Paris General Conference adopted it as part of its effort to counter ideas which have been used to justify war and violence, and decided its dissemination, translating it into all its official languages (Paris, 16 November 1989). In the words of the Dalai Lama (1998), *perhaps the most comprehensive statement on the latest research was summarized in the 1986 Seville Statement on Violence.*

Our main purpose was to state that it was not scientifically true that violence and war cannot be ended, as some people say, because they are part of our natural biology. And we did it through the following five propositions:

1. It is scientifically incorrect when people say that war cannot be ended because animals make war and because we are like animals: neither do animals make war, nor are we like animals. Unlike animals, we possess culture that we can change.
2. It is scientifically incorrect when people say that war cannot be ended because it is part of human nature, because our human culture gives us the ability to shape and change our nature from one generation to another.
3. It is scientifically incorrect when people say that violence cannot be ended because people and animals who are violent are able to live better and have more children than

others. Actually, evidence shows that people and animals do best when they learn how to work well with each other.

4. It is scientifically incorrect when people say that we are violent because of our brain. The brain can be used for cooperation just as well as for violence. It depends on how we are brought up and how we choose to live our lives.

5. It is scientifically incorrect when people say that war is caused by "instinct." None of our behavior is so determined by biology that it cannot be changed by learning. Of course, we do have emotions and motivation like fear, anger, sex, and hunger, but we still decide how to express them. In modern war, the decisions are not usually emotional; instead, they are made in the way soldiers have been trained. The most important question is why they are trained and prepared that way in the first place by political leaders and the mass media.

Conclusion: We are not condemned to war and violence because of our biology. Instead, it is possible for us to end war and the suffering it causes. We cannot do it by working alone, but only by working together. However, it makes a big difference whether or not each one of us believes that we can do it. **In the same way, war was invented in ancient times, and we can invent peace in our time**. It is up to each of us to do our part.

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Backwardness, Growth and Distribution:
Institutional Structure of Capitalism

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Post-Keynesian and post-Kaleckian approaches, as part of the heterodox family, have been progressing fast in the last few decades. They have made important contributions to the socio-economic thought, providing necessary opportunities to alternative policies as well as significant stimulus for new areas of research. They are not immune to controversies and probably a combination of the two alternative schools will illuminate future projects and actions to get a better society for the majority of the world population. Kaldor (1971, p. XXIX) mentions: "I have never felt that one's understanding of economic process has reached a stage where it is no longer liable to radical revision development in the light of new experience".

The above perspectives suggest a number of socio-economic and institutional reforms to make the society sounder and fairer. No doubt, serious policy proposals need to be examined in order to tackle some unacceptable social effects of poverty, instability and distribution of wealth and income. However, the fundamental dilemma is how to implement fair actions. This is a hard task due to the fact that the core of economic policy, in most countries, is to a large extent directed by those that already have and would like to preserve their privileges, as pointed out by Kalecki (1943, p. 138): "The assumption that a government will maintain full employment in a capitalist economy if only it knows how to do it is fallacious." Because it weakens their power over workers. Up-to-date views are required. We have seen the challenges brought by the forces of "populism" over governance. It is necessary to rethink the meaning of backwardness/ development/ gender/ racial/ ethnic/ democracy/ democratizing.

We point out that some post-Keynesian and post-Kaleckian proposals condemned by the majority of the orthodoxy to mockery, mostly at the end of the last century, are getting increasing media success and academic respect. For instance, in the last colloquium organized by WAAS, we find spacious discussions of heterodox economic ideas concerning fiscal policy and other themes. Participants in those events expressed the feeling that the rich tend to dominate the capitalist society illegitimately, paving the way to unfair social inequality. Researchers are frequently expressing themselves in support of increasing level of taxation on fortunes and successions. Indeed, the themes of uncertainty, power, institutions, crisis and their implications deserve profound attention. For instance, the world is facing the coronavirus crisis today. Latin-America's outbreak is worse than ever. This negative moment has severe human and social costs, requiring a profound understanding of the nature and causes of our real needs.

Scholars and politicians are much more open nowadays to structural change than before the recession which took place at the beginning of this century. However, a number of fundamental questions do not seem to have been properly asked. For instance, those concerned with political power (mark-up) which in the capitalist society resides mainly with multi-national enterprises that are beyond the control of governments. They, frequently, may even undermine government and put whole communities out of work by speculation and switching capital elsewhere. Also, they tend to buy the media so that few alternative opinions can be clearly expressed, breaking sanctions, destroying the national environment and advertising "fake news". In many countries, votes of private citizens have less and less efficacy when the real power resides not with proper councils or parliaments, but with the boardroom. How can desirable policies be established in such a way that they could bring such enterprises to serve the socio-economic and political interests of the society? These include greater employment and education, evolution of productivity, expansion of growth and income distribution, reduction of risks, improve health and environment. Public Administration is the actor most responsible for avoiding and/or overcoming a crisis.

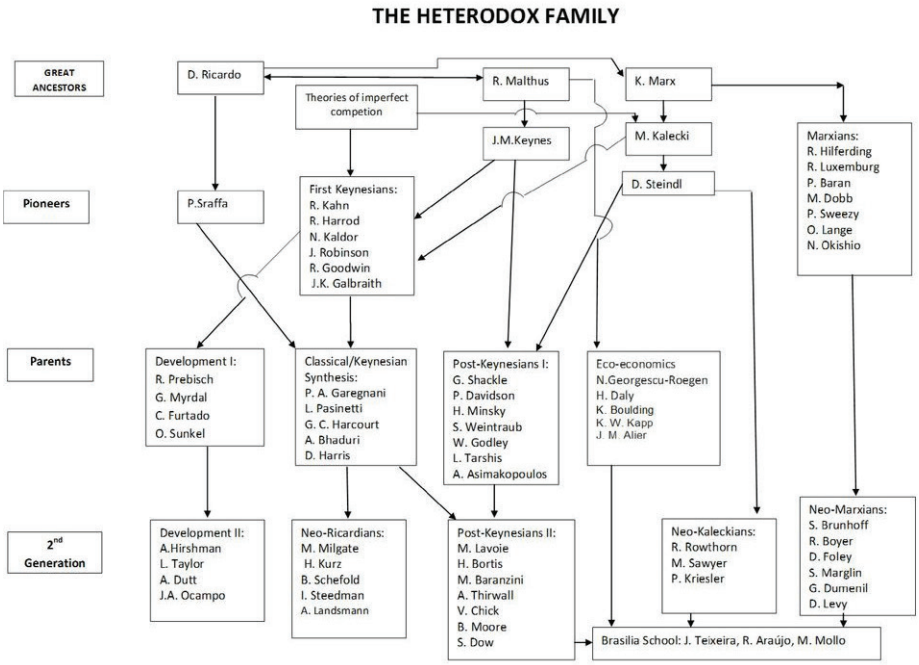
"We need proposals which not only interpret the world but explain how to pursue an enlightened global civilization. We need a wider vision that will bring fair dividends to people and nature."

According to Bhaduri (2010, p.24), "(...) the success of development must be judged from the viewpoint of the least advantaged in society." He also stresses that: "Nothing is more destructive to a political system than the lack of hope for a better future." We need to be concerned with the present state of affairs. Gramsci (1977) says: "If the sceptic takes part in the debate, it means that he thinks that he can convince people. That is, he is no longer a sceptic." This is my case. Actually, in the formulation of actual socio-economic policy, it is useful to add a myriad of remedies (multipliers) together, instead of the simple mathematical exercises and orthodox theories. It is necessary to figure out how to expand the rate of growth of the economy, reduce unemployment, improve distribution of income, etc., in an elusive quest to get a country on the path of desirable living standards.

If we consider the possibility to combine parametrical changes in the post-Keynesian and post-Kaleckian models, given the existing economy, it is possible to suggest some interesting points. For instance, in a country in depression, a larger size of governmental expenditure may well promote increasing equity with no adverse effect on growth. This possibility reflects the belief to implement a strategy based on a better functioning government, which tends to lead to target transfer programmes to disadvantaged groups. This strategy is especially required in Latin America in the present pandemic period. New theoretical perspectives and leadership are required in order to stimulate a fair transition to a new paradigm. As WAAS' motto indicates, "promoting leadership in thought leads to action". Rigorous implementation

of such amalgams remains difficult, but it seems preferable to admit complexities rather than to be inside over-simplifications. For an overview of such economic theory, see Teixeira (2018).

Some contributions and explanations of such complexities have been considered by members of the FAMILY TREE below. Inspired by heterodox visions of post-Keynesian and post-Kaleckian economists, Political Economy has a battle to fight against the status quo. This has been a hard fight which deserves considerable attention. As Brecht (1980) points out, "One of the chief causes of poverty in science is usually imaginary wealth. The aim of science is not to open a door to infinite wisdom, but to set a limit to infinite error. Make your notes."



As expressed by Jacobs (2016, p. 22), "The only legitimate objective of economic science is a system of knowledge that promotes the welfare and well-being of all humanity". In this vein, we need proposals which not only interpret the world but explain how to pursue an enlightened global civilization. We need a wider vision that will bring fair dividends to people and nature.

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Articles

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TransFormNation:
A Suggestion for Rapid Top-Down Transformation

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Abstract

The last 60-70 years have seen the end of the industrial revolution and the rise of the post-industrial era. The way we, as humans, are treating our environment (and each other) is threatening our very existence on our planet. This becomes apparent when we examine the reality of climate change, pollution, destruction of biodiversity, inequality and more. We must replace the current focus of "maximization of economic values" with a multidimensional framework that includes consideration of Economic, Societal, Environmental and Consciousness factors (ESEC).

The problem with climate change and other environmental and societal ***changes is that they*** *are external, meaning they are beyond the scope of classical economics****,*** *and they* ***are long-term problems. This is especially problematic because governments and business leaders are short-term thinkers.*** *We can look at the Sustainable Development Goals (SDGs) as the widest consensus on long-term transformations needed. Since the SDGs were ratified by the governments of the world, it is the business of those governments to achieve them and radically transform them. The SDGs are a good enough approximation to close the gap and to internalize environmental and societal externalities.*

We do not have time for a long-term approach to change; we cannot wait for the next generation's education to take effect. There must be a simultaneous approach. A top-down framework to rapidly transform our leadership is essential to complement the bottom-up approach of education. A bottom-up approach takes decades to take hold, whereas a top-down approach is expedited and can even be implemented within a year.

Over the past decade we have developed a method that accelerates transformation in individuals and groups. This methodology comes from decades of experience in the field of organizational and personal transformation and a series of global workshops focused on accelerating a shift in consciousness. We believe we can transform nation-states by working with decision makers and leaders on the necessary transformations for their respective countries. This is a proposed model based on years of research and working with global leaders. It is called ***TransFormNation (TFN)****.*

1. Introduction

We are not just living in an era of change, but rather through a change of an era.* Humanity today numbers around 7.8 billion. Only 200 years ago there were merely 1 billion people on the planet. Alongside our population growth, there has been a rise in life expectancy and standard of living. These shifts in size, life expectancy and standard of living require more materials and resources than our planet is capable of sustaining. Even though we may have grown eightfold, our stress on the planet has grown much more than that.

The industrial revolution brought vast amounts of pollution into our living systems in the sea, land and air and we are now exposed to climate change and other environmental challenges not witnessed in millennia. We have lost countless species and biodiversity, we are straining the limits of minerals and materials and changing the very planet we live on.

Much of the growth in the past two centuries is due to our Capitalist economic system. Sadly, this growth has not been responsible for the "thrive-ability" of our planet in terms of society and the environment. In fact, Capitalism has caused severe damage to social and environmental frameworks, to a level that now threatens the continuation of the human species on Planet Earth. Nobel laureate Joseph Stiglitz (2012) argued that the "invisible hand" is invisible because it is not always there! This refers to the elements of our economic system that are not quantified, such as the environment and social issues.

We must transform our economic system. We have seen humanity undergo transformations such as the abolition of empires, the end of communism and the globalization of the world economy. These transformations are marked by a shift in values and a change in our framework of thinking. The most powerful tool we have to accomplish this is education. Education allows us to look at our system today and realize what is lacking. However, this tool may not be equipped to deal with our current challenges

2. Education

Education is usually seen as a "**bottom-up**" framework that starts by implementing change or values in the next generation. For instance, we teach our kindergarteners, high school students and young academics the values which we wish to see represented in our world. This lengthy process of education is an investment in the future. The World Academy of Art and Science (WAAS) has dedicated many sessions to education in a number of their recent conferences.†

It is our opinion that we must work in parallel to create a "**bottom-up**" framework for future generations and a **"top-down"** framework for governmental decision-makers, regulators, heads of industry, etc. They must exist simultaneously in order to truly affect the system. One must consider that a bottom-up approach takes decades to take hold, whereas

* Annex 1

† Four International Conferences on the "Future of Education", and a five-day conference on "Strategies for Transformative Global Leadership" in June 2020. Summaries of some of the articles and videos can be found on *CADMUS* Journal 2 parts A and B (June 2020); http://worldacademy.org/academy-activities and http://cadmusjournal.org/volume4-issue2-may-july-2020

a top-down approach can be rapid and even be implemented within a year. We must begin to adopt a top-down methodology in order to make effective decisions within the short time we can.

> *"We must move from a slow evolution (i.e. change) to a rapid transformation. We do not have time for a long-term approach to change. We cannot wait for the next generation's education to take effect."*

3. Our Challenges

Since humans have so drastically affected the globe, we have deemed this era the "Anthropocene"*. This term reflects how humans influence the planet as much as over 4+ billion years of geological forces. These past generations of humans are no longer simply part of the system, they are one of the main forces shaping it. If at first our evolution was moderate and slow moving, now we find ourselves with little time to solve the challenges that have arisen from our part in the system.

We must act in urgency as we are now in an existential storm of processes: Expedited population growth, mass consumption and production, depletion of natural resources, and growing amounts of pollution. This is indicative of exponential change. At first, one does not notice the change at all, and by the time you notice, it is nearly too late. One cannot solve a problem by following the same principles that created it.

Changes are occurring in ways of thinking. People are beginning to believe that they should not serve the economy, but rather that the economy should support their basic values. In such an economy, "doing good" (socially, environmentally and ethically) should support, rather than stand in contradiction to "doing well" (economically).

Current and future crises such as COVID-19, climate change, inequality, and the retreat of democracy are all challenges we currently face as a united human society. In order to address these challenges, we need leadership to evolve and act. Due to the urgency of this moment, we must move from a slow evolution (i.e. change) to a rapid transformation. We do not have time for a long-term approach to change. We cannot wait for the next generation's education to take effect. A top-down framework to rapidly transform our leadership is essential to complement the bottom-up approach of education.

We can apply a top-down approach through our economic system and the metrics that we use. Capitalism, in its current form, is based on a system of scarcity (land, labor, capital). This conception is outdated in an age of endless data, robotics and scientific innovation creating new challenges such as the future of jobs and sustainability. The tools and metrics of this

* Diane Ackerman, *The Human Age—The World Shaped by Us*, 2014 ISBN-13: 978-0393351644

paradigm are not suited for solving our current issues, and our time is running out. As long as the economic model does not account for economic externalities, we are doomed to repeat mistakes, deplete ecosystems, neglect society and not take into account the many effects of our economic system, namely, our commons. Our commons are where "the invisible hand" is indeed invisible.

We must incorporate and endogenize externalities and fundamentally transform systems in order to take into account a fuller picture of the state of the world. The fundamentals must transform as we cannot solve problems by using the same kind of thinking we used when we created them.

4. An Opportunity to Apply New Metrics

We can move towards a more holistic approach that takes into account economic, societal, environmental and consciousness factors (**ESEC**) and replace the current focus on the "maximization of economic values" with a multidimensional framework. Adding the component of Consciousness (ethical values, civil consciousness, consumer consciousness, etc.) to the earlier "triple bottom line" approach is essential. This framework represents an extension and growth of our *values* as opposed to our *monetary system* and will be more suited to take externalities into account.

Our current economy, and thus, conception of reality dictates our values and allows us to ignore the environmental, consciousness and societal factors. It partially stems from our economic metrics that focus on metrics such as GDP and growth. These systems do not account for environmental, social and consciousness factors. Rapid growth and urbanization are expediting the depletion of minerals, wood, water, air and more resources in an exponential way while there is no universal understanding or approach to account for the impact this creates.

Metrics do not merely serve as tools for measuring results. They actually act collectively as compasses or a dashboard, leading us on our way. Using inappropriate metrics leads us in the wrong direction. There is an urgent need to add non-economic dimensions to the dashboard. This is the way we should move from an industrial world to a post-industrial world. This is something that is done to varying degrees in impact investments and responsible investing principles.

A plethora of alternative metrics exist spanning the gamut and alphabet: There are voluntary approaches in the sphere of Corporate Social Responsibility (CSR) that are facilitated by the Global Reporting Initiative (GRI)* and Sustainability Accounting Standards Board (SASB)†, there are scorecards‡ and certifications,§ there are accreditations such as BCorps,¶ and a variety of metrics measuring different aspects of impact such as ESG**

* https://www.globalreporting.org/

† https://www.sasb.org/

‡ https://www.multicapitalscorecard.com/multicapital-scorecard/

§ http://leed.usgbc.org/leed.html

¶ https://bcorporation.net/

** https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp

metrics, Ecological footprints,* Social Value Metrics,† Social Return on Investment (SROI)‡, Principles for Responsible Investment (PRI)§, etc.

Many of the tools and dashboards that facilitate such metrics are employed by organizations that voluntarily care about the impact that they create such as IRIS+ used by the Global Impact Investing Network (GIIN). This means that these metrics are more a matter of morals and principles which, sadly, are not drivers of economic change. Therefore, we do not see a wide adoption of these tools and we do not have consensus around them or their applicability.

There is one set of goals that are widely agreed upon. In 2015, the United Nations created a paradigm shift. All the countries have committed to reach the 17 Sustainable Development Goals (SDGs) by 2030. Trillions of dollars are invested annually in these goals for long term output. These SDGs include the aforementioned ESEC parameters. Since all the countries in the world have adopted the SDGs, this represents a global consensus never before seen.

The annual financing gap of the SDGs is predicted to grow from 2.5 trillion USD by an additional 1.7 trillion due to COVID-19. This figure references developing countries alone and could mean that the SDGs as a whole will not be achieved.¶ We must recognize this bottleneck of financing for sustainable development if we are to address the issues at hand, a concept we have addressed at length in another article.**

In our modern economy, change is fast paced and constant due to digitization, globalization and advancements in technology. The SDGs are very useful because they are long term goals in a world that is changing rapidly. The SDGs are by no means perfect but they can serve as good benchmarks for long-term planning and thinking. They can help us understand what issues are at hand and must be solved while they leave room for future innovations, growth and evolution of our economy.

Considering the consensus around these metrics and their wide adoption, we can use them as a proxy to issues regarding externalities as well. Using the SDGs as a set of goals and metrics can allow us to begin to take into consideration our impact, and begin creating an economy and regulation around these shared goals. This must be propelled by the leaders and heads of states.

For the right leadership to arise we must implement a system that is aligned with the SDGs and based on trust, as it is imperative for the functioning of society and the economy. We can bring about such transformation in a system that works bottom-up, creating demand, and top-down, creating implementation. In an exponential age of change we must think of change as an exponential process as well. As such, change sometimes does not seem to affect us until it is too late to act.

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* https://www.footprintnetwork.org/

† https://socialvalueint.org/

‡ https://www.investopedia.com/ask/answers/070314/what-factors-go-calculating-social-return-investment-sroi.asp#:~:text=Social%20return%20on%20investment%20(SROI)%20is%20a%20method%20for%20measuring,create%20value%20for%20the%20community.

§ https://www.unpri.org/

¶ OECD, Global Outlook on Financing for Sustainable Development 2021, A New Way to Invest for People and Planet.

** Yehuda Kahane, "The New Economy: A Financial Climate for Climate Finance", *Cadmus* Journal 4:2 Part b (June 2020) http://cadmusjournal.org/node/787

5. Transformation

We talk about transformation because our current system is fundamentally unsustainable. It is built on notions that require us to consume and waste under linear modes as opposed to circular models and "Cradle to Cradle" design.* There are many transformative methodologies available for businesses to adopt that allow for more sustainable and often more economic and efficient modes of work. These same principles of transformation of businesses can be translated into a framework at the government level.

> *"Transformation is a phenomenon of consciousness while change is merely a result of that transformation. Transformation catalyzes action, actions lead to change."*

The World Benchmarking Alliance recently proposed seven systems that must transform to achieve the SDGs: De-carbonization and Energy, Food and Agriculture, Urban systems, Social systems, Digital systems, Circular Economy and the Financial System. These transformations are well on their way and countries that do not transform with their global environment will be left behind.

It is crucial that there be a consolidation of tools and standards regarding impact metrics to allow leadership to measure and manage their work. Many impact metrics available today are aligned with the SDGs and need to become common practice to avoid SDG washing and misappropriating funds. Similarly, for cradle to cradle design principles, states can use monitoring and analysis of data, regulations and policy, and education to design their future to be in line with sustainability. This means mapping out industries and society to see where transformations are most crucial.

But in order to put in place such transformations on a state level we must begin with leadership. These changes must happen rapidly, which would require us to work with leaders and decision makers such as ministers and regulators. These ministers and regulators are the ones in charge of the budgets, the laws, the incentives and the regulation, all they must do is align with the SDGs to start creating change. This means that the transformation is not so much of the actual state, but rather of those leading it.

6. Transforming Consciousness

Change is incremental and does not imply changing our original premise. Change simply will not do regarding the challenges we face. Transformation is rapid, it is a fundamental shift of context that redefines what is possible and allows us to look outside of our usual framework.

In the post-COVID world we must transform quickly—looking at the reaction to the pandemic, it is clear that some things work, and some things do not. We are generating a

* Michael Braungart, William McDonough, Cradle to Cradle: Remaking the Way We Make Things EVA, Hamburg, (2002)

conversation around a possibility—the possibility is that maybe there is a phenomenon of transformation, that if distinguished, will accelerate the adoption of the above-mentioned solutions to our challenges.

We must remember that the transformation of nations is a response to transformations happening around them. The inner transformation of a nation is necessary to be able to innovate and respond with resilience to the transformations happening globally. We cannot wait or be content with simple change. We must use transformative methods.

When the understanding of context shifts, that is transformation. Transformation is a phenomenon of consciousness while change is merely a result of that transformation. Transformation catalyzes action, actions lead to change and we must make clear the shift of context that is happening in our world if we wish to see action. When world leaders understand that the world is fundamentally changing around them, they will change their actions accordingly or be left behind.

When we understand that transformation is essentially a shift of the context in which we live, we must merely point out what context that is, we must distinguish it. We suggest that the context in which we live is that of an economic system, one that is not holistic and does not account for all of our needs. Changing the fundamental metrics of that economic system and its impacts will lead to inevitable action.

Countries can aspire to transform their economies to be in line with their values on a global scale. States must take on this responsibility as there is consensus around the SDGs. The SDGs are a useful proxy for externalities as they are agreed upon globally. With the support of international entities and coalitions, we can transform our economies to better serve our values and take into account a more robust system that includes externalities.

7. TransFormNation

Between 2015 and 2020 we went through extensive research and development, conferences, seminars, labs and meetings with leading researchers, scientists, Nobel laureates, opinion leaders and influencers. We knew that 2020 would be an important year due to our forecasts and risk assessments.

We can look at the transformations of countries through the lens of the environment and technology that we live in. As can be seen on our website*, Israel is a great case study for rebooting. Reboot is a term we adopted in 2008, borrowed from the world of large systems. A country can “download” a “new operating system”. The COVID-19 virus, like in a computer, has hurt humanity like never before and stopped the world economy. The reboot we are going through personally, as people, has introduced new rules. We are in a new world.

As with an actual reboot of a computer, there are necessary steps we must follow when “downloading” the SDGs. There are no shortcuts, and whoever is ready for tomorrow is already working on resilience of their system. Rebooting is like a map of scenarios, of parallel actions that are synchronized and work together. The reboot fixes the virus and uploads an

* https://ykcenter.org/

operating system that the country can work with new basic assumptions as a new reality on the ground. Each country must work in its own jurisdiction, which it must keep safe and prepare for future generations.

> *"To create rapid change, we must educate future generations in a long term, "bottom-up" framework to inspire a change in values, while in parallel, we must complement this effort with a more rapid "top-down" framework of working with heads of states and decision-makers."*

At every accelerating meeting with leaders and decision makers we focus on accelerating the connections and partnerships between participants. The audiences change but the results are inevitable when you use the right technology to accelerate breakthrough thinking in working groups. Today, as opposed to the old world, that stopped in 2020. We can brief, prepare, teach and create the low costs using new communication technologies. Global transformation in the second half of 2021 is a global market that is estimated by Forbes as a billion dollar market. This is the self-education market which will accelerate transformation in the world. New virtual conferences can happen around the world with hundreds of thousands of participants globally—virtually connected and socially distanced.

This can be done in 3 steps. We met to accelerate and create a model for implementing SDGs. We did this as part of the UNDP and with friends in Armenia whom we have trained and led in workshops. The next steps are a series of steps in a chain of synchronization steps, connected and meant to enroll organizations, countries and people.

The most critical thing is creating the right financial climate and creating the perfect storm for transformative processes. The next step is finding the leaders and training and preparing the steering group, an SDG cabinet. Then we create a financial climate that is required for implementing the goals and is necessary as the first step to any program of implementation and transformation towards the global goals and moving them into local goals. This is what we are interested in. This is where the vision becomes clear and reality changes according to the goals.

8. Our Methodology

In order to bring about transformation, we have developed a unique methodology called "Game-Changing Labs". These labs are based on conversations, research and development with leaders from around the world. Our unique model utilizes "Accelerating Circles", which allow the participants' transition from individual genius into collective wisdom, what we call a transformation from "Me to We". This transformation enables group impact and alignment. We have used this methodology in the public and private sectors with success and we believe that moving it to the state level can bring outstanding results.

Adding to the existing intelligence and expertise in every country, alongside international support, labs can be tailored to the needs of the group.

9. Design Principles

The labs are a practical program based on ESEC values. The program allows independent thinking that is outside of the regular faculties and departments of universities. This is the **only way** to move from an industrial world to a post-industrial world.

The design principles are inspired by the computer industry. If there is a problem that cannot be fixed by other means, the best way to deal with it is to **reboot** the system and change the drive. In this way, previously gridlocked problems are solved, and the system can run again.

Breaking Silos – Re:View/Re:Think/Re:Learn: Utilization of models which enable the transition to a new economic universe—purposeful, fair and participatory. Moving from individual genius to collective wisdom/insight, moving from "Me to We".

National Stakeholder Alignment – Re:Create/Re:Invent/Re:Design: Introducing the New World & New Economy. The 4D ecosystem, The Game-Changers Model and alignment needed with the SDGs. We map and create "A Financial Climate for Climate Finance" and other important issues in the country.

National SDG Roadmap – Re:Set/Re:Start/Re:New/Re:Act: Here we focus on the country's impact and purposeful group alignment. We convene into groups according to the 4 dimensions that need to be addressed in the country: Economic, Societal, Environmental, and Consciousness. Thus, we map the needed step to close the gaps on the SDGs according to national priorities.

We implement this TransFormNation framework in a series of events that allow us to transform leadership and affect action both from the top-down and the bottom-up. The main outcome is a unified team that can work collectively. The time allotted for the different steps can change from group to group according to the assessed needs. The key success factor of TransFormNation is the scale and size of groups working together in aligned action to fulfil the SDGs of said nations.

10. Concluding Remarks

Humanity grew exponentially for millennia leading up to the post-industrial revolution. The first revolutions took a long time to come about, but the time between revolutions became shorter and shorter. Each revolution brought growth and with it more and more damage to the environment. This pattern should make clear that we must act with **urgency** as our time grows shorter.

Capitalism may have been responsible for much of this growth; however, it is ill-suited to grow our society any further. It is time for a new economic model. Considering that the Anthropocene is an age in which we are affecting our environment like never before, we have little time left in this state of emergency and we must act swiftly.

To create rapid change, we must educate future generations in a long term, "bottom-up" framework to inspire a change in values, while in parallel, we must complement this effort with a more rapid "top-down" framework of working with heads of states and decision-makers. These efforts must work together to instill long-term, rapid change.

Using the SDGs as a compass and as an approximation of externalities, we can make use of this unprecedented consensus to implement a transformation in our educational system, our economic system and our society at large. This is an opportunity to transform humanity and move on to the next stage in our evolution in a sustainable way.

Annex 1 – Change of an Era

Human society arose around two hundred thousand years ago. Homo sapiens excelled in the development of the frontal lobe of the brain. This part of the brain is responsible for speaking, communication and future planning. Due to these skills, humans developed tools, reading and writing, cultural values, etc.

"The digital revolution has changed the very basis of the capitalist economy which is an economy based on scarcity."

The human species grew at more or less an exponential rate. That means that over a long time the relative size of the human population was not so impressive. As soon as the process of exponential growth comes to its maturity the absolute level becomes quite alarming. Over 200,000 years of evolution, humans moved from being hunter-gatherers, through the stone-age, the agricultural revolution, the middle-ages and a renaissance, all at a slow pace. Change happened sporadically as fire, tools, the wheel, weapons, ceramics, domesticated plants and animals, writing, ornaments, metals, glass, paper, gun powder, religion all slowly appeared. These discoveries were in "slow motion" and, therefore a grandfather and his grandson lived roughly the same way.

In the year 10,000 BC there were only 4 million people in the world! At the year 0 the global number of people was between 170-190 million. By 1800 it had grown to reach the 1 billion mark, in 1900 there were 1.6 billion, and by 1960 it was 3 billion![*] In 200 years the industrial revolution created much more population to feed while the population demanded more per capita. Vast transformations and technology were integrated into society. The steam engine, electricity, trains, the telegraph, automobiles, photography, film, radio, typewriters, military equipment, ice boxes, and then electric refrigerators, flight, and the atomic bomb all changed our society profoundly.

Beyond these technological breakthroughs, the most dramatic of breakthroughs is the digital revolution. The digital revolution has changed the very basis of the capitalist economy

* Colin McEvedy and Richard Jones, 1978, Atlas of World Population History, Facts on File, New York, ISBN 0-7139-1031-3. OurWorldData.org CC-BY-SA author Max Roser.

which is an economy based on scarcity. We live in an age of endless information, data and accessibility. Our economy allows us to have more, pay less, and have access to it all the time.

This digital age has changed our level of consumption and standard of living dramatically. The level of consumption per capita has increased in the last 60-70 years and we find ourselves in **a post industrial and scientific society** with unimagined means of communication, computers, plastics, biomaterials, genomes, drowns, artificial intelligence, and space-age breakthroughs.

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Hedging Planetary Risks:
'From Weapons of Mass Destruction to Tools of Massive Social and Ecological Innovation'

A first systematization of new financial engineering that can hedge unchecked risks, enable unmet needs and finance our future.

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Abstract

Cost analyses and risk assessments in the Anthropocene era need to differ from those of the past. Future developments now are determined by opportunity costs and planetary risks. We provide a first comprehensive systematization that can serve as a template for blended finance and blended securitization in order to finance our global commons. We show that financing our future requires multiple new financial engineering techniques that build upon the experiences of the private sector, but need to be adapted to meet the criteria of force majeure and planetary risks.

1. Introduction

It is already five past twelve. We could have had it cheaper. But now, the risks associated with our wealth standards are rising every month as we hesitate and wait. This is because we are now living in the Anthropocene era,[1] meaning we are living in a world where everything is connected with everything and where we have to operate within planetary boundaries. And this is changing almost everything—the way we conduct business and educate our children, the way we do politics, build houses and feed ourselves, the way we organise our

transport system, our power grid and our monetary system, and our impact on ecosystems. In consequence, this also fundamentally changes the way we need to evaluate and hedge the risks associated with all these projects. And this requires new and adjusted risk assessments and new financial engineering to shift from a high-carbon, high-efficiency monoculture-based society to a low-carbon, highly resilient and highly biodiverse society.[2]

Yet financing our future is a wicked problem. The public sector is over-indebted. Over 15 trillion USD in state bonds are providing negative yields, more than 40% of corporate bonds are issued with negative interest rates (2020), private cash deposits of over 12 trillion USD remain unproductive, and institutional investors are sitting on a carbon bubble exceeding 40 trillion USD, forcing them to write off substantial parts of their assets.

In this context, the UN Sustainable Development Goals (SDGs) can be considered the largest preventive program humans have ever engaged in. This program involves unfulfilled planetary opportunities (jobs, education, wellbeing and welfare) and unchecked risks (rising sea levels, loss of biodiversity, hurricanes, forced migration, unemployment). If we leave these opportunities unfulfilled, we create tremendous so-called opportunity costs: costs that arise from projects we failed to implement. And refusing to put a price tag on the risks associated with all these opportunities and leaving them unchecked does not mean they will disappear. Instead, the bill will have to be covered by the next generation, the Global South, the taxpayer or nature in general. In any case, it will be expensive.

Currently, our opportunities and risks are driven by finance. If no money is available, opportunities such as new jobs, technological innovation, health care for all, infrastructure programs and education are simply not met. The same is true for risk assessment. If there is no money available, corporates will not invest in an unsafe environment and will reduce their commitment to searching for new drugs for cancer or infectious diseases, and governmental bodies will avoid setting up the right policy for infrastructure programs.[3] So, while finance currently drives opportunities and risks, it should actually be the other way round: unfulfilled opportunities and unchecked risks should drive finance to explore the most ambitious, elaborate, innovative and advanced financial engineering possible to satisfy both opportunities and risks at the same time.

In fact, any transformation is associated with risks. Risks have a price, and that price is best generated within a free and rule-based market. The agents of the financial sector have a lot of experience and data to hedge short-term risk in the range of 3-6 months, but little expertise and data in managing, foreseeing and pricing in long-term risks, especially those associated with the so-called 'triple crisis', which includes climate change, pandemics and the loss of biodiversity.*

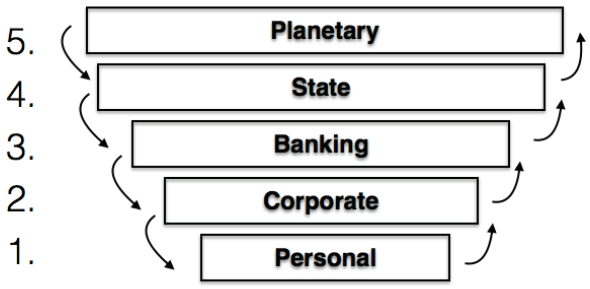
* In the Anthropocene era, accounting and project financing need to follow a different calculation. Traditionally, we have isolated and externalized risks and then referred to historical costs, sunk costs, future costs, replacement costs, direct and indirect costs, fixed and variable costs, marginal costs and so forth. However, the major costs in the Anthropocene era are so-called opportunity costs: the cost of choosing one and not another alternative. All other traditional forms of costs are subordinate. *Opportunity costs here reflect the unfulfilled needs and unchecked risks of projects we have not realized because we decided to put our money somewhere else*. This is particularly relevant because these costs do not disappear, but feed back onto our balance sheets as additional indirect, variable costs or the like. This means that opportunity costs are not only theoretical or hypothetical costs, but real costs. For example: we pay the price for clean water twice (once at the tap and once with our taxes, cleaning polluted water). We should therefore call these costs opportunity costs 2.0.

2. We like Rewards but not the Risks

A risk is a potential adverse event that disrupts our daily routine. It is a potential loss associated with doing or not doing something. Despite the fact that there is no zero-risk world and all risks are intertwined, from a financial perspective, we should differentiate between five categories of risk: 1) private householder (e.g.: housing insurance in a flood zone or health insurance); 2) corporates (project risk exposure, credit risk); 3) banking (credit default); 4) systemic (state deficit, collateral damage risks); 5) planetary (e.g.: global warming, losses in biodiversity and species and force majeure). Such a risk pyramid (see below) allows us to further differentiate between private and public risks, which are expressed in different legal codes. Whereas private assets and their associated risks (1-3) should be managed under private law, public assets and their associated risks (4-5) should be run under a public law regime. This entails completely different forms of financial securitization, depending on whether we are dealing with a private asset or a common good.*

Such *planetary risks* themselves are manifold by their very nature: they (a) affect everybody (b) affect in an asymmetric way, (c) cannot be covered by privates, corporates, commercial banks and single states only, (d) are interlinked with other subordinated risks (1-4), (e) have a non-linear, fat-tail component, (f) manifest as force majeure (earthquakes, war) short-term and as a triple crisis (global warming, loss of biodiversity and pandemics) long-term, and (g) finally, come on top of all the well-known general risks that each society has to bear (unemployment, health crises, bankruptcy or failed states). In short, the bill for the transition to a sustainable way of living that achieves the SDGs is substantially higher than anything we have calculated for in the past. If the financial instruments for coping with planetary risks remain unchecked, unstructured or unregulated, they turn into *weapons of mass destruction* (W. Buffett). But if they are structured in the right way, they turn into *tools of massive social and environmental innovation, realizing unfulfilled opportunities.* In short, they can magnify the losses or the wins, depending on how they are structured.

Graph 1: The Risk Pyramid: From Personal to Planetary and Back



* We should be aware that in a fully interconnected world, we cannot simply hedge risks, by handing over the hot potato from one private agent to another, we need a public body that ensures some sort of a precautionary principle. see Pistor. K. (2019). The Code of Capital - *How the Law Creates Wealth and Inequality*. Princeton: Princeton University Press.

3. A Two-tier Approach. Financialization and Securitization

From a financial perspective, the shift from a high-carbon, low-biodiversity and quite monopolized economy towards a low-carbon, high-diversity and more decentralized economy requires a two-tier approach. *First,* we have to identify the source and the primary financial body, both referred to as *financialization*. The source includes private, profit, non-profit and public resources. The assets that allow us to finance the projects mainly include private equity funds, bonds (loans), facilities, unstructured credit lines, grants and direct cash transfer systems. Both—the source and the primary body—represent what is called *blended financing*.

Second, besides financialization, we need additional financial assets that cover the risks associated with the projects involved, called s*ecuritization*.[4] As no project is risk free, different forms of securitization are crucial to getting the initial projects off the ground. The options for securitization are threefold themselves. *First*, we can reject any form of securitization. In the case of a default, the agent will go bankrupt and/or it will generate massive social and environmental externalities, which will have to be paid for by a third party. The *second* option is public or state guarantees, which build up confidence in immature markets, accelerate implementation and safeguard the program's credibility.* In this case, the state acts as an insurer and has to price in risks and charge for its compensation. Such PPPs (private-public partnerships) involve either catastrophic scenarios (Cat) such as droughts, flooding, and hunger epidemics; infrastructure projects (Infra), such as public sewage, the water supply, energy grid, and investment into the healthcare or educational systems; or public involvement in corporate activities (Cor) in adverse, immature or volatile environments. Such PPPs entail three additional specifications: (1) forms of *performance contracting*, which clarify ownership and specific management activities (delivery, building, managing); (2) *risk-hedging instruments*, which include asset-backed securities (ABS), credit default obligations (CDO) and swaps following pre-agreed key indicators (see below); (3) *defined equity shares* of private-sector involvement. Besides these state guarantees, as a *third* securitization option we can identify so-called private special purpose vehicles (SPV), which make it possible to isolate and trade these risks separately.† They could be used by private or public entities, but remain bankable and tradable. SPVs involve backed securities, different forms of specific derivatives, credit default obligations (CDO) and a small number of more specific swaps. In particular, they mobilise and channel private capital, increase market efficiency and allow price discovery and transparency to hedge these risks. Most such financial engineering is standardized to allow for cross-sectional comparison, or consists of customized over-the-counter (OTC) products that make it possible to provide individual solutions for market participants. In either case, they represent market-based solutions to better hedge risks and enable opportunities. These differentiations are key in order to address the different nature of

* Most such state guarantee programs follow the rationale of reducing the cost of capital for the private sector to address wider market instability, create new sources of funding, leverage additional finance, and finally get the asset built and the program done without managing or paying for it (!). In this sense, most state guarantee programs run as PPP (private-public partnerships) that transcend the given standard risk allocation, making projects bankable, creditworthy and tradable that otherwise would not be; see www.epec.org.

† Derivatives in Sustainable Finance, Centre for European Policy Studies (CEPS) and the European Capital Markets Institute (ECMI): https://www.isda.org/a/KOmTE/Derivatives-in-Sustainable-Finance.pdf.

risks, depending on whether they are public or private. All these instruments together are called *blended securitization*. We claim that it is particularly important to consider market-oriented financial assets, as it is often cheaper and more accurate to isolate and hedge risks through these assets than to finance these risks through taxpayers' money in public debt schemes.[5]

> *"A special-purpose parallel digital currency run through distributive ledger technology (DLT), accepted as legal tender to pay taxes and wages, convertible into traditional currency, and issued by central banks (CBDCs) or regulated private agents (cryptocurrencies) could meet the requirements and complexities of the Anthropocene Era."*

Despite the great variety and complexity of financial engineering, all these financial instruments (financialization and securitization) at the core follow a three-part rationale:

A. they allow better hedging of the risks associated with interest rates, currency, and specific projects in the transition towards better environmental, social and corporate governance (ESG), including covering short-term volatility and allowing long-term funding and perspectives.

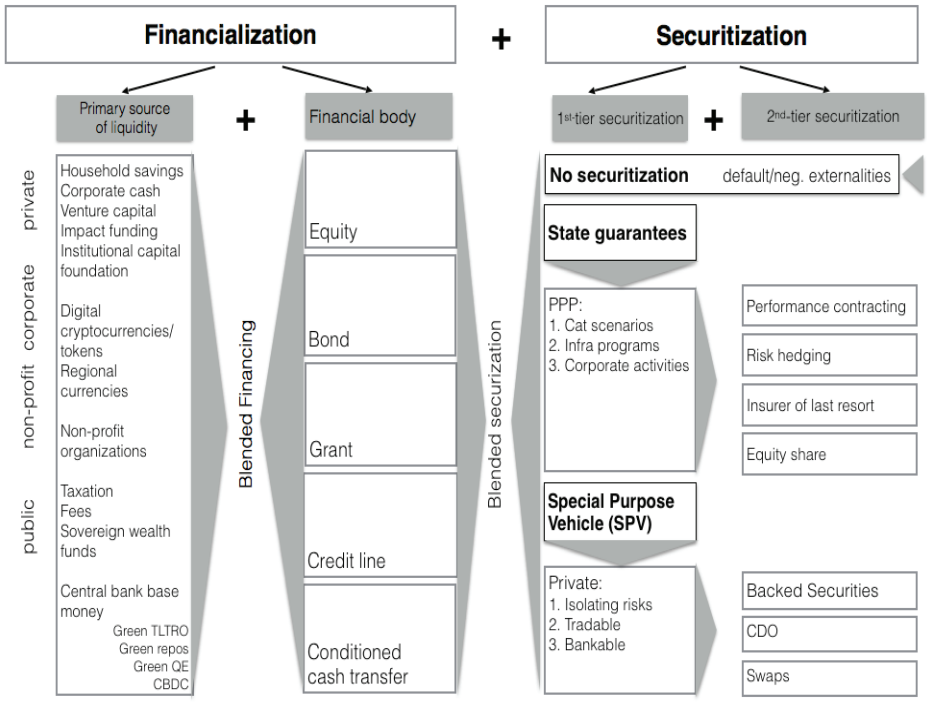
B. They make it possible to manage counterpart payments to compensate for the non-achievement of pre-agreed targets, which results in a net-zero-sum game.

C. They support and clarify legal coding and contracting on which party (private to private or private to public) owns the asset and the liabilities and ultimately carries the risk. And any structured financial asset involves such a two-tier approach: financing the project *and* securitizing the risks of that project.*

Table 1 below provides a first comprehensive systematization—either OTC, customized, standardized or regulated—which can cover most (if not all) financial tools required to finance unmet needs and unchecked risks at the same time. In fact, it provides a general template for financing our commons. We start by using the current financial contracts in operation and adapt them to the requirements of a more complex, interconnected world, where financing our commons becomes key. Taken together, this blended financialization-securitization schema provides a guideline for private and public sector engagement in a multi-tier approach, where we differentiate between the source of finance (*'Where does the money come from?'*), the primary financial body (*'Which asset?'*), and first- and second-tier securitizations (*'Is the project hedged and who is deleveraging it?'*). The following table summarizes this systematization. The associated legend specifies the required instruments in greater detail.

* ISDA (2021), cf. https://www.isda.org/2021/01/11/overview-of-esg-related-derivatives-products-and-transactions/?_zs=eHpp81&_zl=q0i76

Table 1: A Comprehensive Systematization of Structured Financial Products required to Finance our Future



Legend to the table above: further specifications and explanations of the structured financial assets to meet unmet needs and manage unchecked risks.

Table 2: New financial engineering to meet unmet needs and manage unchecked risks.

A. Financialization	1st Tier	2nd Tier	Explanation
	I. Primary source of liquidity		Where does the money come from? Private/corporate profit/non-profit/public sources TO NOTE: Digital currencies/central bank base money could add additional targeted liquidity to the entire financial schema and completely change the risk assessment.[i]
	II. Primary financial body		Each of the five bodies allows for further differentiation into social (S), social impact (SI), transition (T), green (G) or green impact (GI). TO NOTE: The financial assets have specific conditions attached.[ii]

B. Securitization	**1st Tier**	**2nd Tier**	**Explanation**
	I. No securitization		The initial contract does not involve any risk hedging. In the case of a default, there will be social/ecological externalities which have to be covered by a third party and/or the agent has to file for bankruptcy.
	II. State guarantees		Allow specific public-private partnerships (PPP). Three categories (A-C) are feasible, which entail a different risk profile accordingly.
	A. Cat scenarios		Refer to entailed catastrophic risks.[iii]
	B. Infra programs		Refer to infrastructure programs such as health care, education or energy.[iv]
	C. Corporate activity		Refers to private corporate activities in an adverse/insecure environment
		Performance contracting	Refers to public-sector ownership and private-sector management.[v]
		Equity share	Applies to tradable/bankable SPVs (see below) used by public bodies to isolate the risks and cover their expenses.
		Risk hedging	The state covers the entire risk or parts of the risks associated with the project.
	III. Special Purpose Vehicle (SPV)		Refers to tradable and bankable risk instruments to hedge private or public assets.
		A. Backed Securities	Mainly so-called asset-backed securities (ABS) or mortgage-backed securities (MBS).
		B. CDOs	Future losses are hedged following the occurrence of a pre-agreed catastrophic event or social development. Enables the bearer of risks to obtain protection from losses or non-achievement without increasing their debt, transferring the risk to the capital market.[vi]
		C. Swaps	Pre-agreed key indicators (like interest rate, currency volatility, debt ratio, high carbon equity or the abandoning of fossil units (exit)) determine the nominal volume to swap into pre-agreed low carbon projects (reforestation, natural reserve) or providing a way to isolate the risk, making it tradable and bankable. [vii]

i. This includes *green targeted long-term refinancing operations (TLTRO):* conditioned lending for banks, SMEs, private households and public-sector entities to finance green investment and consumption. *Green repurchase agreements (repos)*: green assets are eligible as collateral for borrowing liquidity from central banks. They serve as collateral for financial institutions for short-term refinancing and operate as criteria in case of a haircut. *Green QE:* additional base money is issued for developing banks, which operate as financial intermediaries for conditioned green lending. *Central bank digital currencies (CBDC)*: digital central bank money issued directly or indirectly to finance and hedge projects aiming to ensure our common future (SDGs).

ii. *Social (S) facility:* pre-agreed investment (like affordable basic infrastructure, access to essential services, affordable housing or food security). *Social impact facility (SI):* a government enters into an agreement with an NGO or a non-profit organization, paying for a pre-agreed social outcome. *Transition (T) facility:* allowing the brown, high-carbon economy to transition towards low-carbon manufacturing. *Green (G) facility*: the holder guarantees one of the four following outcomes: climate change mitigation, climate change adaptation, nature resource conservation, biodiversity or pollution prevention. *Green impact (GI) facility*: the holder of the title ensures specific outcomes, like setting up a nature reserve or reforesting an area following pre-agreed key indicators.

iii. Further specifications: a *harvest default facility* (HAD) would allow payments according to pre-agreed key parameters, like days of extreme drought; a *pandemic emergency facility* (PEF) would create liquidity for anybody affected by a virus pandemic, e.g. following lab testing; a *flood and heat facility* (FaH) would trigger additional flow of capital to the insured person/corporate according to a pre-agreed number of days of heat or a sea level rise. A *forced migration facility* (FMF) would operate in the same way. A closer look at HAD reveals that two-thirds of global farming are small enterprises operating for self-sufficiency. Once a drought occurs, HADs come into play. However, it is unnecessary to loan money from the private sector and reimburse the farmers with a risk premium. A supplemental digital currency, operating through a non-profit cooperative banking sector and monitored by the UN, could take over this task with less risk and higher yields for the community. In each case, the bank's balance sheets increase in the first place. In the case of a harvest default, the bank will need to write the event off and decreases its balance sheets in the second place, but millions of farmers are saved from insolvency and can continue their business. In the case of such force majeure, alternative public funding is cheaper than involving the private sector.

iv. Like building a hospital, a power grid, or investing in an R&D program to cure cancer or develop a vaccine against a virus, or applied research to find new drugs to overcome antibiotic resistance. Here, the private and the public sector collaborate in two ways. The public sector provides de-risking in the case of failure and/or provides an advanced commitment strategy (ACS), where a state body guarantees it will buy a certain quantity of drugs in case of success.

v. Including the building, service delivery, maintenance and management of the project, following specific pre-agreed key indicators. For commons, ownership should remain public, management could be provided by a private entity.

vi. In these contracts, pre-agreed key indicators (like rates of unemployment or pre-schooling, number of hurricanes, heat days or precipitation, tons of CO_2 etc.) determine the premium paid and make the asset tradable and bankable. Further specifications allow CDO-S (social), CDO-E (environmental), CDO-D (disaster) and CDO-CaT (cap and trade). To note: the market for securitization is about 100 times larger than the conventional insurance industry, providing a huge amount of liquidity to hedge these risks.

vii. Mainly IRS (interest rate swaps) and CCS (cross-currency swaps) to lower the risk associated with interest and currency volatility, like hedging micro-finance loans in local currencies. In addition, there should be a DNS (debt-to-nature swap), an ES (equity swap) and so-called EES (ex-equity swaps), where a traditional loan or equity comes with the condition that it be converted into a more sustainable asset, including ending and exiting the initial business activity (ex-swap).

"The power of structured financial engineering is that, if done the right way, it converts these weapons of mass destruction into tools of massive (social and environmental) innovation."

4. Emerging from Emergency: We need to think differently

In fact, we can use (most of) the financial engineering instruments already in use as tools for wise inventions to create wealth and prevent them from becoming weapons of mass destruction. If we apply the risk pyramid above, the increase of risk categories 4 and 5 would require additional liquidity to be made available. Central bank base money (CBDC, green QE) as public-sector involvement or private digital currencies or tokens would meet this risk gap.*

To be more specific: we can build upon these refined financial assets and experiences above, but augment and adjust them to the requirements of the complexity of the Anthropocene era. A special-purpose parallel digital currency run through distributive ledger technology (DLT), accepted as legal tender to pay taxes and wages, convertible into traditional currency, and issued by central banks (CBDCs) or regulated private agents (cryptocurrencies) could meet the requirements and complexities of the Anthropocene Era.". This additional liquidity/

* This is particularly true for planetary risks. Empirically, ESG standardization and hedging will leave the hot spots, where the money is needed most and fastest (low- and middle-income countries), untouched. And the net capital return from these poor regions to the rich regions on this planet exceeds ODA, FDI and remittance payments in total. This will leave the regions with the highest negative impact behind as net donors, which will finally increase the systemic risks for all of us (Brunnhuber 2021).

purchasing power in most cases would operate as an additional financial facility, not as a loan, and allow us to non-disruptively hedge/fund/transition our society towards a more sustainable future, where welfare losses are minimized, wellbeing is maximized and moral hazard is reduced.*

> *"The financial and monetary policy should reflect and mirror the requirements of the real economy. Finance has a service function, not a purpose of its own."*

From this differential risk assessment perspective, it is irrational, costly and inefficient to use only taxpayers' money or private debt obligations to finance risk-adjusted projects which are exposed to planetary risks (force majeure or triple crisis).[6] This would either lead to a private gambling or best educated guess scenario, where the private sector simply bets on the future, which creates a zero-sum game. Or it would lead to unlimited public debts to the private sector, restricting current and future generations in their political choices. Clearly, there are better options.

Applying the entire spectrum of financial engineering as explained in this text would finally create a no-regret approach to tackle the planetary risks mentioned above. In fact, the systematization provides almost unlimited permutations, as most of the financial facilities could be backed up by development banks, funded by central banks, monitored by the UN and enabled through domestic and national agencies. If we are prepared to change our mindset and the underlying narrative about money, unlimited options suddenly are possible.

5. Conclusion

Traditional fiscal and monetary policy favours private assets and capital accumulation through private law. In this legal framework, commons are considered second best. If we want commons to unleash their full potential, we should manage them through public law, not private law, and adapt accordingly.

The power of structured financial engineering is that, if done the right way, it converts these weapons of mass destruction into tools of massive (social and environmental) innovation. If we want a more cyclical economy, higher ESG standards and fewer social and ecological externalities, none of these will happen automatically through pure will or self-commitment, but instead require a legal financial framework to make them possible and cover the associated liabilities. In short, the financial and monetary policy should reflect and mirror the requirements of the real economy. Finance has a service function, not a purpose of

* The debt/GDP ratio shows that most countries are over indebted, unable to finance the projects identified. A double entry book keeping procedure would finally correct and end this endless debate. It is important where the money goes. If it is invested in the right projects (SDGs), the ROI is positive. This can cut down the debt/GDP ratio by more than 50%. See E. Brown, president of the Public Banking Institute; or K. Petrou, who can provide intimate details in *Engine of Inequality: The Fed and the Future of Wealth in America* (2021).

its own. This will lead the way towards a monetary ecosystem that better mirrors the physical ecosystem under pressure and alters the assessment of risk.

Some crises will be inevitable; others might be completely avoidable. In each case, finance can be a significant help in adapting to minimize such planetary risks. Whether we end up with the madness of the mob or the wisdom of the swarm depends on the financial environment we are operating in. In a world where everything is interconnected, the opportunity costs of unmet needs and unchecked risks are higher and cannot be managed by either the private or the public sector alone. In other words, whereas risks can be quantified and hedged, systemic uncertainties cannot; they require a different policy. If we then start identifying planetary risks, fund and hedge them properly, differentiate them from uncertainties and cover them through public bodies respectively, moral hazard will finally turn into unlimited opportunities, beyond chance and necessity. And this is then the moment we have all been waiting for—the moment when these opportunities will drive finance and not the other way around.

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Public versus Private Sector Money Creation:
Society Enhancing Monetary Reform

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Abstract

Nearly all money in the US, UK and many other countries is created by the private sector through lending. Private sector money creation provides many benefits, but also imposes large costs on society. Transitioning to public sector money creation can provide equal or better inflation control, economic prosperity, credit availability and monetary value stability. It also can substantially reduce taxes, deficit spending and national debt, while significantly increasing funds available for essential public investments. High complexity often makes it difficult for citizens to understand monetary systems. Lack of public awareness keeps current systems in place. This paper provides a big picture overview of fiat monetary systems, with the goal of facilitating a transition to public sector money creation. The paper is based on the book Global System Change: A Whole System Approach to Achieving Sustainability and Real Prosperity. The book identifies practical system changes in all areas of society, including money creation. This paper provides several US examples. But the suggested transition to public sector money creation is important and relevant for all countries that allow the private sector to create national fiat currencies.

1. Introduction

Money is one of the most powerful forces in society. It strongly influences people's ability to survive and prosper. In a democracy, citizens, through their agent government, should control the creation, ownership and management of the money supply. But in the US and many other countries, the private sector (banks and other lenders) largely creates, owns and controls it. This degrades society because private sector money creation strongly focuses the money supply on benefiting the private sector instead of all citizens.

Substantial public investments are needed to maximize the long-term wellbeing of society. Essential public investment areas include environmental protection, infrastructure, healthcare, education, retirement security and achieving the UN Sustainable Development Goals (SDGs). Allowing the private sector to create, own and control the money supply greatly reduces the ability to fund crucial public investments.

To illustrate, when the private sector owns the money supply, government often must borrow money from it or encourage the private sector to invest in essential areas. Government borrowing frequently incurs interest charges and increases the national debt. This greatly restricts public investments. The private sector is systemically required to only make

profitable investments. If investing in the long-term wellbeing of society is unprofitable, funds usually are not provided. If citizens, through democratic government, reclaimed their right to create, own and control the money supply, they could provide abundant zero-interest funds for essential public investments.

Private sector money creation has greatly increased taxes in many countries (i.e. by literally trillions of dollars over many years in the US). It also has substantially increased deficit spending and national debts, produced extremely complex, unstable and difficult to manage money supplies, and greatly reduced the amount of money available to rebuild infrastructure, strengthen the social safety net, and invest in other socially beneficial areas.

In the early US, Thomas Jefferson and James Madison strongly opposed Alexander Hamilton's financial plan for the United States. The plan consolidated federal and state Revolutionary War debts and established a largely privately owned national bank (like the privately owned Federal Reserve today). It also allowed banks to create money through lending, and then loan this money to government to fund deficits and government activities.[1]

Alexander Hamilton was one of the most important US Founders. As the first Secretary of the Treasury, he played a central role in establishing the US government after it was defined at the Constitutional Convention. He devoted his life to his country and greatly benefited it. But his preference for aristocracy and distrust of average citizens probably limited his ability to see the risks and costs of private sector money creation.

James Madison called Alexander Hamilton a monarchist.[2] Hamilton thought the British monarchy and aristocracy were the perfect form of government. He advocated emulating them in the US. His proposals largely were not implemented at the Constitutional Convention. But he was able to achieve aristocracy in money creation. Private sector money creation reflects the aristocratic colonial history of the US. It empowers a small group of lenders to create the money supply and strongly control citizens' survival and quality of life.

Money creation and lending are two distinct activities. As discussed below, many US leaders and experts have argued throughout US history that money creation should be a function of government while lending largely is a function of banks. But over 90 percent of the money supply in the US, UK and many other countries is created by the private sector.[3]

Under the current private sector money creation system, banks create money, loan it to government, and citizens pay interest on it. With public sector money creation, government creates money, loans it to banks and citizens earn interest. Money creation can generate substantial revenue. Banks have a right to profit from lending. But in a democracy, the profits from money creation belong to citizens. However, we have given away this wealth generating mechanism to the private sector.

Returning the creation, ownership and control of the money supply to citizens, through public sector money creation, would greatly benefit society. It would substantially reduce income taxes and the national debt, produce a far simpler, more stable and easier to manage money supply, and provide abundant zero-interest funds for socially beneficial purposes, including achieving the SDGs.

Private sector-created money (private money) occurs in many countries. It has existed for all of US history. Government-created money (public money) caused many economic and other problems in the early US, mainly because it was poorly managed. Public money was not seen as a viable option. The US monetary system has evolved through extensive expert input. The system provides many benefits, including inflation control, economic stability, credit availability and stable monetary value. (This is especially important in the US because the US dollar is a primary global reserve currency.)

There are several valid concerns about the use of public money, including the potential loss of some or all of these benefits. Public money is not a panacea. Government will not be able to create unlimited money to fund pet political projects. As with the current system, extensive expert input will be needed to ensure that public money systems provide the same or greater benefits as private money. As discussed below, public money systems are less complex. Therefore, they have strong potential to provide greater inflation control, economic prosperity, credit availability and monetary value stability.

In addition to valid concerns, invalid or deceptive objections to public money will be raised. Banks and other vested interests profit extensively from private sector money creation. They often will resist change. Some academics might hesitate to promote a system that is different than the one they have been teaching for many years. Emotional manipulation might be used to turn citizens against public money without rational consideration. For example, vested interests sometimes imply that public sector money creation would harm the economy or be impossible to implement effectively.

These arguments are irrational and probably based on self-interest or fear. Vested interests often try to protect profitable systems, even if they harm society. Everyone alive today in the US and many other countries has lived their entire lives under private sector money creation. Even experts sometimes feel threatened by new systems.

There is no inherent reason why government cannot create all fiat currency. The vast majority of people probably believe this already is happening. A dollar functions the same whether the public or private sector creates it. From a utility perspective, it does not matter who creates fiat currency. The key issue is management of the monetary system. The idea that this only can be done effectively by the private sector is absurd. For the many reasons discussed in this paper, it is highly likely that a public money system would be easier to manage effectively.

Vested interests also sometimes argue that the monetary system is too complex for average citizens to understand. Therefore, people should trust the experts when they say private money is better. It is true that the current system is extremely complex. Complex aspects include types of money, transfers between the government, central bank and commercial banks, international transfers, financial statements and accounting procedures, velocity of money, open market operations, inflation control, and fiscal versus monetary policy.

But citizens do not need to understand these complex issues. They only need to know the basic differences between public and private sector money creation. The purpose of this

paper is to provide this basic overview, rather than discuss the deep complexity of current monetary systems. Once citizens understand the large benefits of public money, they can direct politicians and monetary experts to work out the complex details.

James Madison was concerned that Hamilton's plan gave banks too much control of the government.[4] He was correct. Making government dependent on private sector funding greatly reduces citizens' ability to control their destiny and wellbeing. It strongly suppresses democracy and republican government. The money supply usually is limited to control inflation and maintain monetary value. In this limited environment, the private sector often is given priority in a private money system. Government's ability to fund essential public investments frequently is constrained. With public sector money creation, citizens control their financial destiny. Essential public investments are given priority.

Government funding mechanisms include taxes, borrowing and money creation. Public sector money creation involves shifting government revenues from borrowing to money creation. It does not necessarily increase the money supply because money creation is being transferred from the private to the public sector.

Vested interests often say that public sector money creation would cause inflation and other economic problems. Zimbabwe, the Weimar Republic and some developing countries frequently are cited as examples. However, *A History of Public Money Creation* shows that several factors contributed to high inflation in these countries. The report gives many examples of successful public sector money creation throughout history. It was used effectively in ancient Rome and China. Over the past 100 years, several countries have facilitated economic growth without causing inflation by using public sector money creation, including the US, UK, Germany, Japan, Canada and New Zealand.[5] Effective use requires checks and balances that minimize political abuse of money creation. Many countries achieve this through independent central banks.

Thomas Jefferson accused Alexander Hamilton of making his financial system intentionally complex so that citizens and politicians would not understand it.[6] Lack of public awareness about the large costs of private money and benefits of public money keep current systems in place. Once citizens understand the many benefits of reclaiming their democratic (and in the US, constitutional) right to create, own, control and profit from their own money supply, they almost certainly will demand a transition to public sector money creation.

This paper summarizes the costs, benefits and operation of public and private sector money creation in ways that average citizens can easily understand. To further enhance clarity, it also summarizes some of the deceptive arguments that vested interests might use to try to keep current systems in place.

The purpose of this paper is not to criticize financial institutions or leaders. They intend to benefit society, and do in many ways. As in all other sectors, flawed economic, political and financial systems often compel good, well-intentioned leaders to take actions that harm society. The problem is systems, not leaders or companies. The purpose of this paper is to illuminate the flaws of current monetary systems and suggest more beneficial alternatives.

2. United States Leaders

Throughout US history, many leaders have opposed private sector creation, ownership and control of the money supply. They argued that this should be a function of republican government. For example, Thomas Jefferson criticized the first 'national' bank of the US because it largely was privately owned and controlled.

In 1803, he said, "[The] Bank of the United States... is one of the most deadly hostilities existing, against the principles and form of our Constitution... I deem no government safe which is under the vassalage of any self-constituted authorities, or any other authority than that of the nation, or its regular functionaries."[7]

In 1896, US presidential candidate William Jennings Bryan said, "we believe that the right to coin and issue money is a function of government… We believe that it is a part of sovereignty, and can no more with safety be delegated to private individuals than we could afford to delegate to private individuals the power to make penal statutes or levy taxes… I stand with Jefferson rather than with [banks], and tell them, as he did, that the issue of money is a function of government, and that the banks ought to go out of the governing business."[8]

In 1941, Congressman Wright Patman, Chairman of the House Committee on Banking and Currency for twelve years, said, "I have never yet had anyone who could, through the use of logic and reason, justify the Federal Government borrowing the use of its own money… It is absolutely wrong for the Government to issue interest-bearing obligations… Now, take the Panama Canal bonds. They amounted to… $49 million… By the time they are paid, the Government will have paid $75 million in interest on bonds of less than $50 million. So the Government is paying out $125 million to obtain the use of $49 million… The question is: Should that policy be continued? … I believe the system should be changed. The Constitution of the United States does not give the banks the power to create money…"

"I believe the time will come when people will demand that this be changed. I believe the time will come in this country when they will actually blame you, me and everyone else connected with this Congress for sitting idly by and permitting such an idiotic system to continue… I have talked to the Secretary of the Treasury and members of the Federal Reserve Board… They know this can be done easily and conveniently, and it will save money; but their one reply is, "It will have a bad psychological effect." Well, I do not think it would have a bad psychological effect to save the people 50 percent of their national debt. I do not think it would have a bad psychological effect to save the people over a billion dollars a year in interest… It certainly would have a bad effect on the people who are collecting interest on the Government's money."[9]

Nobel Prize-winning economist Milton Friedman said, "I share [the view] that the creation of fiat currency should be a government monopoly." In 1985, Dr. Friedman wrote, "I have not given up on advocacy of one-hundred percent reserves."[10] (One-hundred percent reserves means prohibiting banks from creating money through lending.)

Many economic, academic and other leaders have tried to raise public awareness about the expensive, undemocratic and harmful nature of private sector money creation. Charging

citizens' interest to use their own money generates large profits for the private sector. As a result, private sector lenders and their political and media allies largely have kept citizens in the dark about this issue. For example, media frequently discusses the importance of reducing the national debt. But conservative and liberal media rarely mention that there would be much lower deficit spending and national debt if citizens reclaimed their right to create, own and control their own money supply.

3. Operation and Transition

This section summarizes the mechanics of private and public sector money creation, as well as the process of transitioning from the former to the latter. Fiat currencies, such as the US dollar, are created by fiat or decree. The money has value only because a trusted entity, such as government, says it does. Fiat currency can be created by the public or private sector. In both cases, government or banks simply declare that new money exists. Government support enables this money to be used as a medium of exchange. The money is not backed by any resource or commodity, such as gold. It does not come from anywhere. It simply is created out of thin air.

3.1. Private Sector Money Creation

Coins and Federal Reserve notes (paper money) are less than 10 percent of the money supply in the US. As noted, the vast majority of money, over 90 percent in the US, UK and many other countries, is created by the private sector through lending. The money is created in electronic form. It appears as deposits in bank and other accounts.

When the complexity of fractional reserve lending and other factors are stripped away, the process of private sector money creation is simple. Banks simply declare that new money exists. An equivalent situation might involve a retailer waving a magic wand and making products appear on their shelves. Products cannot be created out of thin air. But money can because it is not material. It simply is an assertion that new money exists. When people agree that it does, it can be used as a medium of exchange.

Vested interests sometimes argue that banks do not create money out of thin air. They say, for example, that loans create assets and liabilities on bank balance sheets. The monetary system is extremely complex. But if one steps back and looks beyond bank financial statements at the big picture, it becomes clear that banks often do create money out of thin air. To illustrate, money exists. It does not magically appear. Someone creates it. Not every loan creates new money out of thin air. But many effectively do.

Fractional reserve lending is sometimes used to describe how banks create money. But this adds an unnecessary layer of complexity. To illustrate the process, someone might deposit $1,000 into a bank. At a common 10 percent reserve requirement, the bank is required to hold $100, but it can loan out $900. When it does, it often creates $900 of new money out of thin air. When the $900 is deposited in another bank, it must hold $90, but it can loan out $810. Through this process of depositing and relending, the banking system can grow a $1,000 deposit to $10,000 at a 10 percent reserve requirement, thereby creating $9,000 of new money out of thin air.

The confusion arises in the above example because it appears that the bank did not create $900 of new money. It only loaned out part of the $1,000 deposit. But this often is not true. The depositor's account does not say $900 was loaned to another party and is not available. The system still shows $1,000 in the depositor's account. It can be withdrawn at any time. The bank frequently does not loan out $900 of the depositor's money. It often creates $900 of new money out of thin air. Before the loan, the system showed $1,000 in one account. After the loan, it showed that plus $900 in another account. The money supply increased by $900. New money was created through lending.

"Maximizing the long-term wellbeing of society requires that citizens, through democratic government, create and own the money supply."

Creation implies ownership. In the same way that companies own the products they produce, banks effectively own the money they create. This enables them to demand that 'their' money be repaid with interest. But as discussed below, banks should not own national fiat currency. Protecting and maximizing a nation's wellbeing requires that its fiat currency be publicly created and owned. Citizens/governments often do not have the funds needed for essential public investments because they have given away ownership and control of the money supply to the private sector.

Banks create money out of thin air, call it their own, lend it out and collect interest. We literally have given banks a license to create money and keep all the profits from it. As noted, it is a large wealth generating mechanism that We the People have given away to banks.

3.2. Public Sector Money Creation

Public sector money creation involves government creating money out of thin air simply by declaring that new money exists. The Federal Reserve (Fed) sometimes creates money with quantitative easing. But the Fed is not part of the US government. It is comprised of 12 regional banks that are completely owned by private banks. The Fed receives no government funding. Its employees are not government employees. The President appoints the Fed's board of governors and chairman. But once appointed, the government has little ability to influence Fed policies and decisions, short of changing the Federal Reserve Act that established the Fed. The Fed is more influenced by its owner banks than citizens/democratic government. In this sense, Fed-created money is closer to private money than public money.

Public and private sector money creation can coexist. But as discussed below, it would greatly benefit society to implement full public sector money creation. Under this approach, bank reserve requirements would be set at 100 percent. Banks could loan out some owners' equity or time deposits. For example, if a customer bought a certificate of deposit redeemable in one year, the bank could loan the depositor's money out for a year. But banks would not

be allowed to loan out demand deposits (deposits that can be withdrawn at any time), such as those in most checking and savings accounts.

There are several ways to operate a public sector money creation system. One of the most effective is to run it through the current banking system. A robust banking system is needed to provide funds to individuals, businesses and other organizations. One way to operate this system is to provide banks with a borrowing account at the US Treasury (or the Fed if it becomes part of the US government). When a customer seeks a bank loan, the bank could automatically draw on the Treasury account, provided that due diligence and other requirements were met. Treasury accounts would be routinely audited to ensure that banks were complying with government loan covenants.

Banks would borrow from the Treasury at a low interest rate, reloan the money at a higher rate, and profit from the spread. If a bank's treasury account ran low, the Treasury could create money out of thin air and put it in the account, in the same way that banks currently create money out of thin air and put it in customers' accounts.

3.3. Transition to Public Money

Transitioning to public sector money creation involves citizens, through democratic government, taking over the creation, ownership and management of the money supply. In the US, this most likely would involve making the privately-owned Federal Reserve part of the US Treasury. It also would include implementing 100 percent bank reserves. Banks would be required to hold 100 percent of demand deposits. They would be prohibited from creating new money out of thin air through lending.

Money creation would be a function of government, while banks distribute government-created money through lending. Under private sector money creation, money creation and lending are combined into one function. With public sector money creation, they are separated into two distinct functions, as they should be in a democracy.

Requiring banks to hold demand deposits means that money often would be sitting idle in bank accounts, rather than lent out. To provide the credit needed for economic prosperity, government probably would create more money, and make it available through bank loans. This would not necessarily cause inflation. Inflation largely is caused by the amount of money circulating in the economy. The total volume of money might grow. But the amount circulating would remain about the same, and therefore be no more inflationary than a private money system.

Critical money supply issues include, who creates and owns the money supply? Who decides how much money is created? And who decides how public money is used? As discussed throughout this article, maximizing the long-term wellbeing of society requires that citizens, through democratic government, create and own the money supply. They also should control how public money is used.

Checks and balances are needed to control inflation and prevent political abuse of money supply management. To achieve this, a partly independent entity, such as a central bank, might

decide how much money government is allowed to create. However, democracy requires that this entity ultimately be controlled by citizens. The bank-owned US central bank (Federal Reserve) violates this model. The UK central bank (Bank of England) ultimately is democratic. It is owned by the UK government. But government does not control daily operations.

A main goal of public sector money creation is to greatly reduce government borrowing. Creating money, instead of allowing banks to create it and borrowing it, could substantially reduce national debt, deficit spending, public interest expense and taxes. Government would retain the ability to borrow if necessary, for example, if public sector money creation would cause inflation. However, when the private sector no longer is allowed to create money, borrowing from it could reduce money circulating and be recessionary. In these cases, as discussed below, government could use taxation and other tools to limit the money supply and control inflation.

4. Costs and Benefits

Comparing public to private sector money creation, or evaluating any other complex system, usually requires identifying critical system components or issues, and then assessing relative performance on each. Opinions about one approach versus another are irrelevant, unless they are backed up by facts and logic. Key money creation issues include cost, focus, control, stability, public investment, national debt, national independence, economic growth, decentralization, corruption, government lending, state and local money creation, charging interest and the UN Sustainable Development Goals.

4.1. Cost

Government has two basic money creation options—allow banks to create money, borrow it and pay interest or create money itself and pay no interest. Alexander Hamilton, along with banks and large companies, established the Federalist Party. They wanted to profit by creating money and loaning it to government. They were concerned that Thomas Jefferson would pay off the national debt when he was elected President in 1800.[11] This would remove their large revenue generating mechanism.

The Federalists got what they wanted. For all of US history, the government mainly has been allowing banks and other lenders to create money and borrowing it from them, instead of creating money itself. As noted, this has cost taxpayers trillions of dollars. Private sector money creation is one of the largest forms of corporate welfare. It represents a substantial transfer of public wealth to banks and their investors.

To illustrate, interest on the US national debt is about $400 billion per year.[12] Much of this would be unnecessary if government created rather than borrowed money. In addition, by giving away their right to create money to banks, citizens lose about $100 billion per year of interest income.[13] Private sector money creation costs US taxpayers as much as $500 billion per year, nearly half of federal individual income taxes.

The Federal Reserve was established in 1913. In the same year, the Constitution was amended to allow increased income taxes. Citizens' federal income taxes are nearly doubled

because they are paying banks to create the US money supply, rather than creating it themselves for free. In a democracy, the money supply belongs to the people. When citizens allow banks to create money, they are paying interest to use their own money. Public sector money creation is far less expensive than private sector money creation.

> *"The US uses a deceptive 1960s era definition of poverty that actually measures extreme poverty. Using a more honest definition (inability to meet basic needs), nearly half of US citizens are living in poverty. This mainly occurs because private sector money creation and other large forms of corporate welfare unfairly concentrate public wealth at the top of society."*

4.2. Focus

When the private sector creates, owns and controls the money supply, the focus of money mainly is on benefiting banks and other private lender/money creators. Banks face strong systemic pressure to maximize shareholder returns. They often do this by channeling loans and investments into speculative areas, rather than job creation and other areas that benefit the real economy.

The main goal of democratic government, when it is not strongly influenced by vested interests, is to promote the long-term wellbeing of society. When the people control money creation, ownership and management, the money supply is used to equally and fairly benefit all current and future citizens.

Unfortunately, democracy largely does not exist in the US and many other countries. Campaign finance laws and other democracy protections have been greatly weakened in the US. As a result, the US government and both major political parties largely are controlled by wealthy campaign donors. This converts democracy to plutocracy. Under this system, the primary focus of government is to maximize the wealth of those who control government. Plutocracy helps to explain the persistence of private sector money creation. Under true democracy, citizens would take back control of money creation, ownership and management.

4.3. Control

With private sector money creation, it is far more difficult to manage and control the money supply. Currently, thousands of banks and other lenders create money through lending. The Fed tries to control the money supply by controlling the lending of these institutions. It uses several tools to do so, such as open market operations and adjusting reserve requirements and key interest rates.

But the stated goal of the Fed often is in conflict with the systemically mandated focus of banks. The Fed is supposed to manage the money supply in ways that broadly benefit society,

while banks are required to maximize their own financial wellbeing. But as a bank-owned institution, the Fed often faces pressure to put the wellbeing of banks ahead of the wellbeing of society.

In addition, deregulation since the 1980s has increased lending in unregulated markets. This makes it even more difficult for the Fed to control lending/money creation. Trying to control the lending of thousands of regulated and unregulated financial institutions that are focused on something other than social wellbeing is like trying to herd cats.

With public sector money creation, only one entity, that is focused on maximizing social wellbeing, creates money—democratic government. This makes it much easier to control the money supply.

It also makes it easier to channel public money through the banking system into job creation and other beneficial areas. For example, government could charge banks low or even zero interest for loans that benefit society. It also might assume some default risk for highly beneficial loans. Loans for activities that cause large negative environmental or social impacts could be made at higher interest rates. This process holds companies more responsible for negative impacts (i.e. internalizes externalized costs), and thereby makes beneficial activities more competitive.

4.4. Stability

When banks create money (private money), they are not really creating money. They are creating debt. Private money (i.e. debt) is constantly appearing and disappearing as loans are made and repaid. This produces an inherently unstable money supply. Government-created money (public money) would be actual money. It would not disappear when loans were repaid. Instead, banks would return the money to government, where it originated. Through this process, public sector money creation produces a far more stable money supply.

This greatly facilitates economic stabilization. During recessions, banks often restrict lending to build up reserves and protect against growing loan defaults. Reduced lending can exacerbate recessions. Loan restrictions due to limited reserves are much less of a concern under a 100 percent reserve system. Also, the government can increase bank lending to counteract recessions by lowering interest rates and possibly assuming some default risk. Public sector money creation would strongly promote a stable, beneficial economy by providing a far more stable, easier to manage money supply.

4.5. Public Investment

Greatly increased public investment is a major benefit of public sector money creation. This benefit is strongly emphasized by modern monetary theory. As noted, government investments in infrastructure, education, healthcare, retirement security, research and other beneficial areas are severely constrained when they are funded by interest-bearing debt.

For example, interest expense can increase the cost of infrastructure improvements by two to three times. To illustrate, as discussed above, the Panama Canal cost about $50 million.

Then we paid $75 million of interest to borrow the $50 million.[14] If citizens created the money through government, the canal would have cost 60 percent less. Public sector money creation often would enable society to do two to three times more infrastructure work (and create two to three times more jobs) for the same amount of money.

The US is one of the wealthiest nations in the world. But we have nearly the highest poverty rate in the developed world. Forty-three percent of US citizens cannot afford to meet basic needs.[15] The US uses a deceptive 1960s era definition of poverty that actually measures extreme poverty. Using a more honest definition (inability to meet basic needs), nearly half of US citizens are living in poverty. This mainly occurs because private sector money creation and other large forms of corporate welfare unfairly concentrate public wealth at the top of society.

Vested interests often argue that social welfare spending must be reduced to pay down the national debt. This constraint does not exist with public sector money creation. Under this system, government can provide far more money to reduce poverty, rebuild infrastructure and broadly benefit society, without increasing the national debt or causing inflation. As discussed below, it is easier to control inflation with public sector money creation.

4.6. National Debt

Private sector money creation is the primary reason national debt exists. (The US national debt was $27 trillion at the end of 2020.) Citizens have given away their right to create money to the private sector. As a result, when government runs a deficit, banks often create money, loan it to government and citizens pay interest on it. Again, we are paying interest to use our own money. Paying $400 billion per year of interest on the national debt is a main cause of deficit spending. With public sector money creation, we could substantially lower deficit spending, greatly reduce the creation of new government debt, and pay down existing debt.

4.7. National Independence

In addition to borrowing money from the private sector, the US government also borrows from other countries. China holds about $1 trillion of US debt. It is the second largest US creditor behind Japan.[16] As the largest global economy with an attractive currency, the ability of foreign creditors to harm the US, for example by demanding repayment, is limited. However, becoming indebted to other countries can cause economic and other problems, as frequently shown in developing countries. If US citizens created their own money supply, they could greatly reduce foreign borrowing. Not becoming indebted or beholden to foreign governments increases national independence.

4.8. Economic Growth

Private sector money creation strongly drives unsustainable economic growth. Experts have been saying for decades that human survival and prosperity requires switching the focus of society from maximizing economic growth to maximizing the long-term wellbeing of society. Sustainable natural systems seek balance, not growth. It is unintentionally suicidal to seek infinite growth in a finite system.

With private sector money creation, nearly every dollar in circulation is earning interest for banks and other lender/money creators. Existing debt must be paid back with interest. This creates pressure to continuously expand the money supply. Economic growth facilitates this by creating demand for new debt/money. As discussed below, with public sector money creation, interest rates and the need to pay interest would be much lower. This would greatly reduce pressure to continuously and unsustainably grow the money supply and economy.

4.9. Decentralization

Private sector money creation concentrates or centralizes the power of money creation into a relatively small group of banks and other lenders. These private sector entities have little or no accountability to the public. Citizens do not control the creation, ownership and management of their own money supply.

Public sector money creation has centralization and decentralization benefits. It decentralizes the power of money creation, ownership and management out to all citizens, where it belongs in a democracy. At the same time, it centralizes money creation into one democratically controlled entity—government. This takes advantage of economies of scale. As noted, it greatly simplifies the creation, ownership and management of the money supply.

4.10. Corruption

Corruption is a potential problem with government-created money. But the problem is much smaller and more easily managed than it is with private sector money creation. As noted, banks and other lenders/money creators have little to no accountability to citizens. They can do nearly anything they want with the people's money. They often channel this money into speculative areas that degrade society.

With public sector money creation, politicians could give government-created money to cronies through unfair contracts. But this problem already exists under current systems, for example, when politicians direct borrowed money or tax revenues to cronies. Managing corruption is far easier in the public sector than in the private sector. There is much greater transparency and accountability.

In addition, the entire private sector money creation process is inherently corrupt. It involves a corruption of purpose. As discussed, in a democracy, the money supply should be focused on maximizing the long-term wellbeing of society. But private lender/money creators are systemically required to focus on a goal (maximizing shareholder returns) that often is in fundamental conflict with maximizing social wellbeing. They frequently face conflicts between doing what is best for shareholders or society. If they put society ahead of shareholders, they might go out of business. This is a fundamental, systemic corruption of the purpose of the money supply.

To illustrate, in 2009, the US government gave Citigroup a $45 billion bailout and received preferred stock in return. When the preferred shares were converted to common shares with voting rights, some shareholders were concerned that Citigroup would be run with a focus on benefiting society instead of shareholders. To assure shareholders that this

was not the case, the CEO said, "For those people who have a concern about nationalization, this should put those concerns to rest. We're going to run Citi for the shareholders."[17]

> *"Currently, nearly all national fiat currency in the US and many other countries is created by private lenders. This would be ended under a public sector money creation system."*

This is not said as a criticism of the CEO. He simply was doing what he was systemically required to do. This perfectly illustrates why private banks and other lenders should not be creating, owning and managing the money supply. They are structurally incapable of putting the wellbeing of society before all other factors. Activities that must be completely focused on maximizing the long-term wellbeing of society, such as the military, police, taxation, legal system and money creation, should only be managed by citizens through democratic government.

4.11. Government Lending

In a democracy, citizens can and should use the money supply in many ways to benefit individuals and society. Government will create and direct public money into infrastructure and other large-scale endeavors. Public money will be channeled to individuals and organizations primarily through the banking system. However, additional mechanisms could be established. For example, government could provide low or zero interest loans through the Post Office system.

Citizens do not need to charge themselves interest to use their own money. Loans and sometimes grants could be provided through the Post Office and other means for beneficial purposes, such as those related to meeting basic needs and supporting local businesses.

To illustrate, Thomas Jefferson, Benjamin Franklin, John Adams and other US Founders believed that educating young people was essential for maximizing the long-term wellbeing of society. As a result, publicly funded K-12 education has been provided for much of US history. With the growing complexity of society, providing publicly funded higher education also is critical.

Public money should be used to fund public universities and reduce tuition to very low cost or free. Public money grants also should be provided to cover living expenses while young people are in college. Currently, we allow the private sector to create money, loan it to students, and burden them with high debt when they graduate. Instead, we could create the money ourselves, fund higher education, and enable young people to graduate debt-free. This would enable them to better follow their hearts and build successful lives.

Many low and middle-income families cannot afford to send their children to college. Young people often cannot afford to pay back the large debts that were required to get a

college degree. Making it difficult or impossible for many young people to get a higher education severely hobbles our country. With public sector money creation, we can end this degradation and injustice.

"The purpose of money and the money supply is to facilitate a productive, sustainable, fair economy, not earn money for bankers. Money is a medium to facilitate exchange, not a commodity to be traded."

4.12. State and Local Money Creation

Currently, nearly all national fiat currency in the US and many other countries is created by private lenders. This would be ended under a public sector money creation system. However, the creation of national fiat currency does not need to be fully centralized at the federal level. States and possibly regions or cities could create national fiat money, for example, by establishing public banks. Only one state in the US has a public bank. It provides many benefits. The Bank of North Dakota supports community banks, funds state infrastructure projects, provides loans to local businesses, and returns profits to the state.

In addition to raising tax revenues and receiving money from the federal government, states often fund deficits and other activities by borrowing money, for example, by selling municipal bonds. Like the federal government, instead of allowing the private sector to create national fiat money, borrowing it and paying interest, states could create it themselves and pay no interest.

No public or private entity can create unlimited amounts of money. That would make the currency worthless. State and local creation of US dollars or fiat currencies in other countries, if it occurs, would be coordinated at the federal level. Currently, thousands of private institutions in the US and many other countries create their nations' fiat currencies. Concentrating money creation at the federal and possibly state levels would greatly reduce the number of entities creating national fiat money, and thereby greatly simplify management of the money supply.

In addition, public money created at any level of government would be actual money that does not disappear when debts are repaid. As noted, this produces a far more stable money supply and economy than private money (i.e. debt), which is constantly expanding and contracting as loans are made and repaid.

4.13. Charging Interest

For much of human history, charging interest was seen as taking advantage of desperate or vulnerable people who needed money to survive and meet basic needs. As a result, Judaism and Islam restrict or prohibit charging interest. Long ago, Christian churches sometimes

threatened to excommunicate those who charged interest (usurers).[18] In Dante's *Inferno*, usurers were consigned to a lower level of hell than murderers.

Usury laws (interest restrictions) are among the oldest types of economic regulations. By 1886, every US state had some type of usury law.[19] Prior to 1980, 48 states had usury laws that capped interest rates, usually in the eight to twelve percent range.[20] But following deregulation in 1980s, most usury laws were removed or weakened. Now, interest rate caps, if they exist at all, often are in the 35 percent range.

As has been the case throughout human history, charging interest often is not needed. Creating money in the form of interest-bearing debt drives inflation. Paying interest imposes extreme burdens on many individuals and companies. Interest expense represents as much as 30 percent of the cost of products and services.[21] Additional interest often is needed to buy these products and services.

The purpose of money and the money supply is to facilitate a productive, sustainable, fair economy, not earn money for bankers. Money is a medium to facilitate exchange, not a commodity to be traded.

Banks create money for free out of thin air. There often is no cost to this money, other than overhead. When they loan out free money at 30 percent (or even 15 percent) interest, they are taking advantage of people who need money. This once was a criminal act. It still is morally criminal. Citizens should not be paying exorbitant, usurious interest rates to use their own money.

This situation shows the need for whole system solutions to complex, systemic challenges. Bank executives obviously do not intend to harm society or take advantage of customers. But they operate in systems that, not only allow, but often compel this harmful behavior. When businesses and their owners are allowed to make unlimited, anonymous campaign contributions, as occurs in the US, politicians often become the servants of wealthy campaign donors, instead of all citizens as the Constitution requires. In this environment, politicians frequently remove usury laws and other regulations that benefit society, but interfere with ever-increasing shareholder returns.

When regulated entities (businesses) control regulators (government), self-regulation essentially exists. This is equivalent to no regulation. It creates a *Lord of the Flies* type situation where unregulated companies are compelled to severely degrade society.

Global System Change describes the economic and political system flaws that compel companies to degrade the environment and society. It also describes the whole system change processes needed to align the wellbeing of business with the wellbeing of society. In this environment, banks and other companies maximize shareholder returns by maximizing the wellbeing of citizens and society.

Many actions are needed to evolve our economic and political systems into sustainable forms. However, extensive monetary reform can be done under current systems. As discussed

below, transitioning from private to public sector money creation could be done in a timely manner.

The evolution of society sometimes is paradoxical. Charging interest used to be seen as a horrible crime, often equivalent to murder. But slavery was widely accepted. Now we understand the evil, horrible nature of slavery. But we have come to accept a frequently harmful action, as we once accepted slavery. Public sector money creation will greatly benefit society by substantially reducing interest rates and the need to charge interest.

4.14. Sustainable Development Goals

The UN Sustainable Development Goals are one of the most important milestones in the history of the sustainability movement. They establish goals for resolving major environmental, social and economic challenges. As much as $3 trillion of investments are needed per year to achieve the SDGs.[22] Extensive work has been done to encourage the financial community to invest in the SDGs.

This illustrates a major systemic flaw of private sector money creation. Citizens/government often must seek private sector investment to meet societal needs because they gave their right to create money away to banks and other lenders. As a result, the private sector effectively owns the money supply. It largely controls how money is used. It is systemically required to only make profitable investments. If protecting life support systems and meeting basic needs (i.e. enabling humanity to survive and prosper) is not profitable for the financial community, the funds often are not provided.

This is not said as a criticism of the private sector. It simply is doing what it is incentivized to do. Current financial systems essentially say that the private sector should not fund human survival if it is not profitable. Economic and financial systems that put human survival in conflict with the private sector show the unintentionally suicidal nature of our reductionistic systems. This systemic conflict perfectly illustrates why the private sector should not be creating, owning and managing the money supply.

Current systems frequently limit investments in essential areas by putting them through a profitability filter. Human survival and prosperity obviously take priority over private sector investment returns. We should not be putting our survival and other basic needs through these types of filters or screens. Beyond direct private sector investments in the SDGs, government often borrows from the private sector to fund SDG and other public investments. This increases national debt and severely limits the ability to fund survival and other needs.

If citizens took back their right to create, own and manage their own money supply, they could provide much of the funds needed to achieve the SDGs. This would not increase national debt because no money is being borrowed and there is no interest expense. We do not need to earn a financial return on this zero-interest public money. The return on investment is human survival and prosperity. Government will direct public money into the economy through SDG and other societal investments. The private sector frequently will provide SDG and other critical services, and earn a fair return for doing so.

5. Raising Public Awareness

Public sector money creation can outperform private sector money creation on nearly every major comparison point. Private sector money creation outperforms in generating large financial returns for banks and other private lenders. But this should not be the focus or goal of the public money supply.

Switching from private money to public money would greatly benefit society. As noted, lack of public awareness is the primary factor keeping the current system in place. Transitioning to public sector money creation, re-establishing usury laws and lowering interest rates could substantially reduce the revenue of banks and other lenders (as well as greatly reduce taxes, public and private interest expense, and the cost of products and services).

Banks and other lenders often will face strong systemic pressure to oppose public sector money creation and usury laws. Honestly admitting the reason for their opposition (large revenue losses) would not be an effective strategy for blocking the transition. Citizens would have little sympathy for this position. To protect revenues and shareholder returns, private sector lenders frequently will face pressure to mislead the public. Leading economic and monetary experts might be hired to craft compelling, but deceptive arguments about the society-degrading impacts of public sector money creation.

This section discusses some of the deceptive arguments that might be used to protect private sector money creation. It also shows the bias and flawed reasoning behind them. The goal is to help citizens see through the deception that probably will occur when they assert their right to create, own and control the money supply.

As noted, the purpose here is not to criticize banks and their managers. None of them intends to harm society or take advantage of citizens. Their goal is to benefit society, and they do in many ways. But they are between a rock and a hard place. If they do not put shareholder returns before all other factors, bank leaders might lose their jobs or banks might go out of business. The enemy is not these well-intentioned banks and leaders. It is the flawed economic, political and financial systems that compel their harmful behavior.

The purpose here also is not to harm the banking system. It is to protect and strengthen it. Society needs a strong banking system. Currently, the banking system, like many other business sectors, is hurting itself. Flawed systems put banks and other businesses in systemically mandated conflict with society.

As discussed in *Global System Change*, myopic systems unintentionally create a situation where companies are compelled to degrade life support systems and society. They can increase profits by acting more responsibly up to a point. But beyond this point, if they stop harming the environment and society, costs often will go up and they will put themselves out of business. No one intended this. These flawed systems result from failing to look at the big picture (reductionism).

Harming society by unfairly taking public wealth through private sector money creation and usurious interest rates ultimately will end or change the current banking system. Banks

and other companies cannot survive by degrading the environmental and social systems that enable them to exist.

In the same way that individuals are held responsible for murder, assault and robbery, companies must be held fully responsible for the harm they impose on society. Under this system, banks and other businesses maximize profits by fully benefiting and not harming society.

A main goal of this paper is to help transition the current unsustainable, unintentionally harmful banking system to a sustainable one that fully benefits society, and earns fair financial returns for doing so. Helping citizens to understand the following deceptions is essential for achieving this transition.

5.1. Government Competence

Calling government incompetent is a common public deception. Banks and other companies face strong systemic pressure to provide ever-increasing shareholder returns. Privatization (i.e. taking over public services, or in the case of money creation, keeping them) is a common strategy for doing so. Creating the public impression that government is incompetent or inefficient facilitates privatization. But in a democracy, government is the people. It is as good as we demand that it be or as bad as we allow it to be. Vested interest-controlled government often does a poor job of serving average citizens because it is not paid or compelled to serve them. It serves a different master.

However, government has systemic advantages, such as economies of scale and a primary focus on maximizing social wellbeing, that often enable it to provide higher-quality, lower-cost services. The private sector can do many things more efficiently and effectively than government. But money creation is not one of them.

As discussed in the Costs and Benefits section, public sector money creation is far more efficient and less expensive than private sector money creation. In terms of efficiency, one entity creates money versus thousands of banks. Regarding cost, banks create money and citizens pay interest versus citizens create money (through government) and earn interest. The superiority of public money on an efficiency and cost basis is obvious.

Arguing that government is incompetent implies that citizens are incapable of ruling themselves. Instead, they need a small group of bank executives to control their financial destiny. This is the flawed logic of aristocrats and monarchs. The US was established to oppose aristocracy. Even if public sector money creation were less efficient, probably virtually all citizens would accept this in return for greatly reduced taxes, interest expense and cost-of-living. But as noted, public money is much more efficient.

5.2. Politicization

Vested interests often argue that public creation, ownership and management would politicize the money supply, and thereby potentially harm the economy and society. This is a legitimate concern in all areas of government, not just the money supply. There are few

perfect solutions in government, business and broader society. (Among the few, abiding by the laws of nature is the most important. As discussed in *Global System Change*, higher consciousness producing this outcome will completely determine the survival and prosperity of humanity.)

"The capitalism versus socialism deception is misleading. It implies that society could or should do one or the other. But civilized, sustainable society would have a mix of public and private services. It would never do pure socialism or capitalism."

The US Founders studied previous forms of government and developed a new type of republican system. They intentionally structured government in ways that minimize the ability of vested interests to abuse majorities and minorities. Government manages many areas adequately or well, including the military, legal system, taxation and transportation. Administration changes and other political issues sometimes affect important government functions. But the functions continue, and usually perform at least adequately. The idea that money creation is in a separate category from other government functions and cannot be protected from politicization is irrational.

Government already controls public investment, for example, through the use of tax revenues and borrowed funds. Taking over money creation does not significantly increase the already existing political risks. Arguing that money creation should be controlled by the private sector implies that government is the child and the private sector is the parent. The private sector must control the purse strings of government. This is grossly wrong.

Citizens, through their agent government, must decide the priorities of society. The private sector should not be deciding, through creation, ownership and control of the money supply, when public needs will or will not be met. If citizens/government decide that they are willing to risk some inflation to prevent children from going hungry or meet some other critical need, that is their decision to make, not the private sector's. The private sector is structurally required to focus first on the wellbeing of the private sector, not society. If the choice is protecting society or bank profits, citizens and society often will suffer.

Perhaps the most deceptive aspect of the politicization argument is the implication that money creation, ownership and management are necessarily linked. Creation and ownership of the money supply is separate from the management of it. The private sector often implies that they must create and own the money supply to manage it well. For the many reasons discussed in this paper, this simply is not true. Citizens must create and own their own money supply. They should not be paying interest to use their own money or restricting their ability to fund survival and other critical public needs.

An independent board could be established within government to oversee management of the money supply, like existing oversight groups. The board would be completely focused on

maximizing social wellbeing. Board members who put bank profits or any other factor ahead of the long-term wellbeing of society would face civil and criminal penalties.

Also, the board probably would not have complete autonomy to manage the money supply, because several aspects of government influence it. The board might serve mainly in an advisory role. To illustrate, if government decided that substantial public investments were needed in critical areas, the money might be created and different government tools (aside from restricting money creation) could be used to control inflation and other monetary factors. For example, government could tax pollution and other harmful activities to reduce the volume of money circulating.

Politicization implies mismanagement. But mismanagement is not exclusive to the public sector. The entire process of private sector money creation is mismanaged from a social wellbeing perspective. For example, the goal of nearly every dollar in circulation is to generate income for the private sector entity that created it. But as discussed below, this should not be the goal or focus of a nation's fiat currency.

Politicization risk must be balanced against the large benefits of public sector money creation. The risk can be managed effectively, as it is in other government areas. The risk of politicization does not come close to outweighing substantially reduced taxes and national debt, increased public investment and other large benefits of public sector money creation.

The US Founders established checks and balances to prevent essential government functions from being whipsawed by fluctuating public opinions and emotional manipulation of citizens by vested interests. The solution to politicization risk is not to end republican government by removing the people's ability to control essential government activities. Long-term and/or supermajority oversight structures can be established that limit the influence of administration changes, but ultimately are controlled by citizens.

These types of structures are essential in several areas beyond management of the money supply. For example, environmental protection is the most important issue in society. Without environmental life support systems that are clean and stable enough to support human life, we are dead and all other issues are irrelevant. Environmental protection should not rise or fall depending on which political party or administration is in office.

The environment is the foundation of society and life. It is by far the most important aspect of national security. Focusing on insulating money supply management from political influences while leaving environmental protection vulnerable to them is literally suicidal. Long-term, quasi-independent oversight structures can be established in government that insulate environmental protection, money supply management and other critical government functions from political influence, while retaining ultimate control by citizens.

5.3. Public Money and Socialism

Calling government action socialism is one of the most common vested interest strategies for protecting shareholder returns. Citizens are emotionally manipulated into blindly supporting a philosophy or political view instead of thinking rationally. The capitalism

versus socialism deception is misleading. It implies that society could or should do one or the other. But civilized, sustainable society would have a mix of public and private services. It would never do pure socialism or capitalism. Philosophies and blind faith views interfere with rational, objective assessment.

The goal of society should be to maximize long-term wellbeing, not abide by a philosophy. In each situation, citizens and leaders should rationally consider options for achieving a goal, and then select the ones that objectively provide the greatest benefits for the least cost. Allowing a philosophy to inhibit this objective analysis degrades society.

Healthcare provides a perfect example of how the socialism deception misleads citizens into paying more money for lower quality services. The US pays far more than any other developed country for healthcare, usually two to three times more. Every other developed country provides healthcare to all citizens through government-managed or government-owned healthcare systems. But the US leaves millions of citizens uninsured or underinsured. The US also has mediocre healthcare outcomes.[23]

The private, for-profit US healthcare system is by far the most expensive, has by far the worst coverage and frequently produces inferior results. Every other developed country proves that the public sector can provide lower cost, higher coverage and frequently superior results in the healthcare area. When citizens oppose public healthcare because they think it is socialism, they essentially are saying that they are willing to pay much more money for much lower quality service to support their philosophical or political views. This is not rational.

The contrast is even starker between public and private sector money creation. Ending this large form of corporate welfare will greatly benefit society. Allowing the socialism deception to block public sector money creation will cause citizens to pay higher taxes, interest and prices.

5.4. Private National Bank

This is an oxymoron. A private bank is not national. National implies being completely focused on the wellbeing of the nation. This might be the stated or intended focus of the Federal Reserve. But the bank is structured in a way that often makes it difficult to achieve this objective. As noted, the Fed is completely owned and strongly controlled by private banks. Through campaign finance, lobbying and other influence strategies, banks can encourage the President and Senators to appoint Fed board members who serve their interests, in large part by perpetuating the private sector's ability to create and own the money supply.

When banks are regulated by an entity that they own and strongly control, they essentially are regulating themselves. Again, this is equivalent to no regulation. The focus of the Fed on benefiting banks instead of society is shown in many ways. For example, as a privately owned institution, the Fed does not have to disclose its activities to citizens. Obligations of the Fed sometimes become obligations of the US Treasury (i.e. taxpayers).

During the 2008 crisis, up to $12 trillion was spent to bail out banks and other investors in derivatives and other high-risk areas. Much of this bailout money came from the Fed.[24] In effect, the banks, through the entity they own and control, used taxpayer money to bail

themselves out without taxpayer permission or even telling taxpayers how their money was being used to bail out wealthy speculators. These clearly are not the actions of a publicly controlled institution that is completely focused on maximizing the wellbeing of society.

Interstate or nationwide banks were prohibited in the US before deregulation in the 1980s and 1990s. Increasing the size of banks increased the need to bail them out because failure could greatly harm the economy. Larger banks had become too-big-to-fail. Deregulation enabled banks and other institutions to invest in high-risk areas. If things went well, they made very large returns. If they did not, taxpayers often were compelled to cover the downside through bailouts, limited liability and other mechanisms. This is capitalism on the upside and socialism on the downside (because taxpayers were compelled to act as business owners by covering losses).

Covering speculative losses rewards harmful behavior and incentivizes more of it. Banks sometimes were allowed to use taxpayer bailout funds to buy other banks.[25] As a result, some of the too-big-to-fail banks are even larger now. This creates the potential need for even larger taxpayer bailouts. Harmful activities have been made legal. The current concentrated, less regulated financial system unfairly concentrates public wealth and makes many citizens unable to meet basic needs.

In the 1970s, the US was the world's largest creditor, importer of raw materials and exporter of manufactured goods. We also had the largest middle class. Following deregulation beginning in the 1980s, we are the world's largest debtor, exporter of raw materials and importer of manufactured goods, with a severely degraded middle class.[26] Increased business control of government and resulting deregulation caused nearly all economic benefits over the past 40 years to flow to the top of society. Today's young people are the first generation in US history that will be worse off financially than their parents.[27] Private sector money creation is the main factor enabling this unfair concentration of public wealth.

During the 2008 global economic crisis, Iceland and some other countries protected average citizens and held banks and others who caused the crisis responsible. But the business-controlled US government and Fed instead protected speculators and did little to help their victims (low and middle-income citizens).

The unexpected and overwhelming economic impact of COVID-19 initially compelled Republican and Democratic politicians in the US to work together to help average citizens. The initial bipartisan COVID-19 stimulus strategy was highly successful at preventing economic disaster. But as the shock wore off, partisan government reverted to its usual strategy of protecting wealthy campaign donors and letting average citizens suffer.

When the Fed creates money with quantitative easing, much of this new money goes directly to their owner banks. The Fed allows banks to create money for free and then frequently loan this zero-cost money to average citizens at over 30 percent interest. In many ways, the Fed is more of a bank protector than regulator. It is not a public institution. The Fed will not be a national bank until it is made part of the US government and controlled by the only legitimate leaders of society—citizens.

5.5. Private National Currency

This also is an oxymoron. The primary focus of private money usually is to benefit the private sector institutions that create and own it. But the complete focus of a country's national fiat currency, such as the US dollar, should be to benefit society. Fiat national currency is inherently public. In the same way that private organizations could not effectively create and enforce laws, they also cannot effectively create, own and manage the national money supply.

Private organizations could create crypto-currencies and other types of alternative currencies. However, citizens might restrict forms of private money that concentrate benefits among money creators, rather than fairly distribute them to all users. Some types of beneficial private money could exist. But many national economies operate almost completely on fiat currency (excluding barter and unpaid work). As a result, maximizing the wellbeing of society requires that national fiat currencies be publicly created, owned and managed.

5.6. Public Money and Inflation

Vested interests might attempt to mislead citizens into believing that public sector money creation would cause inflation. The vast majority of people probably do not understand how money is created. They might think that government creating large amounts of money out of thin air inevitably would cause inflation. They probably do not realize that large amounts of money already are being created out of thin air. The key issue is who is creating money, the public or private sector? As discussed, the private sector creates nearly all money in the US and many other countries.

Economic and monetary experts at the Fed use various tools to manage the money supply and control inflation. It would be far easier to control inflation, deflation and other monetary factors with public sector money creation. As noted, one public entity that creates money and is focused on maximizing social wellbeing is far more efficient than thousands of private money creators that are focused on a conflicting goal. Even combined federal, state and limited local money creation would be easier to manage than thousands of private lender/money creators.

Vested interests often imply that public money will cause inflation because it sometimes appeared to do so in the past. This is deceptive because it ignores successful examples of public money and implies that government-created money was the sole cause of inflation. But *A History of Public Money Creation* shows that this often is not true. In essentially all cases, several factors combined to cause higher inflation. For example, in Zimbabwe and the Weimar Republic (Germany), economic collapse preceded and drove high inflation.[28]

As with any public or private function, success requires effective management. Effective money supply management frequently involves not increasing the supply of money faster than the supply of goods and services. In other words, if money supply growth matches growth in demand for products and services, inflation generally will not occur. Under public sector money creation, a quasi-independent entity (ultimately owned and controlled by citizens) often would decide how much money government is allowed to create. A primary

responsibility of this entity would be to match money supply growth to product/service demand growth.

Vested interests might say that banks create money through lending, but the money regularly disappears through loan repayment. This provides an inherent balance to the money supply. Government-created money, on the other hand, does not disappear when loans are repaid. This could provide an ever-expanding, and therefore inflationary money supply. But this is deceptive. Money used to repay bank loans would be returned to government. It could be kept out of circulation or destroyed as easily as it was created out of thin air.

Virtually all of the tools used to manage private sector money creation could be used more effectively, or not needed, with public sector money creation. For example, in the same way that experts oversee private sector money creation, experts also would oversee public sector money creation with the main goal of limiting inflation.

To maximize the wellbeing of society, government probably would provide large amounts of money to create jobs, rebuild infrastructure and protect citizens. Modern monetary theory extensively discusses how public sector money creation can be managed in ways that control inflation. As discussed, taxes can be used to restrict the money supply if necessary. Taxation also can be used in conjunction with public sector money creation to incentivize society-enhancing actions. To illustrate, instead of discouraging job creation by taxing employment, taxation could be focused on pollution and other harmful actions.

5.7. Public Money and the Banking System

To perpetuate private sector money creation, vested interests might claim that public money will harm the banking system. Understanding this issue requires stepping back and seeing the big picture (i.e. whole system thinking). In a democracy, individuals, families, communities and life support systems have an inherent right to exist. But banks and other businesses do not. Business is a tool that should be used in ways that fully benefit and do not harm society. Societal control of business was reflected in early corporate charters.

Banks and other businesses do not have a right to operate in ways that harm society. Transferring the profits of money creation from citizens to banks harms society by unfairly taking public wealth. In addition, banks receive a guaranteed six percent return on their ownership interest in the Fed. This also unfairly concentrates public wealth. Banks have a right to profit from lending, but not money creation. These benefits belong to citizens.

Society requires a robust banking system. Demand for banking services will perpetuate the system. Under a fair, sustainable, public money banking system, there will be many profit opportunities, such as lending government-created money at higher rates and offering other types of financial services. Inefficient banks that rely on lending free money at usurious interest rates often will be replaced by more efficient banks, as should occur under democratic, competitive capitalism. The current private money system reflects aristocratic, wealth-concentrating capitalism.

The priority of society is society, not the economic or financial system. Banks and other businesses should be focused on helping individuals and society to prosper, not the other

way around. Citizens should not be giving away their right to create money and other wealth generating mechanisms so that bank investors can earn unfairly higher returns.

The idea that the banking system cannot survive and prosper if it is not allowed to create and own money is untrue. As discussed below, there are practical and profitable ways to transition to a fair, sustainable banking system.

5.8. Public Money and the Economy

To protect current systems, vested interests might argue that public sector money creation will hurt the economy and inhibit the private sector, for example, by reducing credit availability and suppressing the creativity, innovation and private sector investment that greatly benefited society over the past 200 years. But the opposite is true. Businesses would have equal or greater access to private debt financing and equal or nearly as high access to public and private equity financing. Reduced taxes would increase product/service demand. Reduced interest expense would lower business input and production costs, and thereby improve capital efficiency and profits. Producing a more stable economy and business environment could increase business creativity, innovation and productivity.

Public money will strengthen and stabilize the economy in many ways. The money supply strongly affects the economy. The more stable money supply provided by public money will limit recessions. The much lower cost of public money will reduce the need for unsustainable economic growth. It also will benefit individuals, businesses and the economy overall by greatly reducing taxes, interest expense, and the cost of products and services.

Public sector money creation will increase credit availability. The focus of private money is on providing loans that maximize financial returns. The focus of public money is on broadly benefiting the economy and society, for example, by maximizing the wellbeing of individuals, communities and local businesses. Banks will be incentivized to loan to these groups at lower interest rates. As noted, the Post Office and other mechanisms also could provide low or no interest loans.

Public money could reduce bank loan profits. Instead of creating money for free, banks will pay interest to borrow it from citizens/government. Usury laws will end current exorbitant interest rates. With less profit on each loan, banks will be incentivized to increase lending. The more loans they provide, the more profits they make.

Public money can increase lending in another way. Under the current private money system, the Fed and other central banks restrict and control bank lending because it creates new money and expands the money supply. Lending must be restricted to avoid creating unlimited amounts of money and causing inflation. Public sector money creation decouples lending and money creation. Lending no longer will create new money. This reduces the need to restrict bank lending to control the money supply. Banks will have more flexibility to increase lending and thereby increase bank profits. (However, banks often would not be allowed to make unlimited loans because this might require new money from government, which could be inflationary. As a result, public money available to banks for lending could be restricted at times.)

Citizens might be concerned that changing a system that they lived under their entire lives could cause problems or be disruptive. But individuals and companies would see virtually no change at the retail and banking levels. Money would be available. They would still be able to make ATM withdrawals, write checks, use credit cards, do online banking, make bank deposits, take out bank loans, and use electronic payment systems and apps. Instead of causing problems, public sector money creation would greatly improve quality of life, for example, by increasing credit availability and substantially reducing taxes, interest expense, and product and service costs.

Essentially the only negative economic impacts of public sector money creation would relate to those who profit from creating money, loaning it to government and charging usurious interest rates. But these profits involve unfairly taking public wealth. They are not sustainable. Like all other flawed, destructive systems throughout history, they will change through voluntary or involuntary means. Banks and other lenders are far better off working collaboratively to implement sustainable public finance, money creation and banking systems.

5.9. Government Borrowing and Retirement Security

Vested interests might argue that investments in government bonds and other low-risk government securities are necessary for retirement security. Ending private sector money creation could greatly reduce government debt and the ability to profit from it. Understanding this situation also requires whole system thinking. Prior to 1980, most pensions were defined benefits (i.e. guaranteed benefits). Citizens worked for many years and earned a secure retirement. Their benefits did not fluctuate based on capital markets or other factors. Employers bore the risk and cost of retirement. But this inhibited their ability to provide ever-increasing shareholder returns.

As a result, during deregulation in the 1980s, business controlled government facilitated defined contribution pensions. This enabled companies to shift much of the risk and cost of retirement to employees. It often made the ability of elderly people to meet basic needs dependent on capital market growth.

From the perspective of wealthy investors, the transition from defined benefit to defined contribution pensions was a stroke of genius. It made average citizens cheerleaders for a system that often impoverishes average citizens, in part by driving wealth concentration. Prior to 1980, speculators largely bore the risk of their investments, while hard-working citizens earned a secure retirement. Making retirement security dependent on capital market growth frequently compelled taxpayers to cover the downside of investing through business bailouts and other mechanisms. Protecting the retirement security of average citizens, through capital market protection, compelled taxpayers to cover the downside of wealthy speculators.

Currently, at least several trillion dollars of public wealth are unfairly concentrated at the top of society each year through many forms of corporate welfare, including private sector money creation, limited liability, externalities and unfair taxation.[29] At the same time, many elderly people live in poverty and are unable to meet basic needs. This is shameful, especially in a wealthy nation that could easily ensure that the basic needs of all elderly citizens are met.

Retirement security should not be based on how well people speculate in the capital markets. Instead of using public wealth to unfairly enrich those who are controlling government, it should be used to fund retirement security and other essential societal needs. Public sector money creation, combined with reducing other forms of corporate welfare, could be used to increase Social Security, provide guaranteed jobs to all who need them, and strengthen the social safety net.

Vested interests might attempt to mislead citizens into thinking that this is unfair wealth redistribution from the top of society. But this is grossly inaccurate. The approach involves ending wealth redistribution, not initiating it. Instead of unfairly redistributing trillions of dollars of public wealth to the top of society each year, public wealth will be used to equally and fairly benefit all citizens, as it should be in a democracy.

Shifting the focus of government and society from benefiting wealthy campaign donors (corporate welfare) to benefiting all citizens (social welfare) could take some time. However, switching from private to public sector money creation could be done quickly. While retirement security in the US and some other countries remains based largely on speculation, the lack of government debt investment options will not be an impediment to retirement security because there are several other low-risk debt investments.

5.10. Deception Strategies and Solutions

Perpetuating private sector money creation often requires keeping the public in the dark. If citizens understood how money currently is created and the availability of a superior option, they almost certainly would demand a rapid transition. The primary strategy for keeping citizens in the dark (i.e. deceived) is to overwhelm them with complexity. There are many complex papers online that defend private sector money creation. Although they rarely, if ever, use this term because pointing out that the private sector is creating the money supply would not serve their purposes.

Two other deception strategies used to protect private money are One Wrong Equals All Wrong and My Team Versus Your Team. If an article, paper or book makes a strong, compelling case for public sector money creation, vested interests often scan the work and try to find one or more mistakes or debatable points. Then they emphasize these points in public communications, implying that the whole concept is flawed and can be ignored because one point is wrong. This is irrational because one weak point usually does not mean that other aspects or the whole proposal is flawed.

My Team Versus Your Team is the most important deception strategy overall in the US and many other countries. The approach involves using emotional manipulation and deceptive media to divide society into debating factions, such as conservatives and liberals. When this occurs, citizens often waste their time focusing on false enemies (each other) and ignore major problems and solutions.

Vested interests frequently can keep harmful systems in place, for example, by slapping a liberal label on climate change, public sector money creation or other beneficial proposals.

Then conservatives often dismiss the proposal without rational consideration because they have been manipulated into disliking anything labeled liberal.

Rational thought is the general solution to vested interest deception. Instead of blindly believing philosophies or vested interest positions, people should rationally consider proposals and support those that objectively provide the greatest benefits for the least cost. Rational thought often is more difficult than blind faith. But this intellectual work is essential for maximizing the wellbeing of society.

The specific solution to deception in the money creation area is to cut through complexity and focus on one simple issue—who is creating money, the public or private sector? When banks create money, citizens pay interest. When government creates money, they earn interest. Vested interests often will use complexity and deception to keep citizens from seeing this simple distinction.

5.11. Practical Implementation

A main goal of this paper is to provide a big picture overview of money creation and help citizens to understand the large benefits of public money. Once they understand this, they almost certainly will demand that their political servants (i.e. elected politicians) implement public sector money creation. The practical details of how to quickly achieve this already have been worked out by many experts.

For example, the American Monetary Institute (www.Monetary.org) has developed a complete and practical plan to transition from private to public sector money creation. The plan was developed over many years by leading economic and monetary experts. It is in the form of an act that could be submitted to Congress and quickly implemented.[30]

Many academic and other experts also have written about modern monetary theory. This body of work extensively discusses job creation and many other benefits of public sector money creation. It also provides detailed information about practical implementation. The organization Positive Money (www.PositiveMoney.org) also provides extensive information about public money implementation.

The monetary system is part of the larger financial, economic, societal and even environmental systems (because humans and all human activities are part of nature). Whole system approaches to money creation and other systemic changes address all relevant factors in all major areas of society. To illustrate, a whole system approach to achieving sustainable society would address many factors beyond money creation, such as equitable resource distribution. Under current unsustainable systems, wealth concentration compels many people to take out loans to survive. In a sustainable society, fair wages, taxes and other mechanisms would enable many more people to survive and prosper without living on credit.

Global System Change provides a whole system approach for achieving necessary systemic changes. It provides practical strategies for driving system change in all areas, including government, the general public and corporate/financial. In the corporate and financial sectors, System Change Investing provides a powerful, short-term strategy for driving systemic

changes, including public sector money creation. The approach uses investing to practically and profitably engage companies and investors in system change.

"COVID-19 illustrates how quickly and substantially reality and nature can change human society. Rather than waiting for reality to impose traumatic, involuntary system change, we can take charge of our destiny by learning to live within the laws and limits of nature. We can consciously evolve our economic, political, social and financial systems into sustainable forms."

6. Conclusion

Thomas Jefferson and James Madison were correct to oppose Alexander Hamilton's financial plan. Citizens never should have given away their right to create, own and control the money supply. As noted, the purpose of the money supply is to broadly benefit society, not provide a wealth generating mechanism for banks and other private lenders. The purpose of money is to facilitate exchange and a sustainable economy, not provide a tradable commodity for speculators.

Religions were correct when they condemned charging interest long ago. It still often involves taking advantage of desperate or needy people. There is no need to charge interest in many cases. There never is a need to charge usury rates. When interest is charged, much of it belongs to the rightful owners of the money supply—citizens.

Children need parental regulations to grow up well and achieve successful lives. The same is true of banks and other businesses. Failing to hold companies responsible for the harm they impose on society often compels them to cause harm. Banks cannot help themselves. If they are allowed to take public wealth and charge usury interest rates, but fail to do so in competitive markets, they often will go out of business. They are not the enemy. It is the flawed economic, political and financial systems that compel their harmful behavior.

Sophisticated, visionary bank and other leaders understand the need for system change. They see that systems which compel banks to harm society inevitably will end. They also understand that they are much better off voluntarily working for system change, instead of waiting for reality to impose it on them involuntarily. No rational person wants to end the banking system. Banks and other financial sector leaders will find allies in all areas of society as they work collaboratively to evolve the banking and monetary systems into sustainable and truly prosperous forms. Public money will not end the banking system. It will protect it. There still will be many opportunities to profit from lending and other services.

Monetary reform illustrates the complexity of system change. It often is difficult to realize when we are in the middle of system change, and even more difficult to look into the future

and see the form of sustainable systems and society. But fortunately, we have nature to guide us. The laws of nature have controlled all species for 3.5 billion years. These laws include equitable resource distribution and widespread prosperity.

Fair, equitable banking and monetary systems are the only types that can survive on Earth. The primary focus of the monetary system must be on benefiting society, not the private sector. Paradoxically, the only way that banks and business in general ultimately can prosper is by putting the wellbeing of society first. Courageous leadership is needed to guide this transition.

Public sector money creation would greatly benefit society. It will substantially reduce taxes, deficit spending and the national debt, focus the money supply on job creation and maximizing the long-term wellbeing of society, provide a far more stable and easy to manage money supply, strongly facilitate a stable, sustainable economy, protect the long-term wellbeing of the banking and financial sectors, and provide abundant, interest-free funding for infrastructure, state and local governments, education, healthcare and other society-enhancing purposes.

Extensive funding is needed to achieve the SDGs and protect the human economy and society. Public money greatly increases humanity's capacity to protect ourselves. Every environmental life support system is in rapid decline, with some regional exceptions. Billions of people around the world are unable to meet basic needs, including nearly half of US citizens. Throughout human history, all flawed, unintentionally destructive systems changed, usually by collapsing. Rapidly growing political, social and economic turmoil show that our systems are in the process of changing.

COVID-19 illustrates how quickly and substantially reality and nature can change human society. Rather than waiting for reality to impose traumatic, involuntary system change, we can take charge of our destiny by learning to live within the laws and limits of nature. We can consciously evolve our economic, political, social and financial systems into sustainable forms.

It is time to shine the light on money creation. Money is one of the most powerful forces in society. In the US and many other countries, citizens have been paying the private sector to create their money supplies for many years, when they could have done it themselves for free. It is time to end this unfair public wealth redistribution and implement a democratic monetary system. We can and should use the power of money to alleviate suffering and ensure the long-term survival and prosperity of humanity.

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The COVID-19 Pandemic as a Systemic Stress Test:
Who is most vulnerable to food insecurity and other risks in a crisis and why?

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Abstract

The COVID-19 pandemic has shown that in a global systemic crisis, differences in impact are not confined to immediate threat, in this case virus infection and mortality rates. Indirect impacts such as reduced affordability of food due to income loss can be and often are more severe. Economic inequality thus acts as a massive amplifier of disaster impact. Inequality literally kills disadvantaged people under crisis conditions. Already the number of people subject to severe food insecurity and poverty has risen dramatically in the wake of COVID-19 and other crises, such as climate change, are adding to this unfolding tragedy. Conversely, policy designed to lower inequality is the best preparation for any crisis, and should accompany all measures for disaster risk reduction and impact mitigation.

1. COVID-19: An Indiscriminate Threat?

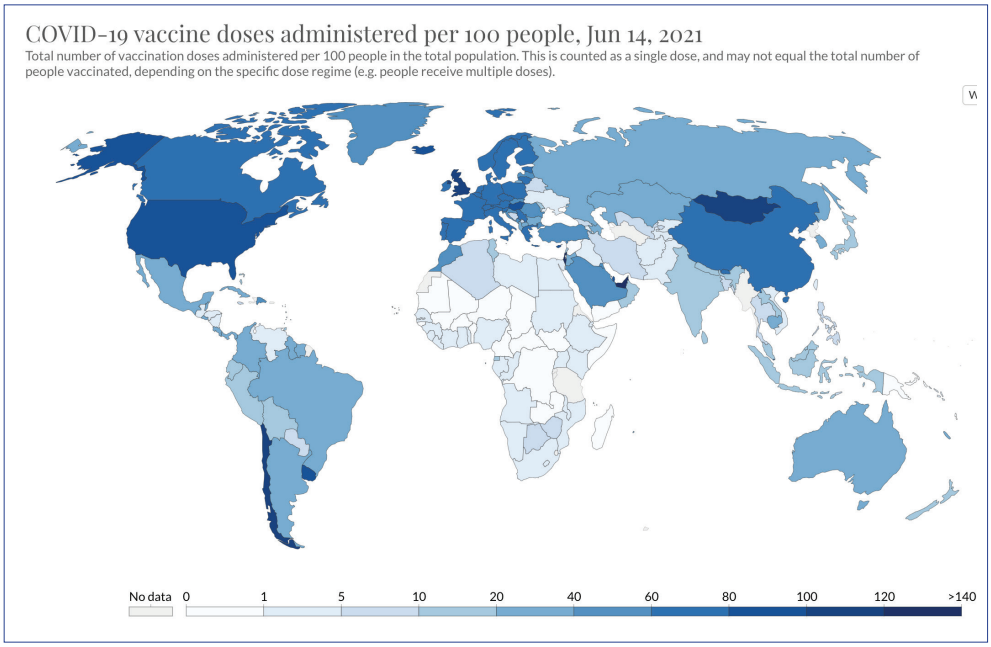
The COVID-19 pandemic was initially experienced as a relatively indiscriminate external shock. The direct impact of the SARS-CoV-2 virus did not discriminate, because there was no population on the planet with any prior immunity. And after the original victims in Wuhan, China, by mid-April 2020 the demographic group with the greatest physical exposure to viral infection risk were the privileged, jet-setting international elite.* This is what also guaranteed that this crisis would gain almost instant and serious global recognition.

Somewhat further into the pandemic, it became evident that the variable stringency of public health measures, such as social distancing and compulsory mask wearing, and the level of pre-existing health system capacities, such as intensive care beds and ventilators, constituted key drivers of infection and mortality respectively, and that these differed greatly across nations. The impression nevertheless remained that COVID-19 did not discriminate in the usual way. Notably, some relatively poor countries like Vietnam outperformed some of the richest countries, like the US or UK, in fighting the virus; largely as a consequence of policy failures in the latter. Additionally, the warmer climate on average and the greater youthfulness of populations in developing countries kept a lid on infection and mortality rates, reflecting the fact that the virus is heat sensitive and poses a disproportionate risk for older people.

* https://www.rki.de/EN/Content/Health_Monitoring/Health_Reporting/GBEDownloadsJ/Focus_en/JoHM_S7_2020_Inequalities_COVID_19_Surveillance_Data.pdf?__blob=publicationFile

The impression of COVID-19 as an indiscriminate threat is nevertheless false. Like other crises, this pandemic is both revealing and deepening an underlying crisis that is set to outlive and out-scale the COVID-19 crisis: the global crisis of inequality.

Map 1: COVID-19 vaccine doses /100 residents
(Source: Our World in Data)



Disadvantaged populations everywhere were soon disproportionately affected. Unsafe workplaces disproportionately affected low-paid workers, in the meat processing industry for example. Limited access to healthcare services, poor diet or malnutrition, and pre-existing medical conditions that weaken the immune response together have led to a much higher percentage of fatal outcomes among disadvantaged populations, even in wealthy countries. In the current stages of the pandemic, inequality expresses itself in the form of variable access to vaccines, as the above map shows (Map 1).* Some 80% of all doses of the first vaccine, by BioNTech-Pfizer, for example, were claimed by a few rich countries. A similar pattern applies to most other vaccines.†,‡ However, these health and healthcare related inequalities pale in comparison with the differential economic impact of COVID-19. It is here that the tragic consequences of inequality in a crisis situation become fully visible.

* https://ourworldindata.org/covid-vaccinations

† "Priorities for the COVID-19 pandemic at the start of 2021: Statement of the Lancet COVID-19 Commission", by Jeffrey Sachs, February 12, 2021, *The Lancet*.

‡ https://www.theguardian.com/commentisfree/2020/dec/25/covid-19-good-health-biology-pandemic-unequal-effects

Economic disruption due to COVID-19 has reduced the food security of millions of people and led to a rapid increase in poverty. Food availability in some places was hit by disrupted production and supply chains, but more often the problem was affordability, caused by a sudden loss of employment or other income. In the mainstream daily newspapers, we look in vain for a league table comparing the number of deaths across countries due to COVID-19-induced food insecurity. That kind of news is not seen as relevant to the elites and middle classes of wealthy western nations, who supply the "worthy victims" of the crisis.

"The UN's World Food Programme estimates the number of people experiencing crisis-level hunger rose to 270 million by the end of 2020 because of the pandemic, an increase of 82% compared with 2019."

It is also not considered news because hundreds of millions of people have long been food insecure anyway, even under the conditions of a global food production surplus. Until 2014, however, we could hide behind the fact that their numbers were shrinking at least. From then on, however, ever more serious climate change impacts led to a global rise in hunger by 18%, even before COVID-19. Under the pandemic's economic impact, poverty is skyrocketing, and ***additional hunger is set to kill more people than the virus itself***. Allow me to illustrate briefly the nature and magnitude of this other, indirect COVID-19 crisis.

2. COVID-19-Driven Hunger: Some Facts on Food Security in a Global Crisis

For some the emergence of the coronavirus and the associated shut-downs of economic activity constituted a minor inconvenience, but for others the impact on their livelihoods was swift and utterly devastating.* Around the world, people in low paid and unstable employment and without significant household savings were also the most likely to become unemployed and instantly food insecure, not to mention housing, education and health insecurity.† The UN's World Food Programme estimates the number of people experiencing crisis-level hunger rose to 270 million by the end of 2020 because of the pandemic, an increase of 82% compared with 2019. Oxfam estimates that by the end of 2020 between 6,000 and 12,000 people died each day from additional hunger linked to the crisis. And this increase could persist for a decade or more, much longer than the pandemic itself.

Apart from income loss, other factors are food price spikes in some localities. In South Sudan, for example, COVID-19 restrictions and climatic events have driven enormous increases in prices after January 2020, whereby the average retail price of wheat has doubled.‡

* https://grattan.edu.au/news/covid-19-hits-the-poor-and-vulnerable-hardest/

† https://www.abc.net.au/triplej/programs/hack/coronavirus-covid-19-outbreak-linked-to-casual-insecure-work/12496660

‡ See *Ecological Threat Register 2020* (first edition). https://reliefweb.int/sites/reliefweb.int/files/resources/ETR_2020_web-1_0.pdf

Similar patterns are seen in many of the most food insecure countries in Africa. In November 2020 the FAO named four famine hot spots, namely Burkina Faso, Nigeria, South Sudan and Yemen.* A recent ISC report thus estimates that overall, "the number of lives threatened by acute levels of hunger is expected to double due to the crisis." 2021 may well go down in history as a year of famine on a scale not seen for decades.†

> *"America's 651 billionaires increased their net worth by 30% to 4 trillion USD during the pandemic."*

In developed countries too, economic inequality is causing divergent COVID-19 impacts. In the US, for example, by March 2020, 39% of those earning less than 40,000 USD per annum had already lost their jobs or had pay checks reduced, compared to only 13% of those who earned 100,000 USD or more.‡ Women and young people were more likely to lose their job than men. According to a US Census Bureau pandemic survey, only half of all US households with children felt "very confident" about having enough money to afford food over the next month, and a staggering 5.6m households struggled to put enough food on the table in the past week. Families of colour were suffering disproportionately, with 27% of black and 23% of Latino respondents with children reporting not having enough to eat over the past week—compared with 12% of white people. Overall, food insecurity in the US has almost doubled in 2020 from 35 to 54 million,§ due to record unemployment and underemployment. Food banks and street kitchens reported a sharp increase in demand and long queues.¶

Inequalities in national crisis response capability are also stark. Developing nations have a larger proportion of workers in precarious employment, and governments lack the financial reserves to support them with social security payments. In India, for example, the demand for support for families made food insecure by unemployment is much greater than in the US, but the state could not afford to provide income supplements on anywhere near the scale of the 2.2 trillion USD CARES Act which the US Congress passed in March 2020—though admittedly it is not just about means, it is also a matter of political will.** What is particularly worrying about the current situation of developing countries is that, as of September 2020, 84% of the IMF's COVID-19 loans were encouraging, and in some cases requiring countries to adopt austerity measures in the aftermath of the health crisis (Oxfam). Such austerity measures could entrench newly increased levels of poverty. In short, loans may increase the

* http://www.fao.org/news/story/en/item/1325054/icode/

† Sperling, F., Havlik, P., Denis, M., Valin, H., Palazzo, A., Gaupp, F., & Visconti, P. (2020). *Transformations within reach: Pathways to a sustainable and resilient world - Resilient Food Systems*. IIASA Report. IIASA-ISC, December 2020. http://pure.iiasa.ac.at/id/eprint/16822/

‡ https://www.counterpunch.org/2020/12/17/hunger-in-america-covid-19-and-the-nightmare-of-food-insecurity/

§ *ibid*

¶ https://www.theguardian.com/food/2020/nov/25/us-hunger-surges-spiraling-pandemic

** For example, in Australia, 40000 homeless people at high risk of infection were given emergency accommodation in vacant hotels, while in the UK, despite a population more than twice the size, only 33000 were assisted in this way. See: https://theconversation.com/states-housed-40-000-people-for-the-covid-emergency-now-rough-sleeper-numbers-are-back-on-the-up-154059

capability of poorer countries to respond to the immediate threat of the pandemic—which is in everyone's interest of course if the disease is to be controlled globally—but it may come at the expense of increasing the secondary economic impact.

The other side of the story of inequality is also worthy of consideration. While recovery for the world's poorest people could take over a decade, America's 651 billionaires increased their net worth by 30% to 4 trillion USD during the pandemic.* Following the release of massive stimulus packages, paid for by debt accruing to the general public, and with the help of quantitative easing and interest rate reductions by many major central banks, share markets returned to their pre-pandemic highs in just nine months, to the delight of wealthy investors. Distributing the COVID-19-induced wealth increase of the ten richest billionaires alone, according to Oxfam, would be enough to prevent anyone on earth from falling into poverty, as well as pay for vaccinating every human being. Instead, the pandemic marks the first time since records began that inequality rose in virtually every country on earth at the same time. It is estimated that the total number of people living in poverty increased by between 200 and 500 million in 2020 alone.†

3. Conclusion and Recommendations

What can be done? The World Bank has calculated that if countries were to act now to reduce inequality then poverty could return to pre-COVID-19 crisis levels in just three years, rather than in over a decade. The benefits, however, go far beyond ameliorating the present external shock of the pandemic.

When it comes to the reduction of risk and impact of disasters of all kinds and at all levels, lowering inequality is among the best strategies. A healthy and economically secure population with a high level of solidarity has the best chance of facing unexpected challenges. Indeed, the evolutionary success story of the human species is largely based on our exceptional capacity to communicate and collaborate in a systematic and rules-based manner. This is reflected in the need for moral foundations as an enabling condition for a healthy economic system, as has been argued by a long line of theorists, from Adam Smith to EP Thompson.‡ There is no real alternative. As the World Economic Forum has pointed out, the present robber baron capitalism is likely to destroy itself.§

While some national and local actors with intermediate-level resources may of course decide to adjust budgetary priorities and raise organisational preparedness so as to maximise their emergency response capability, and while they may thus seem to outperform some others who have equal or greater resources, there are many actors who simply cannot afford to adopt supportive policy measures on the scale that is required. Targeted international post-COVID-19 reconstruction aid and loan amnesties may be needed to enable and encourage all

* https://americansfortaxfairness.org/wp-content/uploads/12-9-20-National-Billionaires-Report-Press-Release-1T-4T-FINAL-1.pdf

† https://www.oxfam.org/en/research/inequality-virus

‡ Smith, Adam. 2002 [1759]. *The Theory of Moral Sentiments*. Cambridge, New York: Cambridge University Press; and Thompson, E. P. 1993. *Customs in Common: Studies in traditional popular culture*. New York: New Press.

§ Gensler, Lauren. 2017. "Rising Income Inequality Is Throwing The Future Of Capitalism Into Question, Says World Economic Forum." *Forbes Magazine* 1.11.2017, online. www.forbes.com/sites/laurengensler/2017/01/11/world-economic-forum-income-inequality-capitalism/#274135505dd3

jurisdictions to take necessary action, such as improving public health services or supporting the unemployed, but always in conjunction with mandatory measures to curb inequality. The advantage is that these measures will improve general, long-term resilience not just to pandemics but to other challenges as well, such as climate change or food supply disruptions. This realisation, unfortunately, has not yet reached many parts of the science community with significant influence on policy. For example, the recent report by the International Institute for Applied Systems Analysis, working in partnership with the International Science Council, recently produced a 53-page report.* The report only mentions inequality once in passing, and does not make any recommendations on this key issue.

Unless determined policy action is taken at multiple levels, inequality is set to turn into 'structural homicide' on a massive scale in this crisis-stricken 21st century. The ideology that likes to call on each of us personally and on each nation to be responsible for our own resilience and disaster preparedness is obviously flawed, when power, wealth and income are distributed so very unequally. But this ideology has long kept us from recognising inequality reduction as a key element of disaster risk reduction as well as general development and prosperity.

And, yes, there is much hard evidence to prove that, with sufficient political will, inequality can certainly be reduced.† Let us insist on it: Solidarity and Equality, not COVID-19-induced 'Hunger Games'! This is not a charitable but a rational approach. Curbing inequality will benefit us all by boosting human security. As Pope Francis put it, in his recent work, *Fratelli Tutti*, "The notion of 'every man for himself' will rapidly degenerate into a free-for-all [attitude] that will prove worse than any pandemic."‡ The same could be said of other crises, such as climate change or ecological collapse. A race to the bottom will destroy what little chance we have to weather the many storms that await us in the coming decades.

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* Sperling, F., Havlik, P., Denis, M., Valin, H. , Palazzo, A., Gaupp, F., & Visconti, P. (2020). *Transformations within reach: Pathways to a sustainable and resilient world - Resilient Food Systems*. IIASA Report. IIASA-ISC, December 2020. http://pure.iiasa.ac.at/id/eprint/16822/

† https://theconversation.com/there-are-many-good-ideas-to-tackle-inequality-its-time-we-acted-on-them-106700

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Report on Global Reports, 2020-2021:
The Whale and the Minnows

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Abstract

The first survey of 25 recent online reports on the global environmental emergency was published in CADMUS (4:1, 2019), with emphasis in the title on "Scientists Reporting." This second survey also covers 25 recent reports on sustainability issues, but it is juxtaposed with a relatively long review of the March 2021 global trends report of America's National Intelligence Council, which received a lot of publicity, and is thus described as "the whale" in terms of its visibility. The NIC report has much to consider in terms of structural forces and emerging dynamics leading to "a more contested world." However, remarkably, it pays no attention to gathering forces for sustainability, the Sustainable Development Goals, or science-based environmental reports from the UN and other respected organizations, described here as "the Minnows" in terms of their visibility. These reports are arranged in four categories: 1) Other General Reports (WEF, GCF, UNOG/WAAS, UNDP, etc.); 2) Biodiversity in Peril (CSR, PNAS, WWF, UNEP, etc.); 3) Climate Concerns (CCS, The Lancet, NOAA, CIEL, etc.); and 4) Proposals (Oxfam, HRW, ILC, FABLE, CIEL, UNEP, WBCSD). If the NIC social scientists had paid attention to the earth scientists and biologists, their outlook would be even more grim. But our contested world could be less bleak if widely proposed transformations to security and sustainability are recognized and even partly successful in the critical decade ahead. Concludes with proposals for strengthening visibility and leadership of the "minnows."

As the COVID-19 pandemic recedes in some countries, while spreading in others, vaccines are becoming available, although distribution is still problematic in many locations. Reports on COVID itself (see *Cadmus*, 4:3, 2020) have waned, but many reports on other global challenges continue to be issued, and many mention COVID as a concern, and often as a possible spur to action on other challenges, notably climate change and biodiversity.

The sub-title of this review is somewhat exaggerated to make an important point. "The Whale" refers to the quadrennial Global Trends report of America's National Intelligence Council, which was reviewed in *The New York Times* and also prompted a lengthy Times editorial. It even got a half-page review from *The Washington Post* reprinted in the local newspaper where I live in upstate New York. The NIC report is a powerful multi-disciplinary synthesis of structural forces, emerging dynamics, and regional forecasts (see below). But it is weak on environmental challenges, notably biodiversity.

"The Minnows" refers to 25 other reports mentioned here, many as long as the NIC report and just as important. But *in terms of public visibility only*, especially in the US, they are like a variety of small fish not swimming in formation. There is no easy solution to this inconvenient truth of visibility, seldom mentioned, if at all. At the least, the other reports, both descriptive and normative, deserve to be mentioned, and perhaps they will grow larger than minnow-size.

"The international system—including the organizations, alliances, rules, and norms—is poorly set up to address the compounding global challenges facing populations." – Global Trends 2040

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1. The "WHALE"

Global Trends 2040: A More Contested World (March 2021, 144p) is the 7th edition from the National Intelligence Council, published every four years since 1997, to assess key uncertainties that will shape the strategic environment of the United States. It is also published "for audiences around the world to read and consider," in the polite but problematic hope that it "provokes a conversation about our collective future."

And there is much to consider in three general sections: 1) *Structural Forces:* on demographics, health challenges (antimicrobial resilience, infectious and non-communicable diseases, mental health), environment (but only one skimpy paragraph on biodiversity), economics, and technology (other than green technology); 2) *Emerging Dynamics*: societies (disillusioned and divided), state tensions (turbulence and transformation), international (more contested, uncertain, and conflict prone), and the future of terrorism (diverse actors, fraying international efforts); 3) *Scenarios for 2040: "*Renaissance of Democracies" led by the US and new technology; "A World Adrift" due to slow vaccine rollout and other crises; "Competitive Coexistence" of US and China, "Separate Silos" of states raising barriers and retreating into Blocs, and "Tragedy and Mobilization" on a global catastrophe in the early 2030s leading to a global movement for bold systemic change.

GT2040 also has a section on forecasts to 2035 for nine world regions, and a valuable summation of the outlook for international norms (p.109), divided into least likely to be contested (national sovereignty), likely regional variation (LGBTQ protection), norms at high risk of weakening (arms control, women's rights, democracy), and norms in early development (Arctic access, biotechnology, AI, and cybersecurity).

One can readily agree with the overall assessment that "The international system—including the organizations, alliances, rules, and norms—is poorly set up to address the compounding global challenges facing populations."

The report concludes with three pages thanking hundreds of organizations and individuals for various inputs. But there is no reference to any UN agencies, environmental think tanks,

or any of the thousands of earth scientists and biologists who increasingly warn that we are close to exceeding planetary boundaries. This is an egregious blindspot!

The NIC report, which summarizes the findings of 17 US intelligence agencies plus the outsiders mentioned above, is not supposed to make recommendations. But optimistic scenarios are a way to suggest what might be done. Unfortunately, the five scenarios are simplistic, such that the general outlook is not bleak enough due to underestimating the growing environmental crisis—yet not sufficiently optimistic by pointing to what is being done!

The first scenario, a Pollyannish future based on US leadership and new technology, depends on successful distribution of COVID-19 vaccines in 2021, which will not happen in most nations until 2022 or even 2023, allowing time for new variants to develop. Along with many other challenges described elsewhere in the report, and some not mentioned, it does not meet the scenario standard of plausibility. The next three scenarios are somewhat more plausible.

The last scenario, however, has a major flaw. It begins by stating that "In the early 2030s, the world was in the midst of a global catastrophe." This leads to widespread famine that catalyzes a global movement in 2040 led by the EU for "bold systemic change," and setting a new target date of 2050 for the UN's Sustainable Development Goals. Remarkably, *this is the first and only mention of sustainability, the UN, or the UN's 2030 SDG Agenda!* If the NIC had consulted the expanding world of sustainability science and concerns, the final scenario would recognize that *a global environmental catastrophe is well underway today, and that both the EU and President Biden are mobilizing to address it.* Our "contested" future would still be difficult, but less bleak if widely proposed transformations to security and sustainability are even partly successful by 2030, rather than beginning in 2040.

The "minnows" described below provide ample support for this more realistic and hopeful view.

2. Other General Reports (5 Items)

The World Economic Forum in Davos, Switzerland, is widely known by business and political leaders. Their **Global Risks Report 2021 (**Jan 2021, 96p) is the 16th annual edition sharing results of their Global Risks Perceptions Survey, while offering proposals for enhancing resilience. The *Top Ten Risks by Likelihood* are extreme weather, climate action failure, human environmental damage, infectious diseases, biodiversity loss, digital power concentration, digital inequality, interstate relations fracture, cybersecurity failure, and livelihood crises. (Note that the top five risks are all environmental!) Their *Top Ten Risks by Impact* are infectious diseases, climate action failure, weapons of mass destruction, biodiversity loss, natural resource crises, human environmental damage, livelihood crises, extreme weather, debt crises, and IT infrastructure breakdown. The report also discusses increasing inequality due to COVID-19, growing digital divides, youth disillusionment in an age of lost opportunity, climate change as a looming risk as global cooperation weakens, and better pathways to manage risk. In sum, this is a pretty big "fish" classified with the "minnows" for the sake of convenience, and quite different from the NIC report.

Global Catastrophic Risks 2020 (July 2020, 54p), from the Global Challenges Foundation in Stockholm, describes weapons of mass destruction (nuclear, biological, and chemical), catastrophic climate change, ecological collapse, pandemics ("If ever there were an argument for enhanced global cooperation to tackle catastrophic risks, COVID-19 is it"), asteroid impact, supervolcanic eruption, and artificial intelligence (significantly smarter than any person, with a note on autonomous weapons), key factors affecting risk levels, and governance issues. "We have now exceeded the safe limit for 4 of the 9 identified planetary boundaries…with human actions estimated to be causing the planet's climate to change 170 faster than natural forces." (pp.4-5).

"The COVID-19 crisis has exposed stark global inequities, fragilities, and unsustainable practices that pre-date this pandemic and have intensified its impact." – UN Research Roadmap for the COVID-19 Recovery

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Global Leadership for the 21st Century (Feb 2021, 20p) summarizes the 15-16 December 2020 conference sessions sponsored by the UN Office at Geneva and the World Academy of Art & Science. The conference aimed "to develop cross-catalytic strategies to address current global leadership challenges," with >800 participants from some 100 countries joining online. Topics from the 16 working groups included a new social and economic paradigm, the continued importance of the 2030 Agenda for Sustainable Development as a compass for action, restoring public trust, the inequality crisis, a paradigm shift in the world of work, empowering youth to become leaders of today, climate change as the defining issue of our times, renewing multilateralism, global governance innovations needed at all levels, the need to break down silos across disciplines and stakeholders as well as different UN entities (e.g. this Report on Global Reports), the mainstreaming of human security into all UN actions, a Planetary Emergency Plan, global health and food security, reorganizing education, financing the SDGs, and more.

Human Development Report 2020. The Next Frontier: Human Development and the Anthropocene (Dec 2020, 317p) is the 30th anniversary edition of the UN Development Programme flagship report, noting that pressures on planet Earth have grown exponentially, taking the Earth to the brink. Climate change, inequality, and people forced from their homes by conflict and crisis "are the results of societies that value what they measure instead of measuring what they value." Advancing human development while erasing planetary pressures is the next frontier. Chapters discuss leveraging the human development approach for transformation, the scale and speed of human pressures on the planet, empowering people (for equity, innovation, and stewardship of nature), unleashing transformation, finance to incentivize transformation, nature-based human development, and a new planetary pressures-adjusted Human Development Index that broadens the vista. "It is not a question of choosing between people or trees; it is neither or both."

UN Research Roadmap for the COVID-19 Recovery: Leveraging the Power of Science For a More Equitable, Resilient and Sustainable Future (Nov 2020, 123p), from the UN Office for Partnerships, warns that "the COVID-19 crisis has exposed stark global inequities, fragilities, and unsustainable practices that pre-date this pandemic and have intensified its impact." Recovering better will depend on bold efforts. Designed to complement an April 2020 Framework for socio-economic response, the Roadmap outlines 25 research priorities for the five pillars of the framework: health systems, social protections, economic recovery programs, macroeconomic policies and multilateral collaboration, and social cohesion and community resilience. Chapters discuss interdependence and co-benefits, science strategies, rapid learning systems, knowledge mobilization, and a "quadruple bottom line" of equity, resilience, sustainability, and COVID recovery.

3. Biodiversity in Peril (6 Items)

Underestimating the Challenges of Avoiding a Ghastly Future *(Frontiers of Conservation Science,* 13 Jan 2021, 23p), by Corey J. A. Bradshaw, Paul R. Ehrlich, Peter H. Raven, Mathis Wackernagel, and 13 others, issues a stark warning. "Humanity is causing a rapid loss of biodiversity and, with it, Earth's ability to support complex life…Major changes in the biosphere are directly linked to the growth of human systems." The 17 authors review the evidence that "future environmental conditions will be far more dangerous than currently believed," as concerns declining populations of vertebrate species, some 40% of plants considered endangered, and rapidly disappearing insects in many regions. Summarizes future trends in biodiversity decline, climate disruption, and human consumption and population growth, demonstrating "the near certainty that these problems will worsen over coming decades." Suggested solutions abound, but the current scale of implementation "does not match the relentless progression of biodiversity loss." This fact is difficult to grasp for even well-informed experts, and no one seems prepared to handle the predicted disasters and stresses to human health and well-being. "The science underlying these issues is strong, but awareness is weak."

The Security Threat That Binds Us: The Unraveling of Ecological and Natural Security and What the United States Can Do About It (Feb 2021, 130p), from The Converging Risks Lab of the Council on Strategic Risks, describes global ecological disruption as the most underappreciated security threat of the 21st century. Earth is entering a sixth mass extinction period, with degraded ecosystem services, growing pandemic risk, and environmental crime amplifying ecological stress and social instability. National security seeks to protect citizens from malign nations. *Natural* security, or ecological security, seeks to protect water, food, wildlife, forests, and fisheries. International conservation strengthens national security, and policy proposals include strengthening international alliances and mechanisms to reverse or reduce ecological disruption, reducing pandemic risk at the point of origin, an ecological security research agenda, and engaging the public on these issues.

Insect Decline in the Anthropocene: Death by a Thousand Cuts *(Proceedings of the National Academy of Sciences,* 118:2, 11 Jan 2021, 10p) summarizes 11 papers presented at the Nov 2019 annual meeting of the Entomological Society of America on declining insect

populations. Conservation efforts have historically focused on protecting rare and charismatic species. The "insect apocalypse" is a different challenge, with many reports on sweeping declines of formerly abundant insects providing ecosystem services such as pollination, biological control of weeds and disease vectors, decomposition of leaves and wood, and removal of dung and carrion. Not all insects are declining, but some are decreasing at the rate of 1-2% per year, due to land-use change, introduced species, nitrification, pollution, climate change, habitat loss, pesticides, fire, droughts, and urbanization. [NOTE: This PNAS Special Feature is probably the definitive scientific account of insect decline.]

Living Planet Report 2020: Bending the Curve of Biodiversity Loss (Sept 2020, 159p). The World Wildlife Fund seeks "to stop the degradation of the planet's natural environment by conserving biodiversity, and reducing pollution and wasteful consumption. This report, produced in collaboration with the Zoological Society of London, warns of serious declines in species populations, and that "decades of words and warnings" have not changed society's business-as-usual trajectory—until now. "Perhaps the COVID-19 pandemic will spur us on…to revolutionize how we take care of our home." The WWF Bending the Curve Initiative is proposed to deal with "biodiversity on the brink." The most important direct driver of biodiversity loss has been land-use change, primarily conversion of pristine forests into agriculture, driven largely by a doubling of human population since 1970. Climate change has not been the most important driver to date, but is projected to become as important as other drivers in coming decades—or more so.

Making Peace with Nature: A Scientific Blueprint to Tackle the Climate, Biodiversity and Pollution Emergencies (Feb 2021, 168p) from the UN Environment Program begins with a statement by the UN Secretary-General that humanity is waging a suicidal war on nature, and "making peace with nature is the defining task of the coming decades." This report makes a scientific case that loss of biodiversity and ecosystem integrity, along with climate change and pollution, will undermine efforts on 80% of SDG targets. Chapters describe the many ways that society is failing to limit environmental damage, transformative systemic change as prerequisite to a sustainable future, leverage points for transformative change, overcoming barriers from inertia and vested interests, the need to address environmental emergencies together, scaled-up and accelerated actions, transforming land management to meet human needs, science-based management to reduce adverse effects of chemicals, transforming economic and financial systems, transforming food and water systems to become equitable and resilient, access to clean energy for all, promoting peaceful societies as key to reducing environmental degradation, and all actors having a part to play in this transformation.

Strengthening Synergies: How Action to Achieve Post-2020 Global Biodiversity Conservation Targets Can Contribute to Mitigating Climate Change (Nov 2020, 11p), from the UN Environment Program and the World Conservation Monitoring Centre (Cambridge UK), notes that "the climate and biodiversity crises are fundamentally connected and more integrated approaches are needed." Identifies the regions where global action via Nature-based Solutions will deliver the most to achieve conservation goals and mitigate climate change: the Amazon rainforest, the Congo Basin, and Mesoamerica. Indigenous peoples, local communities, and other stakeholders are crucial for effective NbS.

4. Climate Concerns (7 Items)

World Climate and Security Report 2020 (Feb 2020, 151p) is published by The Center for Climate and Security. It convened a 12-member Expert Group of the International Military Council on Climate and Security, which considered climate-related risks in seven world regions, and a security risk perception survey of 56 other experts worldwide, 1 year, 10 years, and 20 years from 2020. "Climate change not only acts as a threat multiplier, but can have direct implications for military operations. Climate change-exacerbated water security is already a significant driver of instability, and will pose a significant or higher risk to global security by 2030. All regions are facing more natural disasters, food insecurity, and forced displacement." Climate mitigation and adaptation efforts are increasingly urgent, but rising authoritarianism and nationalism are hampering needed cooperation.

Also from The Center for Climate and Security is **A Security Threat Assessment of Global Climate Change: How Likely Warming Scenarios Indicate a Catastrophic Security Future** (Feb 2020, 84p). The National Security, Military, and Intelligence Panel analyzed two warming scenarios: Near Term (1-2°C by 2050) and Medium-Long Term (2-4°C). The former poses High to Very High security threats; the latter poses a Very High to Catastrophic threat to national and global security. "At all levels of warming, climate change will pose significant and evolving threat to global security environments, infrastructure, institutions, and US military missions in all geographic areas. These threats could come about rapidly."

The 2020 Report of The Lancet Countdown on Health and Climate Change: Responding to Converging Crises (*The Lancet,* Vol 396, 2 Dec 2020, 42p), is signed by c.80 authors from 35 academic institutions and UN agencies. It warns that "the changing climate has already produced considerable shifts in the underlying social and environmental determinants of health at the global level," and that "the 2020 indicators present the most worrying outlook reported since the Countdown began in 2016." Among the 43 indicators: increase in heat-related mortality and its monetized cost, potential labor capacity lost, increased floods and droughts, threats to global food security, air pollution deaths from coal-fired power, growing emissions from livestock, growing climate suitability for infectious disease, more people exposed to risk of wildfire, rising migration and displacement, and growing inequality due to climate change and COVID. Accelerated efforts are needed in the next 5 years to tackle climate change, as well as COVID, and measures should be closely linked. "Considerable financial, social, and political investment will be required to protect populations."

Arctic Report Card 2020 (Dec 2020, 141p) is the 15th annual edition from NOAA, the National Oceanic and Atmospheric Administration. It reviews surface air and sea surface temperatures, terrestrial snow cover, the Greenland ice sheet, glaciers and ice sheets outside of Greenland (a continued trend of significant ice loss), sea ice, the response of marine algae to climate warming and sea ice decline, tundra greenness, coastal permafrost erosion, and wildland fire in high northern latitudes. In sum, "The sustained transformation to a warmer, less frozen and biologically changed Arctic remains clear."

Emissions Gap Report 2020 (Dec 2020, 101p) from the UN Environment Program warns that greenhouse gas emissions hit a new high in 2019, and 2020 is on course to be the warmest on record. The pandemic-linked economic slowdown is expected to cause a drop of up to 7% in 2020 emissions, but "this dip will have an insignificant impact on the Paris Agreement goal of limiting global warming to well below 2°C." The expected 2020 fall in emissions translates to a 0.01°C reduction of global warming by 2050. "Overall, we are heading for a world that is 3.2°C warmer by the end of this century, even with full implementation of unconditional nationally determined contributions under the Paris agreement." However, a green pandemic recovery could shave up to 25% off the emissions we would expect to see in 2030. Measures to deliver these cuts include support for zero-emissions technologies and infrastructure, reducing fossil fuel subsidies, backing nature-based solutions such as large-scale landscape restoration and reforestation, lower emissions for shipping and aviation, and encouraging low-carbon lifestyles.

Gauging Economic Consensus on Climate Change (March 2021, 51p). The Institute for Policy Integrity at the New York University School of Law conducted a large-sample global survey of economists who have published climate-related research in the highest-ranked economic journals, with 738 participants (a 34% rate of response). 74% said that "immediate and drastic action is necessary," while <1% believed that climate change is not a serious problem. Nearly 80% of respondents increased their level of concern about climate over the past five years, and most viewed the climate challenge as "rapidly escalating." 89% believe that climate change will exacerbate income inequality between countries, and some 70% see this happening within countries. If the current warming trend continues, economic damages from climate change will reach $1.7 trillion/year by 2025 and some $30 trillion/year by 2075. 66% view the benefits of reaching net-zero emissions by 2050 as likely to outweigh the costs, while only 12% disagreed. Rapid expansion of clean energy technologies is expected, resulting in >50% of the global energy mix in 2050, up from some 10% today.

Funding Our Future: Five Pillars for Advancing Rights-Based Climate Finance (March 2021, 40p), one of many reports from the Center for International Environmental Law, states that "confronting climate change may be the costliest challenge the world has ever faced. Responding to an accelerating global crisis of the scale, scope, severity, and urgency of the climate emergency requires an unprecedented mobilization of resources." To advance human rights, climate finance must be 1) Ambitious, commensurate with the scale and scope of the crisis; 2) Equitable, prioritizing fund distribution to the most vulnerable countries and communities; 3) Fair, with financing terms not adding to recipient country debt burdens; 4) Effective, with funded activities delivering real emissions reductions and remediation; and 5) Rights-based, with projects respecting and promoting human rights throughout the project lifecycle. Also, the immense public funds committed to economic recovery from COVID-19 present an opportunity to invest in an environmentally sound direction.

5. Proposals: Inequality, Land Use, Plastic Pollution, Capitalism (7 Items)

The Inequality Virus: Bringing Together a World Torn Apart by Coronavirus Through a Fair, Just, and Sustainable Economy (Jan 2021, 82p). Notable for 420 footnotes,

this Oxfam Briefing Paper warns that the pandemic may lead to increased inequality in almost every country at once. "The virus has exposed, fed off, and increased existing inequalities of wealth, gender, and race." Over 2 million people have died, and hundreds of millions are being forced into poverty, while many of the richest individuals and corporations are thriving. Transformative policies that seemed unthinkable before the crisis are now seen as possible, and various surveys show strong public support in many countries. Five steps toward *A Better World* are described: 1) One that is profoundly more equal and measures what matters (GDP as a metric fails to provide guidance); 2) One where human economies care for people (where governments invest in free quality public services and cradle to grave social protection for everyone; 3) One with income security and dignified working conditions, living wages for all, and increased public investments in smallholder farmers (see below); 4) One where the richest people pay their fair share of taxes, through transparent and accountable revenue systems; 5) A world of climate safety, radically breaking from business as usual, where the rights of indigenous people and local communities are protected, and fossil fuel subsidies ended.

"Of some 275 million tons of plastic waste produced annually, up to 12 million tons leak into oceans, wreaking havoc on livelihoods and ecosystems. This crisis is transboundary, thus requiring a concerted global response to adequately address it."

Future Choices: Charting an Equitable Exit from the COVID-19 Pandemic (March 2021, 54p). Human Rights Watch regrets that the severity of the pandemic enabled some governments to use public health emergency measures to grab power and abuse rights, with systematic neglect of some minority populations. To prevent further human rights backsliding, governments should ensure universal and equitable vaccine access, protect the rights of healthcare workers, ensure access to food and water when quarantines or lockdowns are imposed, combat the spread of misinformation on the pandemic, protect older people and people with disabilities, decrease the risk of COVID-19 spread in congregate settings, avoid austerity measures harmful to human rights, provide support for a moratorium on evictions for inability to pay, and invest in quality services for all.

Uneven Ground: Land Inequality at the Heart of Unequal Societies (Nov 2020 72p; 16p Executive Summary) presents research findings from the Land Inequality Initiative of the International Land Coalition based in Rome. "In most countries, land inequality is growing." New measures and analysis in this synthesis report show that it is significantly higher than previously reported, threatening livelihoods of some 2.5 billion people in smallholder agriculture. Family farmers, indigenous peoples, rural women, and youth are being squeezed into ever smaller parcels of land or forced off the land, while more land is concentrated in corporate agribusiness and distant investors. "Climate change is both a cause and consequence of land inequality, reducing agricultural productivity and forcing many

off the land altogether." More sustainable practices of small-scale farmers and indigenous peoples are threatened by evictions, deforestation, biodiversity loss, and water scarcity. A range of policies is needed, including redistributive programs, land market regulatory reforms, taxation to reduce speculation, securing women's land rights, and enforcing accountability measures to compel due diligence and human rights standards.

Pathways to Sustainable Land-Use and Food Systems: 2020 Report (Dec 2020, 715p; 13p Executive Summary). The second report of the FABLE Consortium is part of the Food and Land Use Coalition. FABLE (Food, Agriculture, Biodiversity, Land-Use, and Energy) is led by IIASA and SDSN, working with EAT, PIK, and others. Teams from 20 countries (including Brazil, Canada, China, India, Russia, the UK and the US) present national pathways for sustainability to meet mid-century objectives on food security, healthy diets, greenhouse gas emission, biodiversity, forest conservation, and freshwater use, consistent with the UN Sustainable Development Goals and the objectives of the Paris climate agreement. They ensure consistent trade flows and can inform long-term climate strategies toward net-zero greenhouse gas emissions and biodiversity. The pathways have been "significantly improved" from the initial 2019 report. Country reports occupy >600 pages of this report. Next steps for the FABLE Consortium include welcoming new country teams, partnering with the Food Systems Economics Commission, and working with interested governments to support integrated strategies.

Convention on Plastic Pollution: Toward a New Global Agreement (June 2020, 12p), from the Environmental Investigation Agency and the Center for International Environmental Law, views plastic pollution as "one of the greatest anthropogenic threats our planet faces." Of some 275 million tons of plastic waste produced annually, up to 12 million tons leak into oceans, wreaking havoc on livelihoods and ecosystems. This crisis is transboundary, thus requiring a concerted global response to adequately address it. To prevent plastic pollution in the marine and other environments, it is increasingly clear that a dedicated instrument is needed, a Convention on Plastic Pollution addressing the full lifecycle of plastics, from production and design to waste prevention and management. Three pillars are required: 1) Monitoring and Reporting: developing a harmonized system that includes standardized definitions on the presence of plastic pollution and progress toward a circular economy; 2) Prevention: to eliminate long-term discharges of plastic into land, sea, and air with national action plans, especially concerning microplastics; 3) Coordination: with other international and regional instruments that regulate sea-based sources, the plastic waste trade, chemicals and additives, biodiversity conservation, agriculture, financial resources, assessment panels, and compliance mechanisms.

The New Plastics Economy Global Commitment 2020 (2020, 75p). In contrast to the top-down Convention proposed above (also valuable), this second annual Progress Report from the Ellen MacArthur Foundation and the UN Environment Program celebrates >500 businesses, governments, and NGOs that have come together behind a common vision of a circular economy for plastics. These organizations, accounting for >20% of the plastic packaging market, have set ambitious 2025 targets to realize that vision. "Plastic pollution is clearly a threat to planetary and human health," however, and much more must be done

and at greater speed to achieve the targets. Progress across the signatory group is examined as regards elimination, reuse models, recycling and composting in practice, decoupling from consumption, and transparency. Credibility and transparency are ensured by a clear minimum level of ambition for signatories, common definitions for all commitments, publication of commitments, and annual reporting on progress. The minimum ambition "will become increasingly ambitious over time to ensure that the Global Commitment continues to drive true leadership." Along with the Plastic Pacts network (which now covers 20 countries) and the Global Tourism Plastics Initiative, >1000 organizations are now united behind the vision of a circular plastics economy.

Reinventing Capitalism: A Transformation Agenda (Nov 2020, 33p). In 2010, the World Business Council for Sustainable Development released *Vision 2050*, a pathway to a world in which 9 billion people are able to live well, within planetary boundaries. Revisited 10 years on, this "Vision 2050 Issue Brief" seeks to align the pathway with the Sustainable Development Goals and to prioritize the critical actions that business can take to unlock necessary transformations. It is increasingly clear that doing so requires a shift in the outcomes that our market-based systems incentivize, reorienting capitalism to pursue true value, preserving and enhancing natural, social, and financial capital. "The COVID-19 pandemic has made the reinvention of capitalism even more important," to ensure that sustainable development is prioritized in recovery strategies. Five features of a reinvented capitalism: stakeholder concern, impact internalizing, long-term perspectives, regenerative, and accountable. Some priorities for business: reporting on ESG risks and impacts, ensuring interests of all stakeholders, paying fair taxes in a transparent way, shifting taxation from "goods" such as employment to "bads" such as pollution, and rewarding true value creation. [NOTE: Also see "Greening Capitalism, Quietly: Seven Types of Organizations Driving the Necessary Revolution," *Cadmus*, 3:2, 2017.]

6. Conclusion

More reports published in the past 12 months or so could be added here, but the 25 "minnows" described above can suffice to illustrate the wide variety of important science-based reports, both descriptive and normative, that are ignored by the NIC Global Trends report, especially as concerns the biodiversity crisis and the "insect apocalypse" mentioned in PNAS. The NIC report devotes a single skimpy paragraph to loss of biodiversity (p.36), attributing it only to climate change, rather than equally important pollution, changes in land use, population growth, environmental crime, etc.

The UNOG/WAAS report on **Global Leadership for the 21st Century** mentions the importance of breaking down "silos" among academic disciplines, stakeholders, and UN agencies. This "modest report on global reports" is a small step in doing so, but much more needs to be done. Individual writers should cite more of these reports, which are often leading-edge exemplars of multi-disciplinary and multi-author thinking. UN agencies should reference their major reports and learn from each other, and refer more often to major reports from NGOs, which in turn should cite UN reports. All of these reports are free online—only a couple of clicks away—and most are handsomely produced. But far more attention should

be paid to publicizing them, recognizing the fierce competition for attention in an age of infoglut.

Most importantly, NIC hopes that its global trends report "provokes a conversation about our collective future." So why not do so, where the NIC and representatives of several UN agencies and NGOs come together for a serious science-based conversation on security and sustainability in the decades ahead? It could be a major step forward for effective global leadership in our troubled times.

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Transformation Catalysts:
Weaving Transformational Change for a Flourishing World for All

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Abbreviations

CA: Catalytic Alliance
FC: Field Catalyst
GAN: Global Action Network
TC: Transformation Catalyst
SES: Socio-Economic/Ecological Systems
T-system: Transformation system

Abstract

This article lays out the emerging roles of new entities here called transformation catalysts (TCs). Transformation catalysts act catalytically by aggregating, cohering and amplifying actions of transformation initiatives and change-makers working towards fundamental socio-ecological systems. As catalysts, TCs connect other actors synergistically together towards system innovation, alignment of efforts, and transformation. TCs make three distinctive contributions to address the purposeful transformation challenges of time span, speed, scale, and complexity. They (1) research and analyze to 'see', map and otherwise understand their transformations systems' participants and dynamics; (2) they connect the transformations systems' actors so they, too, see and identify highly strategic actions from a collective perspective, and (3) support implementation of the actions. Although their development faces significant challenges, the promise of TCs as a new organizational form is the ability to much more rapidly and effectively address socio-ecological crises.

1. Introduction

Numerous reports from scientists and other observers have raised the need for socio-economic-ecological (SES) system transformation. SES transformation involves significant change of many human systems, in light of growing and hugely problematic, often global, problems in the world. These issues include climate change, unsustainability, species extinction, and pandemics, among others (e.g., Lovins, Wijkman, Fullerton, Wallis & Maxton,

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2016; Reyers et al, 2018; Diaz, Settele & Brondizio, 2019; Kanie et al, 2019; Ripple, Wolf, Newsom, Barnard, Moomaw & 11258 others, 2019; Scrutton, 2020, to cite representative studies). Through an SES lens, ecological and social issues are inextricably interconnected, although some issues may be more ecological while others are primarily social.

Unprecedented technological potential, more well-educated people than ever, and unparalleled financial wealth co-exist with these crises. Taken together, the SES challenges and novel assets of our time threaten potential disaster, while also creating enormous potential to improve societies. SESs thus simultaneously pose problems, are fraught with issues, and offer exciting new opportunities. All, however, require significant system transformation if they are to achieve their positive potential and avoid disaster.

Many reports and studies argue that system transformation is vital to creating a thriving future for all. Yet system transformation is difficult because it takes place in SESs that are inherently complex adaptive systems (e.g., Stacey, 1995; Anderson, 1999; Grobman, 2005; Loorbach, 2010; Rotmans & Loorbach, 2009; Jones, 2014; Levin, Levin, Oppenheimer, Ostrom & Saari, 2013). Further, the problems/issues that require transformation are "wicked problems" (Churchman, 1967; Rittel & Webber, 1973; Batie, 2008; Mason & Mitroff, 2010; Weber & Khademian, 2008; Levin, Cashore, Bernstein & Auld, 2012; Waddock, Dentoni, Meszoely & Waddell, 2015). Such problems are what Ackoff (1975) called messes and Trist (1983) labeled meta-problems because they are wickedly complex or complexly wicked.

Because of these inherent system characteristics, *purposeful* system transformation towards generally agreed ends (e.g., the UN's 17 Sustainable Development Goals or the Paris Climate Accord) may be desirable, yet is far from easy. Numerous actors attempt to make change—and their efforts can be uncoordinated, fragmented, overlapping, or even go in different directions. Indeed, ecologist Paul Hawken noted in his book *Blessed Unrest* (2007) that globally there were somewhere between one million and two million small to large enterprises generally focused on bringing about a more just and sustainable world. The problem, as identified by Hawken, is that these efforts are largely fragmented and unconnected, with few ways of cohering, coordinating, and connecting to amplify their intended positive impacts or truly bringing about the purposeful system change that is desired. Since his writing, we are seeing emergence of TCs to address this organizing challenge. Consider the following two examples.

Out of the ashes of the Kyoto Process, in 2011 the UN spurred development of ***Sustainable Energy for All (SEforALL)*** as "…an international organization working with leaders in government, the private sector and civil society to drive further, faster action toward achievement of Sustainable Development Goal 7", affordable and clean energy. The failure of the traditional inter-governmental target planning approach of the Kyoto Process reflected the complexity and wickedness of achieving sustainable energy for all. SEforALL works collaboratively and catalytically across sectors and institutions, including the UN, governmental leaders, businesses, financial institutions, civil society organizations, and philanthropies to "drive faster action" to achieve the UN's 17 Sustainable Development Goals (SDGs). Under the headline of "going further, faster—together," SEforALL emphasizes

committing, connecting, and co-creating initiatives that focus on a clean energy transition "that leaves no one behind and brings new opportunities for everyone to fulfil their potential".

Accomplishing these SES goals, SEforALL recognizes, requires significant transformation of the energy sector. It involves "…a radical rethink of the way we produce, distribute and consume energy (and) ensure no one is left behind". Engaging stakeholders in processes in which they participate in dialogue, co-develop solutions appropriate to specific contexts, and spur their commitment to action is part of SEforALL's effort to catalyze energy transformation as well as what the initiative terms results-based financing models. SEforALL describes itself as the "leading enabler of the sustainable energy movement, marshalling evidence, benchmarking progress, connecting partners and amplifying voice". SEforALL's multiple initiatives include Cooling for All, Clean Cooking, Energy Efficiency for Sustainable Development, and various efforts to shift energy financing and policy. The idea is to "focus […] effort by creating a common understanding of impediments and mobilizing collective effort to address them" particularly across Africa.*

Another TC launched in 2020 is tackling the problem of "integrated landscape management", ***1000 Landscapes for 1 Billion People (1000 Landscapes)*** by bringing together numerous, otherwise fragmented, efforts in "radical collaboration". The idea is to build capacity and unlock investment finance to foster regenerative landscape partnerships, strategies, and associated livelihoods. 1000 Landscapes thereby catalyzes actions that enable quicker, more effective, and scaled impacts around integrated landscape management strategies to meet the SDGs. Recognizing the reality that each landscape is unique and requires individualized approaches, 1000 Landscapes forms holistic collaborations that "integrat[e] action for food, water and health security, sustainable livelihoods, biodiversity conservation, climate action, and the transition to inclusive green economies". Landscape efforts "form around watersheds, bioregions, jurisdictions or city-regions, to align the actions of all stakeholders who depend upon and impact landscape resources, including farmers, local and indigenous communities, social and environmental NGOs, local governments, and business enterprises". As with SEforALL, past efforts were highly fragmented and under-resourced, hence the need for the integrative—and catalytic—role played by 1000 Landscapes, so that the "challenge [of] how to unlock the transformative potential of inclusive landscape partnerships and to scale their impact" can be met and all people can live dignified lives. The goal is to ensure that the innovations, tools, resources, and principles that support integrated landscape management can reach the scale, attain the speed, and address the associated complexity.†,‡

Both of these examples represent a new and still emerging type of entity—here called a Transformation Catalyst (TC). Such initiatives are specifically designed to catalyze transformative action by connecting, cohering, and amplifying the efforts of existing initiatives in different types of contexts so that transformative impacts can be achieved in target systems. Below we will explain these emerging organizing forms in significantly more

* Source for quotes in previous two paragraphs: SEforAll website, https://www.SEforALL.org/

† Source: https://ecoagriculture.org/blog/introducing-1000-landscapes-for-1-billion-people/

‡ Quotes about these two examples throughout are taken directly from their websites.

detail and discuss their potential for bringing systemic transformations about.

"By "transform" we do not simply mean reform, but rather deep change in purposes, values, goals, and power structures."

2. What is a Transformation Catalyst?

The collection of initiatives that aim to transform a particular issue or geography in a shared direction can be considered a "transformation system", (Waddock et. al. 2020) a concept growing out of "societal change systems" (Waddell, 2016). By "transform" we do not simply mean reform, but rather deep change in purposes, values, goals, and power structures. The large number of initiatives around transformations issues like sustainable energy and landscape planning reflect the wide array of sub-issues that must be addressed. One reason that transformation is so difficult is because the transformations systems are "under-organized" (Brown, 1980). The task of rendering a system effective in terms of speed, scale and complexity is beyond traditional organizational forms.

In chemical reactions, *catalysts* (from the Ancient Greek, *katálusis* meaning dissolution) are media that bring about a transformational (or state) change but do not themselves change in the process. In social contexts and as used here, the idea of the catalyst has had a more metaphorical meaning as a person or thing that precipitates, hastens, or stimulates a change or causes something to happen, often unpredictably and nonlinearly.

Transformations catalysts (TCs) are promising organizing innovations specifically designed to address complexly wicked societal problems and opportunities and bring about purposeful system transformation. In this case, we focus upon TCs that are working for an equitable, sustainable world, although other outcomes may be the purpose of a TC. TCs tackle the deep systemic challenges facing humanity today using the types of leverage points that Meadows (1999) outlined in her seminal paper "Leverage Points: Places to Intervene in a System". Specifically, they connect, cohere, and amplify efforts of other initiatives in an attempt to overcome the fragmentation and lack of impact that Hawken (2007) called "blessed unrest". They help coalitions of actors emerge shared visions, goals, aspirations, or other narratives that enable them to align their efforts, even while they pursue their individual agendas. Historically, these entities represent innovative organizing forms that have evolved from past efforts to cope with complexity and wickedness. Earlier organizing forms arose on the basis of Ackoff's (1975) insight that single institutions or organizations cannot effectively contend with what he termed "messes" or meta-problems (Trist, 1983), here labeled complex wickedness or wicked complexity and that multiple collaborative approaches were needed to do so effectively. TCs are the latest and perhaps most promising in a series of such entities.

Public-private then multi-stakeholder partnerships (MSPs) and cross-sector collaborations began forming in modest ways in the 1970s and '80s (Gray, 1989; Waddell 2005). MSPs led

to the emergence of cross-sector networks, and ultimately what became known as GANs—Global Action Networks (Waddell, 2005; 2011). TCs resemble but go beyond GANs, and in particular take on the catalytic orientation of other types of entities called catalytic alliances (CAs) (Waddock & Post, 1991, 1995) and field catalysts (FCs) (Hussein, Plummer & Breen (2018), but are different in their transformation focus. Further, TCs are different from innovation brokers/intermediaries (Klerkx & Leeuwis, 2009; Klerkx, Aarts & Leeuwis, 2010) because they attempt to gel catalytic action in the context of complex wickedness rather than develop a field per se and thereby serve a catalytic rather than brokering function.

TCs have attributes that set them apart from any of these ways of organizing that make them uniquely suited to the demands of complex wickedness and the need for purposeful transformation. Transformation catalysts create metasystems* for dealing with meta-problems. They are, that is, TCs' efforts explicitly oriented to weaving together already existing and potentially emerging initiatives. In doing so they create an overarching system of initiatives, each with their own goals, activities, and operations. Collectively, TC actors aim at dealing with sets of meta-problems that exist in a given system by aggregating, connecting, cohering, and amplifying their efforts for greater impact. Focused on systemic transformation of the focal arena, TCs emphasize bringing about radical change in key systems generally in the direction of flourishing for all (using many different labels).

Here is a working definition of the transformation catalyst: Transformation Catalysts work catalytically with actors in a transformation system (T-system) to enhance their collective speed and ability to address the complexity and scale associated with transformation. The T-system is an SES (socio-economic system) that can be geographic, sectoral, or issue-based. For example, 1000 Landscapes is organized around the action framework of integrated landscape management, and SEforAll is around the issue of sustainable energy for all. As catalysts, TCs attempt to bring other actors synergistically together towards greater needed *system* innovation, alignment of efforts, and transformation into powerful transformation (T-) systems. That is, TCs cohere collections of actors oriented toward systemic change in a given arena without necessarily "making" the change themselves.

TCs are self-organized, self-governing systems that are made up of loosely-coupled transformation initiatives and change makers operating to transform places, issues, sectors, industries, and other deep systemic challenges. Employing a theory of change based on understanding complexity and wicked problems theories, TCs work to see and understand their related T-systems, make sense of them and emerge relevant new stories and narratives that support transformation, connect system change actors, and generate radical action and learning to foster transformation. The goal is to induce a state change or "socio-technical tipping point" (Otto et al., 2020) towards purposeful transformation in which all can flourish.

3. Core Characteristics of Transformation Catalysts

Below and using the two examples as illustrations, we elaborate the main characteristics or core attributes of TCs as they are emerging today in terms of: 1) purposes (focus), which

* Thank you to Ian Kendrick for this term.

emphasize system change and the formation of transformation systems, 2) theory of change, which is based on complexity theory and understanding of wicked problems, 3) organizing structure, which tends to be loosely coupled yet aligned, and 4) catalytic action strategies of seeing, sensemaking, connecting, and radical action and learning that support their strategies (see Table 1). It is important to note that while TCs each have their own specific purposes and agendas, they also share two common purposes: an emphasis on *system(s)* transformation and a focus on the emergence of powerful transformation (T-) systems.

Table 1. Core Characteristics of Transformation Catalysts

Characteristic	**Definition**
Purpose/Focus	TCs develop powerful transformation systems (T-systems) with diverse transformation initiatives around shared issues, geography, methodology, or strategy to bring about systems change.
Societal Theory of Transformational Change	TCs employ a theory of change based on complexity and wicked problems theory that recognizes the need for catalytic action to address the challenges of time span, scale, complexity and speed. They do this by creating powerful systems of interaction between actors to develop aggregation, coherence and amplification.
Organizing Structure	TCs are self-organizing and self-governing, interconnected, loosely-coupled systems of change makers operating to transform systems of different types, geographies, and issues. They are frequently structured as temporary entities, however, the complexity and wickedness of the systems with which they deal can potentially expand their lifespan.
Catalytic Actions	TCs undertake four main, interrelated activities to generate catalytic impacts: seeing systems, sensemaking, connecting, and radical action and learning.

***System* Transformation**: TCs' work is characterized by a transformational change objective, in contrast to incremental/mitigation or reform/adaptation types of change (Waddell, 2007, 2011; Pelling, 2010; Waddell et al, 2015). TCs do not focus on simply expanding application of something well-known, policy reform, or organizational restructuring. While these activities might be included in what they do, TCs are fundamentally focused on changing the core logic, values, and power structures in relevant systems. Transformation means fundamental change that involves core aspects of a given system—including its purpose(s) and the perspectives or mindsets of key actors who frame and shape the system (Waddock et al., 2020). The performance metrics that are used to guide goal development and assess outcomes are also important because, as accountants like to say, you get what you measure.

Hence, holistic metrics or evaluation approaches like Blue Marble evaluation (Quinn, 2015) may be considered because the whole system needs to be taken into account. The operating practices of systems and power dynamics also can shift in transformational efforts (see Waddock, 2020a).

Thus, TCs orient towards major change in the relevant social-ecological system (SES), not piecemeal, fragmented, or partial efforts. For example, SEforALL states its purpose as working "to ensure a clean energy transition that leaves no one behind and brings new opportunities for everyone to fulfil their potential", using the words transition and transformation interchangeably. 1000 Landscapes notes that many landscape partnerships are "forging holistic strategies to meet the SDGs—integrating action for food, water and health security, sustainable livelihoods, biodiversity conservation, climate action, and the transition to inclusive green economies" as part of its own transformational agenda. Such a goal builds a holistic perspective into the energy transformation by encompassing the wellbeing of all. Similarly, 1000 Landscapes envisions bringing dozens of organizations globally together. They will be "joining forces to link currently fragmented efforts, build capacities, and unlock investment finance that will enable landscape partnerships everywhere to achieve their regenerative landscape and livelihood ambitions more quickly, effectively and at scale."

Transformation (T-) Systems: In addition to their focus on systemic transformation, TCs also emphasize the development of powerful transformations systems (T-systems). T-systems encompass all of the initiatives, actors, and efforts that are already attempting to move some part of a system in the direction of flourishing for all or sustainability, which is the focus of the TCs of interest (Waddock et al., 2020). Bringing these initiatives into alignment around a common perspective or shared aspirations is a vital catalytic function. It enhances their capacity for real transformative impact, rather than the more piecemeal impacts that many smaller and unaligned initiatives have. The goal is to emerge mindset shifts (Meadows, 1999) that create a degree of coherence in the "blessed unrest" (Hawken, 2007) of having many unaligned initiatives. By being explicit about the emergence of T-systems (whether called by that label or not), TCs recognize the need to identify and cohere efforts in at least a loosely-coupled way (Weick, 1976; Orton & Weick, 1990) to gain transformative impact. The TC, in developing a shared aspiration, vision, set of goals, or other ways of aligning the stories of the various initiatives and mindsets of key actors, implicitly or explicitly recognizes Meadows' (1999) important insight that mindset change—related to the stories and narratives told—is the most important lever of change. We will say more about this facet of TCs' work below in discussing the sensemaking activity.

Further, TCs work with an implicit sense of the need to strengthen their T-system in order to accelerate and scale their transformation. They help participants in a particular T-system understand the dynamics of their system as a whole, and their particular role in that context. TCs bring to the fore the need for powerful transformations systems and action priorities, allowing system participants to change or refine their actions in the context of this understanding. To illustrate, SEforALL's mission is to "…broker partnerships." 1000 Landscapes explains that it is "…working in radical collaboration with dozens of organizations

to catalyze system change". Further, 1000 Landscapes seeks to "unlock the transformative potential of inclusive landscape partnerships and to scale their impact".

3.1. Complexity-Based Theories of Transformational Change

TCs work for transformational change in SESs using a systemic theory of transformational change integrally based in complexity and wicked problems theories. They realize that the scale and complexity of their work require new ways of interacting and organizing among change initiatives. System transformation is often urgent, and yet it is generally a process that takes place over time, with outcomes that cannot be explicitly projected or predicted because of the nature of complex wickedness. Recognizing this, TCs emphasize alignment, bringing numerous different actors together for impact in processes that are necessarily emergent, dialogic, and inherently unpredictable (c.f., Grobman, 2005; Loorback, 2010; Mason & Mitroff, 2010; Jones, 2014; Waddock et al., 2015; Linner & Wilbeck, 2019). In such a context, each initiative or aligned collaborator can still do its own "thing", while simultaneously being aware of and working towards the shared aspirations of the T-system in which they are engaged.

TCs work with change makers who typically are already (or want to be) working on a specific issue, place, or other type of system. TCs attempt to: 1) see and understand relevant systems and their many stakeholders, 2) make sense of what they have learned for themselves and others, connect key actors to form effective T-systems, and 3) generate radical action and learning so that change makers can be more effective and fill in gaps where necessary. TCs recognize that transformational changes emerge unpredictably—but can potentially be guided by shared aspirations and narratives. We will unpack these attributes and actions in the sections that follow.

Some TCs operate at the "meta" level with TCs operating fractally at a different level or scale. For example, 1000 Landscapes focuses on "landscape partnerships" at the regional level, which are themselves TCs, recognizing that each landscape is unique. As part of their amplification efforts, meta-TCs tend to be comprised of other transformation initiatives and change makers in a loosely-coupled, fractal-like organizing structure. Fractals or self-similar, nested TCs that collectively comprise a bigger TC (c.f., Mandelbrot, 1983; Perey, 2014) that can operate on broad geographical, issues/problem, or deep challenges basis (and perhaps others). This orientation is particularly evident with SEforAll and 1000 Landscapes which work with large numbers of actors and diversity of context that their goals imply. The TCs need to "emerge" with these actors' ideas and possible pathways forward in real time, while adapting to context and situation. At the same time they must deal with unpredictability and a range of possible outcomes.

3.2. Organizing Structure

TCs start with the understanding that many valuable transformations initiatives and efforts already exist. The problem is that they lack coherence operating in "blessed unrest", separate from each other and unaligned despite a shared set of aspirations (e.g., Hawken, 2007). TCs operate in the belief that a "loose coupling" (Weick, 1975; Orton & Weick, 1990) of similar but

previously unaligned efforts is needed to build powerful transformations systems. Consistent with their understanding of complex wickedness, TCs are self-organizing, interconnected, loosely-coupled systems of change makers operating to transform systems of different types, geographies, and issues. Their boundaries are porous and allies and collaborators can be closely or loosely linked and these qualities can vary over time.

TCs can emerge as actors in their field saying "something has to change", and then organizing to make that change happen by pulling together existing efforts that have not previously been linked to emerge more coherent efforts and actions. For instance, SEforALL emerged after many years of failed interactions around the Kyoto Accord process, bringing into alliance many local/regional actions that produced results. With UN leadership, sustainable energy actors gathered to create SEforALL as a self-organizing and self-governing group. SEforALL could be framed as a network, however that frame obscures the value that SEforALL brings of viewing its participants as interacting systems.

In TCs very little is decided as a whole or centrally, but rather the locus of activity is in collections of actors in particular high-leverage projects who make their own decisions and, in a sense, constitute the TC and its governance structure. Financing, for example, is rarely provided centrally by SEforALL. Its core focus is to influence participants (who may or may not be members of a given TC by building deep awareness of their part in their particular transformation system and to take action based on that understanding. Similarly, 1000 Landscapes recognizes the need to get new tools, approaches, and methods to local landscape leaders "working on the front lines of the climate crisis. It is designing innovations to meet the needs of local partnerships" to accelerate numerous activities by different stakeholders, including national governments, investors, companies, and NGOs.

4. Catalytic Actions

Catalytic action is at the heart of TCs' work. Part of catalysis, of course, is the very act of bringing fragmented and individualized actors together into a collective. Shared aspirations, purposes, goals, or visions (however defined) can emerge or be co-created, helping to shape and shift mindsets (Meadows, 1999). Just that act alone can be transformative as those entities begin to see themselves and their activities as part of the larger T-system that they recognize exists. Collectively, they can begin to coordinate their efforts, figuring out where there are overlaps and gaps, and begin to take actions to deal with them. Separately, TCs' participants could only do what their original orientation geared them towards, but as a collective they can define and take broader actions in a variety of different domains so that more systemic impact begins.

1000 Landscapes, for example, has established four priorities. One was creating "a digital platform for landscape management and integrated tools to help landscape partnership organize, plan, fund, implement and demonstrate the impact of transformative landscape action and investment portfolios. A second priority was emerging financial innovations for landscape management "that facilitate funding…for landscape-regenerating investment portfolios that meet holistic, locally-prioritized landscape goals". The third was establishing

"an institutional structure that puts locally-led governance in control". The fourth is to institutionalize capacity-development for landscape partnerships. To generate specific actions and priorities, 1000 Landscapes emphasized in-depth dialogue and consultation with landscape partnerships, developers, financiers, and other stakeholders. SEforAll states that "our work involves engaging stakeholders—business, government, consumers and NGOS—to ensure they are committed to" sustainable energy transition. SEforAll also "empower[s] them with the data and evidence and the partnerships they need to act".

These activities reflect three interrelated and somewhat overlapping activities that TCs undertake to generate catalysis: 1) seeing and sensemaking, 2) connecting, and 3) radical action and learning.

4.1. Seeing and Sensemaking

TCs act catalytically through both seeing and sensemaking functions. Seeing systems means defining and continually updating the T-system of interest, its key actors and stakeholders, how it is currently structured and operating, and how resources (money, energy, knowledge) flow. Seeing can be done informally through dialogue with key stakeholders or more rigorously through mapping processes that dig deep into getting a handle on who is doing what. For instance, part of 1000 Landscapes seeing was consultation with more than two dozen landscape partnerships, and a dozen landscape partnerships from around the world are now co-designing with them, along with more than 40 financial institutions that have been innovating around landscape finance to map and understand the systemic barriers and opportunities. That dozen landscape partnerships is to be expanded to 50 in the second phase and eventually to the 1000 landscapes over time. Nigel Sizer, Chief Program Officer of the Rainforest Alliances, on the website explains: "*By 2030, we believe that ecosystem regeneration and inclusive economic development can reach at least 1000 landscapes, meeting locally-defined development and environmental goals, with benefits for over one billion people."*

TCs' seeing activities sensitize participants to the existence of their particular T-system, as well as enhancing understanding of the system(s) to be transformed. Seeing can include tools like mapping, data analysis, and visualizing, as well as interviewing participants and understanding how different entities in the system connect with each other. Such approaches help T-system participants (and others) understand the larger dynamics of which they are part. They can identify where resources do and do not exist or may need to be deployed in different ways. Then they can create new meanings through the interactions that are generated (see Kampelman, Kaethler & Hill, 2018, for a discussion of curators). Seeing can also involve design activities for bringing initiatives together in what 1000 Landscapes calls "radical collaboration…to catalyze system changes that enable landscape-scale partnerships to much more quickly and effectively achieve their regenerative landscape and livelihood ambitions" (1000 Landscapes, 2019).

Seeing helps TC actors identify the most important gaps between what is needed and what exists, and how to best begin to fill those gaps. It is also associated through the sensemaking

activity with shaping shared aspirations and new narratives or stories that help define the system and its needs. In the context of complex wickedness in socio-ecological systems, no single entity is capable of bringing needed system transformation about. Ackoff (1975) referred to these types of meta-problems embedded in socio-ecological systems as "messes". Despite that, as 1000 Landscape's concept note puts it, the "solutions are [can be] in plain sight", they can remain invisible until they are revealed by mapping and other actions that create explicit consciousness of them. As the concept note further states: "Different land uses [or any other systemic problem a TC might address] are deeply interdependent—ecologically, socially and economically."

As defined by the term's originator Weick (1995), sensemaking means giving meaning to experiences (Weick, Sutcliff & Obstfeld, 2005, p. 409). Tackled by TCs, the sensemaking process or intelligence function frequently involves: 1) establishing a coherent and aligned vision or purpose for a T-system, 2) articulating and framing that vision in powerful narratives, stories, images, and other symbols to bring others around those narratives, and 3) developing knowledge dissemination strategies. Sensemaking helps others begin to understand both the T-system and the target system(s) in new ways so they can take more effective action.

Sensemaking frames what needs to be done, how it might or can be done, and by whom. In SEforALL, for example, the impact of the COVID-19 pandemic and the United Nations' SDG-oriented "decade of action" helped participants refine their work into four thematic areas and twelve associated programs. These programs include energy diplomacy and advocacy, energy access and closing the gap, energy transitions and climate, and interaction with other SDGs (SEforALL, 2020). SEforALL then attempts to "provide insight and analysis and present the information in a way that's compelling and accessible", reflecting that important part of the sensemaking activity of TCs.

4.2. Connecting

In many ways the core catalytic activity of TCs is that of connecting. Connecting includes aggregating, cohering, and amplifying the efforts of numerous allied transformation initiatives and change makers to build effective T-systems. Working in the context of wicked complexity, TCs create new connections and synergies among existing actors in order to build a stronger interstitial framework (Furnani, 2004; Villani & Phillips, 2020) that can give rise to more effective systemic outcomes. Like curators (Kampelman, Kaethler & Hill, 2018), TCs "curate" connections, knowledge, and information-sharing between actors so they can amplify their own effectiveness.

TCs organize strategies to connect T-system participants, create shared identity, and make participants aware of their roles as actors in a broader T-system. Through virtual and face-to-face meetings and interactions, TCs create spaces for participants to connect and convene. Connecting can also occur through seeing activities, such as creating reports or maps, which help participants better understand their T-system as a T-system.

Within the T-system perspective and connections that the TC brings, participants focus their attention to identify how to make the T-system more powerful. Connecting thus includes

addressing gaps in effort, increasing effort around highly strategic imperatives, creating synergies between efforts, and reducing unproductive duplications. That explains why 1000 Landscapes focuses so much on establishing partnerships. It is addressing "the complexity of integrated landscape management with practical, adaptable tools, funding mechanisms and partnerships, building on community leadership and embracing collaboration with government, civil society and the private sector" (1000 Landscapes, 2019). None of these actors alone can solve the holistic issue of landscape management as well as the collective. Similarly, SEforALL notes the importance of "government engagement and collaboration with partners to drive progress" (SEforAll, 2020). Connecting helps identify what is needed to accomplish the third set of TC activities: radical action and learning.

"The basic challenge is simple inertia: doing things, including addressing change, the way they have always been done."

4.3. Radical Action and Learning

Transformation, by its very nature, requires taking highly innovative and new action, learning from it, and sharing that learning with others. SEforALL's Business Plan puts it bluntly with respect to sustainable energy and the SDGs: "Simply doing the same projects, in the same way, will not get us where we need to be by 2030" (SEforALL Business Plan, 2020, p. 4). That means that radical action, experimentation, and learning are sometimes required. SEforALL's business plan (2020, p.4) calls for holistic and catalytic action when it describes "new and enhanced partnerships, leveraging data, raising finance and creating insight to scale in-country interventions, complemented by high-level advocacy and agenda setting".

Radical action and learning means creating a safe space for questioning, exploring and analyzing assumptions, and experimenting. It also means sharing what has been learned widely, to T-system participants and beyond. New actions and learning require willingness to try something new and see what happens—and then willingness to share what was learned from the experiment. Connecting the action into action-learning cycles for rapid prototyping, following a design-thinking logic (e.g., Liedtka & Ogilvie, 2011), is an illustration of a competency of a powerful T-system facilitated by TCs.

One type of action builds on understanding about the T-system itself, and what it needs to become powerful and effective. Such action might involve an individual initiative or set of initiatives doing more of something, less of something, or something new in response to insights about how it relates to one or a group of other initiatives in the T-system.

Another type of action focuses on strengthening the T-system as a whole by collectively addressing a common inhibiting factor. To address connection problems, 1000 Landscapes is developing a new digital technology platform with integrated tools that will link and accelerate the organizing, planning, funding, implementation, and demonstration efforts of numerous landscape partnerships. Such a platform can have an enormous impact, since not

only does it provide better ways to exchange information, but it also gives rise to developing common language and standards that help the system cohere.

> *"Associated with the need for institutional innovation is the ever-present danger of isomorphism—pressures from traditional organizations, mental models, and aversion to working outside the norm that can easily suppress the innovation imperative."*

Very weak financing for transformation is a problem both 1000L and SEforAll are addressing. It is an example of a problem that requires collective effort, given the scale(s) of the challenge to influence the traditional finance system meaningfully. The TCs have a critical role in creating new fields for finance through an array of activities that includes educating financiers, creating new investment pools, grouping investment opportunities for scale, developing new metrics, and establishing new intermediaries. 1000L comments that "work has uncovered means to scale, accelerate, and reduce costs" (1000 Landscapes, 2019, p. 6). By 2019, a previous global partnership convened by EcoAgriculture (Landscapes for People, Food and Nature) had produced 28 studies on what is and is not known about integrated landscape management systems and has been broadly sharing that learning with its partners and stakeholders through a collaborative global review. 1000 Landscapes built on that foundation of knowledge.

5. Challenges to TC Development

The need for institutional innovation is apparent from the multiple crises facing civilization globally at the same time and with unprecedented threat to human and environmental well-being. The driver of need for them is obvious, however, they face numerous challenges to their success.

The basic challenge is simple inertia: doing things, including addressing change, the way they have always been approached. Modest adjustments to strategies and reform deny the need for a transformational approach to change itself. On many fronts, institutions, communities and eco-systems are collapsing, making the need for transformation ever more evident.

A clear manifestation of inertia is a common reluctance to provide the needed financial resources for TCs to realize their potential. For example, over its first couple of years after initiation, 1000 Landscapes expended only about a couple of million dollars. 1000 Landscapes estimated that between 2015-2018, EcoAgriculture Partners implemented about $1.3m (US) in projects that provided intellectual foundations and tools behind the strategy for 1000 Landscapes. These efforts also built on earlier work and other partnerships whose co-finance is not included in that figure. And that money was scraped together in an exhausting manner, dependent on contributions of time from diverse partners. Focused work on developing 1000 Landscapes really began in 2017-18 when EcoAgriculture spent about a quarter of a million

dollars directly on 1000 Landscape design research, and the initiative official began in early 2019. Ultimately, with investments from lead and technical partners, the total invested was about $2.4 m.

SEforAll had somewhat more robust access to resources because it was initiated through a traditional government trust fund approach. By the end of its full second year of operation (2013), it had a budget of just under $5 million that more than doubled by 2019. But this amount is miniscule in light of four decades of clear and dire warnings about impending disaster and a long list of associated failures of traditional inter-governmental processes. In the context of the implications of not undertaking TC-type action and the vast amount of resources spent in other ways, the mind boggles at the system inertia and parsimony with institutional innovation.

Associated with the need for institutional innovation is the ever-present danger of isomorphism—pressures from traditional organizations, mental models, and aversion to working outside the norm that can easily suppress the innovation imperative. Simply put, the ways of measuring success, driven by input-output, short-term, project-based approaches are entirely inappropriate when applied to transformation work, and undermine the potential for TCs' success. Without sufficient effort on their part to understand how financing transformation differs from traditional project-based efforts, financiers look at TCs through old frameworks and lenses that usually tell a story about insufficient focus, fuzziness, and lack of clarity.

In the face of such pressures, TCs must continually assert the importance of on-going *processes* around seeing, connecting, and radical action and learning, as well as technological innovation, not simply traditional outcomes. For example, it took several years for SEforAll to mature its forums and their distinctive roles as spaces to safely share failures, interrogate one another, create charettes to co-design new actions, and get commitments to implement them. 1000 Landscapes is experimenting with bringing together ecosystems of actors to collaboratively develop the many roles, products, and new organizations needed to deliver the scale of money (redirect money) for scaled, transformative action. One of the purposes of the design, testing, and demonstration phase for 1000 Landscapes from 2020-2023 is to generate more robust data from landscape partnership. That, in turn, will permit more rigorous modeling of landscape investments and finance and give confidence to funders (and, of course, that requires resources to implement).

As these examples make clear, understanding and supporting the work of TCs require developing new capacities. TCs need system transformation agents (Moore, 2018) and eco-system leaders (Scharmer, 2013) who, in a sense, check their egos at the TCs' door. Skills as stewards (Block, 1993), sensemaking, and network weaving are critical. Deep collaboration is required to develop synergies and work together to realize the power of transformations systems. More work to understand how these skills are deployed and develop leading communities of transformations capacities is required, such as the Transformations Mapping and Analysis Working Group* and the Systems Change Academy.

* https://embed.kumu.io/77e83d4e8842b4ee3bbb0d2c62f4a5a6#main

Perhaps the biggest challenge for TCs is to remain firmly on a transformations pathway, and avoid getting captured by traditional interests. SEforAll was not willing to simply work for environmental goals; it made energy access central to its agenda. This purpose required devising strategies to address the power of traditional energy interests of carbon fuel companies. Core to any transformation work, as may be evident, is transformation of the financing system as well. Funders tend to be fine with technological innovation that can generate outsized financial returns, but are averse to the development of social innovation infrastructure. Moreover, today's funding priorities' natural dynamic is to generate inequity (Picketty, 2020). The world is replete with examples of traditional interests destroying or mitigating innovation, as the finance sector did with micro-enterprise lending (e.g., Wagner, 2012).

6. Conclusion

TCs are an institutional innovation arising out of the inadequacy of traditional organizing forms, such as single organizations, collaborations, and even multi-stakeholder networks to bring real system transformation into being. The two examples in this article illustrate how TCs can respond to the unprecedented goal of purposeful transformation globally. TCs also are arising to address more narrowly defined transformation goals around specific geographies, sectors, and issues. This work requires addressing enormous issues of scale, complexity, urgency, and time horizons. In their work to pursue paradigm shifts, TCs are creating coherence, amplification, and aggregation among many initiatives and forming powerful transformations systems that may actually provide the strength and capability for bringing serious change in the direction of flourishing for all about. They are innovating new methods, strategies, and processes to undertake the three key activities of seeing and sense-making, connecting and radical action and learning.

Of course, the perspective we offer here has limitations. The very notions of TCs and T-system are new and there is yet limited experience with them and how they work. Much remains to be learned about them: what types there are, how they operate, and what types of work they undertake. More needs to be understood about how effective TCs actually are in building T-systems, and effecting transformative change, and many similar questions. Clearly, more research needs to be done to better understand these emerging entities, but we hope this analysis provides a useful foundation for that future work.

Although difficult, we believe that building and cohering T-systems is essential if systems with deeply challenging socio-ecological issues are to purposefully transform towards a better world for all. The promise of transformation catalysts, if we can understand them better and amplify their own effectiveness, is that they can enable purposeful, needed socio-ecological system transformations driving many crises, in a direction of flourishing for all.

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The Social Architect:
A New Framework for Effective Activism and Social Leadership

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Abstract

Social theories and humanitarian movements, despite their good intentions, have had limited effectiveness. This paper introduces Socio-Systemic science as a conceptual and implementation framework designed for effective high impact systemic action. The science of Socio-Systemic impact is led by the Social Architect who understands how to consciously catalyse key drivers of systemic change. The rise of a systems-based worldview forms the basis of a new way of understanding modern problems, inferring the kind of thinking and leadership required today. The Social Architect is a new entity in this development, working to apply grounded sociological science and understandings of natural systems to improving the human condition. Where traditional activism falls short through structural illiteracy and continually stumbles in engaging mere symptoms of world issues, the Social Architects act as the compassionate analysts addressing the systemic causes of world issues. We can no longer turn a blind eye to structural violence and systemic failure. Inside the dark heart of structural violence are the keys of societal re-architecting that are in fact our only hope out of it. The first part of this paper outlines the science of Socio-Systemic impact. The second part explains how to put the science into practice; reviews current implementation methods being deployed by leading Social Architects; outlines the key skills and roles of the Social Architect working individually as well as strategies for integral systemic action, and, lastly, suggests further action strategies and prospects for the future.

1. Socio-Systemic Impact, Effective Action & the New Social Architecture

> *"Current humanitarian and social change theories arrive generally at only 25% capacity for effective action."*

Social theories and humanitarian movements, despite their good intentions, have had limited effectiveness. Number of stakeholders, partners and even how much money are pumped into an initiative are, in fact, irrelevant if the conceptual base only affords you a limited capacity for effective action. Through Integrative Propositional Analysis[1] (IPA) a

theory's structure and capacity for effective action can be measured. Current humanitarian and social change theories arrive generally at only 25% capacity for effective action. For example, a study on theories for how to alleviate poverty in the US found an average of only 16% capacity for effective action.[2] A recent study on theories of evaluation relating to Africa (reflecting our ability to evaluate and improve our programs and policies) found they had an average level of 15% affordance for effective action.[3] The Socio-Systemic framework, currently on par with best practices, is a framework designed for effective high impact systemic action. The structure of Socio-Systemic science was evaluated by Integrative Propositional Analysis[4] (IPA) and is anticipated to at least double its current capacities with a result of 78% capacity for effective action frameworks and applications.[5] Over three times as likely to produce effective action on world issues, socio-systemic science is now prevailing ahead of current theories of social change. It is now only beginning to be put forward for the planning of projects, policies and initiatives. The current Socio-Systemic science, methods, foundational principles, and action strategies will be outlined in this paper along with the critical roles of Social Architect leadership.

"How you conceptualise a problem greatly determines how you conceptualise its solution."

The Socio-Systemic framework operates through a systems worldview in order to address the interconnected challenges facing humanity, which defy any resolution based on a reductionist worldview and which make modalities of specialised activism inadequate for comprehensive global solutions. How you conceptualise a problem greatly determines how you conceptualise its solution. Social sciences and humanities have lacked a coherent, systemic, causal and epidemiological understanding, which affords the capacities for effective action. One which requires more than just NGO and third sector initiatives for development; one which understands fundamental constructs and forces which underlie all social phenomena; and one which, most importantly, understands the critical importance of the fundamental re-architecting of society as the means for genuine social progress. The science of Socio-Systemic impact is led by the Social Architect who understands how to consciously catalyse key drivers of systemic change. Its Socio-Systemic science is driven by impact effectiveness, and its ambition is the design of a new social architecture. A New Social Architecture[6] seeks a higher aspiration for a better alignment of social and natural systems,[7] creating societal institutions and social conditions in line with natural laws, human wellbeing and planetary boundaries.

The first part of this paper outlines the science of Socio-Systemic impact. The second part explains how to put the science into practice; reviews current implementation methods being deployed by leading Social Architects; outlines the key skills and roles of the Social Architect working individually as well as collectively through a framework for integral systemic action, and, lastly, suggests further action strategies and prospects for the future.

2. Part 1: The Science of Socio-Systemic Impact: Framework for Effective Action

Taking its root from long-standing criticisms of development and aid[8] and key structural criticisms brought forward from global health movements,[9] in combination with contributions from the system sciences,[10] a Socio-Systemic lens enables a cause-based analysis. More importantly, it finally affords us the ability for systemic strategies for effective action not previously available and which remain absent from most activism and humanitarian efforts. We can now understand how to act systemically in order to alter outcomes scientifically. And now more than ever, this level of effective systemic action is critical. Since the Industrial Revolution, we have seen a sharp rise in two highly detrimental realities: ecological decline and socioeconomic inequality. There is no shortage of published studies on these issues, where it is clear that modern industry has done vast harm to the integrity of our ecosystem, with all life support systems now in decline. The solution to this global problem requires not only a new level of regulation and compliance but, more critically, a structural shift for addressing how societal institutions and economies operate, working to remove the source of the problem. The science of Socio-Systemic impact is a critical conceptual and implementation framework which can, finally, give us the means for genuine social progress. The three core integral tenets of its science are: 1. the bio-social epidemiological understanding; 2. systemic causality; and 3. the 'culture codes' are outlined here.

2.1. A Bio-Social Epidemiological Understanding: The Critical Nest of Relationships

Without an epidemiological understanding of the human condition, approaches to social progress will have limited efficacy. By epidemiological we mean the bio-social understanding of health which is at the root of public health science today as well as at the heart of the Global Health Movement.[11] There is an interconnected set of relationships that relate directly to one's cognitive development and interface the biological, psychological, sociological and behavioural attributes that connect a human being to his/her environment. Through this, we can understand the social preconditions that breed addiction and criminal behaviour,[12] as well as the social preconditions that set children up for higher intelligence and life success.[13] Criminality, addiction, intelligence, and life success are not purely social phenomena; they are also biological and directly related to cognitive development, and are neurologically bred through a bio-social interface and social preconditions.

When we understand how criminal behaviours are created through bio-social factors, and how poverty is created through societal structures, then we can start to analyse things systemically and address their root causes rather than only symptoms. Through this bio-social and systemic lens, we gain a crucial understanding of the critical nest of relationships, which give rise to social phenomenon. It then becomes clear that if one alters the critical nest of relationships embedded in societal structures, then one can alter behavioural and societal outcomes at a causal level. This integrated systemic epidemiological understanding is where the majority of activist, humanitarian, altruistic and applied social theories have failed to date.

The bio-social lens enables us to identify key system axis points. By an axis point we mean a convergence of critical systemic factors institutional (structural) as well as cultural. The more systemic factors which converge, the more powerful the axis becomes as 'system leverage points.'[14] By identifying axis points, we can highlight key areas and forms of action which can leverage systemic change.

"If we really want to solve the problem, we must address the cause."

The value for developing a bio-social epidemiological understanding is the value for a new paradigm of human development[15] and the understanding of the critical importance of developing of more peaceful behaviours through the enabling of healthier social preconditions. Through a bio-social lens we can make clear links to the societal institutions and systemic factors that are preventing healthy human development, breeding violence, increasing rates of illnesses and incentivising social psychologies which are not only adverse to our biological needs, but also the opposite to what we require for sustainability and peaceful social formations.

2.2. Systemic Causality

Ordinarily epidemiology is limited to cover medical and health-related frameworks. Rarely is this approach considered when it comes to the impact of more complex causality, such as outcomes correlated to a social system, its economy, its institutions and so forth. In order to understand systemic causality, the range of epidemiological study must extend to human behaviour and hence to individual and group incentives and practices. Priority, then, moves towards those casual realities that are most powerful in effect. Socially shared ubiquitous influences, such as economic structures as well as the institutions and societal structures we find ourselves inside of, incentivise the limiting or exaggerating of specific aspects of behaviour. Through this lens, we can see how institutions have a profound influence not just on the people working within those organisations but also on key aspects of social organisation that generate our wider societal phenomena.

By combining this extended epidemiological understanding with a systems worldview, we can expand the contributions of the social disciplines and move systemically into the causality of social issues. Utilising a cause-based analysis embedded with a systemic understanding of mechanisms and processes underlying social phenomena, we can engage processes of social re-architecting. A critical understanding must be gained by the human being and his/her institutions that is integrative and causal. The systemic intersection of historical cultural influence, paired with the short and long-term incentives of institutional structures, in particular our most dominant institution, the economic system, along with our evolutionarily-determined biological propensities, gives us critical information about how the causality is ordered. Some forms of causality will be more powerful and influential on the human being while other forms will not. This can be thought out as a kind of hierarchy of importance.

Institutions and societal structures are at the centre of causality. Business cannot be dismissed as 'just business.' Institutions structure relationships. Institutions create the

'norms' of what is acceptable and what is not. They tell us which behaviours are rewarded and which are not. Institutions decide which forms of knowledge are important and which are not. Institutions decide which values are more important through what they focus on institutionalising. Most critically, institutions incentivise group behaviour. Generally, this can be based on given incentives or rewards to act or not, and can become a cultural phenomenon, where long term, overlapping institutional influences generate a common mental schema and, hence, shared cultural worldview. In this light, we can see how institutions create psychologies and behavioural incentives which powerfully shape social norms and have a causal relationship to societal phenomena.

Major scholars such as Thomas Pogge recognise the systemic causality of global institutions in relation to the global crisis. Pogge writes about the causes of world poverty in relation to the institutions of the global economy. By identifying ways in which "global institutions, norms, and business practices prop up regimes that rule against the people they claim to represent,"[16] Pogge finds the global political order rooted in injustice, arguing that "the reigning economic and political systems and global institutional architecture act as a cause of active harm to the poor."[17] He engages a lens of systemic causality to demonstrate the causes of world poverty to be systematically linked to "specific institutional arrangements created and sustained by political choice."[18] Structural, institutional and systemic causes of poverty and inequality are supported now by multiple scholars.[19] By understanding systemic causality of world issues, we then see that solutions, actions and strategies must be systemic in order to be effective.

Another important example of systemic causality has been identified by The Global Health Movement, which has brought forward the 'Social Determinants of Health'[20] now recognized by the World Health Organisation. The social determinants of health utilise a bio-social case base framework to explain how the risk of ill health is structured. The robust research behind this moral movement concludes that the core cause of global health problems can all be traced back to 'Structural Violence'. Paul Farmer, one of the founders of the Global Health Movement, explains: "Structural violence is one way of describing social arrangements that put individuals and populations in harm's way […] The arrangements are structural because they are embedded in the political and economic organisation of our social world; they are violent because they cause injury to people […] Neither culture nor pure individual will is at fault; rather, historically given (and often economically driven) processes and forces conspire to constrain individual agency. Structural violence is visited upon all those whose social status denies them access to the fruits of scientific and social progress."[21] This means that to effectively address global health, we must act structurally to achieve genuine progress.

By understanding systemic causality, it becomes an imperative to act systemically for effective transformative solutions. If we really want to solve the problem, we must address the cause. Current activist and humanitarian efforts, despite their good intentions, have engaged in mere symptomology. To move out of symptomology into effective action; to afford ourselves 'the fixing capacity;' to really become solutionaries, we need to become structurally literate and systematically engaged.

2.3. The Culture Codes

Every systemic dysfunction and mechanism of structural violence has its inner counterpart—the belief, the mindset, the narrative, the culture, that supports it or that is interlocked with it. We institutionalise what we understand. Socio-Systemic science recognises this interlocking nature of beliefs, mindsets and culture in relation to organizational mechanisms, structures and institutions.

> *"From a systems perspective, to reduce caustic socioeconomic inequality means to get to the root of causal dynamics and change the very mechanisms causing it. This would require restructuring of how economics works at the root level."*

Cultures are constructed of language, symbols, and behaviours. They are connected to space, place and historical context, and, as such, interconnected with social preconditions. As previously discussed, social psychologies can emerge connected to the incentives of societal institutions. The 'culture codes' are cultural mechanisms that can be engaged to address the critical nests of relationships that potentially mobilise, facilitate or even transform social organisation to align with and/or catalyse systemic change. They should be implemented according to the context in which the systemic intervention is taking place.

Culture Code 1: Language & Narratives

As a collective of academics and activists astutely points out: "All power rests on the ability to control language. Humans make sense of the world through stories."[22] In order to target the deep logic of narratives that propagate systemic dysfunction, we need narrative interventions that engage a language which is most meaningful to their context. An example of this form of narrative intervention is the Culture Hacking method which seeks narrative and structural change: "The stories we tell shape the way we see the world and guide our responses to the problems we face"* To change a system, it is critical that we change the narrative at the heart of the system. Creating alternative stories and narratives goes hand in hand with the creation of alternative systems.

Culture Code 2: Social Preconditions

A precondition is defined as something that comes before or is necessary to a subsequent result. Medically, the term is used to denote factors that may lead to a statistically probable result, such as smoking tobacco leading to lung cancer. Sociologically, the term is used in the same way. As opposed to individual health, however, the context is public health—health outcomes occurring on a population level. For example, poverty is highly determinant of many negative outcomes, including child abuse and neglect. While society tends to view the parents as the starting point of these problems, as does the legal system, this inclusion

* see https://therules.org/culture-hacking/

of social preconditions extends the chain of causality. For example, researchers at the American Academy of Paediatrics directly linked an increased unemployment rate to child maltreatment.[23] From this view, problem-solving hinges on focusing on the social preconditions in order to stop resulting in negative social outcomes.

"We need leadership that understands deep systemic flaws and how to re-architect them."

Culture Code 3: Symbols, Experience, Place

Culture is lived experience,[24] lived experience which connects symbols, space and place. In order to engage transformative levels of participation, interventions must be meaningful and engage the symbols of experience that are authentic to their place and context of intervention. To engage the mobilising powers of culture, actions should be expressed in a way that has a local cultural force.

Without engaging culture or a process of cultural change, structural changes not only lack meaning but its people and populations may not understand how to engage with the new structure or system and, therefore, revert back to the systems that they know, even if those systems are destructive. It is, therefore, important that initiatives for structural and systemic change engage culture for meaningful participation. This means working to synthesize culture codes and using their knowledge and symbols to reorder and re-experience social phenomena in order to generate new meanings and environments.[25] Through this transformative cultural engagement, initiatives for systemic change can engage authentic participation and social transformation.

Culture Code 4: The Arts

The fact that arts have had a long history with social change is no coincidence. The arts enable us to read what is embodied and embedded in the larger social order.[26] They are the densest information ground for understanding group values, characteristics, communication and social processes. With the right understanding and engagement, the arts can play a huge role in re-inventing social narratives, transforming mindsets, catharsis, healing wounds of societal violence, catalysing systemic change as well as cultivating alternative cultures with values that align to more sustainable systems.[27]

The arts can effectively catalyse social transformation and hold much potential to strengthen systemic interventions. To utilise the arts-based interventions for systemic change, the wider lens of culture can first enable one to see which artistic interventions could be most relevant and have the highest transformative potential for the context of systemic change.[28]

Culture can be said to contain the above mechanisms, 'culture codes' and critical nests of relationships that when altered systemically and integrally can alter behavioural and societal outcomes. By changing our perception and understandings we increase our capacities to support and even give rise to systemic change. New processes of social learning generate

new understandings and new forms of relationships which can enable authentic reordering of social formations for a new social architecture.

Through this three-pillared framework of Socio-Systemic science, we can highlight key axis points to act on and create more effective activism strategies and transformative leadership. Some of these axis points may be bio-social axis, some cultural axis and some socio-systemic axis depending on the context. Through this framework we can create methods of systemic action alongside identifying key axis points to leverage systemic change. We can understand how to develop methods of practice which can alter outcomes scientifically.

3. Part 2: Putting the Science into Practice

Socio-Systemic science of impact can be applied to multiple fields and sectors of society. It can be implemented by industry sector or by local area and through leadership strategies that catalyse key systemic components. We can apply it to the re-architecting of the development sector, to the transforming of health industries, remodelling business practices for sustainability and to the restructuring of our economic system. Or, a 'systems change map' which alters critical nests of relationships and key societal structures can be created for a specific area or region which desires such change. Leadership such as Social Architect leadership can engage and catalyse key systemic axis points and processes. Structural and systemic action is imperative. Resource overshoot, biodiversity loss, topsoil destruction, atmospheric pollution and the emerging water stress are on a rampant path to affect 6 billion by 2050. These are some examples of system-level problems that require system-level solutions. Systemic thinking is critical for addressing our global issues at a causal level, in particular our most fundamental global issues: socioeconomic inequality and ecological decline.

At the root of socioeconomic inequality are the system of commerce and its built-in mechanics. Business and trade, from a systems perspective, constitute a game in function. How profits and losses occur is reflected in the study of game theory. Like the statistical probabilities one would find in a casino, advantages on the part of a given player can increase their odds of winning in the future. Such a framework can explain the exponential rise in wealth of, for example, the richest man alive, Jeff Bezos. With the odds stacked in his favour, the manner by which money is distributed in market-based economics is imbalanced to the degree that once certain advantages are achieved, it becomes a mathematical inevitability that the "rich get richer" and the "poor stay poor." While ideological debate may rage about the moral validity of this reality, the system operates logically, without political loyalty. Hence, if the societal interest is to reduce socioeconomic inequality in a serious way, taxes and regulations will only go so far. With trillions hidden today in tax havens off-shore along with other general gaming through lobbying to avoid taxation on wealth by the upper class, it can be well argued a new approach is needed as global Gini coefficients rise.[29] From a systems perspective, to reduce caustic socioeconomic inequality means to get to the root of causal dynamics and change the very mechanisms causing it. This would require restructuring of how economics works at the root level.

The same manner of thinking applies to the resolution of ecological decline. Our habitat consists of intersecting systems of nature, in a delicate and elegant balance. Before the

Industrial Revolution, humanity had a relatively low impact on the ecosystem. However, the rapid increase in productivity since has caused great strain on all life support systems. Today, we find no shortage of rightfully concerned NGOs and activist groups demanding the degradation stop, with little success. A systems-minded thinker can see that the effort to stop pollution, over-consumption and habitat loss runs against the built-in mechanism of the economic system. That mechanism could best be defined as a push toward "infinite growth" needing the cyclical consumption at all times. The question must be asked as to how humanity can reduce its footprint when the global economic system requires constant sales and turnover to operate. Hence, from a structuralist perspective, in order to harmonize society's economic behaviour with nature, gaining sustainability, those features built-in in our economy that are systemically perpetuating the decline must be recognized and addressed.

Our systems are failing. Beyond failing, they are incentivising social psychologies and behaviours that are the opposite of what we need for sustainability. Our societal systems are designed to ensure a class war rather than social progress.[30] Therefore, without new structures with sustainable incentives and humanising mechanisms to support social change efforts, any and all aspirations will remain nothing but rhetoric and be destined to fail. Standing now at evolutionary cross-roads, we cannot afford to recreate the same systemic issues in a different package. We need leadership that understands deep systemic flaws and how to re-architect them.

4. Social Architect Leadership

Social Architects are competent in a systems worldview and deeply value both human and planetary wellbeing. They are literate in structural mechanisms and profoundly aware of our current state of bio-social conflict. They make it a priority to engage in a cause-based analysis and systemic action for the re-architecting of our current conditions. Where traditional activism falls short through structural illiteracy and continually stumbles in engaging mere symptoms of world issues, the Social Architects act as the compassionate analysts addressing the systemic causes of world issues. The understanding of structural violence and our current state of bio-social conflict motivates their dedication to societal re-architecting.

From their inter-relational, systems-science based perspective, Social Architects see the oppressiveness and reductionism of our man-made structures and processes. The fruits of scientific discovery have no doubt benefited many aspects of our lives, from health to transport and so on. Yet, rarely have we seen the same thinking applied to how we organize society as a whole. Social Architects must stand away from context-bound ideological debates on capitalism, communism, right wing and left wing etc. A systemic analysis seeks only to identify the key drivers and mechanisms of a system and culture in order to engage a process of social re-architecting for (re)designing institutions in line with natural laws, human development and planetary wellbeing.

5. Social Architect Leadership in Practice: Roles, Methods and Impact

This leadership hosts a number of unique roles and skill sets which are for the most part absent from our current models of leadership. Social Architect leadership, also, already hosts

a number of methods brought forward from Structuralist and Systemic Movements. These include: Systemic Innovation,[31] Systems Change,[32] Systems Acupuncture,[33] Critical Cultural Action[34] and frameworks for systemic activism. We will briefly outline these methods, their impact, the role that the Social Architects play in them, as well as suggest ways forward.

5.1. Systemic Innovation: The Social Architect as an Innovator

Through systemic innovation the Social Architect leads the way to more sustainable industries. Systemic innovation aims to address key systemic flaws through a) innovating on system leverage points,[35] b) identifying new system nurturance points,[36] c) the redesigning of key systemic components, and d) modelling or working towards the modelling of more sustainable systems. It seeks the development of models and systems supporting the integral wellbeing of humans and the environment. It is a successful and growing area. Understanding key places to intervene in a system enables us to understand where to act to have the strongest possibility of fundamentally changing that system. Hence strategic innovations can be made for systemic impact. An example of this is 'Disruptive – Sustainable innovation' which has gained much momentum and now has major platforms such as Katerva, the so-called Nobel Prize in Sustainability (katerva.net).

A key method for disruptive-sustainable innovation is the CIRR framework[37] (Critique, Insight, Redefine, Restructure). CIRR addresses flaws in systemic design of industries and organisations, as well as weaknesses inherent in their logic. It engages a process of re-thinking, drawing insight from culture and lived realities through which the meaningful redefining of core systemic elements can be made. It, then, engages key aspects of design science for the redesigning of a system's architecture.

Other major syllabi have also been created such as the Doctoral Program in Systemic Innovation at Buenos Aires Institute of Technology.* This Doctoral level program looks at how socio-technical solutions can dissolve VUCA challenges (i.e. challenges that are volatile, uncertain, complex and ambiguous) by looking at both system leverage points and system nurturance spaces. Alexander Laszlo expounds: "Results include the generation of socio-technical solutions that are synergistic with each other (thereby forming collective incubators or innovation greenhouses based on the application of collective intelligence)."[38]

Systemic Innovation is high impact innovation which can fundamentally address flaws in how our current industries operate. An example of this is FormWelt media.† As opposed to current media which plays out narratives against each other; and as opposed to current technology which can have a detrimental effect on a person's cognition when used in excess, FormWelt media is designed to make information more and more coherent, and to make communications clearer and clearer. It creates a dynamic information system through which a propagandic model cannot exist. Furthermore, it is designed to increase and develop the cognition and cognitive faculties of those using it. Addressing the systemic flaws which enable media to perpetuate propaganda and the dumbing down of populations, FormWelt is designed for continual increase in informatic clarity which disables propaganda and works

* https://www.itba.edu.ar/doctorado-en-direccion-de-la-innovacion-sistemica/?lang=en

† https://formwelt.info/

for the development of individual cognitive faculties and generation of collective intelligence and superintelligence.

5.2. Role of The Social Architects: The Innovators

This is an entrepreneurial form of Social Architect Leadership where the Social Architect identifies existing flaws within industries and engages in a deep design process for innovations which fundamentally alters the nature of that industry. They are the game changers.

Suggestions for ways forward:

Training in Systemic Innovation can be harnessed to scale out global social leadership for systemic action on global issues. We suggest that 'Systemic Innovation Labs' be created where current methods for systemic innovation could be trained and further expanded.

5.3. Systemic Acupuncture: Social Architects as Leaders in Systems Change

Another method engaged by leading Social Architects is Systemic Acupuncture. Validated by scientific evidence in Deep Design methodology invented by Hames and Oka, Systems Acupuncture deliberates "precisely calibrated change, in complex situations, with the least amount of resources and effort."[39] It engages a process of 'Transformational Narrative' transforming the 'being, thinking and doing' of the people involved in the system/organisation through a deep inquiry process which, in effect, transforms the culture and behaviour of those involved. Alongside this the most relevant 'acupuncture points'[40] in the system are identified. Then new alternatives are highlighted, while the restraints on these alternatives are lifted. The result is the design of a new system for purposeful change.

An example of systems acupuncture is efforts to understand how to reinvent democracy in ways that would not just eliminate flaws and the possibility of corruption, but also provide a compelling UX for citizens. An AI enabled systemic acupuncture analysis revealed the best places to start. This then became the MiVote initiative,* where the re-engagement of the community takes place with public policy decisions that would directly affect them, as the intervention point, instead of the more traditional political party reform.

The impact of Systemic Acupuncture has been that impossibly complex problems have been resolved in ways that are enduring, for considerably less cost and effort than originally thought. Alternative options for intervening in any complex system have been identified that are far less intrusive to (and therefore far more acceptable to people working in) routine operations. Leaders working to effect change begin to appreciate the dynamic nature of shaping whole-system patterns, rather than the more linear, mechanistic, problem solving ways of thinking they are used to.

5.4. Role of The Social Architects: Providing Systems Change Services

In this case, the Social Architect offers a service of systemic change to organisations that are struggling with complex challenges. Enabling them to understand how to alter their operating system from the inside out, through the rewiring of whole-system patterns.

* https://www.studioalto.com/work/mivote/

Suggestions for ways forward:

Alongside activist and humanitarian efforts for climate change and sustainability, the current modus operandi of businesses needs to have sustainability and human-centred design embedded into it. Businesses should be required to address our complex world issues not just through charitable donations, but also through evaluating and addressing how their business systemically contributes to and/or generates world issues. Therefore, Social Architect leadership for the further development of systems change services and systems acupuncture services, which enable companies and organisations to transform their practice, is vital.

"The Social Architect embodies a brave new train of thought, with an activist approach that is integrative, not reductionist. This train of thought commands a public health, epidemiological approach to problem resolution, focusing on the most core structures of our society, posing the proposition: True, needed social improvement will not come about if the current socioeconomic structures remain unaltered."

5.5. Social Architects as the Leaders of Effective Activism

When we understand that systems have inherent natures and cannot be merely reduced to the actions of their participants, but rather, only understood through the functions and related incentives the system has, we begin to understand why contemporary activism fails. The prevailing community is attempting to regulate forces that have a very low probability of being regulated. For example, ecological sustainability and a return to climate stability must involve far more sustainable commercial practices. Unfortunately, when the central mechanics of today's economic system are understood, we realize that the structure itself does not support ecologically sustainable practices by default. Hence, the existence of metrics like Gross Domestic Product and the perpetual push for economic growth across the world. Our current system of economy has no vocabulary for what it means to be environmentally sustainable. It is not built into the system itself.

The Social Architect embodies this brave new train of thought, with an activist approach that is integrative, not reductionist. This train of thought commands a public health, epidemiological approach to problem resolution, focusing on the most core structures of our society, posing the proposition: True, needed social improvement will not come about if the current socioeconomic structures remain unaltered. This is no small task. It will take Social Architects acting as innovators, and as leaders of systems change, as outlined above, but it will also require us to upgrade our current modes of activism and humanitarian efforts.

The vast majority of activist efforts remain structurally illiterate[41] and studies also show that the majority of organisations working in philanthropy and aid remain highly ineffective.[42]

Socio-Systemic science as a framework for high impact systemic action could provide skills, know-how and tools, as well as build frameworks for more effective action. It can highlight key system axis to act upon to leverage systems change, but also provide activism and humanitarian efforts with new and needed skills such as structural literacy.

Social Architects as leaders of effective activism and humanitarian efforts would be structurally literate and would have the capacity to increase structural literacy[43] in their communities, and hence accelerate more effective systemic action. One of the emerging frameworks for structurally literate activism is Critical Cultural Action,[44] which works with principles of collective intelligence to develop the capacity of communities to engage in critical thinking to gain structural awareness in their context of how oppressive mechanisms operate and are affecting their everyday lives. By gaining structural awareness of their societal systems connected to their daily struggles, they then develop methods for critical systemic action in their local environment. Major movements such as Popular Education and Culture Hacking* are examples of structurally literate practices which are growing. Methods such as 'Critical Community Development'[45] have now developed ways to develop structural literacy and scale out critical cultural action from the local level to the global level.

Critical cultural action engages local everyday experience, language and symbols for the development of critical thinking which can challenge taken-for-granted assumptions and reveal mechanisms of dominance, oppression and injustice. It therefore holds the potential for social transformation by enabling populations to become 'structurally literate' in their societal systems and hence holds the potential to generate Social Architect leadership. Through this, populations become equipped to take more systemic action in their daily lives, and also create initiatives for systemic action. It also holds the potential for the utilising of collective intelligence for the building of, and transitioning to more sustainable systems.

5.6. Role of The Social Architects: Leading Effective Activism

As leaders in effective activism they can exemplify methods and models for systemic action. Their leadership acts to increase structural awareness and identify systemic causes, thereby understanding how to act on these locally in ways which are culturally relevant and which engage meaningful community participation. Through frameworks such as Critical Cultural Action,[46] rather than activism being allocated strictly to organisations working on world issues, it can be allocated to everyday people everywhere. Localised forms of Social Architect leadership can be generated and developed through critical collective intelligence.

Suggestions for ways forward:

Current methods such as Critical Cultural Action can be developed and scaled out through network alliances which spread the skills and practices of critical community building. Furthermore, Socio-Systemic science and Social Architect skills, literacies and capacities such as structural literacy could be given to NGOs, third sector organisations and activist groups to scale up and scale out our capacities for more effective action.

* https://therules.org/culture-hacking/

A further step would be the developing of Social Architect leadership which can redesign flaws in our very institutions of Aid and Development which are working against the realisation of systemic solutions. A current example of this is the Tao of Finance[47] Initiative, which is re-architecting the economic system. By addressing the flaws in the financial mechanisms behind the Sustainable Development Goals, and reorienting its financial structures to be focused on human wellbeing, they are working towards the creation of a system which is incentivised towards sustainable values and hence is better designed to enable more effective action on the SDGs.

If all are trained in Socio-Systemic science, the Social Architects can map out key systemic axis points for leveraging systems change, and provide the 3rd sector, private organisations and local communities with frameworks for integral, powerful, meaningful collaborations for effective systemic action.

The above demonstrated methods of Social Architect Leadership and systemic action are just the beginning of what is possible. There remains a great need and profound opportunity to develop more dynamically creative methods for culturally-based systems change through the systemic engagement of the arts.[48] Socio-Systemic science can be harnessed to develop further applications for specific regions and societal sectors. It can also be further developed to create new activism frameworks and more effective humanitarian models. For our prevailing world issues, it can offer the means to address issues individually, and also provide a means to develop methods which address the interconnected nature of world issues through more integral systemic action.

6. Social Architects in Integral Systemic Action

Integral systemic action means a framework through which Social Architects from diverse sectors and levels of society can work to integrate their efforts for the continual development of a more coherent integral and viable system. A new system will not happen overnight. It will take multiple Social Architects in combination with their collaborators and communities. What would the new system look like? Ross Ashby is notable for coining the phrase “Requisite Variety”. It proposes that in order for a system to handle the diversity of problems that can arise or evolve, the system needs to have a repertoire of responses which are as nuanced as the problems. In other words, the system has to be able to adapt to new conditions. If a manmade system does not have Requisite Variety, it means more governance or regulation is required. From the standpoint of what defines a “Viable System” in its most realized form, Requisite Variety would be exactly what is needed and hence the system would not need external management. This means the integral collaboration of multiple Social Architects aligning their efforts for the continual development of a system that becomes so coherent that it takes on its own self-organising capacity.

Within the current developments of Socio-Systemic science, to engage integral cooperation would mean that: 1. the *priority domains* for re-architecting are established, 2. *primary axis points* for critical systemic collaborations must be identified, 3. we need to increase tools and frameworks for *integral acceleration and cultural cooperation*.

The *priority domains* for re-architecting would be the addressing of systemic causality. Although many methods of social re-architecting can be developed, the priority must go to the Social Architects acting most strongly on systemic causality. This means the addressing of systemic incentives and the social preconditions which fundamentally give rise to the variety of social issues that we face.

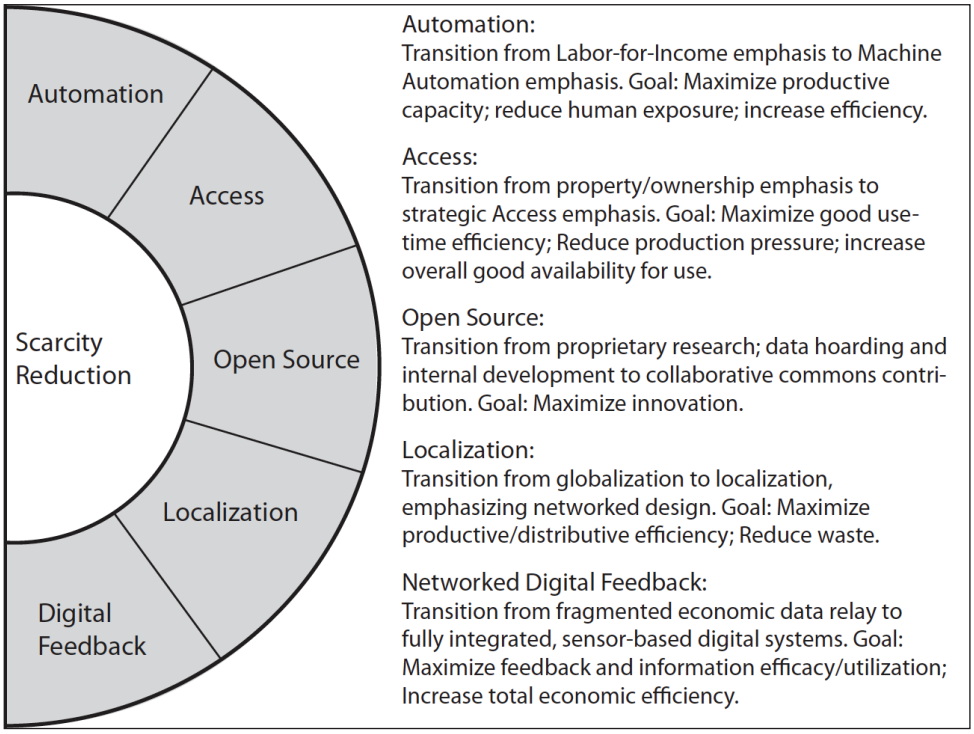
From a Socio-Systemic perspective, an axis point is an area where key systemic influences overlap. An example of a 'bio-social axis' is trauma where one can identify both mechanisms of societal violence and oppression which create the trauma, hence the ability to highlight the harmful effects of our societal systems biologically, as well as counter these with modalities of healing and re-invention. An example of a 'systemic axis' point would be addressing the ownership and decision-making processes of societal institutions which decide how the subsequent relationships are structured. *Primary axis points* for critical systemic[49] collaborations can be developed through identifying overlapping matrices in system change maps. Maps of key Socio-Systemic factors can be made and the primary axis points which can best leverage systems change can be identified. Identifying priorities and mapping critical axis points can become a strategy of action through which multiple Social Architects can combine and organise their efforts for meaningful and powerful forms of integral systemic action.

Integral acceleration and cultural cooperation must be continually supported and developed to enable all efforts to work towards a new system which becomes more and more coherent. Integral acceleration could include a) key information flows locally within organisations as well as between systemic collaborations, b) tools such as 'Collaboration Literacy' which enable organisations whose efforts are isolated or societal sectors not used to working together to generate the personal and professional skills required to understand how to collaborate on a daily basis in more effective ways. Further skills for integral acceleration could include the development of new roles such as 'weavers'.[50] Finally, cultural cooperation enables us to combine our efforts through the conscious cultivation of new values and new norms.[51] We need Social Architects in integral systemic action in order to comprehensively address complex system failure. We outline now a 5-step framework for integral systemic action to address the complex failures of our economic system. Providing an in-depth example of systemic re-wiring, we hope to demonstrate how it could be possible for the systemic forces currently perpetuating socioeconomic inequality and ecological decline, to be restructured in order to support equality and sustainability.

6.1. Altering Systemic Forces to Increase Equality and Sustainability: The Social Architects in Integral Action for Systemic Change in Economics.

Figure 1[52] below shows five economic adjustments that, if achieved to a relevant degree, would act systemically to improve social preconditions and sustainable trajectories. They include **(1)** Automation, **(2)** Access, **(3)** Open Source, **(4)** Localization, and **(5)** Networked Digital Feedback (also generally referred to in popular literature as "the Internet of Things" or IoT). Each of these represents a more efficient mechanism to achieve productivity, reduce waste and environmental impact, while reducing the caustic socioeconomic gap.

Figure 1: Conceptual Graphic representing five shifts to increase economic efficiency and reduce the scarcity pressure. These adjustments will decrease socio-economic inequality and the spectrum of disorder and oppression consequential



These five adjustments are integral, meaning they work interdependently with each other. They can be implemented by local area according to regional requirements/needs. Or, they could also be implemented by industry sector, in which case a 'systems change map'[53] could be made for that industry to understand the key areas of action and adjustment to transition that particular industry or sector.

The first attribute is the deliberate application of **(1) labour automation**. In contradiction to the market's traditional framework, human employment is now inverse to productivity in the sectors where automation has been applied.[54] This means human labour is becoming obsolete and human employment is actually economically inefficient when the automation option is available.

Machine automation has greatly helped facilitate increases in productive efficiency and resulting standard-of-living increases experienced by much of the globe.[55] While many speak of the power of markets as helping increase standard of living over generations, the true technical source is actually applied technology,[56] not markets. As such, it becomes

a matter of social responsibility and prudence to maximize this potential. The growth of information technology, applied robotics, and artificial intelligence are projected to move faster than society is able to create new jobs to replace the ones being automated.[57] Because the costs to produce these machines are increasingly inverse to their productivity, they will also continue to become cheaper than human labour in most sectors over time. Statisticians tracking this rapid rise find no reason to assume any sector will be off-limits from automation in the future.[58] Not only will this structural shift to labour automation dramatically create a more equitable standard of living due to increased efficiency but also free humanity from dehumanizing, monotonous labour roles. This freedom opens the door to a new world of incentives, shifting motivation into creative, collaborative, and exploratory fields. As a natural course, the first areas that automation becomes applicable in are generally the most monotonous since they are the easiest to mechanize. This means the path of adjusting society to an automated economy first removes the type of work people do not wish to do, refocusing on areas that provide greater fulfilment.

The second attribute noted in Figure 1 is **(2) access over property.** This means tilting the balance toward access and away from ownership**.** From the standpoint of technical efficiency, the general idea of everyone owning everything is irrational for a species sharing a finite planet. This ethic of individual ownership has also been a large contributor to resource overshoot, environmental destruction, pollution, and waste. It promulgates a materialist conception of reality that further fuels detrimental consumption. A true access-based approach to distribution means good use is spread across the population, just as a thousand people over a generation may check out a single book from a library. "The rise of the sharing economy" or "collaborative consumption" demonstrates the trend of people gravitating away from ownership, relying rather on access to sharing networks.

Access is really at the heart of economic necessity, while ownership is a creation of the market system's need to store value and protect property from theft in a world based on the assumption of universal scarcity. Most property crime is generally driven by want and a lack of access. The creation of an "access abundance," seeking to give everyone equal opportunity to use, means property crime would drop as abundance is achieved, while also helping close the economic inequality gap. This is not to argue for an abstraction where property no longer exists and no material rights of any kind are enforced. The efficiency logic here is simply to shift the focus from property to access, supporting access rights more than property rights. The result would be the cultivation of a kind of shared commons that would be not only more sustainable and less wasteful but also able to extend goods and services to those who once were not able to afford them.

The third attribute is the full incorporation of **(3) open-source contribution**, making all industrial and scientific information freely available. This could be deemed the cultivation of a "collaborative commons." The market economy treats ideas as property to be owned and sold, and hence the term "intellectual property," about which a host of laws exist. The market incentivizes the proprietary hoarding of information and closed internal development rather than open, collaborative development.

For years, competitive and privatised arrangements have been interpreted as the driver of innovation in the commercial arena. While this may have been true to a certain degree, today it has become clear that technical innovation is actually occurring more quickly and efficiently through open-source collaborative contribution than through proprietary, closed development.[59] While there is plenty of empirical evidence to support this truth, basic common sense also prevails. If we understand that technological progress is an inherently social process, with parties constantly building upon and improving existing ideas over time, then logic recognizes that more minds thinking about a given problem or proposal will always be better than a few, if organized properly.[60] While in its infancy, as numerous pro-open-source organizations now plead with industry to open their intellectual vaults, the emerging reality is that the efficacy of proprietary development is losing steam as an optimized means of innovation.

The ideal next stage of this trend is to apply the method to major industrial design projects. Through CAD (computer-aided design) and CAE (computer-aided engineering) projects, linked online, it is now possible for economic creation to be engaged by anyone who has the skills and interest to contribute. Today, demand is assessed, created and manipulated by advertising, market research, and guesswork. In essence, product developers are testing the waters of what people may or may not seek. The intent is not to help but to sell. A system of open-source participatory economics reverses the process, using a democratic means to decide what should or should not be produced. Other positives would be the elimination of wasteful, duplicate proprietary components that otherwise perform the same function, and movement toward universal standardization across as many categories of goods as possible, also reducing waste.[61]

The fourth attribute is **(4) localization.** In stark contrast to globalization, localization is about regaining efficiency and reducing waste by locally producing as much as possible, streamlining the supply chain. Extraction, production, distribution, and recycling should be subject to design itself, organized in the closest proximity to the population group in need. This may seem like common sense, but mostly because the competitive pursuit of lower labour costs, commodities and goods are moved all over the world unnecessarily. This pattern has become increasingly wasteful in light of new production means that are highly versatile and effective, such as advanced 3D fabrication (additive manufacturing) or soilless indoor agriculture. Modern productive potentials are changing rapidly, further supporting the interest to end globalization in its current highly wasteful form, focusing on regional production through advanced means.

With the advent of automation, we now see labour power, once deemed a core, human-performed economic factor of production, collapsing into the context of capital goods. In effect, labour power, capital goods, and consumer goods are now blending together. Taking this trend to its logical conclusion, it is not difficult to envision advanced fabrication systems capable of producing, through mostly automated means, virtually every material a region needs, locally. The only imports perhaps required would be raw materials the machines used for producing the goods. While there are current limitations of course, this is what the future suggests as we continue doing “more with less” economically.

This brings us now to the fifth and final attribute to address, **(5) Networked Digital Feedback.** This has been popularly embraced by what is often called the "Internet of Things" (IoT). While the IoT has no exact definition, it is about networking technology and sensors to optimize information flows. Using the Internet and instruments to measure and track feedback information, this process, in the ideal, can unify numerous disparate elements and systems, greatly advancing awareness and efficiency potentials. Some ambitious ideas are "smart cities" where various components of the urban infrastructure become networked for rapid response, from personal health sensors that link to hospitals, to lights that dim when no one is detected in order to save energy. The imagination can run wild with possibilities. If properly incorporated, this ability could allow for a powerful integration, unifying and simplifying the once extremely complex technical processes of society.

In an economic context, the IoT approach could relay and connect data regarding how best to manage resources, production processes, distribution, consumption, recycling, waste disposal behaviour, organize consumer demand, and so on. It may seem abstract, but such a process of networked economic feedback would work on the same principle as modern systems of inventory and distribution found in major commercial warehouses. Many companies today use a range of sensors and sophisticated tracking means to understand rates of demands, exactly what they have, where it is or where it may be moving, and when it is gone. It is ultimately an issue of detail and scalability to extend this kind of awareness to all sectors of the economy, macro and micro.

Mechanisms related to the IoT make it possible to efficiently monitor shifting consumer preference, demand, supply, and labour value, virtually in real-time. Moreover, IoT can also be used to observe other technical processes price cannot, such as shifts in production protocols, allocation, recycling means, and so on. A true system of economic feedback and management is about understanding the total interaction of economic components on all levels, in a unified way, not just supply and demand or what people are buying and selling. It is now possible to track trillions of economic interactions related to the supply chain and consumer behaviour by way of sensors and digital relay, far surpassing what we are doing today.

6.2. Integral Systemic Action & Cultural Engagement

Achieving the above 5 steps by regional area or by industry sector is more than doable from a technical standpoint. Our main challenge is not technical, it is cultural. Social Architect leadership in combination with collaborators who understand how to utilise the 'systemic engagement of the arts'[62] and 'culture codes' for the reinventing of mindsets and the cultivation of new cultures for processes of systems change will be key. Systemic action is integral, collaborative as well as critical. This deep holistic systemic rewiring could also require complementary Social Architect initiatives to act on key axis to engage system leverage points whilst industries and regions move in transition with these 5 steps.

Solutions cannot be imposed. For true social transformation participation must be motivated and authentic. Furthermore, changing the stories and narratives at the heart of a system is critical for changing systems. Therefore, engaging culture codes is critical for meaningful participation and catalysing social processes for systemic change. Culture

also provides a lens to identify critical nests of relationships and hence critical axes where meaningful and powerful integral cooperation and collaborations can take place.

Our current social systems are dualizing and polarising. We do not have integral systems. By integral we mean designed to highlight connections between societal phenomena and have embedded systemic processes which continually increase the coherence of that system. A system's level of coherence relates directly to the health of that system. Communication and information flows must be created which enable multiple forms of participation and which facilitate collective intelligence. The Social Architect is a key player of a larger systems change process. They should work towards integral cultural engagement with weavers, innovators, industry specialists, cultural cultivators, catalysts and new story tellers, artists and world builders for integral cooperation for embedding social transformation as part of the building of new systems.

7. An Imperative for the Future

The Social Architects and the Socio-Systemic science of impact represent a critical shift in how we approach activism and humanitarian efforts. They redefine the very notion of sustainability emphasising that it cannot be practiced as anything else but an art of systems change. Humanitarian and sustainability efforts although good intentioned, have for the most part engaged in mere symptomology. Now, standing at critical evolutionary cross-roads we must move out of the realm of effects and into the realm of causes. We are faced with hard questions about the conditions conspiring to promote human suffering, and why in 2020 we still endure inequalities of disturbing proportions and other major systemic failures which now threaten humanity's very future. As Farmer forewarns, "The task at hand, if this silence is to be broken, is to identify the forces conspiring to promote suffering […] If we do this, we stand a chance of discerning the causes of extreme suffering and also the forces that put some at risk of human rights abuses, while others are shielded from risk. No honest assessment of the current state of human rights can omit an analysis of structural violence."[63] We can no longer turn a blind eye to structural violence and systemic failure. Inside the dark heart of structural violence are the keys of societal re-architecting that are in fact our only hope out of it.

Should we really commit to human rights, to a more humane, more just, and more sustainable world, we need to create systems which have those values embedded into them and cultivate cultures which embody those values. The methods outlined in this paper are just the beginning of what is possible. Should we really commit to resolving our global crisis, developing Social Architect leadership and systemic activism must then come into central focus as an imperative and priority.

Alongside previous suggestions posed for ways forward, we can also outline further prospects for developing this new form of leadership and activism which could be explored through the following. Although not exhaustive, they provide a start for how to move forward:

1. Incentivised and structured collaborations of Social Architects working with specialists in sectors so that re-architecting can be applied to different societal sectors such as Development/Aid, Economics, Health, Education, Arts and so on

2. Further development of systemic axis points and system leverage points alongside the development of tools for integral acceleration in order to enable powerful systemic collaborations and integral action.
3. Applied research & action hubs to explore the advancement of Socio-Systemic science of impact.
4. Integral systemic action through a Transformative Ecosystem.[64]

Great changes in science and hence our understanding of the world have occurred over the past century. Advances in technology, new revelations about the universe, nature, public health and other emerging realizations remind us that what we think we know and what we think we are doing is forever going to be challenged by new information. The rise of a systems-based worldview forms the basis of a new way of understanding modern problems, inferring the kind of thinking and leadership required today. The Social Architect is a new entity in this development, working to finally apply grounded sociological science and understandings of natural systems to improving the human condition. Objectively speaking, most of all social trends are now negative from a public health and habitat sustainability standpoint. The gains we have enjoyed since the dawn of the industrial revolution have not come without a cost—a cost that is now growing faster than solutions, in the form of vast systemic problems. From this perspective, it is concluded that not only would such a "structuralist" approach be an improvement to existing methods of leadership and activism—today it is a requirement to meet the challenge.

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A Values-based World Order

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Abstract

The challenges we face today can be transformed into opportunities if the motivation of short-term, myopic social values is replaced by commitment to psychological values such as unity, harmony, freedom and equality. Values are commonly dismissed as utopian ideals of little practical relevance, whereas in fact they possess an enormous power for self-realisation. A study of history makes this apparent. The utopian values espoused during the American War of Independence, the French Revolution, the Indian Independence Movement, the founding of the United Nations, and the Universal Declaration of Human Rights have gradually acquired the status of law and been transformed into globally accepted social standards and goals, as embodied in the UN Sustainable Development Goals. The article examines crucial socio-political issues and analyses the role of values in determining their outcome. Current social theory focuses mainly on the role of objective external factors such as economics, geography, and technology in determining the course of events. In doing so it overlooks or grossly underestimates the role of subjective factors such as rising social aspiration, acceptable norms of behavior and universal values. A valid theory of history must come to recognize and give due importance to the determining power of the psychological forces that govern the course of human events. This theory will confirm that the solution to humanity's problems lies along an evolutionary axis toward a values-based world order.

The world is far from being ideal, beset as it is with so many imperfections ranging from global disharmony, internal civil wars, terrorism, COVID-19 pandemic, climate change, environmental pollution, nuclear arms pile-up, unemployment and scores of other afflictions. These imperfections stem from our short-sight, greed for consumption, mutual mistrust and unwise economic policies etc. These can be remedied if the world reorganizes itself to function according to values such as unity, totality, harmony, human security, freedom and equality. The call to uphold values has been there from time immemorial voiced by religious prophets, wise men and philosophers etc. But these calls have never been taken seriously and so the world continues to remain badly organized and imperfect in many ways.

Values are often dismissed as idealistic platitudes which no one really intends to respect or act upon. But in reality they have an enormous power for self-realization, even though the time required may be measured in years, decades or even centuries. The idealistic values in the American Declaration of Independence did not bring about the abolition of slavery in USA until 90 years later. And the passage of the 13th Amendment was not effectively enforced to replace many forms of discrimination against Afro-Americans for another century. And

it took another 50-60 years for the first mixed race president and female vice-president to be elected in USA. But never doubt it was the power of the original values that was finally realized.

> *"When physical and economic insecurity are high, as they were during the two world wars and the Great Depression, authoritarianism can appear attractive to those in want and under threat. Strength and security first, freedom afterwards."*

Let us consider then the value of global unity. Global unity is a fairly recent concept, formulated after two disastrous world wars and the failure of the League of Nations to guarantee world peace. The League was replaced in 1945 by the United Nations, which was expected to be more effective in dealing with issues of war, peace and security. But the rapid onset of Cold War tensions between the U.S and Soviet camps quickly dispelled the illusion that peace had finally been secured. The aggressive spread of Communism in Southeast Asia aggravated the situation leading to American participation in the Korean War and Vietnam war.

Fortunately, Cold War tensions and the arms race declined following the collapse of Communism and fall of the Soviet empire. But though there have been some relative improvements from the peak tensions at the height of the Cold War, the world is still far from being united in global terms. It is still beset with Islamic terrorism, leaving Europe, North America and other nations apprehensive about where terrorists might strike next. Moreover, European and New World governments are also confused about how to appease terrorist groups and how far their demands can be met without sacrificing Western interests.

As if the terrorist threat is not enough, festering sores like the India-Pakistan dispute over Kashmir and the tensions between Palestinians and Israelis over Palestine still threaten to explode at any time. Given such an unsettled atmosphere, it remains to be seen how global unity can be maintained as a value. The world became truly global by the end of World War II. Consciousness of global interdependences remained very vague for newly independent Asian and African countries which were preoccupied with how to safeguard their newly won independence in the global arena. This was marked by anti-imperialistic rhetoric in UN and other international forums. But the dangers of economic recession spreading all over the world along with the existential threat of climate change and onset of the global pandemic have made many people realise the pressing need for global cooperation and cooperative human unity.

The great European empires of the 19th century, especially the British, had the opportunity to transform its empire into a showpiece model for world unity even before the onset of WWI, had it only acted with the same vision with which it granted independence to India a half century later. But the policies of the great imperial nations were short-sighted and they were only directed at exploiting their colonies for the welfare of their imperial masters

and nothing more. As a result, subject nations only grew increasingly resentful and started demanding their own independence. Their calls were met with some stiff resistance until the end of World War II. Even then, they exhibited no intention to renounce their overseas possessions. Then in less than two decades, the imperial enterprise of two centuries collapsed and vanished into thin air. Today, one would like to believe that the opportunity missed earlier can be attempted with hopes of some success in the 21st century.

Achieving and maintaining world unity demands that the leading nations understand the historical, geopolitical and cultural factors which govern national conduct and pardon the shortcoming and wrong doings of other member nations as they condone their own past lapses and national insufficiencies. Without such tolerance any sense of unity is impossible. In a country like India where joint families were prevalent till 1970s, the head of the joint family could maintain that semblance of unity only by overlooking the faults and wrong doings of other members of that family. When Germany lost the First World War, the victorious allies imposed such severe penalties on it that it generated fertile conditions for the outbreak of 2nd World War. The second time around, they reversed that earlier behavior. America's Marshall Plan supported the speedy recovery of the aggressor and transformed the former aggressor into a long-term ally.

The capacity to maintain unity also demands that nations are able to recognize the truth in the point of view of other nations. That recognition will enable them to remain friendly with other nations that they normally disapprove. Today the USA and China represent the two polar ends of the values spectrum—liberal capitalist America has been extolling the supreme value of individual freedom and minimizing the responsibility of the collective for individual welfare. China has been subordinating and suppressing political freedom to rule by the communist party while implementing development strategies which have raised hundreds of millions out of poverty. While the extremes are bound in competition, Europe has sought a more balanced reconciliation of the two values in social democracy, which is itself under pressure from the neoliberal onslaught that followed the end of the Cold War and globalization of the world economy. The right balance is yet to be attained and the conflicting value systems divide societies and nations, refueling competitive nationalism and Cold War tensions.

China's remarkable achievements in recent decades demonstrate that liberal capitalism is not the only route to development, but even in far less developed democracies such as India, there is no evidence that the population is willing to forego its democratic rights for greater material benefits and the nation persists in seeking a reconciling middle way. Even in the West, social conformity had far more prevalent value in the early stages of its development than when the same nations reached a higher stage of prosperity. From this we may conclude that when physical and economic insecurity are high, as they were during the two world wars and the Great Depression, authoritarianism can appear attractive to those in want and under threat. Strength and security first, freedom afterwards. In a market economy, employment is the essential condition for economic freedom. Without an assured income for economic survival, political freedom loses much of its appeal, and populations are easily swayed by populist rhetoric that attributes their woes to immigrants, religion or ethnic minorities.

Therefore, it appears that understanding and respect for the differences in different cultures and stages of development are an essential precondition for fostering global unity in future.

Totality of understanding—a comprehensive, inclusive, total vision—is another value that we must cherish if we want the world to be a better place for us to live. Human vision is characteristically partial. Totality or a whole viewpoint is not natural to the human mind, which thrives on dividing reality into smaller and smaller bits. But whether we are partial or total, good living demands a total vision and if such totality is absent it generates problems. The environmental pollution that we are facing today is the result of an exclusive preoccupation with greater production and consumption without regard for its impact on the sustaining environment on which all life depends. The preoccupation with the wholesale exploitation of natural resources to support unbridled consumption to meet ever-rising demands and expectations is unsustainable. It is equally true that the earth's capacity for absorbing waste is limited and that our lifestyle must remain within that carrying capacity of the planet. Today we are reaping the consequence of mindless uncontrollable behavior arising from a partial viewpoint. Climate change is the direct result. The alarming disappearance of the polar ice caps threatens to bring about flooding of all coastline areas, displacing tens of millions living there.

If our approach to the earth lacks a total vision, our approach to our economic affairs is similarly deficient. Economy is only a part of Society and fully integrated with other aspects of social life. Rising levels of inequality have profound political and social consequences which undermine the stability, shared identity and social harmony on which society depends for its existence. We have forgotten such an integration and continue to treat economics as something separate and independent with little relevance to other aspects of our life. The steady and increasing recognition of human rights naturally drives up the price of labor, a natural result of social progress. But economists view only its economic impact on profits and strive to prevent it, oblivious of its deeper social significance and essential role in social evolution. If the price of human labor goes up, naturally the products of that labor will also go up and that will come in the market as higher cost of goods in store shelves. The long practised policy of central banks to raise interest rates to prevent inflation as unemployment falls below what were once considered "natural levels" is now being discarded as a trade off which benefits the wealthy elite at the expense of the masses. If only we had a whole perspective, we will be able to look at inflation as a sign of increasing social development, instead of an unwanted affliction. So too the mythical notion of what constitutes too much national debt is now being discarded to confront the demands of the pandemic for quantitative easing and other forms of economic stimulus because even the wealthy have come to realize their dependence on the working class to support the economy.

1. Trust and Harmony

Mutual trust and Harmony are essential values for building a peaceful progressive world order. And these two values are difficult to sustain in times of rapid change and increasing uncertainty. Today people around the world express a steep decline in their trust for social institutions, including national governments, business and the media. The greatest trust today

is placed in the medical profession and science, but even that is under threat by populists who reject COVID-19 vaccine or debunk the dangers of climate change for one reason or another.

"What prevented the UN General Assembly from drafting and bringing to effect in 1970 the UN Treaty on Prevention of Nuclear War, which came into effect five decades later in January 2021? Did it really require a half century for these nations to recognize the existential threat of these weapons? What prevents the whole world from doing so now?"

Restoring trust in our institutions and social harmony should begin with restoring trust in the media, which has been severely undermined by the rapid expansion of unregulated social media. The press, which was once considered the last bastion of freedom, a role it has played well since the French Revolution, is now under attack from those who use the media to manipulate public opinion by false assertions and fabricated information powered by algorithms that can spread deceit far and wide faster than any regulatory body can act. The freedom which protects the public from arbitrary suppression by governments leaves it completely vulnerable to the onslaught of fabricated and strongly partisan news. If a government is unable or unwilling to act, then an independent international authority, similar perhaps to the World Wide Web Consortium, should be constituted by organizations such as WAAS, the Nobel Peace Prize Laureates, Wikipedia or the like to establish an independent authority to rate major media sources globally on criteria such as objectivity, rationality and non-partisanism and the procedures they have in place to prevent the dissemination of false news for political, commercial or social purposes. Without reestablishing trust in the media, fostering social harmony within and between nations—preconditions for effective democracy—cannot succeed.

Surely, we cannot expect to have the earth peopled with only those who are in alignment with our own values and beliefs. As the earth houses grassy plains, steamy jungles, hot deserts and polar ice caps all within its borders, so must human society house within its confines monotheistic worshippers along with polytheistic believers and atheists, sedentary agriculturalists along with mobile nomads, those who prefer individual freedom to social conformity, human security to national military preparedness. The evolution of humanity bears witness to the facts that human beings are quite capable of accommodating people of different cultures and religions. Polytheistic Hindus and monotheistic Muslims lived side by side in India for many centuries before going their separate ways.

A chief impediment to harmony is the human tendency to be possessive about the land and other natural resources that they are familiar with. The Arabs have lived in Palestine for many centuries and they are unable to reconcile themselves with Asiatic and European Jews coming back to live there claiming that this was their ancient homeland. Similarly, the

Indian state of Karnataka is unable to share the waters of river Cauvery that passes through its borders with neighboring Tamil Nadu, through which also the river passes before emptying into the sea. Just because the river originates in that state, Kannadigas claim it to be their river unmindful of the fact that a good section of the river traverses through Tamil Nadu also. What both Kannadigas and Tamilians are forgetting is that both are Indians and that both have equal rights for sharing Cauvery water treating it as a common national resource.

Disputes over land and water can only be solved if the concerned people come forward to be broad-minded and not be so petty as before. Religious differences between Catholics and Protestants that have occasioned many wars in Europe have mellowed enough to allow both factions of Christians to live in the same state as is being done in many European countries now. The same type of broad-mindedness is expected of Palestinians and Israelis now so that both can amicably live together instead of perennially quarrelling. It is all the more urgent given the fact that Israel is a country with nuclear weapons, the use of which can bring about great destruction. A similar give and take approach is necessary between India and Pakistan over Kashmir for which both countries are fighting from 1947 onwards. It is true that a majority of Kashmiris are Muslims and as such Pakistan has a rightful claim over Kashmir. It is also equally true that India regards the division of Kashmir on religious grounds a direct contradiction to the inclusive secular principles and cultural heritage on which the religious, linguistic and ethnic groups are united and living in relative harmony as a single nation and feel that any abrogation of that fact constitutes an attack on the soul of the nation.

Differences between the rich and poor have long been a cause for major disharmony between people. The French peasantry supported the French Revolution against the aristocracy, clergy and monarchy because of the unconscionable inequity of wealth distribution between commoners and the elite, supported by high levels of taxes on the poor and broad exemptions for the wealthy. The Russian Revolution was triggered by Lenin's proclamation to the Common Russians that they can emerge from their poverty and enjoy prosperity only if they can get rid of their Czar and the Russian aristocrats sided with him. It is hoped that the SDGs formulated by the UN will help reduce the enormous gap between rich and poor nations and between the classes within nations. Doing so would vastly reduce the sources of material insecurity, political conflict, social unrest, and violence so prevalent at a time when the world is more prosperous than ever before in history.

What prevented the UN General Assembly from drafting and bringing to effect in 1970 the UN Treaty on Prevention of Nuclear War, which came into effect five decades later in January 2021? Did it really require a half century for these nations to recognize the existential threat of these weapons? What prevents the whole world from doing so now? For decades Pakistan has fueled paranoia about the threat of Indian aggression to justify the necessity of military rule at home, at enormous expense to the prosperity of its own people and that of its neighbors.

Human civilization can only thrive on the basis of safety and security. That safety has been endangered now with the introduction of nuclear weapons and the persistent threat of nuclear holocaust. The two world wars of the 20th century which caused the death of more than

60 million people were a big blow to the security of the world. The world survived those two disasters only to be followed by the Cold War confrontation between the US camp and the Soviet camps that lasted nearly 45 years while the world lived under incessant fear of nuclear annihilation. Those tensions ceased following the end of the Cold War but now appear to be rearing their heads with the beginning of a new nuclear arms race threatening the safety and security of the whole world. The threat persists because the Nuclear Powers still possess a considerable number of nuclear weapons and refuse to sign a law that paves the way for abolishing these weapons. Moreover, terrorist attacks stemming from terrorist groups operating from the Middle East have cast a shadow of fear all across Europe and North America and made people feel very insecure about moving in the public. Governments are not willing to listen to terrorist demands or negotiate any settlement with them. The free availability of guns to the American public has endangered public safety in the US and the American government is finding it difficult to pass any law tightening gun control owing to the defense of the gun lobby and resistance from those who believe in the right to carry arms for self-defense. Added to all these woes is the arrival of COVID-19 which has made domestic and foreign travel very unsafe.

"Terrorism as a global threat will disappear only when its root causes are addressed."

The world community seems to have a very casual attitude about its own safety. Occasionally the world public erupts in protest, as in the protest march by the million Moms in Washington D.C some 30 years ago after more than 15 students were murdered in a school shoot-out in Colorado. For another 25 years, the world community largely ignored the climate threat until a Swedish student awoke to danger of global warming and enlisted millions of students around the world to support actions to combat climate warming. Recently, world governments have tightened the flow of funds for terrorist purposes and the UN has started labelling states that support terrorism as rogue states. In spite of some effect, support for terrorism persists. The world community needs to introduce more stringent punishment for those who indulge in terrorism. Recently a New Zealand Court imposed life imprisonment without any parole for a terrorist who gunned down worshippers in a mosque. But terrorism as a global threat will disappear only when its root causes are addressed. As a doctor cleans the patient's sore and applies medication and proper bandage, the world community must come forward to address legitimate complaints rather than simply condemning the violence of those who see no other way in which to protest against perceived injustice.

2. Equality

Equal economic opportunities and social benefits have long been a dream of humanity since the dawn of civilization. But equality has remained a distant dream and societies have always remained divided and unequal in political, economic and social rights and power, even in societies founded on strong egalitarian principles. When Socialism began to gain ground in late 18th century Europe, socialist philosophers envisioned models of a classless society. But it was Karl Marx who came up with what he called Scientific Socialism in the form of his Communist Theories. The Soviet Union became the first Socialist state in 1920.

It did raise the lowest levels of the society with assured education and employment, but the inequality of power, privilege and wealth remained far from the ideal. Instead of the withering away of the State, the state became all-powerful and began persecuting enemies of the Socialist Revolution, real or imaginary, by the millions. When President Gorbachev relaxed some of the state controls with a view to making Communism more people-friendly, the movement acquired a momentum of its own and ended up unravelling the Soviet state and empire and the communist system itself.

Inequality is deeply embedded in law and social institutions, so much so that even 150 years after passage of the 14th Amendment in America, Afro-Americans and women still struggle for equality before the law. The roots of the inequality lie not in the institutions but in the consciousness of the society that is rooted in the quest and worship of power rather than justice. It is social power that governs law and institutions and it is the human ego's quest for domination that presides over more idealistic values.

The dissolution with idealism has occurred after every forward progress, from the French Independence and the Civil War to the Civil Rights Movement. Still the world seeks to attain the highest values it espouses and values once placed on paper have an inevitable tendency toward realization in life. As the world has found out that Communism has many shortcomings in its practical application, it is now searching for a more effective approach to abolishing global poverty and ushering in an era of global plenty.

When the Universal Declaration of Human Rights was adopted in 1948, none of the signatory countries were willing to accord the UDHR the status of law or grant powers to enforce it. Yet these values constitute the very foundation of the Sustainable Development Goals adopted by 193 nations in 2015 with a commitment to achieve the targets by 2030. The 17 SDGs address the full range of human needs including the abolition of poverty, hunger, provision of clean water, housing and enabling gender equality and safeguarding the environment from pollution etc. Taken together they constitute a complete formula for Human Security. Experts estimate the investments needed to achieve them range from 2.5 to 5 trillion U.S. dollars per year or more, depending on what is included. A sum looks fantastic, the attempt daunting, yet the world possesses more than sufficient resources to achieve Agenda 2030 in time, even now, if only it is fully committed. The Conscious Capitalism movement has been channeling an increasing volume of funds for this purpose. The fulfillment of those commitments appears unlikely, but none can doubt that nations around the world are making decisions and investments in support of realizing them. That is the power of an idea once accepted and enunciated. Values are power.

Where there is a will, there surely is a way. Many tasks considered impossible were achieved because some man came up with an idea that these could be achieved. When the vast majority of Indians were resigned to being ruled by the British, Mahatma Gandhi came up with an idea that freedom could be won using Satyagraha. He followed it up with an action program that brought the results by 1947, though it took 27 years. Franklin D. Roosevelt became President of the USA in the midst of the Great Depression and the worst banking crisis in American history, which had defied every remedy over the previous three years. FDR

assured the people that the banking crisis could be ended if only the people recovered faith in themselves and the nation. The people responded to his call and saw to their amazement that the banking crisis was overcome in a matter of days.

When Europe was paralyzed with fear, convinced that the Nazi juggernaut was unstoppable, the lone voice of Winston Churchill, the wartime British Prime Minister, claimed that the Nazis could be stopped and defeated. The German attack on Britain failed and the Germans withdrew within three months. Within five years the Nazi war machine broke down and brought Germany to its knees.

The same can be the case with the present task of achieving the implementation of the 17 SDGs within the time frame predicted. At present this initiative has been taken by the U.N. and there is some amount of awareness at the governmental level across the world. But any revolution needs to be mass-based, if it is to deliver results at all. Voltaire and Rousseau may have given the theoretical framework for the French Revolution. But it is the enthusiastic people's participation that enabled the dethroning of the royalty and installation of the revolutionary regime. In a similar way, if ordinary citizens become convinced that a global Prosperity Movement is possible, they will not rest until it is achieved.

In the 90s talking about a monthly income of 100,000 rupees for an Indian family sounded like a fantastic idea. But in 2020 after the arrival of the IT industry, such an income has become commonplace. Young men are not able to find a bride unless they are earning an income of that level or more. If this is possible in India, which was a bastion of poverty, what is not possible on the global scale if globally this movement wins the support of the global community?

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Open Societies versus Autocratic Experiments or Why the Latter are Parasitic, Cannibalizing and Self-Limiting

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Abstract

Events over the past decade revealed a new systems clash: Open Societies versus digital autocracies which are competing to provide better solutions to tackle climate change and pandemics, overcome poverty, and offer reasonable jobs. However, which is doing a better job? The text argues that the current autocratic experiments are flourishing based on the preconditions that they cannot generate independently: Price allocation in free competitive markets; a rigorous debate on facts in an interdisciplinary scientific discourse; free public speech and a free, critical, investigative press; a creative, pluralistic cultural scene; and the building of social capital based on interpersonally generated trust and reciprocal tolerance. These conditions all draw on a human- and person-centred approach and are superior to any attempt to regulate society through a collective, non-democratic top-down process. Autocracies depend on Open Societies and must import relevant information generated only in Open Societies, and thus remain self-limiting.

1. Introduction

Watching the flow of events over the past decade, it is obvious that so-called Western democracies, sometimes also called the 'free world', are facing fundamental challenges. Far from liberal democracy marking the 'end of history',[1] this system of government is coming to be replaced by political alternatives sometimes referred to as autocracies. This goes hand in hand with increasing challenges on a worldwide scale such as global warming, asymmetric wars, unprecedented inequality, forced migration, pandemics and the unknown impact of automation on the traditional labor force, to name but a few. Journalist Thomas Friedman asked: *What if the US declared itself to be China for one day in order to solve all the challenges we are facing, and then decided to shift back to an open democratic system in order to enjoy all its benefits?*[2] In other words: what is the right political agenda for the 21st century? More so-called 'Open Societies' or more autocracies?

The Freedom House 2020 report[3] states that over the last 14 years, 64 countries have experienced a decline in human rights, fair elections, rights of minorities and the rule of law and only 37 countries have experienced a net improvement. Measured by population, 39% live in a free world, 25% in a partly free and 36% in a non-free world. If we attribute half of the population living under partly free political conditions to the free and the other half to the non-free world respectively, we can say that roughly 50% of the world population represent

a free world and 50% do not. At the end of the Cold War it looked as if authoritarian and totalitarian regimes were on the decline, but the current trend shows the opposite: 2020 was the lowest ranking for the free world for over a decade. These empirical findings reflect a statement made by Vladimir Putin, the president of the Russian Federation, in which he claimed that liberalism is simply outdated.[4]

> *"Open Societies protect human rights. It is the very nature of such Open Societies that they are built upon the conviction that the coexistence of other opinions, the creativity of individuals and institutionalized forms of criticism guarantee a life with greater personal freedom, greater truth and greater wealth overall."*

2. Problem-solving in the Anthropocene Era

In fact, these autocratic experiments enjoy significant support, and not only within prominent autocratic countries, but also within the Western 'free world'. In some countries, the support for an autocratic agenda is even higher than the support enjoyed by their 'free world' counterparts.[5] Much has been written about this shift in acceptance on the one hand and lack of legitimacy on the other, but one of the main reasons for this hype about the autocratic experiment is the fact that its followers believe the autocratic system is better capable of solving problems such as poverty, unemployment, global warming, inequality, corruption, and losses of biodiversity. These are all undoubtedly significant issues, and it looks as if autocratic agendas are able to do a better job. We have to admit that, empirically speaking, the autocratic agenda has its attractions: Fast political decision making, a rapid rollout of solutions and streamlined scaling in the economy. However, if we start looking more closely, we see there are self-limiting factors built into the autocratic experiment itself. The question arising here is: which of the two contrasting alternatives has the relative competitive advantage to cope with the upcoming challenges of the Age of the Anthropocene,[6] which is characterized by the limits set by planetary boundaries, overshoots and all-time interconnectedness? In this era, the human species has taken the driver's seat, not only determining the course of the planet—global warming, reduction of biodiversity, pandemics—but also offering recipes for human life in coordinated large societies and for meeting human socio-economic needs. It is an era in which there is no real exit option, plan B or restart button. In short: which of the two systems discussed, Open Societies or autocracies, is doing a better job?

3. The very Nature of an Open Society: Human-centered and Open to Revision

Historically, 'Open Societies'—first described by the Austrian philosopher and founder of critical rationalism Karl Popper[7]—is a conceptual response to the experiences of German fascism and Russian Stalinism, where individual human rights were violated on a vast scale.

Open Societies reflect a societal and constitutional order in which personal freedom and reciprocal criticism provide not only the foundation of individual wellbeing, economic welfare and peace, but also superior tools for solving problems and pursuing truth and coherence in both science and religion. And it is in Open Societies that the state legitimizes itself simply by enabling, safeguarding and balancing out the often conflicting forms of individual freedom and responsibility of each of its members.

Although historically the Open Society has been a contribution of the West, it actually is a political agenda that can apply anywhere on this planet. In an Open Society, individuals engage in a critical, open, fearless and public dialogue to solve problems. Each member of an Open Society knows that this quest for a better life should be human-centered, open to revision, failure-friendly and built upon reciprocal tolerance and trust. And each member of an Open Society is also aware that this search for personal freedom will potentially enable greater creativity, happiness, wealth, health and truth compared to any alternative. The Open Society is built upon pluralism, reciprocal respect and humility, being aware that our knowledge will always be incomplete, biased and potentially misleading. This requires an ongoing fair, critical and fact-based public debate, investigations by a critical and independent press, autonomous scientific endeavors that search for the truth and a better understanding of life's miracles and magic, and an educational system that unleashes the creativity of each and every individual. Open Societies install checks and balances that prevent the abuse of power, and are places where the prices of goods and services are generated in a free, fair and regulated market system with product liabilities and entrepreneur responsibility, revealing the truth about social and ecological externalities. Even more: they are societies where a social security system means that nobody is left behind, where minorities' rights are respected and majority votes are accepted. Open Societies have and implement laws on how to replace elected political officials if they fail to do a good enough job. Open Societies protect human rights. It is the very nature of such Open Societies that they are built upon the conviction that the coexistence of other opinions, the creativity of individuals and institutionalized forms of criticism guarantee a life with greater personal freedom, greater truth and greater wealth overall.

This ideal concept of the Western world enjoyed broad reception in the years following 1989. A further significant influence on the narrative of political debates in the West has been the so-called convergence hypothesis.[8] This hypothesis posits that free trade with autocratic regimes leads, as it were automatically, to a global convergence of the rule of law, the protection of minorities, the separation of powers, human rights and free markets. Therefore this Western value system ultimately is being implemented worldwide, making Open Societies themselves more stable and secure. This narrative even justifies the deployment of the military in humanitarian interventions (so-called R2P: Responsibility to Protect).[9] However, it seems as if this form of expansive liberalism[10] with its missionary proselytism has been taken too far. The flaw of this convergence hypothesis is that it is no longer falsified. Every time an autocratic regime takes a supposed misstep, it is assumed that the regime is *'not yet there'* or that its journey towards an Open Society still needs more time. But it turns out that these were not missteps—autocratic regimes were simply following a different narrative. For example, the year 1989, when the Berlin Wall fell, was used in the West to proclaim the

end of Communism. For China, 1989 was the year of the suppression of the popular uprising in Tiananmen Square and signaled the strength rather than the demise of Communism.

> *"We actually need more critical thinking and less copying, more independent thought than imitation, more freedom and critical autonomy than control and domination."*

However, Open Societies' understanding of democracy and human rights is subject to Western interpretative sovereignty with its claim to universal validity. If you go to a country with high rates of poverty, illiteracy and hunger, you may come to the conclusion that it is worth standing up for universal human rights. But at the same time, you may acknowledge that there can be a temporal prioritization and geographical weighting of different values. Thus the overcoming of poverty and hunger, a roof over one's head and access to basic education and health facilities will quickly take precedence over freedom of expression, freedom of the press and geographical mobility across national borders. Those of us living in Open Societies, as we demand for Europe, the US, and other Western countries, need to admit to ourselves that there may be societies that have other priorities and preferences with which we disagree. There are societies, for example, for which it is not so important that everyone can (almost) always say what they think, but whose concern is instead that their members can be sure that their children will no longer starve, will go to school and will have access to potable water.

4. The Autocratic Experiment and its Constraints: Parasitic and Self-limiting

Whereas in Open Societies, we witness shared, balanced and controlled forms of political power, autocratic regimes rely on reduced or no constitutional constraints to such power, which is exerted by the few, by one party or even by a single person. We can distinguish between communitarian forms of autocracies (China) with a one-party system, paternalistic autocracies (Russia) that emphasize the individual over institutions, and tribal or feudal forms of autocracies (Gulf states) with a prominent family or clan structure, often including military and/or religious-fundamentalist traits. Security and stability as well as economic welfare are seen to outweigh political participation, individual freedom and human rights in the traditional Western sense, something that is common across the forms of autocracies mentioned above. And all have this in common: the population's approval for precisely the given constitution is higher than in most, if not all so-called Western democracies and Open Societies. Autocracies prefer to synchronize, correct and align their citizens, with solidarity, homogeneity and the subordination of individual rights to collective narratives determining the political agenda.

Take China: in Chinese culture, successfully copying the master is considered a special learning achievement. The more perfectly this process succeeds, the greater the learning curve

and the greater the person's reputation in society is. This *'copy and paste'* culture means that the person who copies enjoys a head start because he or she can avoid the entire burden of work, invention and production, trial and error and failure and can instead concentrate completely on the copy. In addition, the China experiment is impressive in its magnitude and the speed with which decisions are sometimes implemented. The reduction of the poverty rate, the growth of the middle class, rising enrollment in educational institutions, increased productivity and the overall increase in life expectancy seem to demonstrate the superiority of the system compared to the clumsiness of decision making in Open Societies.[11] The same seems to be true for other autocratic experiments we are currently witnessing in Europe, Africa and the Americas.

At the same time, however, a number of other cultural achievements are lost or never trained in the first place: critical debate, error friendliness, public discourse, individual judgment and autonomous thinking are characteristics that can only flourish in an Open Society. Autocratic systems have to rely on copying and imitation strategies because the original results of critical judgment are not available first hand. We would assume that as we are living in an uncertain and complex world, we actually need more critical thinking and less copying, more independent thought than imitation, more freedom and critical autonomy than control and domination.

The autocratic ruler has to rely on knowledge and information that is only accessible to them through critical judgment. They pretend to possess a knowledge that they are not able to generate from within. Instead, it needs to come from elsewhere. Even in basic research, the number of patents and publications and the R & D infrastructure do not falsify this argument. For example, most researchers now working in China have been socialized in Open Societies and represent a hidden import of Western values and standards into autocracies. They will play the role of gamechangers towards more open societies from within (while sending their own kids to Swiss high schools).

5. Cannibalizing, Parasitic and Self-limiting Factors

My argument is that the autocratic experiments we are currently witnessing all over the world are flourishing on the basis of preconditions they cannot generate themselves. These experiments are self-limiting, cannibalizing, and demonstrate that these experiments will end sooner rather than later, as they are built upon a set of values that originally come from the free world itself.

Price allocation in free competitive markets, a rigorous debate on facts in an interdisciplinary scientific discourse, free public speech and a free, critical, investigative press, a creative, pluralistic cultural scene, the building of social capital based on interpersonally generated trust and reciprocal tolerance, all drawing on a human- and person-centered approach, are superior to any attempt at regulating a society through a collective, non-democratic top-down process. And a lifelong position in political leadership or decades in political power without the possibility to elect someone else is a sign not of the power, but of the weakness of the system in question. It shows that this system has abandoned a public and critical debate in order to find what it considers the right way.

The multiple critical feedback loops that keep an Open Society in balance and provide sufficient flexibility to respond to asymmetric shocks (such as global warming or pandemics), which itself requires decentralized uncensored information, are poorly developed in autocracies. In fact, censorship is not criticism. Whereas criticism is inclusive and a fundamental component of any Open Society, as it honors different arguments and tries to improve the status quo, censorship creates a so-called in-group/out-group scenario of those who follow and those who refuse. Where films and media, publishing houses and Wikipedia, curricula for schools and universities, and even history are censored, we end up with citizens who have no memory and humans who have no critical mind. In this case, censorship is exclusive and moralizing.

"Open Societies thrive on the idea of a liberal order based on a human-centered approach. They are not driven by leftist narratives' notion of a forced equality, nor by an exclusionary ethnic identity of right-wing narratives."

The process of searching for truth, freedom, fairness and so forth is replaced by autocratic knowledge and a political party agenda that the leader pretends to have but that relies on precisely the quest for truth that is generated elsewhere, namely in Open Society only. Autocracies are too homogenous and too synchronized in a top-down manner to respond and operate in a complex, non-linear world, where uncertainties and incompleteness determine the decisions of daily life. This is true for politics and for the corporate world. This is also true for individuals, smaller and larger groups and entities, and large institutional bodies. Political clan structures, where family members are given preference without any kind of external auditing, mean that the innovation and creativity of the best and brightest never get to develop; the lacking involvement of a critical third sector leads to systemic corruption; these and further examples demonstrate that a critical mind is superior to mechanisms of collective control.

Open Societies, by contrast, are driven by a dynamic and decentralized process led by critical, free-thinking individuals, who are prepared to fail and are sufficiently encouraged to take personal responsibility in entrepreneurship, in the unknown and rigorous journey of scientific discovery, in the creativity of cultural expression, in an open fearless public debate about our own doubts, uncertainties and incomplete knowledge, in day-to-day decision making in the private sphere and in setting political agendas.

Despite their acceptance in the population, their economic and political power and sheer magnitude, autocratic experiments are built upon at least two forms of illusions, which themselves are self-limiting, parasitic and cannibalizing: the *illusion of control* and the *illusion of knowledge and wisdom*. Both lead to the false assumption that the control and the knowledge autocracies exert politically are able to manage the challenges of the 21st century and make autocracies superior to Open Societies.

The *illusion of control:* autocratic regimes are convinced that they can control not only human behavior on a large scale, but also the course of a society as a whole. Facial recognition programs, unchecked artificial intelligence, social credit systems, large-scale state interventions and regulatory efforts, a closed internet and public video surveillance are examples where the politics claims to control and command a societal process that Open Societies organize in a completely different way. However, autocratic political systems lack external feedback loops, such as a critical media and press, free and independent lawyers, or an autonomous civil sector providing indispensable wisdom to cope with the challenges in the near future. And without this formation of social capital, which only occurs when free and autonomous humans decide to collaborate, autocratic systems find themselves much less in control when faced with external and internal challenges.

The *illusion of knowledge and wisdom:* autocratic regimes are convinced that they are able to generate enough wisdom and knowledge from within to rule society and tackle systemic challenges. And once again, this autocratic knowledge is an illusion, because these regimes rely on information and knowledge that is generated in Open Societies only, but is then misused and instrumentalized for autocratic systems' own purposes. The knowledge, wisdom and information acquired to solve problems in Open Societies are superior to the knowledge, wisdom and information genuinely generated in autocracies. A one-party system is unable to generate wisdom in the way Open Societies do, in a decentralized, human-centered, critical and failure-friendly manner. For example, a failed state-driven real-estate investment program requires a point of view that allows that program to be corrected. In an autocratic system, the only reliable source of information the political apparatus has is its own political party programs. An Open Society, by contrast, can rely on free price formation in free markets, a critical investigative press and a research community that provides empirical evidence on how to proceed. In Open Societies there is more than just one voice. And it is these multiple voices that guarantee progress, solutions and prosperity. When scientists get a bonus if they offer courses on political party programs, where ideology and party membership are more important than competence or professionalism, where spending on domestic security is higher than on defense and the military, and where even the constitution itself is subordinated to the party program, we in the West cannot assume that such a system is ready to cope with the global challenges of the 21st century. No party program, no military regime or no ideology whatsoever is able to replace the wisdom generated in Open Societies. In other words, the societal immune system or early warning system is weak in autocracies, as top-down commands prevail in the process of decision making.

We can take this argument one step further. Autocracies function only because they are able to fall back on achievements they have not guaranteed and generated themselves in the first place; they lack the *endogenous factor for critical self-correction* that is key for Open Societies. Open Societies, on the other hand, accept the opinions of right- and left-wing populists as well as aspects of closed, homogeneous ethnic habitats, knowing that nobody is 100% wrong and that each position will have to justify itself in the light of reciprocal criticism, open public debate, a free press, and free and autonomous research and development. And if this test fails, a position will be falsified and disqualified within the Open Society itself.

In this sense, autocratic systems are parasitic and self-limiting. They abolish themselves as soon as they are confronted with all the cultural achievements that are characteristic of Open Societies: individual criticism, creativity and the co-existence of heterogeneous ethnic, socio-economic groups. And even though in autocracies, too, basic research takes place, patents are filed, prices are created in markets and journalists do their work, these are all already unacknowledged islands of 'open social relations' within an autocratic dystopia.

6. Conclusions

Illiberal democracies, controlled democracies, and one-party democracies—which all refer to autocratic regimes in one sense or another—are not identical with the understanding of democracy and the rule of law in Open Society we have in the West, even if they bear a similar name. They represent a historical experiment that has jumped too fast and fallen short. While this experiment may sound great at first, it is a regressive response to the challenges of the 21st century. By contrast, Open Societies thrive on the idea of a liberal order based on a human-centered approach. They are not driven by leftist narratives' notion of a forced equality, nor by an exclusionary ethnic identity of right-wing narratives. Both these narratives, if they assume an authoritarian character, live off the illusions of being able to control societies and their citizens and of possessing information, knowledge and insight about processes that are not actually theirs. The free movement of goods, basic research, critical press reporting as well as the unleashing of human creativity presuppose an order of freedom and are only really created in Open Societies. Anyone who refuses to make this connection will be left behind. If the world were made up solely of autocratic systems, we would have neither real scientific progress, nor objective and critical news, nor maximum creativity and cultural diversity, and so on.

At the bottom line, it boils down to the question of *governance through control, conformism and copying* versus governance through *criticism, the co-existence of heterogeneity and creativity*. The course of history will show which model proves more successful at coping with the challenges of the 21st century. To me, the evidence suggests that autocratic systems are only second best. It is true that Open Societies appear more fragile on the outside, but they demonstrate greater internal robustness, thanks to autonomous and self-critical individuals. They appear to be clumsy and slow in their decision-making at first sight, but demonstrate flexibility and tolerance for failure if necessary and re-correct themselves. In a fully connected and complex world with increasing uncertainty, non-linear adverse feedback loops and spillovers, asymmetric shocks and unknown unknowns, the competitive advantage of autocratic experiments—both in terms of geography and time—will fall short or prove a nonstarter. They remain parasitic as they depend on Open Societies, they cannibalize themselves as they have to import relevant information generated only in Open Societies, and finally remain self-limiting.

And despite backlashes and backward steps, historically it has always been a *person- and human-centered approach* that has enabled greater wealth, greater social achievements, more scientific discoveries, greater health and so on than any other form of political system. Over the last centuries, the course of history has shown that the more perfectly a human-

centered approach is accomplished, the better the results. This does not mean that there have not been failures and that there has not been abuse and misguidance. But anytime a society favored individual creativity, criticism and the coexistence of heterogeneous groups, honoring and protecting minorities and individual freedom, more wealth, health and freedom has been achieved. I believe that Open Societies are more resilient because they are more error-friendly, more adaptable and more restorative, which in turn is because they are more critical. They are able to mobilize their own self-healing powers in ways not available to autocratic experiments. In this reading, Open Societies do not need an agenda for world peace or global governance, but simply demonstrate their attractiveness through their own exemplary character.

We have to admit that autocracies do not automatically become Open Societies with their inherent canon of values through the mere presence of Open Societies. It is rather the other way round—autocracies need Open Societies in order to make themselves more stable by usurping the knowledge and discussion of Open Societies to consolidate their own power.

As long as we do not mimic and copy these autocratic experiments in the free world, we will come out of this historical phase ahead. And this will once again demonstrate that there is never an end of history or an end of ideology, that the free world faces ongoing challenges that may never end. In the meantime, however, we will start with a more realistic situation, where we have to admit that we in fact need both systems. Open Societies that have generated enough knowledge and wisdom through public debates, a free investigative press, uncontrolled creativity, price signals in a free market system, uncensored information and the rigorous scientific discourse in social and basic science, all based on a person-centered approach; *and* autocratic systems that use precisely these cultural achievements to roll out and scale up solutions to major challenges in their own countries (global warming, eradicating poverty).

And then the alleged systems clash will develop towards a non-hegemonic era,[12] where asymmetric and reciprocal interdependency predominate, rather than another era of imperialism, where each proponent is convinced that their world views have to be adopted by the other. To rephrase the bon mot of the famous biologist E.O. Wilson: 'Autocracies are an interesting experiment, but they've got the wrong species and the wrong time.'

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Transdisciplinary Theory of the Firm

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Abstract

There is an imperative need to reconceptualize the role of the firm in modern society based on a holistic perspective in order to correct the imbalances and excesses generated by a too narrow conception of purpose and the inadequacies of current theory to explain and reveal the underlying process by which firms, stakeholders and society at large grow, develop and evolve in a synergistic, mutually reinforcing and beneficial manner. The concept of the firm as a separate independent entity striving to maximize its own individual benefit in competition with other firms needs to be replaced by a conception of the firm as a nodal element in a comprehensive commercial system and social organization designed to deliver maximum benefits to society as a whole and to distribute those benefits rationally for the welfare of all. The concept of efficiency narrowly defined in terms of shareholder value needs to be replaced by the concept of effectiveness broadly defined as the total value generated to all stakeholders and society at-large. The unique role of the firm as an agent for free expression of individual initiative, innovation and creativity can best be preserved and enhanced only in a commercial, regulatory and social environment which safeguards the welfare of the collective, while providing maximum opportunity for individual choice and action. This article views the firm from the perspective of an integrated transdisciplinary science of society, examines the relationship between the individual firm, business community and the wider society, and considers the concept of value from the perspective of impact and overall benefit on society and human wellbeing.

1. Origins of the Firm

The roots of the modern firm run far into the past, a past which reveals much about the origins of the corporation and its inherent socioeconomic nature. The 'company' as it is known today first developed in medieval Italy, where individuals pooled capital together and jointly invested it by establishing a permanent partnership. At first this arrangement included only family members, but later was extended to include others. The earliest known record of such partnership was by a group of merchants in Genoa in the 12th century ("The Genoa Connection", 2009).

The form of company known as 'corporation' was born in medieval England. Early corporations were established by issuance of a royal charter by the British crown. The original corporations were not-for-profit organizations such as universities, schools, churches, hospitals, etc. (Woodland, 2014). If the corporation's acts violated the terms of its charter, the

court had the power to declare the offending actions unlawful. Profit-making was not legal under these early charters. This changed with the reconstitution of the East India Company in 1612. The charter of EIC distributed the company's liability among the stockholders and limited it to the total capital pooled by the firm. In the granting of charters and rights to firms as a 'corporate' entity, applicants were known to offer monetary and other benefits to public officials or the crown itself in order to obtain monopoly powers (Hodgson, 2002).

"This article examines the theory of the firm from the perspective of society and looks for a theory that is consistent with the fundamental principles of social reality. It views the firm from the perspective of an integrated transdisciplinary science of society. It examines the relationship between the individual firm, business community and the wider society, and considers the concept of value from the perspective of its social impact and overall benefit to human wellbeing."

Adam Smith became an outspoken critic of the mercantile system which benefitted the government and selected domestic corporates at the expense of the public-at-large by imposing high tariff barriers on foreign goods, thereby effectively raising domestic prices for consumers. This was perhaps the principal reason for his advocacy of the 'invisible hand' as an impartial, impersonal mechanism to prevent bias and collusion between the government and big business. His intention was not to liberate business from regulation but rather to liberate the general public from victimization by rent-seeking officials and influential businesses. His objective was to promote public interest rather than to maximize private profit. Smith (1827, p. 107) says,

The interest of the dealers, however, in any particular branch of trade or manufactures, is always in some respects different from, and even opposite to, that of the public. To widen the market and to narrow the competition, is always the interest of the dealers… The proposal of any new law or regulation of commerce which comes from this order, ought always to be listened to with great precaution, and ought never to be adopted till after having been long and carefully examined, not only with the most scrupulous, but with the most suspicious attention. It comes from an order of men, whose interest is never exactly the same with that of the public, who have generally an interest to deceive and even to oppress the public, and who accordingly have, upon many occasions, both deceived and oppressed it.

2. Legal Theory of the Firm in USA

During the colonial era, British corporations were chartered by the crown to do business in North America and the practice continued in the early United States both at the state and

federal level. These corporations were often granted monopolies by charter. In the late 18th and early 19th centuries, corporations began to be chartered in greater numbers by the states under general laws allowing for incorporation at the initiative of citizens, rather than by specific acts of the legislature.

In the 1886 case Santa Clara County v. Southern Pacific Railroad Co., the US Supreme Court recognized the corporation as a 'natural person' under law with at least some of the rights of other citizens, except those specifically barred. This included protection under the 14th Amendment of the Constitution, 'No state shall deprive any person of life, liberty or property.' The ruling served as the initial legal basis to defend unchecked capitalism, limits on regulation of firms, including their enormous financial influence on political processes (New Internationalist, 2002). The 1886 judgement and subsequent interpretations and adjustments remain highly controversial issues for legal debate even today. It is noteworthy that the American legal position is an exception to prevailing global law on this issue.

Law is one of the fundamental constructs on which society is founded and in a constitutional democracy the constitution is held to be sacrosanct. The constitution represents the principles and universal values upon which the nation's founders have formed the government and legal framework for the governance of the society. In some instances, when the constitution has been found to be inconsistent with fundamental human rights, it has been amended by an arduous process. It was well known at the time the US constitution was adopted in 1789 that its failure to prohibit slavery was in direct contradiction to the principles on equality and social justice on which the nation was founded. Due to the expediency of framing a constitution acceptable to all 13 of the original colonies, slavery remained legal for another seven decades until the passage of the 13th Amendment in 1865, but it was from the outset in violation of natural law as a "codification of the public conscience of society," as widely interpreted by global society even a century earlier (Jacobs, Nagan and Zucconi, 2014). The same obviously applies to its failure to grant voting rights to women.

It is not the purpose of this article to enter into extended legal debate and controversy over issues on which prevailing legal theories of the firm are based. It is sufficient to emphasize the obvious fact that a valid legal theory, whether in democratic USA, communist China or any authoritarian state, may be valid according to the constitution of the nation but contrary to universal principles of law and justice. It can also be contrary to the conscience and will of the public-at-large, which is impeded by a cumbersome constitutional process from interpreting or modifying the constitution to reflect the national public conscience and that of humanity as a whole.

Instead, this article examines the theory of the firm from the perspective of society and looks for a theory that is consistent with the fundamental principles of social reality. It views the firm from the perspective of an integrated transdisciplinary science of society. It examines the relationship between the individual firm, business community and the wider society, and considers the concept of value from the perspective of its social impact and overall benefit to human wellbeing.

3. Theory in the Social Sciences

A discussion regarding the theory of the firm raises fundamental questions regarding the nature of theory in the social sciences. Valid theory needs to be founded on concepts and premises regarding reality that are clear and well-defined. The mere capacity to predict results is not in itself sufficient to confirm the validity of a theory, any more than the accuracy of the Julian calendar based on the conception of a heliocentric universe proved the validity of that conception.

Moreover, the theories expounded in the social sciences are of a distinctly different type than those formulated in the quest to uncover the universal, invariable and eternal verities of reality in the physical realm of the natural sciences. For the social reality, which is the field of study in the social sciences, is a human-made reality, not a product of physical nature, and the principles governing its functioning are founded on modes of consciousness—conceptions, perceptions, ideas, beliefs and values—which vary in space and time, differ from one culture to another, mutate and develop with the development of the society, and evolve with the progressive evolution of the consciousness, knowledge, values, organization and technological capabilities of the society.

Theory is a scientific explanation (Jones, 2001). It is not an ideological statement of beliefs or preferences. Theory is an attempt to represent reality in a manner that is a consistent close approximation to what actually exists. A scientific theory seeks to present a reliable account of the real world. The real world studied by the social sciences, including Economics and Management, is the world of human society. Theories put forth in these and other fields of social science must be consistent with what is known about social reality as a whole. On these points, theory in the natural and social sciences seems comparable.

The problems arise when we consider the nature of social reality and the consequences of dividing it into disciplinary fragments. All the natural sciences are constructed on the same fundamental principles of Physics and Chemistry. Although the subjects are organized as different fields of knowledge, these fields are all based on the same primary assumptions and are interlinked with one another. The laws of Physics applied in Astronomy and Meteorology are the same as those that apply in Botany and Soil Science. Natural reality is an integrated whole and there must be self-consistency between the premises and principles applied in all these fields. So too, society is an integrated whole and its study is incompatible with attempts to describe it differently in different fields of social science as if these fields exist independently or without reference to what is pertaining in other fields with which it is related.

Controversies no doubt exist in the social sciences between different assumptions regarding the fundamental reality of society. The contract theory of society first set forth by Hobbes and Rousseau conceives of society as dependent on establishing contracts by which parties agree to forego their dominant interests and independence. Rousseau's (1950) *The Social Contract* prepared the way for the notion of people and government acting in a coalition of interdependent partners. Adam Smith considered society as an artificial creation for the maintenance of mutual economy and benefit between people and government. But

regardless of whether society is a social construct or a natural reality, the theory supports the view that the purpose of society and that of the firm is for the mutual benefit of its members. The alternative social organic theory regards society as a kind of organism, similar to a biological system, as conceived by Emile Durkheim (1998). This view gives prominence to the organism as a whole and conceives of individuals and organizations merely as constituent parts, its associations and institutions. But here too, it is the mutual benefit accruing to the collective which is of paramount rationale for the existence and functioning of society. Our view integrates both perspectives and grants fundamental legitimacy and real existence to both the society and its individual members and other constituent elements. But in all three cases we are led to the same conclusion. The society and its elements, including the firm, exist for the purpose of mutual welfare.

"A social theory of the firm is one that examines the role and functioning of business entities as a specialized category of social institution created and sanctioned to serve a social purpose. Like all social institutions established and protected by law, they are intended to promote the welfare and wellbeing of society."

The boundaries separating social, political, economic, psychological and management activity are conceptual rather than actual. The social reality they seek to describe cannot be divided or arbitrarily segregated into separate airtight, independent theoretical compartments. Thus, for example, assumptions regarding human rationality and decision-making processes in Economics must necessarily be consistent with those in Psychology, unless they refer to two different species of humanity or a clear case can be made for the variation. The separation of disciplines is an intellectual device to facilitate study rather than an actual division of social reality. Social reality is transdisciplinary and its components form aspects of a single, indivisible reality, just as the metabolic, respiratory, muscular, nervous and hormonal systems in the human body form inseparable elements that do not exist independently of one another.

So too, to be valid social theories must take into account not only factors and changes taking place within disciplinary boundaries but also those that are taken as externalities. It is perfectly valid to seek to formulate a specialized legal theory of the firm that strives to explain its status under the laws of the nation in which it operates or an economic theory of the firm which seeks to explain its status and functioning under whatever are the prevailing conditions of the economic system in which it operates. But it is essential to realize that neither the legal environment nor the economic system in which it operates offers static, passive, immutable conditions. Unlike the laws of nature governing the behavior of atoms and molecules in the physical universe, social laws and determinants evolve over time along with the changes that occur in government policies, technologies, organizational practices, social attitudes, cultural values, international relations, global context and environmental conditions. All of

these factors constitute dimensions of an ever-changing global social environment. A social conception that ignores these changes may serve as a model, but it cannot be said to represent the underlying social reality it seeks to represent.

When President Franklin D. Roosevelt (FDR) assumed office in 1933, he confronted the worst banking crisis in American history. Thousands of banks had already failed as depositors rushed to their banks to withdraw funds before theirs too collapsed. Over the previous three years, the crisis had defied remedy by conventional economic policy under the previous administration. FDR realized that nothing he had studied in Economics at Harvard had prepared him to deal with the situation, because the economic theory he had learned did not consider the wider social context and underlying social, political and psychological forces impacting on the situation. In response he implemented a spectrum of actions that spanned many disciplines, including new public policies and new laws, including the first federal deposit insurance program. But the most important of these actions was neither legal nor overtly political. Instead he directly addressed the American public in the first of his famous fireside chats. The President explained to them that the crisis stemmed from a loss of public confidence by the American people in their government, institutions and national heritage. He appealed to national pride in the heritage and destiny of their nation. He called on the people to reject the emotions of fear that drove so many to the bank to withdraw their savings. He appealed to Americans to stop the panic by ceasing to withdraw their savings from the banking system with the famous words, "We have nothing to fear but fear itself." When the banks reopened, Americans heeded his call to courage and many went back to the banks to redeposit their hard-earned savings. The panic subsided (Johnson and Jacobs, 2012). FDR's remedy for the financial crisis illustrates the obvious fact that economy and business are inseparable aspects of a wider political, legal, social, cultural and psychological reality and can only be fully understood in the context of society as a whole.

A social theory of the firm is one that examines the role and functioning of business entities as a specialized category of social institution created and sanctioned to serve a social purpose. Like all social institutions established and protected by law, they are intended to promote the welfare and wellbeing of society and any abrogation of that purpose must be considered in theory and practice as an aberration or departure from that intended purpose.

But social theory differs from natural theory in yet another important respect. Theory in the natural sciences often strives to approximate the way things actually work in the real world by constructing models. The assumptions on which those models are based are an attempt to reproduce the way nature actually works. Theory in the social sciences is often constructed to represent the way theorists think social reality *should* work. Here the line is crossed between ideology and reality, often without making the distinction explicit. The statement that the purpose of firms is to maximize profitability is an ideology rather than a statement of fact. Unfortunately, in the social sciences, especially in economics, the concept of theory and economic law is often founded on implicit theoretical assumptions, philosophical premises and cultural values that far more closely resemble dogma than scientific thesis.

4. Social Nature of the Firm

This perspective compels us to examine the fundamental premises on which a social theory of the firm must be based. A firm is a child of the society born out of its needs, nurtured and supported by its resources and capabilities, and sustained by mutually beneficial interchange with the social whole of which it constitutes an inseparable element. It is born of the existing and emerging needs of society, draws its sustenance and substance from the present resources of the society, grows by productively harnessing these resources to provide value to the society, and evolves by contributing to the evolution of the social organism as a whole. Society includes the totality of all human relationships between its members and the groups to which they belong.

Human relationship is the basis for all forms of productive social activity and all creation of social value. Economic relations are founded on the capacity of individuals and groups to produce surpluses beyond what is required for their own sustenance and their capacity for specialization of function in order to expand the range of products and services available for exchange and consumption. Firms are organized groupings of individuals designed to maximize the effectiveness of their interrelationships with other individuals, firms and groups.

The relationship between these three levels of reality—individuals, firms and society—is self-evident from an examination of history. The development of steam-powered tractors, farm machinery and processing plants brought unprecedented prosperity to America during the late 19th century. Perceiving an unmet social need as a business opportunity, a perceptive railway stationmaster in the American Midwest named Richard Sears established a mail-order company in 1892 to sell household products to consumers in outlying rural areas far from urban commercial markets. Within a decade, his mail-order business extended far and wide in rural America. Around 1900 he brought in a business partner named Julius Rosenwald who questioned the quality and reliability of the products being offered to distant rural customers, at a time when the prevailing philosophy in American commerce could be summed up as *caveat emptor, 'buyer beware'.* So the company introduced what a half-century later became the ubiquitous promise of retailers to American consumers 'Satisfaction guaranteed or your money back.' The company's business multiplied until it was unable to efficiently handle the volume and complexity of its business. Then just around the time Henry Ford was introducing the moving assembly line in his first mass production, automotive factory for the Model-T, a German engineer named Otto Doering applied the same technology to streamline order fulfillment in the expanding warehouses of the mail order company. Business boomed further until by 1920 Sears Roebuck had become the largest retailer in the world.

Soon afterwards, retired army officer Robert Wood took over at Sears. Wood observed the revolutionary social changes wrought by the rapid spread of low cost automobiles, including the migration of middle class families out of the congested urban centers to the freshly sprouting suburbia. Recognizing an unfilled social need, he established the first of what became Sears' department stores and suburban shopping malls. Over the next six decades, Sears continued to grow rapidly, retaining its title as the largest retailer in America and the world, even during the Great Depression years when department store business was down

by more than 40%. Sears won and maintained the loyalty and trust of the American Middle Class, controlling 50% or more of total sales in many product categories, until it lost touch with the rapid evolution of American retailing and lost its dominant market position and title to Walmart, which proved able to meet the needs of American society more effectively and efficiently.

Sears' phenomenal success as a commercial business was inextricably tied to the growth, development and evolution of American society. The company grew on the strength of rising national aspirations and levels of education, changing social expectations and cultural values, rapid technological and organizational developments, and demographic forces. It thrived for nine decades due to its ability to perceive, understand and serve changing social needs effectively and efficiently. The profits it earned during that period were impressive, but they were only a residual benefit for the invaluable service it provided to American households. It thrived because it served the needs of the people better than other firms did.

The Sears story is a dramatic historic example of a ubiquitous phenomenon. Today Airbnb, Amazon, Apple, Facebook, Google, FedEx, Marriott, Microsoft, Uber, Visa International are outstanding instances of this fact. These and countless other companies of the past and present support the same conclusion. A firm is a form of social organization sanctioned and supported by the society, given a legal status and protection under the law in order to meet the needs of society (Roberts, 2004). Its purpose is to provide goods and services, employment and incomes to meet the economic needs of the society and its members in a manner that is consistent with the policies of the government, laws of the nation, health and welfare of the people, and preservation of the natural environment (Lawson, 2019).

It performs this function by drawing upon the resources of the whole society and utilizing them in a manner which is socially beneficial. It does so by utilizing the cumulative knowledge, know-how and skills developed by society over countless generations which are made available for its use. It utilizes the services of members of the society raised, educated and trained for the purpose. It functions based on the physical and social infrastructure provided by society, including energy generation, communication, transportation, education, scientific research, healthcare facilities, and many other types. It is granted temporary proprietary rights to benefit from the incremental technological innovations it generates based on the vast reservoir of existing knowledge and practice. It exists and grows by drawing upon the accumulation of the society's existing capital resources—human, social, financial, intellectual, manufactured and natural.

This view is self-evident when it comes to the list of massive global firms mentioned above. In these cases, the very definition and conception of the firm no longer seem adequate to explain their nature and functioning. Companies such as Google, Amazon and FedEx have become part and parcel of the global social system. Their presence extends far beyond the limits of their physical properties and operations or the workplace of their employees. They connect, relate to and integrate so many aspects and functions of the society that it is inseparable from them. Therefore, Google and Facebook are held accountable by a standard for unbiased presentation of information which few national governments and politicians can meet.

And this fundamental principle holds true even for the smallest local firm as well—the local restaurant, hotel, doctor or dentist, barber, electrician, builder, taxi or bus service. The moment it poses threats to the health, safety, welfare and well-being of its customers, employees or society at large, it can be compelled to correct itself or be dissolved. The operation of any business is a privilege extended in return for service rendered to society and that privilege is always conditional. As Thomas J. Watson, Jr., the founder and CEO of IBM, expressed it, "We acknowledge our obligation as a business institution to help improve the quality of the society we are part of."

> *"The firm is an intermediate agent between society and the individual. It has no independent existence of its own, any more than the respiratory and circulatory system of the human body exist independent of the whole of which they are inseparable components."*

Thus, any valid theory of the firm must rest on the foundations of this social reality. When for any reason a firm ceases to serve this purpose, it is subject to strictures either by the customers who reject it, the employees who operate it, the shareholders who invest in it, the bankers who finance it, or the government that has the right and responsibility to regulate its activities. If its products are found to be faulty or dangerous, it may be subject to lawsuits by the state or private parties. If its activities damage the environment, it may be punished or prohibited from continued operations. If its domination of the market exceeds prevailing norms to the extent that it is no longer in the public interest, it may be broken up into smaller entities under antitrust laws or subject in rare cases to special legislation.

Founded in 1880, the American Telephone and Telegraph Company, AT&T, was declared a public utility in 1907 and subject to strict regulation to ensure optimal service to the American people. When advances in telecommunications technology no longer necessitated public management, in 1982 the company was broken up into seven smaller regional entities for the very same reason—to ensure optimal service to the American people.

5. Social Macrocosm and Individual Microcosm

Full understanding of the nature of the firm depends on full understanding of the nature of the macrocosm we call Society. Society is a living organization, an evolving organism, which includes but is not limited to the sum of its individual members and intermediate formations. It includes both objective and subjective elements and both organized and unorganized structures and activities. Its formal objective structures include family, government, law, systems, national and international organizations, enterprises and formally organized activities such as governance, defense, production, distribution, finance, etc. Its informal relationships include recurring interactions between individuals, organizations and

activities, which operate within and outside the formal structures. Its intangible subjective factors include prevailing values, knowledge, ideas, attitudes and beliefs, which constitute its culture.

Society is a reservoir of social resources and potentials which individuals, firms and other social organizations draw upon for their sustenance, growth, development and evolution. These resources can be classified under five major heads: the needs and aspirations of the society, which form the basis for the Market; the sum of society's knowledge, skill and know-how, which form the basis for Technology; all forms of Capital—natural, financial, human-made—which enhance its capacity for productive activities; the knowledge, skills, energies, aspirations, values and attitudes of its People; and the activities, systems and formal structures that constitute elements of social organization (Jacobs and Macfarlane, 1990). All the accomplishments of firms are based on the utilization of these five types of social resources to produce products and services designed to serve the wider society of which they form a part.

The individual members of society represent the other pole of social existence, the Microcosm on which the firm bases itself. The individual too is an inexhaustible source of energy, aspiration, ideas, invention, innovation, initiative and creativity who bases his or her actions on the resources of society for the growth and development of both the individual and the collective in a mutually beneficial manner. Social macrocosm and individual microcosm exist in a symbiotic relationship which governs the existence, growth, development and evolution of the society and all the intermediate elements between them. The individual acquires the energy, knowledge and capacities for growth and development by drawing upon the resources of the society. At the same time, the conscious individual in the form of leader, pioneer, inventor, discoverer, creator and original thinker is the source and catalyst for all social innovation, creativity and evolution. In a well-governed society, development of these two poles is mutually reinforcing.

6. Intermediate Status of the Firm

A company lives and grows as a significant intermediary in symbiotic relationship between the two fundamental poles of social existence: the social macrocosm of which it is a part and the microcosm of individuals which are members of that macrocosm. The firm is an intermediate agent between society and the individual. It has no independent existence of its own, any more than the respiratory and circulatory system of the human body exist independent of the whole of which they are inseparable components.

According to Greenwood (2005, p. xxvi), "To reduce the firm to its constituent parts is no more reasonable than is treating a human being as no more than the chemicals that make her up." Maitland (1900) writes that Otto von Gierke's theory says of the corporation "that it is no fiction, no symbol ... no collective name for individuals, but a living organism and a real person, with body and members and a will of its own. Itself can will, itself can act ... It is not a fictitious person ... It is a group-person, and its will is a group-will… the personality of the corporation ... is in no sense ... artificial or fictitious, but is every whit as real and natural as is the personality of man."

Firms grow, develop and evolve by drawing upon and harnessing the five types of social resources in productive and creative ways to meet the needs and aspirations of the society. They draw upon the individuals with whom they relate as the source and catalysts for its growth, development, innovation, creativity and evolution.

"There is an imperative need to reconceptualize the role of the firm in modern society based on a holistic perspective in order to correct the imbalances and excesses generated by a too narrow conception of purpose and the inadequacies of current theory to explain and reveal the underlying process by which firms, stakeholders and society at large grow, develop and evolve in a synergistic, mutually reinforcing and beneficial manner."

The effectiveness of the firm depends on its capacity to identify and organically integrate itself with the wider society of which it is a part; on its capacity to coordinate and integrate the actions of the individuals, structures, systems and activities of which the firm is constituted; and on its capacity to align and integrate itself with the unique capacities of each of its individual members.

Society, individual and firm are organizations which carry out activities for their survival, growth, development and evolution in systematic, recurring ways. The extent of their organization determines the effectiveness with which they transform resources into social value. At the same time, society, individual and firm are also living organisms which thrive, grow and develop by a process of generating, releasing, focusing and converting energy into productive forms of activity. The process of energy generation and conversion governs their growth, development and evolution. The intensity of the energy generated and the effectiveness with which it is utilized for productive purposes determine their overall capacity for growth, development and evolution (Harmon and Jacobs, 1987).

The primary mode of relationship between the firm, society, other firms and social organizations and members of society is cooperative, symbiotic and mutually beneficial. The law of the jungle dictating survival of the fittest is no more apt for firms than it is for physical nature. For the law of the jungle is also based primarily on symbiosis and mutuality. Each being and species plays a part in the survival and growth of the whole and even their competitive behaviors help to sustain the overall balance and health of the ecosystem as a whole. Competition between firms is a reality, but for every competitor it seeks to supplant, a firm depends for its very survival on cooperation and mutually beneficial relations with countless others which provide the raw materials, component elements, processing, transport, energy, communication, financial services, storage, educational, research, knowledge, skills, research and auxiliary services it requires for its functioning.

7. Purpose of the Firm

The purpose of a firm is to maximize value to society as a whole and all its individual members. Social value includes physical, organizational, social, ecological, mental and psychological dimensions, such as quality, accuracy, speed, punctuality, safety, hygiene, maximum utilization of physical resources, space and time, exchange, communication, systematic functioning, cooperation, coordination, integration, courtesy, teamwork and harmonious relationships, service, satisfaction, freedom, equality, trust, honesty, comfort, convenience, integrity, innovation, creativity, goodwill, self-giving, security, enjoyment, beauty, wellbeing and delight.

The purpose of the firm is no more to make profit than it is the purpose of human beings to breathe and eat. Profit is an essential condition for the survival and growth of the firm as breathing and eating are essential for human survival and growth. But they are not its purpose. Its purpose is to meet the needs of society and it does that by providing goods and services, generating employment and generating incomes for members of the society, providing markets for suppliers, providing loans and investment opportunities for financial institutions, generating tax revenues to support the requirements of the local community and national government, and also to generate returns to its shareholders as an incentive for them to invest in it. In performing these functions, it is governed by a variety of other requirements—to conform with the nations' laws; to protect the health and safety of consumers, employees and the general public; to protect the natural and social environment; and to conduct itself in all ways as a good corporate citizen. The right to create a firm as an artificial entity recognized and protected by law is bestowed by the government so that it may carry out its beneficial social functions. That right carries with it specific obligations and responsibilities. The fundamental system flaw in prevailing corporate and financial law is the failure to hold companies fully responsible for harm arising from failure to fully implement the rule of law and pursue the welfare of society. Frank Dixon (2017) rightly argues that

Failing to hold companies fully responsible for negative impacts is a primary overarching economic and political system flaw. It places businesses in conflict with society… Flawed systems make it impossible for companies to mitigate about 80 percent of negative environmental and social impacts and remain in business.

There is an imperative need to reconceptualize the role of the firm in modern society based on a holistic perspective in order to correct the imbalances and excesses generated by a too narrow conception of purpose and the inadequacies of current theory to explain and reveal the underlying process by which firms, stakeholders and society at large grow, develop and evolve in a synergistic, mutually reinforcing and beneficial manner. This redefinition is consistent with the growing recognition of the vital importance of CSR (corporate social responsibility) and ESG (Environmental, Social, and Governance) for the future of viable, equitable and sustainable market economies. This recognition has come so far that ESG is becoming a very important criterion for investment in global financial markets and even hedge funds are applying ESG criteria (Fletcher, 2019). The adherence of firms to stringent

environmental, legal and other standards is not a secondary or subsidiary factor. It is a fundamental social as well as a legal condition on which the very existence of the society depends.

The concept of the firm as a separate independent entity striving to maximize its own individual benefit in competition with all others needs to be replaced by a conception of the firm as a nodal element in comprehensive commercial system and social organization designed to deliver maximum benefits to society as a whole and to distribute those benefits rationally for the welfare of all. The concept of efficiency narrowly defined in terms of shareholder value needs to be replaced by the concept of effectiveness broadly defined as the total value generated to all stakeholders and society at-large. The unique role of the firm as an agent for free expression of individual initiative, innovation and creativity can best be preserved and enhanced only in a commercial, regulatory and social environment which safeguards the welfare of the collective, while providing maximum opportunity for individual choice and action.

The article argues that the firm fulfills its role most effectively and generates the maximum of social value when it harmonizes its activities with those of the wider society, its individual members and all other stakeholders. In the measure the total social system is aligned with this wider view, profit can constitute one measure of that value generated and maximizing total social value is compatible with maximizing the effectiveness of the firm. Under present circumstances the perverse incentive system and distribution of power encourages other strategies that are detrimental to social welfare and often to the sustained corporate success as well.

These views are based on 40 years of case studies and consulting for businesses and historical research on the evolution of the current legal environment for business in the USA as documented in several books and articles (Harmon and Jacobs, 1987). This research confirms the view that sustained corporate success is achieved by firms which are best able to identify the needs and aspirations of society—physical, social, psychological and cultural—and to shape their activities to most effectively meet those needs.

Given the considerable gap between sustainable social theory and current practice, the article will close with a discussion of policy measures and systemic solutions designed to realign corporate behavior and investment practices. Holding companies fully responsible is the overarching systemic solution. It changes the incentives. "Protecting business and society," Dixon (2017) stresses, "requires that systems be evolved in ways that hold companies fully responsible. This eliminates conflicts between business and society. It makes acting in a fully responsible manner the profit-maximizing strategy."

Achieving this requires addressing the specific system flaws mentioned above. Emphasis needs to be placed on incorporating environmental, social and other externalities within the pricing structure in order to remove perverse incentives for unsustainable corporate behavior, and reducing the perverse impact of limited liability, time value of money, over-emphasis on economic growth and shareholder returns, inadequate measurement of social well-being, and inappropriate business influence of government (Dixon, 2019).

8. 'Value' in a Social Context

The problem of economic theory in general and the theory of the firm in particular is complicated by the absence of adequate theory regarding other principal elements in economic science. Two obvious examples are the interrelated concepts of value and money which form the basis for most economic theory yet lack satisfactory definition. Value is commonly defined in monetary terms and vice versa, but neither exists in and of itself apart from the aspirations, values, perceptions and behavior of human beings in a social context.

"Economic theory is founded on implicit assumptions regarding the playing field and rules for economic transactions that completely and intentionally ignore the larger fundamental question of social power. Social power is the elephant in the room ignored by economic theory."

The standard description of money found in economic textbooks focuses on its multiple forms and economic functions that it performs, but does not explain its essential basis or reality. Regardless of the early material forms which money assumed in the distant past, money is not a material thing at all. It is a purely social conception and a symbolic representation of human relationships. It is a device formulated by human consciousness to facilitate mutually productive relationships among people (Jacobs and Slaus, 2012). Like the sounds and symbols of which language is composed, it is based on human conventions with no inherent value of their own. Money has no more value or utility than a telephone or email account of one living on a desert island without communication with the wider world. It has value to foster relations between human beings. Money is a networking tool or instrument designed to facilitate productive exchanges in space and time. It is founded on the subjective human perception of trust or confidence. When that trust is declining or absent for any reason, money has less or no residual value.

It is true that we commonly perceive the value of money to depend on physical objects, resources and productive capabilities, and these things do indeed support the trust vested by people in the value of money. But the real source of the value is still subjective, rather than objective. That is why $8 trillion in value could so suddenly vanish from the American economy during the 2008 financial crisis, when the nation's material assets remained fully intact or why the US Federal Reserve could by an act of wizardry create trillions of dollars of new value out of apparent nothingness, like a magician out of an empty hat, to restore trust in the system.

But the problem of value in economics and the value of money with which it is linked is further complicated by the fact that money is a very limited measure or index for value creation which excludes far more than it includes. Measures of monetary value may and

often do exclude and even act to the detriment of other values depending on the political, legal, regulatory, economic, commercial, social and cultural environment in which they operate. The most obvious example is the fact that the economic notion of wealth creation is so narrowly defined that it excludes the detrimental impact of economic activity on the physical environment and resources on which it is based and depends for its existence. The notion that shareholders are entitled to the residual value of economic activity undertaken by firms is based on this narrow conception. It can and often does distribute residual value to shareholders when there is actually no residual value to the society to be distributed. This example illustrates the problem of separating an economic theory of the firm or of value from a wider social theory.

But the problem lies still deeper. Economic theory is founded on implicit assumptions regarding the playing field and rules for economic transactions that completely and intentionally ignore the larger fundamental question of social power. Social power is the elephant in the room ignored by economic theory. For much of what is regarded as economic value generated by effort and efficiency is largely and sometimes wholly the result of the unequal distribution and access to various forms of social power and may not depend on any form of productive economic activity at all. This fact is tangentially addressed by the economic concept of rent-seeking. But it goes much deeper. For rent-seeking is viewed as an exceptional factor which intrudes on the free workings of the market, whereas social power is an ever present, ever active agent in determining social outcomes. No valid economic theory or theory of the firm can be formulated without addressing this issue explicitly.

The issue of power is not confined to either economy or politics. It is a fundamental construct of all social theory. Power is the capacity to accomplish any goal. The generation of power is one of the principal reasons why groups of individuals acting in coordination with one another can accomplish what none can achieve by themselves. The basis of power in society is collaborative human relationships. That power takes a multitude of forms—the capacity for self-defense or aggression, governance, safety, security, communication, transportation, production, trade, education, healthcare, research, technology, innovation, invention, entertainment and so forth. All of these powers support human accomplishment and all are forms of social power made possible by collaborative human relations. All these forms of social are interchangeable. Political power can be used to acquire wealth and economic power. So too, economic power can be exercised to acquire political influence and power. Education, science and technology are productive powers that are readily converted into wealth. The strategic location of Dubai as a global transportation hub has been converted into wealth comparable to that of some oil-rich countries.

9. Money, Value and Social Power

Money is one form of social power. But it is also a symbol for all other forms of social power due to its capacity for rapid convertibility, mobility, storage and exchange. A complete theory of the firm needs to be founded on a comprehensive theory of the money as a convertible and transferable form of social power and capacity (Jacobs, 2016). In principle, profit is intended as a measure of the efficiency with which a firm utilizes the available social

resources and individual capacities to maximize overall value to society. But to a large extent it is a measure of the differential in power exercised by individuals and firms due to their size, financial power, access to information, political influence, legal resources, etc.

> *"The development of a transdisciplinary science of society which encompasses economy and business would be a significant and substantial contribution to framing the theoretical foundations for the future evolution of global economy and society."*

A theory of the firm that ignores the power dimension of economy and society does not reflect social reality. A few years ago, *The Economist* published a cover story on the role of patent and copyright laws in contemporary economy. They argued that the original purpose of these laws was to encourage innovation, so that firms can recover the costs of innovation and be encouraged to invest further in it. In other words, the social intention is to promote the welfare of society through the innovation of firms. Their research found that extending protection beyond a period of 20 years (which applies only to the pharma industry. For others, the period is even less) actually has the opposite effect. Extended patent and copyright laws are a form of rent-seeking ("Question of Utility", 2015). *A Patent System for the 21st Century* recommends significant changes in the way the patent system operates (Merrill, Levin and Myers, 2004). Countless other laws bestow benefits that do not reflect the real efficiency of firms, not their real contribution to society.

In current practice, profit reflects the efficiency with which a firm maximizes value in a power-biased system that gives excessive importance to some resources and some values at the expense of others. To cite an obvious example, the government incentives for continued investment in fossil fuels is a power-based decision to support a politically and economically influential sector, to reduce the cost of oil production and pass on the cost of remediation and environmental pollution to society-at-large. This bias results from and contributes to inherent inequalities in relative importance attributed to different social values and the rent-seeking behavior which it permits and reinforces. Both result from the unequal distribution of social power. Value as currently measured reflects the present disposition of power in society as much or more than it reflects the real value to the individual and its members. Thus, the effective behavior of firms is strongly influenced by the total social system in which it operates. Optimal social welfare and effectiveness can only be achieved under social conditions that promote the equitable distribution of power and benefits to all members.

10. Conclusion

This article is not intended to challenge the virtues of the market economy system or the contribution of business entities to social welfare and development. For millennia economic exchange has been a principal instrument for social evolution. It has broken down the

physical, social and cultural barriers that separate groups of people from one another. It has provided an incentive and a means to relate with other human beings for mutual benefit over wider and wider areas until it covers the entire globe. It has encouraged people to develop specialized skills to capitalize on their comparative advantages and benefit by exchange with others who possess different skills and advantages. Since the mid-1950s and, especially since the end of the Cold War, business has been at the forefront of global social evolution. Companies like Google, Apple, Amazon and Facebook may have done more to bring human beings in collaborative relations with one another than the combined efforts of all the world's governments.

This article is rather intended as a challenge to the ideologies of economic orthodoxies masquerading as scientific theory, which retard social evolution by ignoring or concealing inconsistencies and fallacies in theory that serve as the basis for perpetuating inefficient, ineffective, and inequitable policies and practices, which in turn prevent global society from fulfilling its fundamental objective of maximizing human wellbeing. In this sense much of prevailing mainstream economic theory is the handmaiden of an inequitable system.

It is not the intention of this article to pursue this subject in depth, but a few examples may illustrate the fundamental importance of the issues that they raise. One example is the fallacy of regarding environmental costs as an externality which undermines the very claim that firms maximize profit by efficiency. In the measure they do not absorb the true costs of their activities, they maximize profit at the expense of present or future generations of the society-at-large. Another fundamental flaw is the failure to distinguish between productive investments in the real economy and speculative investments in financial markets. Current tax policies incentivize capital investments by depreciation allowances and low tax rates regardless of whether they are socially beneficial or socially destructive. The growing divorce between financial markets and the real economy has led to rising levels of inequality and financial instability, which are polarizing society and undermining democratic processes.

The development of a transdisciplinary science of society which encompasses economy and business would be a significant and substantial contribution to framing the theoretical foundations for the future evolution of global economy and society.

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Society requires a robust banking system. The current private money system reflects aristocratic, wealth-concentrating capitalism. The priority of society is society, not the economic or financial system. Banks and other businesses should be focused on helping individuals and society to prosper, not the other way around.

– *Frank Dixon,* Public versus Private Sector Money Creation

The ideology that likes to call on each of us personally and on each nation to be responsible for our own resilience and disaster preparedness is obviously flawed, when power, wealth and income are distributed so very unequally. But this ideology has long kept us from recognising inequality reduction as a key element of disaster risk reduction as well as general development and prosperity.

– *Thomas Reuter,* The COVID-19 Pandemic as a Systemic Stress Test

The UNOG-WAAS report on Global Leadership for the 21st Century mentions the importance of breaking down "silos" among academic disciplines, stakeholders, and UN agencies. This "modest report on global reports" is a small step in doing so, but much more needs to be done.

– *Michael Marien,* Report on Global Reports, 2020-2021

Transformational Catalysts are an institutional innovation arising out of the inadequacy of traditional organizing forms, such as single organizations, collaborations, and even multi-stakeholder networks to bring real system transformation into being.

– *Sandra Waddock & Steve Waddell,* Transformation Catalysts

Needed social improvement will not come about if the current socioeconomic structures remain unaltered.

– *Julene Siddique & Peter Joseph,* The Social Architect

The world is beset with imperfections which stem from our short-sightedness, greed for consumption, mutual mistrust and unwise economic policies. They can be remedied if the world reorganizes itself to function according to values such as unity, totality, harmony, human security, freedom and equality.

– *Ashok Natarajan,* A Values-based World Order

Open Societies thrive on the idea of a liberal order based on a human-centered approach. They are not driven by leftist narratives' notion of a forced equality, nor by an exclusionary ethnic identity of right-wing narratives.

– *Stefan Brunnhuber,* Open Societies versus Autocratic Experiments

A social theory of the firm is one that examines the role and functioning of business entities as a specialized category of social institution created and sanctioned to serve a social purpose, to promote the welfare and wellbeing of society.

– *Garry Jacobs,* Transdisciplinary Theory of the Firm

CADMUS

Inside This Issue

Sixty years after its birth, the Academy remains much like all visionary ideas more of an aspiration than a reality, young, ambitious, hopeful—with the modesty and common sense to claim very little and the ambition to still aspire for very much—still inspired by the conviction that our reach should exceed our grasp.

– Garry Jacobs et al.
Retrospective and Reflections on WAAS@60

WAAS has succeeded in establishing various permanent contacts and joint programmes with the United Nations and its agencies together with many other international NGOs and strived to monitor and overcome some of the global problems we face today.

– Augusto Forti
WAAS Retrospective: Why WAAS?

Science is the accumulation of knowledge, and art is the expression of science that begins with the contemplation of nature and inspiration.

– Donato Kiniger-Passigli
Reflections on Arts and Science

When we act not for ourselves, not for money, not for prestige, not for any personal interest but solely for the causes we are fighting for, then our power becomes infinite and the realization of our vision will be inevitable.

– Marco Vitiello
A Holistic Strategy for Achieving WAAS' Goals & Realizing Our Common Vision

We must move from a slow evolution (i.e. change) to a rapid transformation. We do not have time for a long-term approach to change. We cannot wait for the next generation's education to take effect.

– Yehuda Kahane & Tal Ronen
TransFormNation: A Suggestion for Rapid Top-Down Transformation

A special-purpose, parallel digital currency, run through distributed ledger technology (DLT), accepted as legal tender to pay taxes and wages, convertible into traditional currency, issued by central banks (CBDCs) or regulated private agents (cryptocurrencies) could meet the requirements and complexities of the Anthropocene Era.

– Stefan Brunnhuber et al.
Hedging Planetary Risks

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