THE WEALTH OF NATIONS REVISITED

CADMUS

NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

CADMUS
New Perspectives on Major Global Issues
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Inside this Issue

The challenges confronting humanity today are a compelling call for leadership to transform crises into opportunities. The COVID-19 pandemic calls for global solutions to address global problems, not partial, sectoral approaches based on outdated attitudes, concepts, institutions and policies. We need leadership with a transboundary vision: leadership that can sense the rising social energies and seize the occasion to convert these energies into effective transformative social power; leadership to forge alliances across borders, disciplines and other types of walls; leadership which can learn from the past and creatively apply its poignant lessons to unlock the future; leadership with the individuality and courage to spearhead a global social human-centered movement; leadership to seize this unique planetary moment to unleash the planetary momentum to create the future NOW.

There has been ample time, opportunity and effort to analyze our problems. The broad lines of the remedy are apparent to all those with open-mindedness and courage to see beyond the limitations of self-blinding orthodoxies, entrenched social powers and vested interests, so heavily vested in the past that they cannot see it is already dead. Now is the time to pass from analyzing problems to formulating effective solutions and catalytic strategies to fill the vacuum, break the logjam and transform the long, slow meandering pace of subconscious social evolution into rapid, conscious social transformation. The formulation of the SDGs provides a clear consensus on the goals to be achieved. What is needed now is the leadership in thought that leads to effective action.

Social transformation is not a utopian dream but a fact that has been playing out before our very eyes with increasing rapidity and intensity in recent decades. It took several centuries to abolish slavery in the world and nearly as long to establish the idea of gender equality as a fundamental human right. But it took just two decades to virtually abolish colonial empires from the face of the earth after World War II. And barely a few years to tear down the boundaries built during the Cold War to liberate and weld humanity into a single global community. Since then the World Wide Web has connected and unified humanity to an extent unimaginable just three decades ago.

Social transformation is not a myth, but it is a challenge to overcome the inertia, resistance and barriers that retard the process. Throughout history we have witnessed potentialities transformed into actualities. But never before have we been presented with the means and confronted by the urgent necessity to consciously direct and accelerate that process in a race against the consequences of our own past attitudes and actions. We are compelled to step forward with the necessary leadership in values, thoughts, organizational initiatives, catalytic strategies and effective actions. Further reliance on fragmented thinking, piecemeal, compartmentalized, sectoral, unilateral policies and actions that have been the source of the present problems will only aggravate and accelerate the crises. We need holistic, global approaches that address root causes rather than superficial symptoms. Civil Society and youth groups have already become catalysts and instigators of transformational change.

The first two parts of this issue of *Cadmus* present working papers for a project of the United Nations Office in Geneva and the World Academy of Art & Science on Global Leadership in the 21ˢᵗ Century. The issues, questions, and ideas it presents were discussed at the

on June 15-19, 2020. This event was preparatory to the main conference scheduled to take place at the UN in Geneva on October 27-28, 2020 and to a final report to the UN and educational outreach measures.

A strong consensus emerged at the UNOG-WAAS econference that a paradigm shift is essential and inevitable and that COVID-19 is acting as a compelling catalyst for rapid change across all sectors of society around the world The third and the final part of Volume 4 Issue 2 of *Cadmus* features articles that converge on the theme of paradigm shift in thought that should lead to action. Outstanding individuals like Greta Thunberg and Malala will play an essential leadership role. But inspiring individuals will not be enough. The world needs to unleash a process of transformational leadership to generate awareness, release and direct social energies, and organize them as a broad-based collaborative movement for the common good.

This issue is a call and challenge to think freshly and an invitation to contribute.

Editors

The Russell-Einstein Manifesto:
As relevant today as it was 65 years ago

"We appeal as human beings to human beings: Remember your humanity, and forget the rest."

These are the moving words with which **Albert Einstein**, **Bertrand Russell** and nine other distinguished scientists and intellectuals introduced the famous resolution which became known as the ***Russell-Einstein Manifesto*** on July 9, 1955.

Hermann Joseph Muller was an American geneticist, educator, and Nobel laureate best known for his work on the physiological and genetic effects of radiation.

Hideki Yukawa was a Japanese theoretical physicist and the first Japanese Nobel laureate.

Max Born Born won the 1954 Nobel Prize in Physics.

Linus Pauling was an American scientist, engineer, peace activist, author and educator.

Leopold Infeld was a Polish physicist. He was a Rockefeller fellow at Cambridge University

Cecil Frank Powell was a British physicist, and Nobel Prize in Physics laureate (1950) working at Bristol University.

Frédéric Joliot-Curie was a French physicist and Nobel laureate.

Percy Williams Bridgman won the 1946 Nobel Prize in Physics for his work on the physics of high pressures

Joseph Rotblat was a Polish-born and British-naturalised physicist.

Albert Einstein   Bertrand Russell
NOTICE TO THE WORLD
*...renounce war or perish!
...world peace or universal death!*

**The Russell - Eistein Manifesto, 9 July 1955
Signatories to the Manifesto**

Exactly 65 years later, their message is as relevant today as it was when it was issued. The scourge of weapons of mass destruction and war still threaten us; but the crises confronting humanity have multiplied exponentially in number, intensity, complexity and impact on human security. Infectious diseases, hunger and poverty, unemployment and inequality, financial instability and economic uncertainty, the retreat from democracy, the reversion to competitive nationalism, and the overarching threat of climate change loom larger than ever. They are magnified by the vacuum in global leadership and a loss of trust and confidence in national and international institutions.

The sense of urgency, appeal to human conscience and universal values that reverberate through their Manifesto powerfully echo the needs of our time. The challenges we confront may be greater, but so too are our collective knowledge and capacity for effective global response. The voice of science, the aspirations of youth, the just demand for human rights,

the sanity of human wisdom and the resourcefulness of human creativity compel us to call with renewed resolve for unprecedented steps to replace the failed doctrines and policies that have brought the world to its present state.

The Russell-Einstein Manifesto led directly to the establishment of Pugwash Conferences in 1957 and the founding of the World Academy of Art and Science in 1960. It has also inspired the work of a great many institutions dedicated to a better common future for all.

In view of the great relevance of the Manifest to the world today, we invite all like-minded organizations to reflect on the relevance of the Manifesto to the world today and seize the opportunity to convert the looming global threats confronting humanity into a compelling force for collective action. We call on nations, organizations and individuals everywhere in all fields to forge an inclusive alliance and movement for global peace and human security. Please join us and spread the word.

The Russell-Einstein Manifesto (9 July 1955)

In the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction, and to discuss a resolution in the spirit of the appended draft.

We are speaking on this occasion, not as members of this or that nation, continent, or creed, but as human beings, members of the species Man, whose continued existence is in doubt. The world is full of conflicts; and, overshadowing all minor conflicts, the titanic struggle between Communism and anti-Communism.

Almost everybody who is politically conscious has strong feelings about one or more of these issues; but we want you, if you can, to set aside such feelings and consider yourselves only as members of a biological species which has had a remarkable history, and whose disappearance none of us can desire.

We shall try to say no single word which should appeal to one group rather than to another. All, equally, are in peril, and, if the peril is understood, there is hope that they may collectively avert it.

We have to learn to think in a new way. We have to learn to ask ourselves, not what steps can be taken to give military victory to whatever group we prefer, for there no longer are such steps; the question we have to ask ourselves is: what steps can be taken to prevent a military contest of which the issue must be disastrous to all parties?

The general public, and even many men in positions of authority, have not realized what would be involved in a war with nuclear bombs. The general public still thinks

in terms of the obliteration of cities. It is understood that the new bombs are more powerful than the old, and that, while one A-bomb could obliterate Hiroshima, one H-bomb could obliterate the largest cities, such as London, New York, and Moscow.

No doubt in an H-bomb war great cities would be obliterated. But this is one of the minor disasters that would have to be faced. If everybody in London, New York, and Moscow were exterminated, the world might, in the course of a few centuries, recover from the blow. But we now know, especially since the Bikini test, that nuclear bombs can gradually spread destruction over a very much wider area than had been supposed.

It is stated on very good authority that a bomb can now be manufactured which will be 2,500 times as powerful as that which destroyed Hiroshima.

Such a bomb, if exploded near the ground or under water, sends radio-active particles into the upper air. They sink gradually and reach the surface of the earth in the form of a deadly dust or rain. It was this dust which infected the Japanese fishermen and their catch of fish.

No one knows how widely such lethal radio-active particles might be diffused, but the best authorities are unanimous in saying that a war with H-bombs might possibly put an end to the human race. It is feared that if many H-bombs are used there will be universal death, sudden only for a minority, but for the majority a slow torture of disease and disintegration.

Many warnings have been uttered by eminent men of science and by authorities in military strategy. None of them will say that the worst results are certain. What they do say is that these results are possible, and no one can be sure that they will not be realized. We have not yet found that the views of experts on this question depend in any degree upon their politics or prejudices. They depend only, so far as our researches have revealed, upon the extent of the particular expert's knowledge. We have found that the men who know most are the most gloomy.

Here, then, is the problem which we present to you, stark and dreadful and inescapable: Shall we put an end to the human race; or shall mankind renounce war? People will not face this alternative because it is so difficult to abolish war.

The abolition of war will demand distasteful limitations of national sovereignty. But what perhaps impedes understanding of the situation more than anything else is that the term "mankind" feels vague and abstract. People scarcely realize in imagination that the danger is to themselves and their children and their grandchildren, and not only to a dimly apprehended humanity. They can scarcely bring themselves to grasp that they, individually, and those whom they love are in imminent danger of perishing agonizingly. And so they hope that perhaps war may be allowed to continue provided modern weapons are prohibited.

This hope is illusory. Whatever agreements not to use H-bombs had been reached in time of peace, they would no longer be considered binding in time of war, and both sides would set to work to manufacture H-bombs as soon as war broke out, for, if one side manufactured the bombs and the other did not, the side that manufactured them would inevitably be victorious.

Although an agreement to renounce nuclear weapons as part of a general reduction of armaments would not afford an ultimate solution, it would serve certain important purposes.

First, any agreement between East and West is to the good in so far as it tends to diminish tension. Second, the abolition of thermo-nuclear weapons, if each side believed that the other had carried it out sincerely, would lessen the fear of a sudden attack in the style of Pearl Harbour, which at present keeps both sides in a state of nervous apprehension. We should, therefore, welcome such an agreement though only as a first step.

Most of us are not neutral in feeling, but, as human beings, we have to remember that, if the issues between East and West are to be decided in any manner that can give any possible satisfaction to anybody, whether Communist or anti-Communist, whether Asian or European or American, whether White or Black, then these issues must not be decided by war. We should wish this to be understood, both in the East and in the West.

There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal as human beings to human beings: Remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death.

Leadership for a New Paradigm:
Planetary Moment and Momentum

Garry Jacobs, **Donato Kiniger-Passigli, Ivo Šlaus,**
Alberto Zucconi & Stefan Brunnhuber

Abstract

This is a unique moment in human history. It is a unique opportunity to generate the momentum needed for rapid transformation of national and global policies and institutions. We are confronted by challenges of a magnitude and urgency greater than ever before at precisely the moment when humanity faces a global leadership vacuum. These complex, multidimensional, interrelated challenges have already generated unprecedented awareness of fundamental flaws in prevailing ideas, values and institutions; a growing recognition of the need for a radical reordering of values and priorities; a greater willingness to embrace new policies; and a groundswell of public support among the younger generations for new solutions to safeguard their future. Leadership is needed to seize the moment and harness the momentum of the awakened energies to generate a shared vision, aspiration and social preparedness. Catalytic strategies are needed to overcome the inertia of established practices and the resistance of entrenched powers and vested interests. This will require the integration of knowledge about diverse fields, unprecedented cooperation between sectors and nations, and unparalleled coordination between the multitude of multilateral institutions. The transformation should culminate in a global social movement guided by the universal values of human security, human rights, wellbeing for all and harmony with nature. This is a Planetary Moment and a time for global leadership to generate Planetary Momentum.

Humanity is presently facing a nexus of challenges of unparalleled scope, magnitude and complexity. COVID-19 is only the most visible and immediately impactful, posing severe threats to the health, wellbeing, livelihoods and economic security of billions of people around the world. The urgency of this crisis has nearly eclipsed attention to other imminent threats to global security—global warming, war, weapons of mass destruction, the retreat from democracy, populism, rising inequality, the polarization of society, terrorism, uncontrolled migration, disruptive emerging technologies, and decreasing confidence in science and public institutions. These threats are interconnected and linked globally in complex ways we do not fully understand, defying remedy by piecemeal strategies or unilateral actions. The unparalleled series of asymmetric shocks they impose can only be effectively addressed by concerted, coordinated multilateral action by and on behalf of all nations in the world community and our international agencies for global governance.

The world confronts a global leadership vacuum at precisely the moment when inclusive, cooperative, anticipatory, participatory, *value-based leadership* is urgently needed to address

the greatest challenges of all time. It requires leadership in values to affirm the primacy of human wellbeing and universal human rights in all its dimensions as set forth in the UN Sustainable Development Goals.

The work of the **World Academy of Art & Science** is premised on the power of thought to change the world. These challenges demand *leadership in thought* to formulate a comprehensive, integrated, value-based theoretical and practical framework of solutions that encompass the multitude of sectoral issues and stakeholder perspectives within a unifying transdisciplinary perspective—a coherent, human-centered paradigm that envisions all facets of our existence as inseparable aspects of a single global reality.

Translating these ideas into effective action will require transformational leadership at the level of institutions in all fields and at all levels. Complex multi-dimensional, multi-sectoral crises cannot be effectively addressed by piecemeal policies and uncoordinated actions of countless specialized institutions acting independently. This will necessitate an unparalleled coordination between the multitude of multilateral institutions responsible for different sectors of global society; the departments of national governments; networks of universities and scientific research institutions; businesses; and networks of specialized civil society organizations focusing on one or another of these crises.

These challenges can only be addressed when the goals and targets elucidated in the SDGs are translated into a coherent framework of catalytic strategies designed to release the energy and initiative of progressive forces in global society to break the inertia and resistance of outmoded ideas, policies, institutional roadblocks and narrow vested interests. Unleashing the power needed for the global social transformation will only be possible when humanity is sufficiently awakened to the urgent and compelling necessity of concerted, coordinated collective action at the local, national and global level and the action of governments is supported, empowered and compelled by the emergence of a global social movement for the common good of all humanity. Successful initiatives of the past such as the international campaigns to ban landmines, eradicate polio, restore the ozone layer of the atmosphere, promote responsible sustainable investments, and promote renewable energies illustrate the type of strategies that have been effective. This requires the emergence of coordinated leadership initiatives within and by national academies and scientific research institutions, universities, the media, business and civil society, and among youth who represent the next generation of leadership.

These monumental leadership challenges would be near impossible to meet in normal times. But these are not normal times. The contemporary world is already very different from what it was just a few months ago. The psychological impact of Covid-19 has been and continues to be enormous. It has generated unprecedented planetary awareness and momentum, greater than that created by the nuclear arms race during the Cold War, the global financial crisis of 2008, or the growing existential threat of climate change. Today there is a greater awareness of the urgent need for fundamental changes, a greater preparedness for coordinated, collective action, a greater willingness to embrace new perspectives and approaches at least in some areas. The urgency, scale, severity and future consequences of

coronavirus pandemic present a compelling opportunity for collective leadership and action at the global level.

"We need leadership with the mental knowledge and capacity to perceive and comprehend the complex nexus of evolutionary forces driving rapid social evolution and the process by which it can be consciously directed for the common good."

Our world has already changed. The global exchange of information has multiplied through the coordinated action of multilateral institutions, all levels of government, scientific research institutions, the media and civil society organizations. The importance of controlling fake news has been universally recognized. Web-based distance learning is powerfully and irreversibly permeating education at all levels. The two centuries long trend toward concentrated employment in centralized workplaces is rapidly being challenged by the enormous economic and social benefits of online collaboration. The enormous cost and waste of human time from long commutes and the mounting environmental damage to air quality and climate from the frenzy of incessant physical movement of people have been dramatically reduced in a matter of few weeks, proving that changes in lifestyle are possible to halt and reverse global warming in time to avert irreversible damage to our planet, while enhancing quality of life and human relations. The general public and political representatives alike are demonstrating far greater awareness and willingness of the need for rapid change in the form of health-related policy measures, even very restrictive ones.

Still, most discussions and actions are concentrated on short term, quick fix remedies to prop up the existing, outmoded, unsustainable system, rather than on harnessing the opportunities generated by the crisis to provide the catalytic transformational leadership needed for transition to an inclusive sustainable paradigm. The major government expenditure programs under the rubric 'Quantitative Easing' are primarily designed to protect the wealth of the wealthy few, not the livelihoods and wellbeing of the many.

A consensus has yet to emerge regarding essential economic and financial reforms urgently needed to support full implementation of the SDGs and avert the consequences of the inevitable catastrophic economic, social and ecological impacts of the present world system. History confirms that paradigmatic changes of the required magnitude are very difficult to achieve in the absence of a perception of acute, highly tangible, immanent threat to human life and society. Leadership is urgently needed at all levels and in all fields to generate an integrated vision of the interconnectedness of all aspects of life on the planet, a blueprint for the promotion of change that will protect and promote human and natural capital and the social consensus and political will for rapid, radical change.

We stand at a crossroads and are compelled to make a collective choice. The intensity of recent events may be allowed to gradually recede, permitting us to sink back into the

complacency and security of business as usual, founded on long-discredited ideas, policies and practices which will eventually prepare the way for far greater, more calamitous challenges. This has been the result when humanity missed the unprecedented opportunities generated by crises in the past. The missed opportunities at the end of WWI led eventually to a far greater second world war. The missed opportunities at the end of WWII generated the far more menacing threat of global nuclear annihilation. The missed opportunities following the end of the Cold War have led to the current nexus of global challenges referred to above culminating in the existential threat of climate change.

Or, we can seize the opportunity generated by the crisis, build on the unprecedented level of awareness and willingness to prepare the way for more essential and beneficial changes that will avert the immanent threats that will remain long after COVID-19 has receded and move us toward an inclusive, stable, secure and sustainable social, economic and political paradigm for global human wellbeing.

The boundaries are no longer national. The challenges we face can only be met by working together rather than independently, in competition and opposition to one another. Today we need leadership which can awaken and enlighten global consciousness, foster positive human relations and unite humanity for the good of all. We need leadership with the mental knowledge and capacity to perceive and comprehend the complex nexus of evolutionary forces driving rapid social evolution and the process by which it can be consciously directed for the common good. We need leadership with the will to correct and avoid the errors of the past and make up for missed opportunities. We need leadership with an inclusive vision and values that affirm and encompass the wellbeing of all human beings. We need leadership with the inspiration and skills to empower, release and direct the energies of all humanity and the organizational capabilities to channel those energies effectively for productive, collaborative work. We need institutions that represent the whole world and every individual and not just the momentary possessors of wealth and power.

The leadership the world needs cannot be embodied in any individual representing a single nation, religion, culture or value system, though it needs to be sufficiently inclusive to be embraced and supported by individuals and groups of all nations, religions, cultures and value systems. Global leadership can only be represented by a synthesis rather than a selection out of the rich diversity of global society. Global leadership cannot be exercised by the power of any single organization controlled by vested interests based on military, economic or technological power. It must be governed according to the principles set forth in the Universal Declaration of Human Rights and the global consensus of 193 nations in the UN Sustainable Development Goals.

Leadership is the power to unite people to generate a power greater than that of any individual, including those who may guide it. That leadership can best be achieved by an inclusive social movement for unity that embodies and represents the aspirations and shared values of all and which gives rise to institutions governed by those values, rather than by values of a bygone era. Its call must be for inclusive cooperative global security and global prosperity. Its power must be drawn from the energy of unity, empowerment and harmony in

diversity rather than that of division, conflict and domination. Its strategy must be to replace divisive, nationalistic political conflict with universal cultural diplomacy based on respect and understanding. Its platform must be a network of networks bringing together all those who aspire for a peaceful, prosperous world for all.

WAAS has been emphasizing the need for a new social, economic and political paradigm to promote the wellbeing of all humanity. Such a radical and massive change cannot be achieved solely on the initiative of superpowers, national governments or by a few outstanding individuals. It will require the active involvement and support of all major stakeholders—governments, business, scientific and educational institutions, the media and civil society. In each field and at every level it will also require people-centered catalytic leadership strategies to overcome the inertia, obstruction and vested interests of entrenched elites. All these will have to be founded on a new value-system as a source of its ideas, power and action. Ultimately it must release the energy and collective initiative of the entire global society for rapid transition to a new paradigm.

The time has come to join together to create the essential global leadership needed for the 21st century. *This is a Planetary Moment and a time for global leadership to generate Planetary Momentum.*

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Catalytic Strategies for Socially Transformative Leadership:
Leadership Principles, Strategies and Examples

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Abstract

Transformative leadership is the process of consciously accelerating the evolution of global society. This paper provides an overview of initial research findings of the project on Global Leadership in the 21st century (GL21) initiated by WAAS in collaboration with the United Nations Office at Geneva, preparatory to a major conference at UNOG on October 27-28, 2020. The objective of GL21 is to identify fundamental principles of social transformation that can be consciously applied to accelerate progress on addressing global challenges and opportunities and to illustrate these principles by citing successful instances of significant transformative achievements in different fields of activity at the local, national and global level. GL21 is examining past and recent achievements of social transformation related to peace and disarmament, governance and human rights, economy and the environment, business and finance, the application of science and technology for social progress, global governance and rule of law, education and wellbeing. Through this project WAAS and UNOG seek to learn from humanity's collective experience and convert that experience into codified principles of knowledge which can be more consciously and systematically applied in different fields and issues to accelerate global social evolution. The principles and examples cited in this paper are not new or unknown. Nor do they represent a complete and comprehensive approach to accelerating global progress. Each sheds light on a different aspect, dimension or element of a greater whole, steps and stages in the process of human accomplishment and social transformation. We may recognize each of them and know that we already know it. But in most cases we have not assembled the pieces mentally or fully understood their interrelationships with one another to form a knowledge of the whole process of social transformation or fully converted the rich knowledge they contain into powerful mental and practical instruments for universal application. The goal of GL21 is to forge a

wider conception of the process of social transformation, to assemble a universal toolbox of effective, proven strategies and catalysts, and to illustrate how they can be applied to break the leadership logjam which presently prevents and retards global progress. Taken together we believe they confirm the premise that rapid, radical global progress on addressing the greatest challenges confronting humanity is possible here and now. Project GL21 examines many different types of leadership, of which outstanding individual personalities are the archetypal conception but not the only form. Effective leadership always transcends the actions of any one individual or small group. Leadership is a living social process that encompasses the whole society in which and on which it acts. It may be initiated by idealistic individuals, inspired by lofty ideas and values, and empowered by innovative organizations, but transformative leadership sooner or later influences the actions of a great many people and organizations and spreads until it becomes a broad-based social movement and eventually becomes institutionalized in the customs and culture of society. Outstanding individual leaders and the broad-based social movements are two complementary ends of the leadership spectrum. This paper examines the role of many different component elements, stages and instruments of the process of socially transformative leadership.

Part I: The Evolutionary Context

Humanity has seen countless social transformations. From the time the hunter-gatherer discovered agriculture and human settlements developed, more and more complex and powerful social organizations have evolved, and society has evolved in the process. The common thread running through all these evolutionary stages is the compelling force of human aspiration. In each and every stage and movement—be it the call for end to slavery, right to education, climate control or end to war—the collective aspiration of humanity has been the fundamental driver for all human accomplishment.

The individual is the catalyst of social change. Society evolves when the collective is awakened and aspires for change. The individual is the conscious peak of the collective through whom that awakening and aspiration manifest. The individual gives conscious expression to new ideas and initiatives which then spread slowly or rapidly, hesitantly or enthusiastically, until they are recognized, embraced, imitated, disseminated and eventually accepted and assimilated by the institutions and culture of society as a whole. The role of the individual is to awaken and release social energies and innovate new forms of organization to realize them. The symbolic act of a single individual can act as a catalyst to expedite the progress of the whole society, as Rosa Parks did by refusing to give up her seat on the bus to a white passenger in Montgomery, Alabama and Greta Thunberg did by her Friday protests before the Swedish Parliament. These representative individuals voice the aspiration of millions of people.

When growing public awareness of these symbolic acts is recognized, accepted and enthusiastically endorsed by sufficient numbers, it can unleash enormous energy and initiative. When that energy and initiative are organized, they acquire social power for transformative change. When the call for change crosses a tipping point, the movement

spreads rapidly, is systematically promoted, institutionalized by public policies and formalized by legislative initiatives. Thus, law is codified social consciousness.

The global movement that led to the revival of the ozone layer is a case in point. Major landmarks in the environmental movement have often followed major disasters such as the Three Mile Island, Chernobyl, the Bhopal tragedy and Valdez oil spill. They have also been catalyzed by the tangible impact of environmental threats on human health and wellbeing, such as the impact of smog in Los Angeles on early efforts to control urban air pollution. Landmark change in the past has almost always been initiated by civil society movements and only later incorporated in public policies.[1] In some cases the civil society initiative has come from local communities and NGOs. In others it has emanated from scientific research promoted by national academies. When the US National Academy of Sciences reported in 1974 that chlorofluorocarbons (CFC) were connected to the thinning of the ozone layer, it initiated a multistage process which gained widespread attention through the media, acquired support from the medical profession, public health officials, educators and research institutions, and altered the behavior of concerned corporations, investors and financial markets.

Eventually this process led the US government to ban CFC in aerosol sprays. But even before the legislation was passed, Americans had drastically reduced the use of aerosols containing CFC, leading to a halving of sales. Governments, industries and corporations only prioritized environmental concerns after society had come to expect and demand them. Through the media, public education plays a critical role in shaping public thought and influencing policy. Environmental science eventually infiltrated school curricula worldwide. Extensive media campaigns by environmentalists led to faster, effective dissemination of information to greater numbers of people. The detection of the ozone hole in 1982, and the media highlight of incidents of skin cancer and other illnesses heightened public concern. In the face of greater scientific evidence and public pressure, governments began to give up their defense of the CFC industry. Green parties that were founded in the 1970s became globally united and stronger in the following decades. They started participating in the political process and becoming part of governing coalitions in several countries. They contributed to making public policy more sustainable. NGOs began working in concert with scientific bodies and national governments. A scientific institute in Germany developed an ozone-safe refrigerant, and the NGO Greenpeace supported it and went on to win the 1997 UNEP award for its championing of the cause. After over a decade of public activism, support from educational and scientific institutions, media campaigns and concerted action by NGOs and IGOs, in 1987, the Montreal Protocol, an international treaty to protect the ozone layer by phasing out substances that lead to its depletion, was agreed on and later ratified by 196 countries and the EU. Ozone levels have since recovered, and NASA reported in 2019 that the ozone hole had become the smallest ever since it was discovered in 1982.

The recovery of the ozone layer has been a successful movement, but it is one movement within the larger ongoing movement of climate change. *With a much larger number of NGOs today than ever before in history, higher levels of education, and faster, more effective ways*

for disseminating information, faster, vaster, and more powerful catalytic transformations are possible than ever before.

"Transformational leadership begins with the assertion of a new vision, value or ideal that often appears unrealistic or unachievable, yet over the course of time becomes a rallying call and catalyst for radical change."

Social movements have their origin in the distant past and their inevitable consequences will continue long into the future even when the immediate result does not appear significant. The Occupy Wall Street (OWS) movement of 2011 seemed like a sudden burst of energy that lasted six weeks and disappeared without a trace. But the gathering of a thousand people in New York spread to 82 countries and involved over a thousand occupations because it was part of a much larger evolutionary movement. OWS was a result of the rising inequality in American society since the 1970s that was brought into sharp relief by the financial crisis of 2007-09, and was inspired by the Arab Spring and the anti-austerity protests in Europe. But it also has a 'prehistory'. Its influence stretches back to Beijing in 1989 and Prague in 1968.[2] Similarly, its impact did not end with the eviction of the protestors in New York in the winter of 2011. It has resulted in greater activism in civil society, opened up discussion on inequality and corporate culture worldwide, and set the stage for other actors and social forces to take over. Much of the work that shapes human progress takes place during what appears to be long intervals of inactivity that fill the space between the shorter moments of impactful activism.[3]

A remarkable success in impactful activism is the story of Jody Williams and the International Campaign to Ban Landmines (ICBL) that resulted in the signing of a legally binding international treaty banning the production and sale of anti-personnel landmines. It is a dramatic instance of a social movement that transformed the rules of warfare around the world. ICBL started as a coalition of 6 NGOs in 1992 which jointly agreed to launch a campaign to ban landmines. It joined hands with an aspiring committed individual, Jody Williams, who headed the campaign. ICBL established an egalitarian, consensus-based decision structure which provided every member autonomy of action combined with a role in group decisions and a sense of ownership in the campaign. ICBL launched the 'First Forty' campaign, pressing governments to be among the first forty nations to ratify the treaty banning landmines, and thus contribute to its rapid implementation. This campaign induced several governments to act quickly to become a part of that special group. Media campaigns were launched. Clear, concise information was made available. Every individual member of the campaign communicated clearly and consistently, thus gaining the attention and confidence of people, governments, media and other actors.

The movement employed the media very effectively to make landmine victims the face of the campaign. One survivor carried the Olympic torch into the stadium during the opening

ceremony of the Winter Olympics in Japan in 1998. Princess Diana spurred the campaign with photos in the international media of her walking across a minefield in heavily landmine-contaminated Angola.

With greater visibility and support, more NGOs, governments, religious leaders and private actors joined the cause of ICBL. The campaign grew from 6 NGOs to 1200 organizations in 80 countries in six years. Governments started agreeing unilaterally to destroy their stockpile and support the call for a total ban. A stigmatization campaign was launched against manufacturers who did not voluntarily give up producing the weapons, in some cases supported by organizing the company's own workers. As 122 nations signed the Mine Ban Treaty in Ottawa in 1997 banning the use, production and sale of anti-personnel mines, Jody Williams and ICBL were awarded the Nobel Peace Prize, for starting a process that in 6 years transformed a vision into a concrete reality. With continued activism, the treaty became binding international law in 1999. *The banning of anti-personnel mines was a narrowly focused, but major achievement. It demonstrated that concerted, well-coordinated actions by NGOs could alter both the law and public attitude toward deeply entrenched military practices. The process by which it was achieved offers important ideas for all efforts to promote rapid global social transformation.*

1. The Power of Ideas—converting high values into practical reality

Ideas have power—especially when they affirm universal human values and when they are accepted and endorsed by large numbers of people. The initial expression of an idea may appear utopian, but once enunciated it tends to grow in intensity and spread until it takes root in the mind of humanity and begins to bear fruit. Transformational leadership begins with the assertion of a new vision, value or ideal that often appears unrealistic or unachievable, yet over the course of time becomes a rallying call and catalyst for radical change. In the past, that course of time was often centuries. In the 20th century it was abridged to decades. More recently there have been instances of such sudden transformation that it has taken the entire world by surprise, including those who most ardently sought it.

Today many people take their fundamental human rights for granted and assume that the inherent rights of every individual are self-evident. But this has not always been the case and is still far from universally true even today. The origin of human rights can be traced back to the time of Cyrus, the Great in ancient Babylon and the Magna Carta in England. Until then the rights of each human being were limited to those of members of the group to which they belonged; they did not accrue to individuals in their own right. It is only during the past four centuries that the idea of inalienable and universal individual rights began to gain widespread prevalence. In ancient Greece and Rome, citizens could be bought and sold as slaves if they were unable to pay their debts or were captured in war. It was only in the 17th century that the countries of Europe began to abolish the right of people to own other human beings as slave property. Later these countries affirmed the rights of the slaves themselves and began to ban commercially profitable slave trade outside the country. Still later, slavery was abolished in their overseas colonies. In 1776 America's Declaration of Independence proclaimed the right to life, liberty and the pursuit of happiness, but these rights were fully

accorded only to property-owning male citizens and did not apply to women or black slaves. The US constitution of 1789 specifically included provisions acknowledging the legality of slavery. The more recent history is too well known to require recollection. The idea of equal rights for women has a similar but far more recent history. Until 1882 the wealth and property of English women were legally transferred to their husbands immediately upon marriage and their legal identity ceased to exist. It is only in the 20th century that most democracies accorded equal voting rights to all women, e.g. 1922 in USA, 1928 in UK, and only 1991 in all parts of Switzerland.

In this context, the adoption of the Universal Declaration of Human Rights in 1948 signifies a momentous event in human history. For the first time 48 nations of the world joined together to adopt 30 articles affirming fundamental human rights. Yet it is important to note that the 48 nations which signed the Declaration did not adopt the UDHR as a legally binding treaty. The other ten nations either abstained or did not sign. The failure to accord the UDHR legal status was conscious and intentional, because the principle of enforceable individual rights was still too controversial and suspect. Member states refused to give UDHR the force of law for fear its provisions might be applied to challenge their own policies and internal functioning, even in 'democratic' nations. In the years that followed its adoption, UDHR was cited with increasing frequency in the UN General Assembly and outside it to justify and support policy measures, resolutions, judicial decisions and national conduct. Then in 1976 the UDHR and two subsequent documents were combined to constitute the International Bill of Human Rights and acquired legal force when a sufficient number of nations had ratified it. Since then, the idea of inalienable, universal rights has become a living and powerful ruling principle in human affairs.

Where did that power come from and how was it acquired? It came from the evolving collective consciousness of humanity exercising its influence over the thought and action of the global community. Its emergence marks the awakening of conscious mind in subconscious society, the abrupt intrusion of the light of reason and spiritual values into the shadowy realm of possessive power of the crude, rude rule of force, power and violence. Since then the power and influence of human rights have surged forth from the darkness of history until it has become a force of light for all other forms of power to reckon with. Then in 2015 these universally recognized human rights took on a concrete, specific, actionable form as the 17 Sustainable Development Goals adopted by 193 member nations of the UN. Today the SDGs are guiding decision-making by governments, businesses and civil society organizations around the world. They are being taught in schools and colleges in every country. Progress on achieving them is being measured and monitored. Financial resources are being invested to realize them on an unprecedented scale. Implementation lags behind the dates set in Agenda 2030, yet efforts to accelerate progress persist. The SDGs represent tangible evidence of the power of ideas to change the world.

Ideas and values have power in the measure humanity accepts and endorses them. The idea of equality for women, blacks, religious and other minorities has become a real force. Tracing the historical process from the first formulation of universal values to their

progressive embodiment in laws, institutions (e.g. international conventions, humanitarian law, human rights commissions, NGOs such as Amnesty International, and countless other forms), policies (e.g. racial integration and equality), rules (equal pay for women), targets, strategies, policies and programs reveals the process of converting distant ideals into concrete practical reality. The public awakening of environmental consciousness in response to air pollution in Los Angeles and New York City in the 1960s eventually led to the rise of environmental groups and movements around the world; local, state, national and international organizations backed by law; global standards, quantitative measures and monitoring systems; laws governing every major source of pollution; development of an endless array of new technologies; value-based investment guidelines such as SRI and ESG, and so much more.

Acts such as these are not new to humanity. But their speed, reach and power have vastly multiplied. What once took centuries can now be accomplished in weeks and months. It takes great patience and research to trace the history of the movement for the abolition of slavery in Europe in the18th century, to observe its gradual extension to a ban on the lucrative slave trade which brought immense wealth from slave-worked mines and plantations in distant colonies, to the complete abolition of these practices at first in the home countries and only much later in their colonies. And still more than a century after the awakening of reason and justice began, it required the bitter violence of the American Civil War to forge the 14th Amendment to the US Constitution, and then another long century before the Civil Rights Movement could convert democratic values into practical action through the integration of schools and anti-discrimination laws in America. Only then the call for justice could unleash the anti-Apartheid movement and countless other steps and stages in the reluctant awakening of humanity to principles of freedom, justice and equity proclaimed centuries earlier. And out of these dim early advances, the process has gradually spread and repeated with ever greater speed and intensity to proclaim the rights of women, minorities, labor, children, and countless other social movements of the last two centuries.

Today words and values travel far faster and farther than ever before. The soil of human consciousness is more fertile and receptive today. The quiet words of a 15-year-old school girl named Greta Thunberg proclaimed the rights of future generations to be heard and honored among the clamor of humanity's present desires. Her voice reached out with a mission and message to other school-age children, spreading like wildfire through the media and social networks around the world within a few days and sparked a global social movement within a few weeks. Her soft words carry power to awaken minds and stir hearts to action. The slow and difficult-to-arouse voice of human conscience resonates and reverberates in other minds and hearts until the whole world begins to listen to reason for the first time. It reminds us that we cannot afford to continue to place our faith in institutions of governance controlled by vested interests, deaf or immune to changes in public conscience. Nor can we continue to blindly submit to them in helpless passivity and dependence. The awakening global public conscience represents the collective consciousness of humanity. Transformational leadership arises either in the form of new people or from those who recognize and embrace the rising social consciousness of those they lead.

The leadership of the future will come in many different forms—some individual, some organizational and some in the form of unifying values and elevating ideas. All other forms of leadership are subject to inherent limits defined by their origin, culture, and circumstances. Ideals alone can truly express universal values in a manner that is all-inclusive. The world today needs the leadership of transformative ideas that lead to effective action.

We know all these facts, but their immense significance remains blurred by the dullness of pious repetition. The process of their emergence remains largely hidden from view. Tracing and documenting the various steps and stages in the process of converting higher values into practical reality in different fields will enable us to arrive at a general blueprint or tool box that can be applied to identify the missing links and steps that retard the process in many current efforts to alter the course of global society. We need to enlighten our minds and fortify our will with the deep conviction that values have the power to transform the world. Today they have greater power than ever before.

2. The Social Process—the evolution from violence to social power

The history of human evolution traces the gradual evolution of our collective capacity to mobilize human energies for accomplishment. All human accomplishment is the result of human energies released and expressed in action. But for that energy to accomplish, it must first be focused and directed as purposeful Force. That Force must be harnessed, channeled and converted into Power. That Power must be expressed in action with knowledge and skill. This formula underlies the Physics of social accomplishment, growth, development, evolution and transformation.

Throughout history a great portion of that energy was expressed physically in violent conflict, warfare and conquest over other people. During the past five centuries and most dramatically after 1950, mutually beneficial trade through cooperative social interaction increasingly replaced physical violence as the principal mode of relationship between societies. Unlike the empires of ancient times, the empires of the 19th century were predominantly commercial in nature and intended to enhance economic power rather than military force. Increasingly countries channeled their energies into productive economic activities rather than wars of conquest. Prospering nations acquired a vested interest in maintaining peaceful, harmonious relations with other societies. Violence gradually subsided, only to erupt in two horrendous world wars, as if reminding humanity of the cost of reverting to force of arms as the principal mode of national power. Only then did humanity come together to establish the United Nations in a global effort to prevent and outlaw wars between nation-states.

The global media are so filled with daily reports of violence around the world that many citizens conclude the world is getting more violent than ever before. Never before did we have the capacity to study, monitor and broadcast news of violence around the world 24 hours a day. Violence has come to be regarded as the exception rather than the general rule of human relations, so today we consider as abnormal and unacceptable occurrences which were regarded as commonplace in earlier periods. In spite of appearances, research supports the view that the world is a safer place than at any other time in history.[4] Many

factors account for the dramatic reduction in rates of violence. Among these are the creation of nation-states, which safeguard the lives of their own citizens against crime and foreign threats; the spread of democracy and rule of law, which have replaced mob rule with rights and justice; global commerce, which has replaced imperial conquest with mutually beneficial economic exchange—Nixon's trip to China opening up what has become the world's largest single trading partnership between erstwhile enemy nations—universal education, which fosters the development of well-informed citizens; the increasing influence of women and feminine values in global society; the rise of mass media disseminating information rapidly and sensitizing the global public to even small acts of violence; the increasing voice of the individual in national and global affairs through greater recognition of human rights; more sensitive public opinion, and the recent extension of internet usage and social networks to nearly 60% of the world population.[*]

Today humanity has awoken to the destructive violence of rapacious economic activities on the livelihoods of less developed communities and on humanity's physical and biological environment. The costs of both in terms of political, social and economic insecurity are immeasurable, but the impact of the recent flood of refugees from war, famine and ecological disasters provides sufficiently compelling evidence that violence of any type threatens the welfare and wellbeing of the whole world. Like the beneficiaries of violent conflict, the beneficiaries of predatory actions against the economically weak and the environment ignore or resist change as far as possible, but the ultimate necessity of abandoning violence for peaceful and sustainable planetary relations is irrefutable and self-evident. The transition from war to peaceful forms of human relationships is one expression of the process driving social evolution. This same evolutionary process is behind the transition from other forms of social domination and exercise of power.

The sublimation of physical energies for productive purposes and their channeling through mutually-beneficial, increasingly organized and technologically sophisticated economic and commercial relations supported by negotiated treaties and principles of lawful conduct are important stages in the process of social evolution. The age of physical warfare is drawing to a close, but the urge for domination and exercise of power by some human beings over others is far from exhausted. Only, the forms of power have largely shifted from military subjugation and political dominance to economic and financial supremacy. In recent times, the role of money has become the ubiquitous instrument for monopolizing other forms of social power.

Each successive stage of this evolutionary transition in the past has refined, organized and utilized available human energies more effectively than before, eliminating the unconscionable waste and destructiveness of war, the inefficiency and wastefulness of unorganized economic activity, the injustice of colonial imperialism and widening social inequality. The only possible means for further social evolution—short of violent revolution—is the further sublimation of human energies to universal principles of freedom, justice and equity. This defines the next stage of collective evolutionary transition now in process and presents itself in the form

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* https://www.statista.com/statistics/617136/digital-population-worldwide/

of the greatest challenges confronting humanity today. The once immovable force of blind, intransigent human possessiveness and greed now shows signs of giving way. India's non-violent Independence Movement and the anti-Apartheid movement in South Africa were unprecedented events in world history. But neither of them prepared the world for the speed and magnitude of the social transformation which so suddenly and pervasively swept through Eastern Europe in 1989-90, leading to the fall of the Berlin Wall, the peaceful collapse of communist regimes in one country after another, the end of Soviet imperial domination, the end of the Cold War and the reunification of Germany—all within the space of two years.

The process repeated in what became known as the Arab Spring of the 2010s. Up to this point, social movements had to rely largely on word of mouth as the principal means of communication and coordination, especially in countries where the official media were rigidly controlled. But all that changed after the power of social media was put in the hands of every citizen with a cell phone and became ubiquitous. Revolution began in Tunisia in 2011 with a protest against oppressive government and low standards of living and then quickly spread to Libya, Egypt, Yemen, Syria and Bahrain, where either the regime was toppled or major uprisings and social violence occurred. Sustained street demonstrations also took place in Morocco, Iraq, Algeria, Iranian Khuzestan, Lebanon, Jordan, Kuwait, Oman and Sudan. Some of these protests degenerated into violent revolution and civil war, but their originating spirit and transformative power issued from public protests rather than armies and weaponry. Recent uprisings in Sudan and Algeria show that the conditions that started the Arab Spring are not going away and political movements against authoritarianism and exploitation are still occurring. The multiple uprisings and protest movements of 2019 in Algeria, Sudan, Iraq, Lebanon and Egypt have been seen as a continuation of the Arab Spring.

Perhaps even more dramatic was the power of public resistance in Hong Kong in 2019 to the imposition of extradition treaty with mainland China, which was widely perceived as an encroachment on Hong Kong's autonomy and the rights of its citizens. While the world waited with baited breath for an inevitable military response from China to the provocation of public protests and violence on the island, none came and the protesters achieved their immediate demands.

These anecdotes from history highlight the general direction in which humanity has been moving for centuries, which has gained greater momentum in recent decades. They point to the possibility of even faster and more peaceful transitions from the power of violence to the power of universal human values in the coming years—a possibility that reveals the potential for more sudden and rapid advances which now appear achievable only in some distant future. Awareness of that possibility is a form of knowledge with the power to awaken human aspirations and release social energies to accelerate global progress.

3. From Power to Wellbeing—the values revolution in business and finance

The end of the Cold War, which was marked by the collapse of communism, was celebrated by many as the ultimate victory of capitalism. The globalization of trade after

1990 generated an unregulated playing field for multinational corporations and hedge funds, a wild west global casino for speculative investments, a refuge for offshore tax evasion, a license for unrestricted assertion of shareholder value, limitless accumulation, ruthless and often senseless mergers and acquisitions, and rising levels of inequality with the deeply entrenched and politically fortified fossil fuel industry thrown into the mix, and capped by predatory state capitalism and the violent hegemony of resurgent trade wars. The multibillion dollar bail out of Wall Street financial institutions following the 2008 financial crisis, the rapid dismemberment of legislation designed to prevent its recurrence, and the resurgence of Big Oil in America were interpreted as clear signs that this combination of forces was destined to dictate the rules of power in the 21ˢᵗ century.

"The aberration of neoliberal economic theory has proved as irrational and unsustainable as so many other flawed orthodoxies. Neoliberal capitalism has no greater legitimacy than authoritarian communism and its end will be the same."

Yet even as the forces of neoliberal capitalism were reaching their acme, early signs appeared that their days were numbered and already in decline. Even before the collapse of communism, powerful new ideas began to emerge in the West under the rubric of corporate social responsibility (CSR), socially responsible investing (SRI), for-benefit corporations (B-corps), impact investing and more recently environmental, social and governance (ESG) investing. The origins of SRI in the US date back to the late 1700s when religious investors decided they would not invest in companies engaging in alcohol, tobacco and gambling. It was reborn in the 1960s when those opposing the Vietnam War and the nuclear arms race blacklisted investments in the military-industrial complex. In the 1970s the first efforts were born to curtail investment in businesses damaging the environment. In the 1980s anti-apartheid disinvestment gained prominence. SRI and Impact Investing gained momentum through the 1990s and 2000s, but some of these impact funds led to greenwashing and remained too small in total value to influence mainstream business.

But over the past year or two since the Trump administration reaffirmed commitment to neoliberalism and fossil fuels, the reaction against the status quo has suddenly swelled into a global movement of unprecedented magnitude and power. Today upwards of $36 trillion is being managed under various forms of impact investing. In April 2019 International Finance Corporation (IFC) spearheaded the formulation of Operating Principles for Impact Management, which has already been accepted by more than 80 asset managers and owners. Over the past 18 months many of the world's largest retail and investment banks have announced their own sustainable finance initiatives, signaling new market opportunities and ways of doing business. Then in January 2020, after years of apparent indifference or denial, BlackRock[*], the world's largest investment management company with upwards of $7 trillion

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[*] https://www.blackrock.com/us/individual/larry-fink-ceo-letter

in resources, acknowledged that the world is on the verge of a fundamental reshaping of finance which will result in a significant reallocation of capital. BlackRock announced a number of initiatives to place sustainability at the center of its investment approach, including measures to reduce dependence on fossil fuels and strengthening its commitment to sustainability and transparency in investment activities.[5] The premise behind this announcement is what some impact investors have been claiming for decades: sustainability reduces risks. Moreover, it acknowledges the fact that when financial metrics are adjusted to reflect real contribution to the economy and society, many high value corporations are destroying more wealth than they are creating.

BlackRock's announcement is not merely a temporary blip on the radar screen. It is more like a final concession by established powers that things are inevitably and irreversibly changing and will never be the same. Nor is this the only significant sign of that change. In 2019, the Business Roundtable convened a meeting of the CEOs of 181 of the world's largest corporations, to adopt a joint Statement on the Purpose of a Corporation, publicly committing its members to create economic opportunity for all of their stakeholders: customers, employees, suppliers, communities and shareholders. The Statement represents a rejection of the obligation of firms to maximize short-term shareholder value. It signifies the recognition that climate change related governance issues and human values are dramatically shifting the long-term business environment.

As if to confirm that these are not mirages, artefacts or mere blips on the screen, in January 2020 the World Economic Forum released the "Davos Manifesto 2020: The Universal Purpose of a Company in the Fourth Industrial Revolution". The Manifesto affirms what common-sense has always understood. Businesses are first and foremost social organizations intended to serve the needs of society and the wellbeing of humanity. Their specialized functions may be economic and commercial, but they have always played a greater role and have a wider responsibility. The Manifesto states: "The purpose of a company is to engage all its stakeholders in shared and sustained value creation. In creating such value, a company serves not only its shareholders, but all its stakeholders—employees, customers, suppliers, local communities and society at large. The best way to understand and harmonize the divergent interests of all stakeholders is through a shared commitment to policies and decisions that strengthen the long-term prosperity of a company."[6] The aberration of neoliberal economic theory has proved as irrational and unsustainable as so many other flawed orthodoxies. Neoliberal capitalism has no greater legitimacy than authoritarian communism and its end will be the same.

A few days after the Davos Manifesto, WEF announced the first Business Playbook, an exponential climate emergency action plan produced by leading experts and business stakeholders, providing a framework for all companies to reach net-zero emissions rapidly through the adoption of an exponential trajectory of at least halving their greenhouse gas emissions every decade to approach net zero by 2050, and integrating climate action in their business strategy. The initiative is supported by the International Chamber of Commerce (ICC)—the institutional representative of more than 45 million companies, the World Business Council for Sustainable Development (WBCSD), Ericsson, IKEA, Scania, Telia

Company, The World Wide Fund for Nature (WWF), Skanska, the Potsdam Institute for Climate Impact Research and many additional partners and contributors. The 1.5 °C Playbook is a spin-off from the world-leading Exponential Roadmap initiative. It guides companies and organizations of all sizes on exponential climate action, and helps them align with the 1.5 °C ambition. It is a concrete tool to facilitate the first step of halving emissions, which is grounded in the latest science. Focused on simplicity and speed, the Playbook is aimed at helping the global economy to achieve the goals of the Paris Agreement.[7] Other recent developments include the announcement by Amazon declaring aggressive goals to fight climate change, including achieving the Paris climate agreement's objectives ten years early and using 100 percent renewable energy by 2030.

Viewed superficially recent pronouncements may be regarded as mere empty words designed to placate the masses. But viewed historically, they reflect a clear, inevitable evolutionary direction and intention. The intention here is not to announce any premature celebration of final victory. It is rather to lift the mantel of apparent helplessness and hopelessness that so often prevent human beings from lifting their submission to the instruments they have themselves created. These initiatives are signs of the times—signs of a social tipping point discussed elsewhere in this article. The values of the Millennial generation who are inheriting the world's wealth and assuming leadership positions in business and government are not those of their parents or earlier generations. They feel a sense of ambiguity and uncertainty about the future that compels them to question, rethink and demand a change of course. However powerful the entrenched social forces, the social consciousness that accepts and sanctions is the ultimate determinant of social evolution. Not even authoritarian communism could long withstand that force. The signs today may appear as tentative as were those in the mid-1980s when virtually no one foresaw the momentous changes that would unfold within a few years. This perspective is not a prediction or prophesy of what will happen, but rather a call to leadership and action to pull down the walls that block humanity's pathway to a better future. Climate change is not the only thing that is accelerated. Our collective capacity for humanity is too—perhaps not as fast as we need for it or wish for it to, but faster than ever before and capable of acceleration as surely as global warming is accelerating. By means of floods, fires, rising sea levels and the latest pandemic, the planet is compelling humanity to become conscious and address issues it has long preferred to ignore. As in the past, humanity tends to rely too much on the pressure of threats than the opportunities offered by consciously embracing higher values, knowledge and consciousness.

Part II: Levels of Leadership

4. From Individual Leaders to Global Social Movements

Where are the leaders we need? The environmental movement had a very modest beginning and took decades to gain momentum. It was born out of the air pollution in Los Angeles and New York City as a result of rapid growth in the 1960s, the beginning of municipal recycling practices in California, publication of the Club of Rome's *Limits to Growth,* the UN

Conference on the Human Environment in Stockholm in 1972 organized by WAAS Fellow Maurice Strong, the Brundtland Commission and the contributions of countless other social thinkers, scientists, organizations and activists. Yet today a great many feel disheartened by the obvious lack of effective environmental leadership at the global level. Leadership is missing in many other fields as well. With the aging of Gorbachev, the nuclear disarmament movement no longer has a prominent spokesman. The EU, which prior to 2008 offered such promise as a model for overcoming the blatant limitations of the nation-state, has lost its sheen and appeal to many of its own member states and citizens. Even so, the European Commission's new President Ursula von der Leyen has articulated the widespread aspiration in many EU countries for the "Green Deal" to direct post-COVID-19 stimulus funds to be invested in the future, post-fossilized sustainable economy.

Feminism has been one of the most powerful, ubiquitous and effective social movements of the last century. It has provided the framework and seeded grass roots initiatives for the advancement of women and girls around the globe. It began in the distant past when a few spirited women defied social conventions by exposing, questioning and disrupting social norms that oppressed them. Mary Wollstonecraft, who published what was perhaps the first feminist manifesto, *A Vindication of the Rights of Woman*, in 1792, Sojourner Truth who advocated civil rights and abolition, Emmeline Pankhurst who was a key leader in the women's suffrage movement, and Simone de Beauvoir who attacked the idea that women belonged in passive roles were early feminists who awakened the masses. These efforts have eventually improved access for girls and women to education, health care, voting, reproductive freedom, freedom from sexual abuse, workers' rights such as family leave, etc. It has resulted in a cultural shift that has touched societies around the world. Even in peace-keeping, women became more prominent. Eleanor Roosevelt, a former First Lady of the USA, became the public voice and inspiring leader of the movement that led to the Universal Declaration of Human Rights in 1948. The movement for gender equality has no central leadership. It is coordinated by a simple but compelling idea—women and men are equal and must be afforded the same rights and privileges.

The retreat from multilateralism is disconcerting and demoralizing to those who perceive the threat of a return to Cold War competitive nationalism and those who believe in the inevitability of collective human action to forge our common future. The missed opportunities that appeared at the end of the Cold War have been a great source of disappointment and disillusionment. It is clear we could have done better. We look for reassuring signs or a savior. The hope that America might play that role for the benefit of all vanishes even among Americans wedded to global idealism. The world is confronted by a leadership challenge at the global level where we look for and desperately need them. The reactionary resurgence of nationalism offers absolutely no answers, safeguards or promises. The logic of history compels us to reach beyond the failed myth of national sovereignty to evolve effective instruments of global governance.

Today humanity looks on helplessly and hopelessly to our leaders at the national level to show the way. Rarely have they ever done so except at extreme moments when new people were propelled into positions of leadership. America's founders were rebels and leaders of

revolution. Slavery was abolished by a man born in a log cabin. Churchill was a political outsider spurned for years by his own party until no one else had the courage or energy to lead. The leaders of tomorrow will not come from the establishment. They will come from the people or by those who represent the values and aspirations of the people, not those of the establishment.

The example of a Swedish school girl who refused to go to school awakening a global movement of millions of children is only a single example of a phenomenon that is multiplying around the world. Leadership has always begun with the individual. All social change begins in the minds and hearts of one or a few individuals who embody higher values and aspirations of the society. It is significant that the new leadership emerges in a new generation that does not think or feel like its elders. They do not remember the Cold War or the arms race. They are not consumed by competitive nationalism.

Faith has been lost in the hope that a nation or group of nations will lead humanity forward. At the same time we are reminded that it has always been individuals and small groups who formed the kernel for creative leadership. Social movements are not launched by governments or global institutions. They have always been launched by individuals, small groups and catalytic organizations whose voice and influence gradually grew in intensity and power to the point where they could no longer be ignored by the entrenched political parties and vested interests, which were compelled to act and eventually embrace the emerging social values. All the great steps and stages in the long march and trail of victories of the environmental movement began with the people—with individuals, small groups, local organizations and local governments—which embraced new ideas and values and demanded change. Among the world's largest corporations—Amazon, Apple, Facebook, Google, Microsoft—most were founded by youngsters, a single individual or small group, several were born in garages, often with little or no resources.

5. Organizational Leadership—Sierra Club and Beyond Coal

New ideas originate in the minds of farsighted individuals. The founders of Club of Rome formed a small, informal group which published *Limits to Growth* to challenge the conventional wisdom about economic growth. But the power of individuals is always severely limited, even when they gather en masse. The energy of individuals becomes powerful only when it is harnessed and channeled through the instrumentation of organizations. Organizations are the means for gathering, directing, and coordinating the energies and actions of countless individuals for specific purposes.

One individual, Garry Davis, a US Air Force pilot in World War 2, must be remembered as an outstanding example of global leader. Davis, shocked at the carnage of war and his own role in bombing civilians, renounced his US citizenship and declared himself "stateless" and a citizen of the world. Against huge opposition, Davis founded World Citizen, with the encouragement of Eleanor Roosevelt, and this organization began issuing the now familiar World Citizen Passports, which are today stamped and routinely recognized in many countries. Arthur Kanegis, the producer of the documentary on the

extraordinary life of Garry Davis, has produced a documentary of this achievement as a compelling example of the power of leadership.

Organizations evolve with the evolution of society. They have evolved from the local and national level to the global level, from physical places to meet and work together into virtual organizations such as social networking groups. One of the most revolutionary developments of organization in recent times is the proliferation of non-governmental organizations or NGOs. Though NGOs have long existed, their growth over the last two decades has been nothing short of incredible. From an estimated 28,000 NGOs in the whole world at the beginning of the 21st century, today there are approximately about 10 million, representing a 350-fold multiplication in a mere 20 years.[8] This phenomenal growth represents a new phase in global society in which individuals no longer relate to one another primarily through government, commercial and religious organizations. They are able to interrelate, associate, and act together on virtually an unlimited range of common interests and objectives over vast distances in space and time. While the subjects vary enormously, they include groups dedicated to improving every aspect of individual, local, national and global life—political, economic, social, cultural, psychological, ecological and spiritual. There is a new game in town that is changing the rules of how societies grow, develop and evolve.

All social change begins with individuals who think, feel or act differently. The power of individuals multiplies when they join together. It grows exponentially when they organize for collective action. Carl Pope, former Executive Director of the Sierra Club, narrates how the Sierra Club convened a meeting of 100 club leaders in Tucson to decide on a collective strategy to address the climate challenge. The result was a decision to challenge the Bush administration's energy strategy of establishing 150 new coal-fired power plants. Following initial success at the local level, the effort spread nationwide and ultimately resulted in cancelling plans for 80 percent of the new plants with combined generation of 100,000 megawatts in spite of opposition from federal authorities demonstrating that coal power was an idea whose time was over.

Organizations of all sizes and varieties represent the intermediate links between pioneering individual leaders and the social collective. At a WAAS roundtable in St. Augustine hosted by Ethical Markets Media, a certified B. Corp., the dynamic former mayor of this tiny tourist town, Nancy Shaver, testified to the importance of local support for measures to address the climate threat and the value of collaboration among the leaders of municipalities and cities all over Florida to challenge the denial and indifference of state and national officials.[*]

6. The Return of the City– from national paralysis to local activism

Our problems are no longer local or even national, so we need to foster social movements that transcend national boundaries and are global in reach. But in the absence of effective national governments and adequate support for multilateralism, we must look elsewhere. Throughout history, the greatest contributions to civilization came from small groupings such as the tiny kingdoms of ancient India and Greece, and the city states of renaissance Italy

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* See https://www.worldacademy.org/conferences/future-democracy-nov-2018

and Germany. Civilization, innovation, creativity, ideas and culture thrive in small groups where individuals have an active say in the management of their schools and communities and governance of their lives. City walls, markets, education, and recourse to legal justice were among the first types of public goods which cities provided to their citizens.

For centuries cities were places where people traveled to see the wonders of the world— the work of famous artists and performers, majestic cathedrals, great universities, the latest technological inventions and modern conveniences. All innovation and creativity gravitates to the cities and thrives in the concentrated intensity of the metropolis. In more recent times, the havens of creativity have been cities and small concentrated regions such as Silicon Valley, which grew from an obscure rural community into global prominence due to the concentrated gathering of creative individuals, small firms, universities and research institutes. Therefore, it should not be surprising to discover that the real sources of new thinking, vision, dynamism and initiative are coming today from cities rather than from the distant parliaments and government bureaucracies that govern nation-states. The city is recovering its role as the dynamic engine for social change.

The global and national leadership vacuum has given powerful momentum to the emergence of leadership at other levels of global society. Ironically, 'leaders' such as Trump are contributing to this process. Over the past three years he has done more to awaken and call forth leadership from other levels of American society than at any time since the 1960s. Those leaders come in many forms: District and Federal Judges who overturn and obstruct the implementation of Presidential Orders; Sanctuary Cities which refuse to follow the lead or obey the rules established by the all-powerful Federal Government. State governments which invoke the principle of states-rights with a clamor for independence not heard since the Civil War.

All the research on social transformation traces radical change to movements that modestly start from below and grow in momentum until entrenched powers are compelled to recognize and follow their lead. It happened in the 1960s when citizen action in New York City supported similar action in Los Angeles, forcing environmental legislation in California which set the standards for air quality, emissions and pollution control nationwide.

Now these pearls of civilization are beginning to string themselves together in a manner never witnessed before. When the US refused to ratify the Kyoto Protocol, hundreds of cities across the country pledged to meet and exceed the carbon admission targets outlined in the agreement. Within a year, 40 cities established the C40 Cities Climate Leadership Group. Within seven years the number grew to 90 cities representing 25% of global GDP. California adopted a plan to cut state greenhouse gases by 25% in 15 years. After Trump pulled the US out of the Paris Agreement, a bottom up effort called "America's Pledge" was launched in California to meet America's commitment to the Paris goals. Eventually the movement spread to more than 2500 US cities, business and other institutions which in combination represent the third largest economy in the world.[9] The We Are Still In movement spawned LEAD, the latest effort to pressure the US Congress on its Green New Deal Resolution.

In the US a network of cities and corporations first launched by Michael Bloomberg when he was mayor of NY is on track to achieve clean energy standards without requiring leadership from the US Government. The Global Covenant of Mayors for Climate and Energy now includes 7000 cities in 112 countries committed to publicly measuring and reporting their carbon emissions using a standard measurement system. The Delta Cities Network is one of many other examples. It connects places such as New Orleans, Ho Chi Minh City and Rotterdam to exchange experience, information and technologies for addressing the problems of rising sea level and other challenges unique to low lying coastal communities.[10]

It is time to restore the status of cities which long predate the founding of empires and modern nation-states. Cities are hotbeds of innovation and social evolution which can play a far more active and progressive role leading the changes needed to address global social challenges. Devolving more power to cities can be one of the most effective leadership strategies for filling the leadership vacuum in national politics.[11]

7. Youth Movements Come of Age

"Youthquake" is the term used by *Time* Magazine to describe the revolutionary changes that are already taking place and are bound to accelerate as more and more of the world's youth after 1980 reach adulthood. This is a generation with very different political views than those in power and it is the first network generation that is globally interconnected as none before it. Some have already entered politics and positions of influence such as US Congress woman Alexandria Ocasio-Cortez, one of 20 Millennials elected to Congress in 2018. Surveys show this generation in America is markedly more liberal, earning less, heavily burdened with student debt, sympathetic to socialism and far more concerned about environmental issues than those who came before them. They are far more likely to found, and join "leaderless" social movements like Occupy Wall Street and Black Lives Matter, demanding systemic overhauls to fix structural inequality and institutional racism.

And America is not the only one turning to more youthful leaders. Three years ago New Zealand elected Jacinda Ardern, born in 1980, as Prime Minister. About the same time Sebastian Kurz was elected the youngest Chancellor in Austrian history at age 31. Last year Finland elected Sanna Marin, born in 1985, as Prime Minister and the world's youngest serving state leader. Ukraine's Prime Minister Oleksiy Honcharuk is 35 and El Salvador's President Nayib Bukele is 38. Though young, most came of age after the 2008 financial crisis and have witnessed the rising inequality, polarization of society and retreat from democracy and multilateralism that have followed. Youth today are more educated, socially aware, globally conscious and concerned about the future than ever before. They resonate with the charge of Greta Thunberg to their elders: "How dare you?"

Since 2012 the global population under 30 years of age has been rising rapidly and today it accounts for more than half of the 7.5 billion people on the planet. Young leaders raising their voices have become a force across the globe, in areas ranging from climate to human rights, corruption to freedom from arbitrary authority, education and employment. In the past few years, they have been at the forefront of movements on every continent, from high schools in Sweden and campuses in Hong Kong to the streets of Santiago, where protests

were triggered in part by a social-media campaign by middle-school students, to Antarctica, where a group of scientists joined the global climate strike brandishing slogans like "rise before the sea level does!" Around the world we find the youth of the world proclaiming their rights and acquiring power to influence the future of the whole world.[12]

The Fridays for the Future (FFF) movement launched by Greta Thunberg's protest against climate change in August 2018 converted millions of school children on all continents into agents of social transformation. The Global Week of Climate Action organized by FFF in September 2019 was probably the largest climate strike in history involving 4 million people in 4500 events in 150 countries. Presently FFF is conducting about 2500 events per week in nearly 1700 cities in 150 countries around the world. Within 15 months from its founding, representatives of the movement still in their teens were addressing elite conferences and prominent television programs, and testifying before national parliaments, the United Nations General Assembly and the World Economic Forum. FFF also inspired celebrity Jane Fonda to launch Fire Drill Fridays, and court arrest while picketing the US Congress. While national politicians remained submissive to the economic and political power of oil and coal, their children were cross examining their motives at home, challenging their conduct in the classroom and protesting their conduct on the global media. As one leading climate scientist put it, youth have accomplished more in a few months than tens of thousands of climate scientists have achieved in the past decade. Although there is truth in this statement, it might be more accurate to say that the world's youth heard and believed what climate scientists have discovered and mobilized their influence to support effective action. Though it may be too early at the time of this writing to declare total victory, it is very significant that BlackRock and other investment management firms have clearly understood the writing on the wall and are already taking action to accommodate the radically different views of the next generation of investors who will soon come to dominate the world and inherit the earth.

8. Academia

Catalytic transformations need effective leadership, and effective leadership must be based on knowledge. In order to generate knowledge in these information-surplus times, effective structures and management of knowledge generation are essential. Academies consisting of universities, research institutes, professional associations and knowledge-sector NGOs are leaders in thought, collective wisdom and social power.[13]

Academies are vital institutions that have the credibility to foster both policy makers and the public with the knowledge needed to formulate policies and take decisions. Advanced communication technology and collaborative online tools make it much easier to work together. When academies network at the international level, their unified voice can have a great impact at the global level. Research on treatment of COVID-19 has made it amply clear that global co-operation and knowledge sharing are essential for human survival. Scientist Jamie Metzl, author of *Hacking Darwin* (2019), who served on US President Obama's National Security Council and is an advisor to the World Health Organization, has launched a global civic movement: ONE SHARED WORLD, promoting a Declaration of Interdependence (See www.onesharedworld.us).

The InterAcademy Partnership (IAP), a global network of over 30,000 scientists in more than 140 regional, national and global science academies worldwide, plays the vital role providing evidence-based solutions to the world's greatest challenges. Its reports and recommendations prepared by the world's leading scientists are independent, authoritative and reliable sources of policy advice. It contributes to global policy debates. Its connections with national governments and IGOs enable it to directly impact decision making and achieve critical development goals. IAP has advanced science diplomacy by bringing national academies and regional networks to address global problems.

IAP has developed a practical program of action to fight deforestation. It released its Communique on Tropical Forest at the 2019 United Nations Climate Change Conference, COP25. This document outlines a set of necessary measures aimed at protecting forests worldwide and fighting climate change. The high visibility of COP25 combined with the authority of a consortium of national academies can build momentum for action before the COP26 Conference in Glasgow, when the parties to the Paris Agreement are expected to report on the progress they have made since 2015.

In the wake of the spread of the Coronavirus, the IAP Communiqué on the COVID-19 pandemic has called for concerted action to aid and accelerate research and its outputs for the global public good. IAP has been supporting interdisciplinary research in epidemic preparedness, providing evidence-based scientific advice on the outbreak to government and other stakeholders, and seeking to initiate collaboration globally to tackle the coronavirus. Its efforts have contributed to countering the spread of fake news and misinformation. Many IAP member academies too play their own part in national or regional initiatives. This results in greater dissemination of knowledge in local languages specific to the local context.

9. University Networks

When WAAS was founded in 1960, one of its goals was to become 'an informal world university'. It was a time when the Cold War was in full swing, the world was divided into enemy camps, international air travel was infrequent and expensive, television viewing was mainly confined to North America and Western Europe and programming was limited, and the written or printed word was the principal means for communication. Until then universities situated around the world operated as islands of knowledge separated from one another by distance, language and impediments to communication and movement. Until the end of the Cold War, exchange and cooperation between universities in different parts of the world were further hampered by political barriers and constraints on the free flow of information and exchange of scholars.

Today conditions are radically different. All the world's universities are linked together by a common information system, a global library of intellectual resources, an instantaneous communication network for exchange of ideas and information, a global system of faculty and student exchanges, and a growing number of students studying abroad. The number of students studying outside their home country, which was 2.5 million in 2009, is expected to reach 7 million in 2020. China alone has more than 700,000 students studying overseas.

But in addition to various types of exchange between universities, today universities around the world are joining together to form effective networks for action on critical problems confronting humanity. The International Network of Universities (INU) is a global consortium comprised of higher education institutions that actively seek international partnerships and experiences, create

"Development is a process, not a program."

innovative programming and delivery methods, and embrace the internationalization movement. The Worldwide Universities Network (WUN) is a leading global higher education and research network made up of 23 universities, spanning 13 countries on six continents. The International Association of Universities (IAU) brings together institutions from 130 nations.

The Sustainable Development Solutions Network (SDSN) was established under the auspices of the UN in 2012 to mobilize global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the Paris Climate Agreement. SDSN includes universities from every continent around the world, eight national networks and seven regional networks exchanging research findings and coordinating their work to address specific issues.

WAAS founded the World University Consortium (WUC) in 2013 in collaboration with leading international organizations to promote the quality higher education for the whole world. The vision of WUC is to evolve and promote the development of accessible, affordable, quality higher education for all based on a human-centered approach that shifts the emphasis from specialized expertise to contextualized knowledge within a trans-disciplinary conceptual framework reflecting the complexity and integration of the real world, from teaching mastery of a field of knowledge to learning that enhances the capacity of students to think and discover knowledge for themselves, from theoretical mastery to acquisition of knowledge, skills and values relevant to each individual's personal development and career—an educational system better suited to develop the full potentials of social personality and individuality for productive engagement, social welfare and psychological well-being. As part of the UNOG-WAAS Global Leadership project, WUC and WAAS are now collaborating to develop university-level programs on global leadership targeting executives in international organizations, national governments, business and civil society. The programs aim to enhance understanding of global challenges and effective strategies for building a harmonious, progressive global community. Special emphasis will be placed on the roles and responsibilities of each of the stakeholders in this process.

10. Boundary-Crossing Organizations

Many of the institutions responsible for addressing the challenges confronting humanity today were never intended for the role now expected of them. The UN, World Bank, national governments, corporations, research universities, the media, and other actors who support progress were never designed or organized to think or act together. Most university courses

still impart abstract knowledge within narrow disciplinary boundaries that is far removed from the complex realities of the real world.

The Gates Foundation is fostering a diverse network of organizations that is making extraordinary progress on vaccine development and childhood immunizations in under-developed countries. Boundary crossing organizations such as Bloomberg Philanthropies and the Gates Foundation demonstrate the capacity for refined thinking about "public goods" as developed in several books by UNDP economist Inge Kaul and the limitations of thinking about "governments" as a logical and realistic solution to problems. Efforts by organizations like these have generated innovative approaches to social change that can be imitated and replicated around the world in many different fields.

The World Health Organization (WHO) is an immensely successful border-crossing organization that has been instrumental in eradicating several dreaded diseases globally, apart from managing local outbreaks of diseases and coordinating surveillance, information sharing and relief across regions. In 1967 smallpox infected 15 million people and killed 2 million of them. But in the following decade a global campaign of smallpox vaccination was so successful, that in 1979 the World Health Organization declared that smallpox had been completely eradicated. In 2019 not a single person was either infected or killed by smallpox.[14] In collaboration with other global organizations such as UNICEF, the Red Cross, Rotary International and others, it repeated the success with polio, leading the largest public health initiative in history. The Global Polio Eradication Initiative has brought down the number of cases from 350,000 across 125 endemic countries in 1988 to less than 200 restricted to a few countries.

11. Integrating Research, Policy-making and Implementation—multi-stakeholder networks

A detailed study of the history of the last two centuries confirms that outstanding developmental achievements are the result of a social process, and only to a very limited extent that of government programs. Government policies and programs certainly matter, but development is accomplished by the initiative and active participation of society as a whole. Development is a process, not a program. One example was the successful citizen action which led to the US government's Office of Technology Assessment (OTA), set up in 1974 to assess the likely future impacts of technologies developed for profit in the private sector and how they might impact other groups, society and the environment. Forty countries have adopted this model. Although OTA was shut down in 1996, its path-breaking approach is still applied and its trendsetting reports remain available from the University of Florida Press.[15]

Structural barriers are a major impediment to effective leadership in addressing global social challenges. The barriers include disciplinary barriers separating different fields of expertise in academia, government, business and civil society. There are also barriers separating research institutions from policy-making institutions, implementation agencies

and society. In spite of the enormous global research infrastructure and investment in science and technology, many problems remain unsolved due to these institutional gaps. Closing these gaps can leverage and multiply the speed and effectiveness of translating new knowledge into socially beneficial results.

The complex, multidimensional challenges confronting humanity today are global in scope and inextricably interlinked. They defy effective solution at the national level by fragmented, piecemeal policies based on partial, outmoded concepts. Discipline-specific research and knowledge are most often inadequate to address the complexity of these interdependences. Even in cases where multidisciplinary research formulates comprehensive solutions, it passes through specialized policy-making institutions that give greatest emphasis to actions within their area of authority and neglect those for which other agencies are responsible. Systems approaches and futures research methods, including scenarios, are finally being adopted by economists.

WAAS advocates development of new types of institution to address these barriers. It has called for establishment of multi-stakeholder, multi-sectoral networks of academic, governmental, business and civil society organizations bringing together multidisciplinary teams of researchers, policy-makers and implementing organizations to work in concert on comprehensive, integrated solutions that address all dimensions of the issue and at all stages from conception to implementation. The work of these agencies should include broad knowledge of social transformation processes and strategies as well as the technical, economic, political, legal, social and cultural dimensions relevant to each specific issue. Formulation of such an integrated approach is one of the objectives of the UNOG-WAAS Global Leadership project. Existing institutions such as the Center for Research and Interdisciplinarity in Paris already possess some of the needed attributes of this model, which can be further developed and replicated.

These institutions should be designed to bridge the prevailing gaps between academic research, public policy, business and civil society —between piecemeal, fragmented, sectoral approaches and between uncoordinated national initiatives. The objective is to combine knowledge generation with social effectiveness to accelerate the evolution of national and global society. The primary focus of its research will be on the process by which society mobilizes itself to effectuate socially desirable goals such as the SDGs. The efficacy of the institution should be judged by the social impact it achieves. The underlying and ultimate aim is to formulate measures that will release and harness the social energies of countless individuals and organizations to accelerate the course of social development. The overall strategy is to unify research, education, policy-making, action and impact.

12. Global Citizen Movements—the Network of Networks

Organizations are the backbone of every successful social achievement—from the abolition of land mines and smallpox to the protection of human rights and the environment. In most cases these organizations remain small and unconnected with one another. Some learn to collaborate with others to multiply their force. In a few cases they have grown and expanded from the

local to the national or global level. The International Campaign to Ban Landmines (ICBL) started as a coalition of six non-governmental organizations with similar objectives. Over time it grew into a global network that included groups working on women, children, veterans, religious groups, the environment, human rights, arms control, peace and development—working locally, nationally and internationally to eradicate antipersonnel landmines.

The success of ICBL led to the growth of other networks of organizations, such as The International Campaign to Abolish Nuclear Weapons (ICAN), founded in 2007, which now has 541 partner organizations in 103 countries. ICAN received the Nobel Peace Prize in 2017 for its contribution to the Treaty on the Prohibition of Nuclear Weapons (TPNW), which was adopted by the United Nations General Assembly by a vote of 122-1. ICBL and ICAN are striking examples of the power of organizations when they overcome their separate identities and merge forces for a common goal to build a network of networks with reach and power exponentially greater than the sum of its parts.

Thus far, these networks have been limited to those focused on a single issue. But in most cases there is a strong overlap and interdependence between the actions needed to address issues which are commonly regarded as separate and independent. For example, meeting the air quality control objectives of the climate movement could be rendered virtually impossible if one or a few nuclear weapons were ever detonated in the atmosphere. Abolition of nuclear weapons is essential to achieve virtually all of the SDGs and there are strong grounds for diverse organizations to join global networks with a common cause. Instead of arguing which objective is more urgent or important than the rest, it may be far more productive to recognize that progress on any of them is a step toward progress on all, just as civil rights for black Americans became a catalyst for the rights of women, the disabled and other minorities.

The ultimate network of networks would be what Paul Raskin and his associates at Great Transition Initiative (GTI) refer to as a Global Citizens Movement for effecting the rapid and dramatic changes needed today. "Catalyzing a global citizens movement will require a campaign that evolves and spreads across regions and issues in 'widening circles.' A critical requirement is that it is able to foster a sense of common purpose and promote coordination without compromising the essential autonomy of its allied organizations, which is the source of its vitality and expansiveness."[16]

Part III: Institutional Forms of Leadership

13. Numbers Count—Green Accounting

Purpose is powerful. A change of purpose can be revolutionary. But for a change of purpose to acquire effective power to change the world, it has to be translated into concrete actions. No Words, only Acts. The process of converting abstract intention into practical action involves many stages, of which the capacity to quantify and measure the change desired is one of the most important. Metrics matter. The spread of double-entry bookkeeping is widely credited with the dramatic spread of the commercial revolution in Europe during the 15th century. That invention made it possible for business people to accurately measure

the profitability of commercial transactions. Inventing new methods of accounting today is of even greater importance.

For decades it has been known that Gross Domestic Product or GDP is a poor and "grossly distorted" measure of national economic activity.[17] Among its many deficiencies, it fails to distinguish activities that promote human welfare such as food production, housing and education from destructive activities such as war, natural calamities and epidemic diseases. It also fails to distinguish economic activities which create jobs and equitably distribute incomes from those which eliminate jobs and benefit only a small portion of the population. It fails to take into account the cost of environmental degradation, the exhaustion of non-renewable resources and the rising existential threat posed by climate change. Over the last few decades more than 1000 alternative measures have been created and tested to replace this grossly distorting measure with one or more that far more accurately measure what is really important—the actual impact of human economic activity on sustainable human welfare and wellbeing. Still GDP prevails and so does the blind insistence on maximizing economic growth regardless of its impact on human beings and the planet. That's how important the numbers are. In 2003, Brazil hosted the First International Conference on Implementing Indicators of Sustainability & Quality of Life in Curitiba. In 2007, the European Commission launched its "BEYOND GDP" initiative. (See www.beyond-gdp.eu)

Six centuries after the adoption of double-entry bookkeeping revolutionized commerce in Europe, new accounting methods are behind the revolution in Impact Investing which is transforming where and how money is flowing in global financial markets today. Private and public finance can play essential leadership roles in altering the future of global society by shifting the emphasis away from fossil fuels and other energy-intensive, polluting technologies to clean, energy-efficient, renewable energy technologies, and in many other ways. But achieving a rapid shift in energy investments, policies and practices is only likely to happen if they are supported by new metrics which make informed investment decision-making possible.

The Green Transition Scoreboard® (GTS) developed by Ethical Markets Media tracks the technological revolution which is moving the economy toward a cleaner, greener, sustainable future. It provides a comprehensive operational definition of a green economy and a framework for measuring progress toward it. GTS includes only selected companies and technologies with long-term criteria of sustainability. Other measures include Calvert, Pax World, Domini, and the Council on Economic Priorities, which offer new metrics for ESG evaluation. Research conducted 20 years ago by Innovest Strategic Value Advisers, the largest ESG research firm before it was purchased by Morgan Stanley Capital International (MSCI) in 2010, helped to pioneer positive screening by providing best-in-class ESG ratings. In nearly all sectors, sustainability leaders, taken as a group, outperformed laggards by 300 to 3000 basis points per year.[18]

Building on these new quantitative measures, United Nations Environment Programme Finance Initiative (UNEP FI) was launched, which is a partnership between UNEP and the global financial sector to mobilize private sector finance for sustainable development. UNEP

FI supports global finance sector principles to catalyze integration of sustainability into financial market practice. UNEP FI has created or co-created three highly successful sets of financial principles. Principles for Responsible Banking (PRB), a framework launched in September 2019, involves 130 banks holding $47 trillion in assets, or a third of the global banking sector. Its Principles for Responsible Investment (PRI) are now applied by half of the world's institutional investors (USD 83 trillion).

These important developments are concrete steps in the right direction, but there is still more that needs to be done. The behavior of businesses is powerfully influenced by economic and political factors which will continue to generate adverse decisions and impacts until the total system's environment is altered. Nearly all corporate sustainability and SRI strategies focus on changing companies but it has been estimated that companies can voluntarily mitigate about 20 percent of the short-term and long-term, tangible and intangible, negative environmental and social impacts in a profit-neutral or profit-enhancing manner. Flawed systems are the root causes of the major challenges addressed by the UN Sustainable Development Goals (SDGs).

System Change Investing (SCI)[19] is a total system approach that focuses on changing the underlying systems and addressing the root causes which encourage harmful corporate behaviour, instead of focusing on symptoms (environmental, social, economic problems). The corporate and financial sectors are among the most powerful segments of society. They are largely controlled by investing. SCI uses this powerful lever to drive capitalism reform and other systemic solutions to major challenges.[20] SCI can utilize all the successful strategies and insights about how to change investment decisions gained from SRI and ESM to address the flawed systems which presently undermine efforts to transform investing.

SCI is powerful and relatively easy to implement, and provides a practical and profitable way to engage the corporate and financial sectors in system change. Its ease of implementation is because it involves indirect instead of direct system change, and it is based on widely adopted practices. Changing economic and political systems is complex. SCI does not do this directly. Instead, it strongly incentivizes companies and investors to do so. It also builds on existing corporate and financial practices such as SRI and corporate sustainability that have become mainstream over the past 20 years. The approach identifies systemic risks and opportunities that are not assessed by traditional financial and ESG analysis. SCI ratings also provide strong indicators of management quality, intangible value and stock market potential. The method has strong potential to increase investment returns.

14. Making Markets work for Us—the power of reliable information

In our haste to overcome the limitations of national government inaction and commercial profit motives, it is important not to overlook the enormous untapped potential of the market to address global challenges. Regardless of our economic persuasions, markets rank alongside language, money and the internet as one of the most productive human inventions of all time. All four are powerful networking instruments for promoting mutually beneficial relationships between people over huge distances in space and time. Most of the serious

problems with today's markets arise from the way they are being used rather than inherent deficiencies in the concept of competitive enterprise. As Michael Bloomberg and Carl Pope explain in *Climate of Hope* and Tomas Bjorkman points out in the *The Market Myth,* there are many ways available to far better align the operation of markets with sustainable economies and human wellbeing.

Markets can become leaders in solving problems instead of creating or aggravating them as is too often the case today. Benefit Corporations now charter rigorously certified companies focusing on public benefit and all stakeholders, and have become a new badge of honor. The Impact Investing movement is an example of leadership in changing how markets work. When investors have access to reliable information and truly understand the consequences of their investment decisions, the same markets that presently undermine effective action become powerful instruments for solving problems. The same impact is evidenced when consumers understand the true consequences of their purchasing decisions, as in the growing preference for organic foods and manufactures produced without exploitation of underpaid or child labor.

There are many prevailing myths of the market that retard effective leadership and decision-making. The widespread belief that fossil fuels are still the most cost-effective solution to meet the world's energy needs prevails only due to public ignorance of the enormous subsidies paid to fossil fuel producers which contribute massively to climate change while slowing down energy innovation, depleting natural resources and imposing huge health costs on communities. These subsidies prevent the market from making intelligent leadership decisions to change course based on the real competitive advantage of cleaner forms of energy. The same applies to agricultural subsidies paid to large corporate food producers.

Increasing transparency is another way to improve the wisdom of markets. Transparency requires reliable data and reliable data on the contributions of business to climate change has been hard to come by. In recent years this has been changing. The climate disclosure task force of the Financial Stability Board, the US Sustainability Accounting Standards Board and Bloomberg New Energy Finance are providing the transparency needed to drive changes in energy markets. Reliable information can be an inspirational leader. The Task Force on Climate-related Financial Disclosures (TCFD) calls for this disclosure to become mandatory by COP 26 in 2021. This will accelerate the slide in fossil fuel stock prices.

These are only a few of the ways in which markets can be converted into leaders that serve and save rather than threaten and destroy. Eliminating the unnecessary monopolistic privileges many companies enjoy, such as exclusive rights to run electrical wires through neighborhoods and the long-term patents given to corporations based on government funded research can make markets serve society as they were always intended to do. Economists have identified a long list of rent-seeking activities that enable businesses to acquire special benefits without paying for them. Citizens value their freedom of choice and tend to view markets as beneficial. Instead of being tied up in long-standing ideological disputes, exposing market failures and unfair practices is more likely to sway public opinion than attacking the institution of market itself.

15. Information and Media

Throughout most of history, reliable information has been scarce, difficult to acquire and largely inaccurate. Before the invention of the printing press, handwritten books were so scarce and precious that they were chained to library shelves. Literacy was a rare endowment, and those who could simply read and write were considered genius. Before the first printed newspapers, news was mostly transmitted by word of mouth through rumor and gossip, subject to various interpretations and distortions. Until the invention of the telegraph, news travelled for weeks between Europe and America by ship. Even after the advent of newspapers, telegraph, radio and television, the range of viewpoints accessible to citizens was narrow and commonly mistaken for the whole truth. Until the advent of cable news in America, the American public obtained almost all their information from local newspapers supplied by information from the same two or three national news bureaus and three major network TV stations reporting near-identical information.

Today with faster and better communication technology, information is far more readily available to us than ever before. Internet and cell phones have made it possible for every individual not only to access information but also to broadcast his or her views. It leads to misinformation and false propaganda too on the one side, but on the other, we are also more conscious of the bias and distortion that colour the information we receive compared to times in the past when the public assumed all news information was objective and impartial.

New forms of media such as digital and social media have played vital roles in movements such as the Arab Spring, Occupy Wall Street, Fridays for the Future and Me Too movements. New and traditional media can serve as complementary forces that reinforce each other for local and global communication services. There have been some remarkable advancements in the dissemination of information and the use of media in recent times.

The UN system has established good and reliable information sources, and UN agencies have broken stories and projected important information on a global basis. Web-based podcasts are rediscovering the intrinsic value of radio broadcasting that is uncensored and value-based. Journals and newspapers today support social causes and raise awareness among people. Investigative journalism such as *Washington Post*'s breaking of the Watergate story unveils truth, counters government-sponsored propaganda and provides alternative perspectives. Self-publishing both on the internet and outside is breaking the monopoly of large publishing houses to determine what we read.

Access to reliable, unbiased information is critical today, as humanity faces an existential threat. History shows that real protection from a pandemic comes from sharing reliable scientific information globally.[21] COVID-19 needs to be urgently addressed, but the issue of climate change is perhaps a far greater challenge.

The Intergovernmental Panel on Climate Change (IPCC) is a strikingly successful example of an international organization that provides the latest, most authoritative scientific information on climate change to national policy makers, researchers, NGOs, educators and the general public around the world IPCC prepares assessments on all aspects of climate

change and its impacts, with a view of formulating realistic response strategies. It provides policymakers with regular scientific assessments on climate change, its implications and potential future risks. It puts forward adaptation and mitigation options based on which decisions can be taken.

IPCC has become the leading international authority on climate change. The scientific evidence brought up by the first IPCC Assessment Report of 1990 underlined the importance of climate change as a challenge requiring international cooperation to tackle its consequences. It therefore played a decisive role in the creation of the United Nations Framework Convention on Climate Change (UNFCCC), the key international treaty to reduce global warming and cope with the consequences of climate change. Its Second Assessment Report of 1995 provided important material drawn on by negotiators in the run-up to adoption of the Kyoto Protocol in 1997. The IPCC's landmark Fifth Assessment Report marked a turning point for the field of climate change, and provided a clear and up to date view of the current state of scientific knowledge relevant to climate change. It was a critical scientific input into UNFCCC's landmark Paris Agreement in 2015. In 2007, IPCC and Al Gore were awarded the Nobel Peace Prize "*for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change*".

Part IV: Leadership in Thought

16. Leadership in Values

As in the pre-COVID-19 world, but definitely in the post-COVID-19 one, values-based education, leadership and global functioning are necessary to avoid an existential crisis. Values are real wisdom and power, they have practical value. Just as physical skills are the channels through which physical energy is directed so that it produces results, values play a similar role at the psychological level.

The United Nations' Universal Declaration of Human Rights (UDHR) that proclaimed the rights of each individual human being is a milestone in human history. It marked the first time when the fundamental human rights of very human being were universally acknowledged. Since then the principles set forth in UDHR have been translated into laws, policies, standards and practices by governments, educational institutions, corporations and civil society around the world in countless ways.

For example, in 2014 WAAS, WUC, and some WUC charter members endorsed the Poznan Declaration, a formal statement aimed at mainstreaming ethics and anti-corruption in higher education adopted by the member universities of the Compostela Group of Universities.* The declaration identified major challenges faced today in promoting good government, ethical business and individual behavior. Recognizing universities' potential and responsibility in shaping the moral contours of society for the better, it called upon

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* http://web.gcompostela.org/wp-content/uploads/2020/01/ENThe_Poznan_Declaration-1.pdf

institutions of higher education to shoulder their role as key agents of change and listed several strategies for implementing the change.

17. Integral Complexity and Science-based Rapid Learning Networks

New forms and strategies for education are needed at all levels and in all fields. Rapid social transformation requires continuous and rapid change in the way we think and act. Education is the instrument humanity has forged to pass on the cumulative knowledge of all humanity to the next generation so they do not have to reinvent the wheel or commit the same follies as their forefathers. The conventional definition of a generation is the average period, generally considered to be about thirty years, during which children are born and grow up, become adults, and begin to have children of their own. But in these days of rapid social change, the next generation often refers to the next generation of thinking, technology or organization, not merely of people and the duration of these other types of generations can be much shorter than for human beings.

Accelerating the transfer of knowledge within and between human generations, between people and organizations around the world, and between different fields of activity is becoming increasingly important. And it is not just people who need to learn faster. It is also the concepts, systems and networks of knowledge that increasingly relate and interconnect activities in space and time. For example, scientific leadership in Cognitive Computing now requires in-depth specialized knowledge in at least four fields which are traditionally regarded as independent of one another—mathematics, computer science, neuroscience and psychology. Similar interdependencies exist in many other fields of the natural and social sciences.

International professional and scientific networks have an extraordinary potential to provide leadership. The building of global cooperative knowledge networks has become an important contributor for genetics-based Big Data medical research. Examples in Biomedicine include the formation of the Global Alliance for Genomics and Health (www.ga4gh.org), which includes 500+ data-sharing organizations worldwide, and the global networks of oncologists for rapid learning cancer treatment at (www.asco.org). Another example of fast, crossbreeding, global information networks to support distributed leadership for science-based rapid learning is National Institutes of Health VideoCasting (www.videocast.nih.gov), which brings leading-edge ideas and discoveries in all areas of biomedical research and public health policy to researchers and students in all countries (including for-profit pharmaceutical and startup companies) as quickly as possible, 1-2 years before print publication. The Kaiser Family Foundation provides a similar service to improve global news media and link international public health/policy networks (www.kff.org). They make facilities and professional services available, at cost, to other organizations to bring plenary sessions of significant conferences and regularly scheduled research and policy colloquia to new, boundary-crossing, global networks.

The logic that is valid for genetics and cancer can be equally relevant to building leadership with regard to socially responsible investing, climate change, management of cities, and in many other fields. Science-based systems for rapid learning require leaders with what psychologists call "integrated complexity." They need the capacity to make sophisticated

assessments of different users and cases. A database and user interface for research scientists will be different from the repackaged discoveries and user interface that a physician will want when seeing a patient with an undiagnosed ailment for the first time. Patients with chronic conditions and patient-advocacy groups will have their own needs for online and usable access to science-based learning.

18. Implementation Science

The knowledge needed to change the world cannot be found in any textbook or classroom concentrating on one of the 1000+ disciplines and subdisciplines taught in universities today. The division of knowledge into specialized fields has played an important role in the growth of specialized knowledge. But in doing so it has largely lost sight of the complex interrelations and interdependencies of life in the real world. Knowledge of the human body is of limited value for medical practice if it is not accompanied by an understanding of the psychology of patients and family members or the sociological factors that powerfully influence physical health and psychological wellbeing. Yet around the world medical education focuses almost exclusively on the patient's body to the exclusion of mind, emotions and social context. Technical education in microelectronics and artificial intelligence focuses on how to enhance the power of computer systems rather than on understanding the needs of human beings and the impact of technology on society and psychological wellbeing. Management education emphasizes profit maximization rather than maximization of the welfare and wellbeing of the full range of stakeholders.

The rapid transformation of global society requires radical change in education at all levels and in all fields. A critical missing link in education today is the link needed to bridge the gulf between ideas and actions, between theory, research, public policy and implementation. Today innumerable institutions around the world are focusing on the SDGs. But in almost all cases their work is confined to one stage of the implementation process—theory, applied research, policy-making, regulation, applications in business or civil society. Achievement of the SDGs will depend on our capacity to bridge the divide between different types of institution and different types of knowledge—scientific, technological, administrative, commercial, social, cultural, and psychological. The world's leaders need to understand social processes such as the diffusion-of-innovation strategy which brings all institutions up to the already-known Best Practices, such as those recognized by the Baldrige Awards, databases of Six Sigma, Toyota, and other management and process-design achievements in the public and private sectors. Similar knowledge is needed in every field.

The knowledge of the process that connects all the various fields is also needed. That is the objective of the discipline of "Implementation Science", which is evolving as a useful scientific synthesis of effective practices in the field of healthcare. E. Rogers, *Diffusion of Innovation* is a standard reference. AcademyHealth.org is an annual leading-edge Conference on the Science of Dissemination and Implementation in Health.

Rapid implementation strategies are needed that cut across all Sustainable Development Goals. The early agricultural revolution in the US built implementation networks linking

farmers, field agents, and agricultural outreach services at state universities. Studying the lessons, sociologists made discoveries like the "S" curve and the two-stage model of opinion leadership and adoption of innovation. The Department of Learning Health Systems at the University of Michigan works to advance the science of rapid-learning systems. Sanjeev Arora's design for Project ECHO delivers leading-edge and new specialty training to doctors who have basic MD training in medically underserved and rural areas. It is a hub and spoke design, with experts using Internet videoconferences for case management discussions. Once professionals have learned how to learn, the Project Echo human relationships allow advanced medical education to "move information, not people." This organizing model is now operating in 38 countries. The goal is rapid implementation to reach 1 billion+ patients in rural and under-served areas.[*]

19. Harnessing Humanity's Collective Wisdom

Project Drawdown was established by Paul Hawken in 2013 to identify the 100 most substantive solutions to global warming. The list was compiled by an international team of over 200 scholars, scientists, policymakers, business leaders and activists to assess each solution's carbon impact through the year 2050, its total and net cost to society, and its total lifetime savings. For each solution, researchers describe its history, the carbon impact it provides, the relative cost and savings, the path to adoption, and how it works. Their research and conclusions were reviewed and validated by a 120-person advisory board including prominent community geologists, engineers, agronomists, politicians, writers, climatologists, biologists, botanists, economists, financial analysts, architects and activists. The goal of the project is to determine if we can reverse the buildup of atmospheric carbon within thirty years. All solutions modeled are already in place, well understood, analyzed based on peer-reviewed science, and are expanding around the world.[22]

This remarkable initiative did not create a master plan for the world. Rather it sought out and discovered the elements of a successful strategy to not only stop but reverse the buildup of carbon emissions in the atmosphere—hence the name 'Drawdown'. It did so by accessing knowledge and expertise that already existed and had been tested by research and commercial projects around the world. Drawdown is a dramatic example of a leadership strategy designed to systematically harness the collective wisdom to address global challenges.

Nor are their findings purely theoretical. Many of them are based on proven real world examples which demonstrate that drawdown is really possible. For example, in spite of political paralysis on climate action at the national level in USA, by applying drawdown strategies the State of California —the sixth largest economy on the planet—is on track to meet the pledge it made in 2006 to reduce greenhouse emissions to 1990 levels by 2020.

Project Drawdown represents a new type of global social organization capable of harnessing the expertise of the whole world to provide collective leadership for global social transformation.

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[*] See https://echo.unm.edu/locations/global

20. Power of the Visual Arts

The power of the motion pictures and other art forms to precipitate sudden changes in public awareness, values, attitudes and actions is well documented. Former US Vice President Al Gore's Oscar-winning documentary about the environment, *An Inconvenient Truth,* communicated complex scientific arguments about the threat of climate change into a language and form accessible and intelligible to the educated general public. It was well-received politically in many parts of the world and is credited for raising further awareness of global warming internationally. A 47-country Internet survey conducted by The Nielsen Company and Oxford University found that 66% of those respondents who had seen the film stated that it had "changed their mind" about global warming, 89% said it had made them more aware of the problem, and 74% said they had changed some of their habits because of seeing the film. Another example is Sir David Attenborough's series *The Blue Planet* which helped get governments to enact pro-environment legislation such as no single use plastic, no micro-beads, etc.

21. Leadership Education

New forms of educational content and new delivery systems are needed at all levels and in all fields from healthcare and environmental sustainability to responsible investing and business management. The growing repository of Online Educational Resources (OER) and improved Information and Communication Technology (ICT) are serving education now during the COVID-19 pandemic when distance and online learning are becoming mainstream. This shift must be matched by corresponding changes in our traditional ways of teaching, by separating accreditation from learning, and introducing holistic methods of evaluation.

One of the urgent needs in education is the need for leadership education. Social transformation requires change and change is initiated by leaders with the capacity to think for themselves and the skills to communicate, organize and motivate others to set out on a new course. The Ashoka Model of changemaker education strives to impact leadership as a basic life skill. Ashoka is a large network of social entrepreneurs started in India in 1981, that identifies and supports social entrepreneurs who have ideas for far-reaching social change. Its work impacts millions of people and communities through its work in the fields of farming, education, human rights, finance, media, and women and youth empowerment globally. It functions as a collaborative network that supports and amplifies change by bringing together those who solve problems, the changemakers. It functions on the basis of the understanding that in order to solve all the problems of the world, everyone must become a changemaker, and empathy, teamwork, leadership, and problem solving are the tools for change. Its programs for students, youth and young entrepreneurs enable them to acquire the skills they need to thrive and become role models in their communities, and ultimately benefit the entire society. It builds a team of teams that unlock enormous social as well as business value. This model is one of a small but steadily growing group of institutions the world over that are stepping in to fill the shortfall of truly well-educated and well-developed individuals.

Colleges and universities worldwide offer undergraduate majors and specialized MA programs to train entry-level and mid-career students for leadership positions in public

and global problem-solving and public-private strategies such as industrial development planning. Association of Professional Schools of International Affairs (APSIA) is an umbrella organization of leading graduate programs. Elite business schools have formed the Global Network for Advanced Management to develop cadres of global leaders for government and private sector problem-solving. The network offers a set of MOOCs with an advanced curriculum to support this vision.

"The formulation of the 17 Sustainable Development Goals and 169 targets is an unprecedented example of the transition from evolution to conscious social transformation."

Ultimately, the quality and impact of leadership depend on the values and knowledge on which they are based. The leaders humanity needs today must be inspired by inclusive universal values. The knowledge they need necessitates a deep understanding of global challenges and emerging opportunities, the underlying process that guides human social evolution and the process by which leaders can act as catalysts for humanity's conscious social transformation.

The principal aim of the UN-WAAS project on Global Leadership in the 21st Century is to gather insights from our collective evolutionary past to formulate the knowledge needed to prepare leaders in every field—government, business, science and civil society—to guide and mobilize global society for rapid transition to a better future. One of its aims is to develop new types of courses in every field to impart knowledge of the process of transformational leadership and the ways it can be applied to accelerate global evolution in government, business, education, science and other fields.

22. Knowledge Mobilization for Deep Societal Transformations

Society is an organic whole. The division into separate disciplines is artificial, inadequate and counterproductive for guiding conscious evolution of that whole. Most of the problems arise due to the gaps, disconnect and inherent contradictions between the premises of different social science disciplines. We need a coherent, integrated knowledge of underlying transdisciplinary social processes that express in all fields but beyond the scope of prevailing social science theory and practice. We need to take steps to evolve a transdisciplinary science of society founded on common core principles and processes rather than independent and often contradictory premises. Such an exercise will give us the knowledge to initiate and accelerate conscious societal transformations.

From the beginning WAAS has brought together many different disciplines with divergent perspectives and sought to synthesize and integrate for a coherent understanding of the whole. WAAS is not just about promoting scientific research and applying its results to problems as understood and defined by political authorities. It is all about understanding the process of

social evolution by which rising social aspirations shape social trajectories which emerge as awareness, generate social preparedness, release social energies and underlying social forces, and direct and transform them through organizations and institutions into coherent actions aligned with evolutionary objectives.

The history of great social transformations testifies to the fact that we are most often blind to radical change until it is already well underway. In retrospect, we can explain anything. Mind is like a rear-view mirror, it sees everything clearly in retrospect after it has happened, but is blind to the sudden transformations that are right around the corner, which are beyond the visionary boundaries of conventional thinking. Today, we are approaching an intellectual point, where our entire educational system, our entire disciplinary academic structure and even the theories in the social sciences are going to be tested to their limits and no longer maintain their integrity. This will usher in a transitional period of great confusion and creativity. Old structures will break. We see signs of that change in the institutions, even in the disciplines, but it has yet to fully manifest and break through the prevailing institutional inertia and conventionality. One example with regard to universities is the Stanford University study "Stanford 2025": a future was envisioned in which students will be free to create their own disciplines and departments are transformed into knowledge resource centers, so that each student can design his or her own curriculum. This change will take our knowledge and the capacity to apply our knowledge to a whole new level.

23. Leadership in Thinking

Transformative leadership emanates from the formulation of new ideas and perspectives. The formulation of effective ideas depends on the kind of mental thought processes applied. Generating ideas with leadership potential depends on the way we think. All the challenges confronting global society today can be traced back to the inadequacy of the mental processes and premises on which prevailing ideas, theory, institutions, strategies, policies and actions are based.

This defect is common to virtually all disciplines and fields of knowledge and activity. It arises from the tendency of the human mind to divide reality into parts and then regard each part as if it exists as an independent whole and can be treated separately from all the other parts of which it is a constituent element. This process of mental analysis has proven to be an effective means for developing specialized scientific knowledge. But it has generated countless problems when it is applied to action in life. Knowledge can be divided, but life is always an integrated whole. Piecemeal disciplinary knowledge results in partial perspectives, fragmented policies and uncoordinated actions, which can only be partially compensated by efforts to construct complex mental models of reality. It has led to an artificial divide between subjects such as the division of economics from politics and ecology as if there can be an economy that does not take place within a policy-making and environmental context. It has led to a chasm between financial markets and the real economy, a division between technology development and human wellbeing, a fissure separating education from the needs of society, society from the environment, and many other mental obstructions to effective knowledge and action.

Effective global leadership starts with changing the way we think about the natural world we live in, human society, nation-states, communities and individual human beings. None exists independently of the others. The world is an inseparable whole. None of its component elements can be fully developed without reconciling and integrating its aims and objectives with that of the others. Global leadership requires a transdisciplinary perspective and cooperative spirit between the different fields of knowledge, a greater awareness of the whole of which each is only a part. It requires a paradigm shift in political, economic and business theory, economic and financial models, technology development and deployment strategies that seek to arrive at an integrated science of society.

Most of all it requires a fundamental change in education to correct the inherent bias toward analytic thinking which overlooks or fails to comprehend the wholeness, complex interdependencies, and deeper connectedness of the social and natural world which constitute the reality in which we live. It requires a shift in emphasis in science from analytic processes to validate new hypotheses to promote development of the creative, intuitive mental processes that lead to the original formulation of new ideas and hypotheses, which are the true source of all scientific discovery. WAAS seeks to promote a paradigm shift in theoretical thinking as the basis for evolving effective real world solutions.

Part V: Global Social Transformation

24. Leadership in Thought that Leads to Action

At a time sixty years ago when international travel was limited, communication was slow, and the Cold War was just in the process of gaining momentum, WAAS was founded by eminent scientists and intellectuals deeply concerned with the policy implications and social consequences of rapid advances in the development and application of science and technology. The founding members included a number of scientists who had been associated with the development of nuclear weapons, including Einstein, Oppenheimer and Rotblat, who lived to regret that the nuclear genii had ever been released. The development of the nuclear arms race led them to the inescapable conclusion that science could no longer remain a passive observer of how the creations of science impacted on human society. Science must accept responsibility for the consequences of its creation and ensure that it was in the service of humanity. Along the way the Academy adopted as its motto "Leadership in thought that leads to action."

The Royal Society founded in 1660 is the oldest national scientific institution in the world. Since then national academies of distinguished scientists have been founded in most countries of the world to promote science and its benefits, support and recognize excellence in science, provide scientific advice for policymaking, foster international and global co-operation, education and public engagement. During the 20th century associations of national academies and scientific institutions were established, which are now represented by the International Science Council (ISC), the world's premier representative scientific organization uniting more than 140 national and regional academies together with research

councils and 40 international scientific unions and associations. The EARTH CHARTER and its 16 Principles of Human Responsibility was launched at the Rio +5 Summit in Brazil in 1997, to complement the Declaration of Human Rights. It has been ratified since by NGOs, academics, SRI companies, municipalities worldwide and was unveiled at the Peace Palace in The Hague in 2000, with Maurice Strong, Mikhail Gorbachev, and hundreds of dignitaries. It is now housed at the University of Peace in Costa Rica (See www.earthcharter.org)

25. From Social Evolution to Social Transformation

Global society has been evolving for millennia toward convergence without anyone being in charge of the process. It has evolved from isolated, small, autonomous, culturally homogeneous communities to larger, heterogeneous, multicultural nation-states giving rise to an increasingly interconnected and interdependent global community capable of relating, communicating, exchanging, learning, sharing and acting collectively as never before. It is also evolving from settlement of disputes by use of violent physical force to negotiated peace, rule of law and universal human values; from governance by arbitrary authority to freedom, self-governance and self-determination; and from reliance on military power to the power of economy, science, technology, cultural diplomacy, and the emerging social conscience of humanity as a whole. At the same time it has evolved from innumerable independent fields of activity—political, economic, technological and social—toward increasing levels of interrelatedness, interdependence, convergence and integration approaching a closely knit global society or World Wide Web.

Today the process of global social evolution is taking place far more rapidly than at any earlier time in history. It is also taking place far more consciously and intentionally. Instead of a long, slow, trial and error process of subconscious change driven by the pressure of circumstances and events, it is in the process of morphing into a conscious process of social transformation guided by growing awareness of the need and opportunity to direct our collective energies and actions toward a better common future. Instead of solely depending on chance events or the external compulsions, global social evolution is being guided by the power of ideas, values, aspirations and goals. The formulation of the 17 Sustainable Development Goals and 169 targets is an unprecedented example of this transition from evolution to conscious social transformation.

Today humanity possesses far more knowledge of how our ancestors lived in the past than anyone had during their own lives. As we move forward, we are discovering and recording the history of our ancient origins with a depth, precision and perspective never possible until now. At the same time we are looking further ahead into the future, imagining, projecting, and planning for events centuries from now. Yet in spite of this remarkable extension of our knowledge, we still understand relatively little about the process by which we have evolved in the past or are transforming ourselves at this very moment. We have many more facts, but knowledge of the process itself remains elusive. We have acquired the capacity to explain many things in retrospect, but have not yet developed a science of society which enables us to fully understand the process or course of our own future evolution.

The inadequacy of our knowledge is symbolized by the many instances in which social change has occurred with a speed and course of events that even the most perceptive observers did not anticipate, a phenomenon social scientists refer to as social tipping points. We know that the force of circumstances and events can build for long periods of time without fundamentally altering the status quo and then suddenly and unexpectedly undergo radical change when it was least anticipated, as it did during the period from 1989 to 1995. The sudden fall of the Berlin Wall, collapse of the USSR, dissolution of communist regimes in Eastern Europe, end of the Cold War, reunification of Germany and the radical reduction in nuclear weapons stockpiles are striking examples of our collective ignorance, but they are not the only ones. The birth and growth of the World Wide Web a mere half decade later took the world equally by surprise, as did the 2008 financial crisis, Brexit and the recent retreat from democracy, economic globalization and multilateralism. Many social scientists attribute our incapacity to foresee events to the increasing complexity of global society. Complex phenomena defy modeling and accurate prediction. Others attribute it to the increasingly rapid and unpredictable nature of technological innovation and dissemination. But regardless of the cause, the process still escapes our understanding.

This inability to see the approach of radical social transformations until they are already underway is both a source of insecurity and a source of promise. For it reminds us that no matter how immovable and all-powerful the obstacles to social evolution appear, they reflect only a limitation in our capacity to perceive the deeper forces that are reshaping society. Thus, none of the major European colonial powers imagined that in a few short years following the end of WWII, virtually all the old colonial empires of the world would be only memories. One of the most precious endowments of leadership is the capacity to aspire, believe in and envision that which contradicts the evidence of our senses and the prevailing status quo. The recent statements cited earlier in this report regarding the need for radical change in investment strategies and business purpose can be interpreted as early signals of further surprises to come.

In spite of our tenuous knowledge of tipping points, a study in the proceedings of the National Academy of Sciences suggests that we may well be approaching a positive social tipping dynamic in which global society finally acts rapidly and effectively to address the existential threat of climate change. Researchers examined six small changes which might precipitate larger cascading changes in a positive direction and in a way that could substantially reduce greenhouse gas emissions. They include interventions that would increase the financial returns of investment in clean energy systems by reducing fossil fuel subsidies and redirecting government support to clean energy systems; changes in building codes and construction practices on buildings and infrastructure projects which account for 20 of the current global emissions; divestment campaigns in fossil fuel intensive projects; rapid adoption of rooftop solar and electric vehicles as a result of changes in behavioral norms and values unleashed by social movements such as Fridays for the Future, Extinction Rebellion and the Green New Deal in USA; educational campaigns such as the one on cigarette smoking and vaping; and more effective tracking, monitoring and corporate disclosure of information related to carbon and climate more visible to consumers, business and government.[23]

This project on Global Leadership in the 21ˢᵗ century seeks to increase our understanding of the process of conscious social transformation and to enhance our perception of unrealized possibilities which are waiting to become actualities. It may not result in a mature science of society which humanity has yet to develop, but it can provide us with valuable insights into the process and many of the catalytic instruments available to us to foster it.

Acknowledgements

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The Role of Finance in Solving Global Issues and in the Transition to a New Civilisation

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Abstract

Finance is one of the fundamental tools that has underpinned and shaped global civilisation, alongside agriculture and writing systems. During the past 5,000 years finance has adapted and innovated to scale civilisation by funding industrial development, technological advancement and human progress generally. Given this traditional role, finance should play an essential role in supporting the solutions to the world's major challenges, including income inequality, climate change, mass migration, unsustainable resource consumption, among others. In the industrial era, finance was banker to industry, government and the military, among others, in its conquests. By the last quarter of the 21st Century, finance had become 'Big Finance' and was a major power bloc in its own right. Today, ever more sophisticated forms of finance have been highly innovative at financing itself, without directly touching an endeavour to invest in, and so streams of finance find themselves divorced from the world's challenges, rather than solving them, leading to a rise in calls for the need to reform and reinvent many of its tools and institutions. In the absence of reform from within, revolution from without has often addressed imbalances in other spheres of life and has carried with it substantial risks and costs. Looking ahead, as the world enters the information age, the internet is transforming finance into something digital, global, distributed, and disintermediated and this promises to transform it into something radically different than it is today. Current financial institutions have a choice of either being at the forefront of this transformation, launching their own reforms and revolution, to be relevant to the challenges and opportunities of the mainstream, or risking being swept away. This paper is intended to provide a high-level conceptual overview of the history, challenges and questions facing finance as the world transitions to the next world order.

1. Money, Finance and Civilisation

Money, as a proxy for assets, has risen to become one of the main reasons, arbiters and mainstays of war and peace. Plenty makes one want peace but also, it seems, to want more, leading to war, and times of scarcity make one want more and may also lead to war (although people find a multitude of reasons to wage war), which in turn, if war is successful, may lead to plenty (but rarely does for developing nations).[1] Importantly, finance is subtly, but importantly, different from money. Finance is the system of provision of money, most

commonly as an investment, that is, with the expectation of a return, to enable an objective or need to be satisfied.

Like agriculture and writing systems, finance is one of the fundamental tools that has underpinned and shaped global civilisation. Civilisations are built through surpluses that enable labour specialisation and investment.[2] At the most basic level, finance facilitates both the investments that create surpluses and the trade that distributes them. Of course, the efficiency, effectiveness and equity of these processes can be disrupted by force, at least for a period, until the costs of doing so outweigh the benefits. At that point, changes to address the imbalance (often called injustices) arise and these can be revolutionary if the systems that regulate finance and capital, governments in today's world, fail to change themselves.[3]

Money's dual function as both a store of value and a medium of exchange, has evolved significantly from bills of receipt for actual goods, through to coinage with 'intrinsic' value, banknotes backed by commodity reserves, government fiat money and today's decentralised digital currencies, in order to meet the ever changing needs of our increasingly complex societies and civilisation.[4]

During the past 5,000 years, finance (including the financial markets, their participants and the instruments they employ) has adapted and innovated to scale civilisation through financing industrial development, technological advancement and human progress,[5] as well as conflicts and war. In particular, following the Industrial Revolution, the world population has grown from fewer than 800 million to 7.8 billion today,[*] and world output has grown from US $500 billion to US $86 trillion.[†]

2. Challenges and Innovation

Seen through the lens of civilizational progress, each era of humankind and the transitions between them have been made possible by financial innovations that funded commerce, science, art and war and all the endeavours of humanity.[6] The art of the Renaissance was financed by Italian merchant bankers who had created massive wealth on the basis of the modern holding company and letters of credit (not to mention double entry bookkeeping to oversee their growing financial enterprises).[7]

The breakthroughs of the Scientific Revolution of the 17th Century were enabled by the wealth created by burgeoning international trade, facilitated by joint stock companies and financing by central banks and a national debt.[8] The Industrial Revolution, a century later, brought the world modern exchanges, bond underwriting and building societies.[9] Colonialism, financed by the wealthy public as an investment, was also a major source of finance for empires to build the beautiful European cities that survive to this day.[10] In the 20th century, particularly following two wars that wreaked havoc on the European powers, the colonial model was ready to be superseded by a new model built not on land acquisition and occupation but trade and multinational corporations and it saw the rise of the most effective at that endeavour, the US plant the US dollar as the international reserve currency, it also

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* United Nations Department of Economic and Social Affairs

† New Maddison Project Database, World Bank

saw the creation of global financial institutions, regional financial zones, personal credit, derivatives and futures contracts and hedge funds.[11]

Through these eras, the world has transformed beyond recognition many times over as new developments have opened up new opportunities but also brought new challenges. Today, in the early 21st century, the world can look back at 75 years of unprecedented progress. We are living in a world in which global literacy has increased from 50% to over 85%, in the past 50 years,[*] war-related deaths per capita are 80% lower than they were 40 years ago,[†] violent crime is down 50% over the past 30 years,[‡] childhood mortality has halved in just the past 20 years,[§] and nearly 80% of the world's population live in at least partially democratic countries.[¶] Stepping back, the world today has more peace, prosperity and freedom than at any other time in human history.[12]

*Figure 1: A History of Financial Innovation**

	30,000 BC Money of account, Aurignacian, Europe, ledger in the form of the tally stick
Barter, exchange of goods and/or services without using money **PRE-3000 BC**	
	600 BC First coin was minted somewhere in Lydia, Asia Minor (present-day Turkey)
Joint stock company, China, Tang Dynasty, by Song Dynasty (960–1279) **618 AD**	
	1408 First Modern Bank, Genoa, Italy
European Colonialism: Portuguese in Morocco, Spanish, Dutch, French, British **1415**	
	1600 East India Company, a corporation that controlled Indian subcontinent
Organized Equity Stuck Equity Exchange, in Amsterdam **1602**	
	1650 Futures contracts, Japan, Osaka rice market
Central Bank, Sweden 1/15 Fractional reserve banking **1668**	
	1717 Gold Standard, adopted by UK
Mutual Fund, in the Netherlands **1774**	
	1811 Limited Liability Law, NY, US in 1811
Limited Liability Act 1855, England, UK **1855**	
	1865 Latin Monetary Union, formed by France, Belgium, Switzerland, and Italy
Modern securitization, a mortgage bond with a senior tranche, by Samuel W. Straus, NY, US **1907**	
	1914-1918 Rise of US dollar as international currency, beginning of end of Gold or Silver Standards, World War I
Bretton Woods Agreement, fully negotiated monetary order to govern monetary relations among countries **1944**	
	1944 World Bank, international financial institution providing loans and grants to governments of poorer countries
International Monetary Fund, consisting of 189 countries working to foster global monetary cooperation **1947**	
	1949 First hedge fund, NY, US
Credit Card as a general purpose card, Diners Club, US **1950**	
	1972 Floating currency, UK floats pound sterling
First futures contracts currencies (first also for non-physical commodity), Chicago Mercantile Exchange, US **1972**	
	1973 Modern option theory and pricing, Black-Scholes formula
Petrodollar Recycling, international spending or investment of a country's revenues from petroleum exports **1974**	
	1991 The Internet
The Euro, common currency, established by 11 Western European countries, replacing national currencies **1999**	
	2005 Peer to Peer Finance, online services that match lenders with borrowers 2009: Bitcoin, a cryptocurrency. It is a decentralized digital currency without a central bank or administrator

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* UNESCO UNDP Human Development Reports

† Peace Research Institute Oslo (PRIO) Battle Death Data

‡ Uniform Crime Reporting program, United States Federal Bureau of Investigation

§ United Nations

¶ Polity IV Project, Center for Systemic Peace

** Adapted from multiple sources, including: Kurt Schuler, Office of International Affairs at the United States Department of the Treasury, Senior Fellow of Financial History at the Center for Financial Stability.

However, the 21st century has also seen the increased sophistication of finance give rise to finance for finance's sake. In this regard, money can make money from finding and exploiting inefficiencies in the financial system. As computational capabilities have grown, hedge funds and other specialists have become increasingly sophisticated at finding inefficiencies and arbitrage opportunities. This clearly reduces the inefficiencies identified but often these inefficiencies reappear for exploitation by the same sophisticated players. However, one class of such strategies, high frequency trading, based on algorithms operating across markets not only addresses inefficiencies, it creates shocks rapidly from one market to the next, creating new risks for the system as a whole.[13] The disparity of information and sophistication and opportunity between the best of the hedge funds and other investors create a win-lose for 'ordinary' investors who are either focused on the use of capital to invest in productive assets rather than inefficiencies or are just not as skilled at handling such complex trading activities.

"The record bail-outs and stimulus packages implemented across the globe in response to the coronavirus pandemic have demonstrated that there is no lack of capital to solve big problems, and governments have indicated their willingness to effectively print money in zero-interest rate environments, creating an opportunity for the scaled and coordinated application of financial resources to solve major problems in the world today."

Financial participants have also innovated to create solutions to finance riskier investments, often called sub-prime, in the form of 'securitisation' of assets, essentially bundling different risks in packages that can then be distributed across financial buyers. While this has helped to finance the poor to buy houses, for example, it has spread the risk across the world and when the risk has materialised, it has caused a world-wide crisis, the last being the global financial crisis of 2008.[*] So, in the early part of this century, this very sophisticated form of finance has become both a source of solutions as well as a source of risk.

Given finance's most positive traditional role as a facilitator of growth and development, it has an essential role to play in addressing the world's fundamental challenges. The world today faces existential risks to human life. These include the following:

1. ***Rising income inequality between and within countries***. The world is deeply divided in terms of income distribution, both across and within countries. North America, for example, has less than 5% of the world's population but is home to over a third of its total wealth. And within the US, the top quintile of households owns 52% of the total

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[*] The Financial Crisis Inquiry Report (2011) Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States; The Global Economic Crisis: Systemic Failures and Multilateral Remedies (2009), Report by the UNCTAD Secretariat Task Force on Systemic Issues and Economic Cooperation

wealth, up from 43% in 1968.[14] This has become a cause of widespread protest and political upset.[15]

2. ***Information revolution replacing the industrial age***. The replacement of manufacturing by knowledge creation as the primary driver of economic value is ongoing, with the explosion of connected devices and data accelerating the growth of the knowledge economy.[*] This shift is not only driving the growth of tech-related industries but also disrupting older industries through automation, substitution and rationalisation, leading to significant economic dislocations across the world.

3. ***National populism and democracy***. Despite its long term upward trajectory, global democracy as a whole has declined in the past decade,[16] in part due to the emergence of authoritarian and national populist leaders who tapped into widespread fears about many of the world's current challenges including a lack of economic opportunities and the perceived threat to national cultures from migration, alongside a declining faith in the existing political institutions that have failed to address these issues.

4. ***Successive and global protests and political unrest***. The global retrenchment of democracy has not gone unopposed (or protest in favour of less democratic leaders) and nor has the perceived unresponsiveness of governments to the world's major issues, giving rise to increasing social and political unrest, with protests leading to revolutions in many cases. The Arab Spring earlier in the decade gave way to Brexit in the UK and protests for and against President Trump in the US, as well as the ongoing mass protests against Chinese encroachment on the rights of Hong Kong.

5. ***Climate change and environmental degradation***. The US aside, climate change is now universally recognised as one of the biggest existential risks to humankind and is an increasingly urgent one.[†] With market forces alone unable to address the issue, most governments and societies have now recognised the need for immediate action, although execution to date by most countries lags the commitments made in the 2015 Paris Agreement.[17]

6. ***Mass migration from poor to rich and unstable to stable regions***. There are over 70m displaced people and refugees in the world today and they are on the move in numbers not seen since World War II.[‡] Driven by economic, political and environmental factors, an unprecedented number of migrants are seeking safer and better lives in developed countries, leading to political crises and security concerns not just in the destination countries but also the transit countries along the way. To this transnational migration comes perhaps an even bigger flow within countries into cities, with the global urban population expected to grow from 4.2 billion today to 6.6 billion by 2050, placing massive stress on infrastructure and societies.[§]

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[*] The market capitalisation of the top 50 manufacturing companies has grown at an annual rate of 8.6% since 1990; the top 50 tech companies have grown at 16% annually and are currently worth 3x their manufacturing peers.

[†] Pew Research Center, Ipsos Mori

[‡] United Nations High Commissioner for Refugees (2018) "*Global Trends Forced Displacement in 2018*"

[§] United Nations Department of Economic and Social Affairs, (2019) – *World Population Prospects 2019: Highlights*

7. ***Population and resource consumption leading to planetary resource depletion challenges***. Current levels of global resource consumption are clearly unsustainable, particularly given the rapid growth of a developing world that can increasingly afford 'Western' style consumption patterns: For the global population to lead lifestyles with US level per capita consumption we would need to exploit the resources of five Earths, rather than one we have available.[*]

8. ***Health and pandemics posing global and national security crises***. The coronavirus pandemic has exposed the world's lack of preparedness to deal with scaled healthcare disruptions. Even the richest nations have lacked the medical infrastructure and resources to effectively contain an outbreak of the current magnitude and to properly treat its victims. Further, much of the world has proven incapable of responding rapidly and in a coordinated fashion, scrambling in competition with one another for now scarce resources.

9. ***Great power rivalry setting the stage for geopolitical instability***. Finally, the ongoing withdrawal of American leadership of the liberal order and the increasing tensions with an increasingly assertive China are creating geopolitical instability.[18] Trade wars, Chinese expansion in the Indo-Pacific region, and mixed messages by the US about the continued value of long-term security partnerships are leading to increasing political and security risk in many of the world's most critical regions.

10. ***Need to find alternatives***. With the accelerating depletion of key global resources, societies are faced with the prospect of catastrophic gaps that will lead to conflict and scarcity which may force demand levels down to match dwindling supplies.[†] The world will need to innovate and develop alternative sources of energy, materials and consumables to bridge this gap while managing demand in order to bridge the world to a more sustainable future.

Solving these global issues will require coordinated actions across countries, governments, markets, communities and individuals on a scale that has seldomly been achieved. Finance, alongside technology and innovation, is among the most critical tools to be utilised in developing and executing solutions to the greatest challenges facing the world today. While finance has historically been most heavily used in the pursuit of endeavours of an economic nature, and has developed most rapidly within capitalist settings where the goal has been profit maximisation, it can of course be applied for any purposes narrow or broad, large or small. For example, the UN estimates that achieving its 17 Sustainable Development Goals by the 2030 deadline will require US $5-7 trillion of annual investment across sectors and industries.[‡] Without modern financial markets and financial institutions, it would be impossible to source, aggregate, structure, deploy and monitor the necessary funds to do this. Further, the record bail-outs and stimulus packages implemented across the globe in response to the coronavirus pandemic have demonstrated that there is no lack of capital to solve big problems, and governments have indicated their willingness to effectively print money

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[*] Global Footprint Network (2018), Public Data Package

[†] United Nations Interagency Framework Team for Preventive Action (2012) *Renewable Resources and Conflict*, Toolkit and Guidance for Preventing and Managing Land and Natural Resources Conflict

[‡] https://www.un.org/pga/72/wp-content/uploads/sites/51/2018/05/Financing-for-SDGs-29-May.pdf

in zero-interest rate environments, creating an opportunity for the scaled and coordinated application of financial resources to solve major problems in the world today.

3. The Transformation of Finance to Solve Problems and Create the Next Civilisation

However, the world is not only facing challenges, it is also facing opportunities that will define the next civilisation. These include laying the foundations for the next part of man's journey including innovations that change the scale, reach and character of humanity and its civilisation, of which a few suffice to illustrate the dramatic nature of the changes ahead:

- **The New Space Race.** The original space race in the 1960s put man on the moon and gave us countless innovations that have transformed our lives, including GPS, laptops and LED lighting to name a few. In the next phase of the Race currently being initiated, humanity will expand its footprint beyond the planet, opening up new commercial opportunities and leading to a new wave of transformative innovation.

- **A New Energy Source.** While one third of global power capacity is now based on renewable energy,* current technologies suffer from technological and practical restrictions that will limit their ability to fully replace fossil fuels with renewable energy. This will require the innovation and exploitation of a new energy source, one that is clean, cheap and abundant and importantly enables a transformation of the capability of machines that it can support, just as oil enabled far more functional machines than steam, and so far greater scale and sophistication of civilisation.

- **Artificial Intelligence.** From self-driving cars to digital assistants, artificial intelligence is becoming increasingly pervasive to modern life. With machine learning continuing to develop rapidly, AI has the potential help people solve more significant, more complicated problems, supporting innovation and improvements in the quality of people's lives generally. A future is already conceivable where machines and humans share innumerable functionalities, in the form of implants and extensions of the physical self, implying changes to how people and societies function along every dimension.

For tools to be effective they need to be fit for purpose, and the vast majority of today's financial instruments, financial institutions and financial markets have been purposed for the industrial era to maximise direct wealth creation, rather than the achievement of more universal and long-term goals. One important consideration is whether reorienting finance towards objectives other than making financial returns, will make it inefficient, ineffective, and inequitable and whether straying from these will undermine society in the way that the tools favoured by communism, including planned economies, state-owned enterprise and price setting, proved to not create as many surpluses as more capitalist societies in the last century.[19] Solving global issues therefore will require innovation not just in the application of finance, but also in innovation applied to finance itself to avoid the pitfall of making it an ineffective tool.

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* International Renewable Energy Agency, 2019 Renewable Capacity Statistics

The challenges and opportunities that finance will need to be fit to support addressing core issues fall into three broad categories:

1. The solving of global problems that arise or are exacerbated through negative externalities, such as climate change, resource shortages and mass migration, including the issues caused by the financial system itself.

2. Narrowing the gap between rich and poor, primarily by reducing poverty without diminishing the rich, inclusion not exclusion.

3. Financing the future, scientific and technological breakthroughs that form the basis of a new civilisation.

   For finance to provide the basis of the next civilisation, the global and local society will need to re-engineer the global system of not just finance but how politics, economies, societies and individuals work and measure success.

Solutions that transform and redefine the relationships that define the contract between stakeholders in the world. Examples of the types of solutions illustrate the near impossible task of finding world leaders to take these forward or fitting them neatly into agendas of nation-states or international institutions:

1. ***Relationship between capital and the world.*** *Regulated/Mandated Responsible Capitalism* criteria for participating countries to push each nation's financial industry to establish ESG criteria and write their regulatory framework (comparable: Basel Accord for finance and business)

2. ***Relationship between the old industrial base and the new technology world.*** *Western Marshall Plan* for Restructuring the Old Industries particularly in the industrial West to adapt to the new technological and information era (comparable: Marshall Plan of 1948)

3. ***Relationship between business and the environment.*** Governments to finance (directly and through tax exemptions) *Corporate Self-Destruction* if companies embrace and finance alternatives to "harmful" industries rather than wait to go out of business (comparable: widespread tax investment laws)

4. ***Relationship between rich and developing countries.*** *World Development-Dollar* in a deal where rich nations buy goods from the poorer ones for the dollars to flow back to the rich nations as investments (comparable: 'Petro-dollar')

5. ***Relationship between individuals, the state and international institutions.*** The new globalisation recognising *The Individual as 'Nation State' and a 'Multinational Corporation'* by enabling mass micro-entrepreneurship using online technology (comparables: entrepreneur models on eBay, Amazon trading platforms)

6. ***Relationship between people and the workplace.*** *Mass Distributed Work* and its financing, enabling work from home for product and services (comparable: old fashioned industrial piece work)

7. ***Relationship between people.*** *Democratisation of Money*, with formal regulated peer-to-peer exchanges (comparables: stock exchanges, crowd sourcing, mobile peer-to-peer systems)

8. ***Relationship between peoples across the world to solve problems.*** *Collaborative Innovation and Finance technology platforms* to enable collaborative solutions to issues and problems, provided for general issues by new enterprises and for specific issues by major corporates, NGOs, governments (comparable: MS Teams in corporations)

For such innovative projects to be more than projects, albeit radical in nature, one would need to change the system itself, of which finance is a part.

"The transformation underway represents a change in character, not just capability to match the new global system that is emerging."

Finance is an essential ingredient—alongside science, technology governance, security, commerce and industry—without which civilisations cannot be built. In history, it has been different from the other ingredients, in that it underpinned the others as the one ingredient without which the others could not survive. Where society has seen finance as the enemy, it has failed to create thriving economic societies, and failed to have financial surpluses for cultural, technological, healthcare and social development too. However, where societies have allowed it to operate without limits, it has caused crises as it stops serving society and turns inward to serve itself. This poses one of the challenges to changing finance. It is unclear whether an external agent will or even can architect the new financial system. The risk of getting this wrong provides a strong incentive for the financial community to change itself rather than wait for it to be made for them by regulators or customers and the environment. This is particularly true since the financial community is now a partner, not merely a banker, it is 'Big Finance'. This requires a very different approach to engaging the financial community than the one adopted during the industrial era.

In the industrial era, finance was banker to industry, government and the military, among others, in its conquests. By the last quarter of the 21st century, finance had become 'Big Finance' and was a major power bloc in its own right. The constituents were mutual fund managers, private equity funds, hedge funds, sovereign wealth funds and investment banks that were financial conglomerates.

Looking ahead, at a future that has already begun, Big Finance is about to face its own revolution, and it is not well prepared for this, which is usually the case with powerful incumbents. In the information era, which we are in now, the internet is democratising finance by making it digital, global, disintermediated and distributed, and this will transform it into something radically different from what it is today. The current financial institutions

will of course invest in this new model of finance and either be transformed in the process or finance their future rivals.

The evolution of finance to this new model is a natural one and like other evolutions is a result of changes in the environment that leave those that have a superior ability to survive to spread. Finance will not be able to stand in the way of this information age financing model any more than agricultural financing models could resist the industrial financing models needed to fund factories, ships, trade, empires and multinationals. The question for the incumbents is whether they can change quickly and radically to meet the challenge of relevance by solving the biggest problems facing the world, helping the spread of technology throughout the planet, and in endeavours beyond, and building the new world that is emerging on top of the old. History shows that such changes are nearly impossible for incumbents. It will be more challenging given the transformation underway represents a change in character, not just capability to match the new global system that is emerging.

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Global Transformative Leadership in the 21st Century:
A Science, Engineering, Technology Integrated and Strategic Perspective

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Abstract

The goal of this paper is to focus on the Global Leadership Challenge in the 21st Century with an integrated and strategic perspective in science, engineering and technology (SET). "In any crisis, leaders have two equally important responsibilities: solve the immediate problem and keep it from happening again. The COVID-19 pandemic is a case in point. We need to save lives now while also improving the way we respond to outbreaks in general. The first point is more pressing, but the second has crucial long-term consequences," according to Bill Gates. What is happening is a vivid example of a global "tipping event", in which multiple social systems flip simultaneously to a distinctly new state. A global arbitrary multiscale systems science (GAMSS) perspective might create the required knowledge and paradigm shift in thinking.

The SARS CoV-2 virus seems well-tuned to exploit the specific characteristics of the world we have created for ourselves, with our massive population tightly linked together by air travel and marked by brutal inequalities in health care and physical wellbeing. We treat others as we treat the Earth. Two key factors, high connectivity and high uniformity, together leave us increasingly vulnerable to global tipping events, in which shocks propagate like a row of dominoes falling over. Human life cannot be wholly understood in terms of generalizations and statistics only, we need to take fully into account the role of conscious individuality in human affairs. Nevertheless, one can determine under what conditions systems are prone to cascading effects. Moreover, weak system components can be used to produce early warning signals. If safety precautions are lacking, however, spontaneous cascades might be unstoppable and become catastrophic. In other words, statistical predictability and controllability are a matter of proper systems design and operation.

In fact, cascading changes in our global social systems do not always have to be so pernicious like COVID-19. Some might be virtuous, and it is here that we can glimpse those silver linings. Today's emerging pandemic could help catalyze an urgently needed tipping event in humanity's trust, collective moral values, priorities and sense of self and community. We are one step away from the abysmal catastrophe humanity can avert. Sri Aurobindo depicts human social evolution as a progressive dance between rising levels of consciousness and rising levels of organization. "Life evolves through growth of consciousness. Consciousness

evolves through greater organization and perfection of life: a greater consciousness means a greater life."

Nevertheless, some current responses to COVID-19 based on existing policies and methods threaten to undermine democracy and human rights, underlining the absence of human-centred attitudes. Therefore, a new human-centred paradigm is essential. Its realization will require the commitment and active involvement of all of us. "Because we all share this small planet Earth, we have to learn to live in harmony and peace with each other and with Nature. This is not just a dream, but a necessity," according to Tenzin Gyatso, the 14th Dalai Lama.

1. Introduction

The current situation of the worldwide coronavirus outbreak has brought new concerns surrounding government ethics to the table, as citizens are posed with dilemmas related to the government's role in their daily lives. Although the pandemic is impacting every part of society, there are dilemmas that are especially prominent in the minds of members of Generation Z (WKGE, 2020) as they embark on a transitional period in their lives. The impacts of this pandemic are expected to have lasting marks on their lives, especially as many enter the workforce and adulthood.

Nevertheless, individuals have within themselves vast resources for self-understanding and for changing their self-conceptions, basic attitudes and self-directed behavior, and these resources can be tapped if a climate of facilitative psychological conditions is provided. This is the basic assumption of the Person-centered Approach Institute (Zucconi, 2015). As an example, in Italy, Limbix Italia gave virtual reality (VR) headsets to Schiavonia COVID Hospital (Monselice, Veneto Region, Italy) in an attempt to improve the psychological and emotional wellbeing of its staff. The VR hardware uses visualization and guided breathing techniques to reduce stress and anxiety (LeDoux, 2015) in healthcare workers to support staff working long shifts treating patients suffering from coronavirus.

The current global pandemic threatens us all, without distinctions of race, culture or gender, and our response must be as one humanity, providing for the most essential needs of all. The world today will never again be as it was just a few months ago. The social structure of our world has already changed, and a major economic crisis is looming. In addition, COVID-19 (WKCO, 2020) has had a significant psychological impact. The world that emerges from the coronavirus pandemic may be a warring collection of countries that are more closed off and nationalistic than before.

At least for now, heavy-handed nationalist responses predominate. Division and fragmentation of reality are still the governing rules and "modus operandi" in the social sciences. Alongside curfews, lockdowns, and requisitioning, governments are closing borders and using wartime rhetoric to rally their populations. Global supply chains and trade are being disrupted not just by lockdowns, but also by wealthy countries' competition for supplies. The most recent event of this kind was the 2008-09 financial crisis. The warning example, the loss of trillions of dollars in the stock markets during the financial crisis, was

largely caused by a loss of trust. It marked an abrupt shift in the world economy from a state of relatively high growth and modest inflation to a new state of much lower growth flirting with deflation. The world economy never returned to its pre-2008 state. But without rapid and effective global cooperation, the world may not exit this crisis safely at all (Jacobs & Ramanathan, 2020).

Recent developments in the area of digital technologies, especially concerning big data, artificial intelligence (AI) and the digital transformation, have generated a wide debate about the social, ethical and political implications of these changes. Many international organizations, professional groups and governments are promoting reflection on these changes with a view to ensuring that they serve the good of all human beings. Acknowledging the importance of these issues, and based on Pope Francis' encouragement to find new ways of dialoguing about how we are shaping the future of our planet (Laudato Si', 14, 2015), the Dicastery for Promoting Integral Human Development (DPIHD) and the Pontifical Council for Culture (PCC) organised a seminar of experts to foster an in-depth debate on the topic of the common good in the digital age. Scientists, leaders in industry and labor, government officials and humanitarians gathered in the Vatican at the end of September 2019 for a three-day conference titled "The Common Good in the Digital Age".

The goal of the conference was to reflect on how the tremendous advances of science, engineering and technology (SET) can move beyond being used mainly for profit to serve the good of all human beings. "Humanity has entered a new era in which our technical prowess has brought us to a crossroads," says Pope Francis in Laudato Si', 102 (2015). "Technoscience, when well directed, can produce important means of improving the quality of human life . . . It can also produce art and enable men and women immersed in the material world to 'leap' into the world of beauty" (Pope Francis, Laudato Si', 103).

At the same time, though, ethical and moral judgments have not made similar leaps. "The economy accepts every advance in technology with a view to profit, without concern for its potentially negative impact on human beings," says the Pope (Pope Francis, Laudato Si', 109, 2015). Conference-goers discussed the ethical jump needed so that technology can serve the common good of all. Discussions ranged from AI, machine learning, cybersecurity, drones, nuclear weapons and effects of automation on the workforce.

On Friday, February 28, 2020, at the conclusion of the Vatican workshop titled "A Human-Centric Artificial Intelligence", the Pontifical Academy for Life, Microsoft, IBM, the United Nations Food and Agriculture Organization (FAO) and the Italian government signed the "The Rome Call for AI Ethics", a document developed to support an ethical approach to Artificial Intelligence (AI) and promote a sense of responsibility among organizations, governments and institutions with the aim to create a future in which digital innovation and technological progress serve human genius and creativity (De Giacomo & Fiorini, 2015) and not their gradual replacement (RCAIE, 2020).

The complexity of the technological world demands an increasingly clear ethical framework, so as to honor our commitment to serve every individual without discrimination or exclusion. This can only become truly effective through collective intelligence and

collaborative innovation. (Fiorini, 2020). In the encounter between different visions of the world, human rights are an important point of convergence in the search for common ground. The "good algorithm" points to the need for renewed reflection on ethics, rights, and duties in the science, engineering, and technology (SET) areas.

Technology ethics is the application of ethical thinking to the practical concerns of technology. The reason technology ethics is growing in prominence is that new technologies give us more power to act, which means that we have to make choices we did not have to make before. While in the past our actions were involuntarily constrained by our weakness, now, with so much technological power, we have to learn how to be voluntarily constrained by our judgment: our ethics (Metzl, 2019). For instance, since the dawn of the Internet the sheer quantity and quality of data have dramatically increased and are continuing to do so exponentially. Big data describes the large amounts of data as voluminous and complex that traditional data processing application software is inadequate to deal with them.

Recent innovations in medical research and healthcare, such as high-throughput genome sequencing, high-resolution imaging, electronic medical patient records and a plethora of Internet-connected health devices, have triggered a data deluge that will reach the exabyte range in the near future. Big data ethics or simply data ethics refers to systematizing, defending, and recommending concepts of right and wrong conduct in relation to data, in particular personal data. It is of increasing relevance as the quantity of data increases because of the scale of the impact. Big data ethics is different from information ethics because the focus of information ethics is more concerned with issues of intellectual property and concerns relating to librarians, archivists, and information professionals, while big data ethics is more concerned with collectors and disseminators of structured or unstructured data such as data brokers, governments, and large corporations.

These changes obviously present some powerful risks, and we should ask ourselves whether we think such changes are worthwhile, because we do have choices in the technologies we create and live by. We can govern our technologies by laws, regulations, and other agreements. Some fundamentally ethical questions that we should be asking of new technologies include: What should we be doing with these powers now that we have developed them? What are we trying to achieve? How can this technology help or harm people? What does a good, fully human life look like? As we try to navigate this new space, we have to evaluate what is right and what is wrong, what is good and what is evil.

Additionally, we have become so powerful now that we not only have the power to destroy ourselves, but we also have the ability to change ourselves. With CRISPR and synthetic biology, we can choose to genetically modify people, and by implanting biomedical devices into our bodies and brains we can change how we function and think. Right now, most medical interventions are done for therapy, but in the future, we shall have to consider enhancement, as well. At some point we could potentially even change human nature (Metzl, 2019). That is a tremendous power, one that must be matched with serious reflection on ethical principles such as dignity, fairness, and the common good. The temptation of power without ethics is something we need to avoid now more than ever. If one is powerful without

goodness, one becomes dangerous and capable of very evil actions. In fact, such dangerous power may well destroy itself and perhaps take many innocent lives with it.

As long as there is technological progress, technology ethics is not going to go away; in fact, questions surrounding technology and ethics will only grow in importance. As we travel this path into the future together, we will choose the kind of future we create. Given our growing technological power, we need to pay more and more attention to ethics if we want to live in a better future and not a worse one.

As daily lives are changing, we are relying more on things like SET and the Internet to complete tasks that might otherwise have been done in person. As children switch into online classes and people work from home, the topic of access and what a government should ensure as basic rights for people become more relevant. This is especially an issue as some people already lacked access to the Internet before the outbreak and now may be unable to pay their bills, with fear of losing such access. Should the government aim to ensure all children have Internet access and the basic tools to learn online the same way they provide books and meals?

2. Global Transformative Leadership and Global Ethical Followership

The unprecedented disruption by COVID-19 is accelerating the urgency for agility, adaptability and transformation. Industry structures and business models are being disrupted, and the digitalization of the economy is being rapidly accelerated. An estimated 70% of new value created in the economy over the next decade will be based on digitally enabled platform business models. However, 47% of the world's population remains unconnected to the Internet. Digitalization has been accompanied by ever-increasing energy and resource consumption, as well as global production and consumption patterns that place an even greater burden on ecosystems. Technical innovation surges do not automatically translate into sustainability transformations but must be closely coupled with sustainability guidelines and policies (WBGU, 2019).

Our ideas of what human rights are or what classifies as a necessity are shifting and therefore, we ask whether it is now the government's job to provide those in the way they help others. What happens when children cannot take classes due to lack of access to technology? The Internet is one of the biggest resources that people are relying on now and seeing as a necessity, especially members of Generation Z, who have grown up alongside technology and require it for classes and jobs, yet until the pandemic, it was seen as a privilege rather than a right. If this definition and the need for the Internet have changed, what does it mean for privacy and security rights? The list of concerns with regard to government ethics that has arisen from this pandemic is long, and directly impacting the lives of Generation Z all over the world. Although all these issues have different focuses and affect people differently, in different countries, their similarities stand in the idea that the role of government is changing as the virus spreads.

"In any crisis, leaders have two equally important responsibilities: solve the immediate problem and keep it from happening again. The COVID-19 pandemic is a case in point. We

need to save lives now while also improving the way we respond to outbreaks in general. The first point is more pressing, but the second has crucial long-term consequences," according to Bill Gates (Gates, 2020). Another sound leadership principle is to never ask someone to do something you would not be willing to do yourself. People have been asked to work when they do not feel safe, in all ways, physically and psychologically, for decades. In the way OSHA, Maslow, and #MeToo reporters would measure safety, in ways people sense instinctively. Now is the time to prioritize the care of people while they work, and the care they provide for people at home.

"The coronavirus has not broken our world. It just exposed a world that was already breaking."

We may never have another moment where there is such a shared awareness of what matters most: how we care for one another. As leaders plan for what needs to happen next, they have the opportunity to put human welfare and wellbeing first (Fiorini et al., 2016). They should not miss the moment. Some long-discussed changes about how to care for each other now seem possible: basic healthcare, an end to homelessness, year-round school to close the achievement gap for children from low-income families; care for society's most vulnerable, the sick, the children, the aged, and the marginalized. To care for them, we must see them first, a clarity the global pandemic has offered.

Philanthropists must step up. There is too much money sitting on the sidelines right now. Now is the time to redistribute some wealth, creating a society that works better for everyone. We are finding the will, the solidarity, to address problems we could not tackle before the virus. Now that we have imagined a way to shelter the homeless in hotels in the midst of this crisis, can we imagine a way to sustain their support?

There is a lot of emphasis on leadership in society and certainly during moments of crisis, like this one. What is standing out, and serving humanity at a time of great need, is a global transformative leadership complementarity that we can call augmented "ethical followership". Our confidence in one another, and humanity broadly, is being restored, one ethical followership example at a time. Followership is a concept explored by scholars like Robert E. Kelley, at Carnegie Mellon University, amongst others. Ethical followers are independent thinkers with a positive mindset. They do not blindly follow the decisions or actions of someone in a traditional authority position without evaluating and understanding them on their own. They can succeed without a leader being present.

In the midst of a pandemic, there is an abundance of examples of moral autonomy and ethical followership. People are making great decisions about who to listen to and follow. In the United States of America, Dr. Anthony Fauci has emerged as the leader whom followers have chosen. In Italy, Dr. Massimo Galli and Dr. Andrea Crisanti, in Lombardy and Veneto Regions respectively, have gained the same status. There are others with institutional leadership roles that might be more logical choices, like the head of the "Center for Disease Control and Prevention" in the USA (CDC, 2020) and the head of "Istituto Superiore di Sanita" in Italy. But only in those physicians do followers see bravery and expertise. They

have been willing to calmly and clearly disagree with elected officials. They have confidence in their understanding of infectious diseases and share it plainly. Followers see their courage, following their bravery in speaking out. They appreciate the doctors' knowledge base. People have chosen to follow them.

Many different cultures are tangling with this foe, COVID-19. They are all going about it differently, honoring the norms of their locale, and, in some cases, forging new norms. When we look at where the virus has been tamed, at least a bit, it seems to be in places where people have learned the value of followership. Now it is up to the rest of us to follow as ethically as we can; to follow bravery, courage, expertise, humanitarianism, compassion, equity, and truth.

With our health infrastructures, economies, governments and global power structures collapsing and with billions of people around the world, including the most vulnerable, at risk, we find ourselves at a transitional moment of our planet. The last time we experienced something like this was in the early years of World War II. Lessons concerning the weaknesses of social systems must be studied in depth and analyzed to understand why and how conventional thinking has led to global crises, the vulnerabilities generated by globalization and networking, and the ideas needed to foster effective social innovation. The coronavirus has not broken our world. It just exposed a world that was already breaking.

We should try to figure out new prospective scenarios where information and the conditions for its circulation will continue to play a crucial role, as we are experiencing in this epidemic period, and SET will effectively and appropriately fertilize (EM, 2020) the various and heterogeneous local cultural contexts worldwide in a more targeted and more flexible way.

We must learn from this lesson and make the necessary investments to limit the impact of future pandemics now. It will require post-Bertalanffy Systemics (Minati et al., 2016; Fiorini, 2019) and Cybernetics insights to steer the new situation to an equilibrium that increases the chances of health, equality, and viability to all stakeholders in society (Fiorini, 2015). The investment needed is tiny compared with the economic and human toll of another pandemic (EM, 2020). It just makes total financial sense; anything else does not. The world needs an insurance policy against pandemics from now on. A better understanding of what is happening at the global level necessitates a deep, shared perspective change, based on a global arbitrary multiscale system approach.

3. Global Arbitrary Multiscale Perspective

A crucial lesson for leaders (particularly at the local level) is that resilience is most important when it comes to risks that are difficult to predict or, owing to a dearth of knowledge, manage effectively to get global system sustainability. The most important lesson is to avoid examining these risks in isolation. Instead, leaders should adopt the mindset of systems thinking, relying on a multi-factorial, multi-layered process to determine risks (Gill & Kadziński, 2012). Most current governments are not ready enough or totally educated to see the implications of these new understandings and what is happening in response to the worldwide spread of the SARS CoV-2 (and COVID-19, the disease it causes,

is a vivid example of that): a global "tipping event," in which multiple social systems flip simultaneously to a distinctly new state (Helbing, 2013; Fiorini, 2015). Complex systems can abruptly flip from one state to another (Homer-Dixon, 2010). A system might appear to be chugging along normally one day and then, bang, it shifts to an entirely different behaviour the next (Holling, 1973). Remember the collapse of the east coast cod fishery, or the world economy's sudden flip in 2008 from an inflationary state to one that barely skirts deflation.

In the past, around the world, national institutions and political systems have been designed to deal with single-cause problems and incremental and almost reversible change, according to the traditional, reductionist Newtonian mechanics of simple systems. But the real world has never been like that. Take a problem like climate change. Its causes are many and tangled; the climate system has flipped from one state to another in the past, and could do so again under human pressure; and once it flips, we will not be able to get the old climate back.

Human beings introduce complexity into their social, economic, and technological systems to solve their problems. In 1994, the economist W. Brian Arthur wrote an article that is one of the foundation pieces of complexity science. He suggested there are really three deep sources of complexity: (1) co-evolutionary diversity; (2) structural deepening, and (3) capturing software (Arthur, 1994, 2014). The first is growth in co-evolutionary diversity. This process applies equally to societies, economies, and ecological and technological systems. Ecological systems offer, perhaps, the clearest illustration. Each ecological system has a number of niches or ecological roles that may or may not be filled by various species. Niches filled by one or more species are separated by vacant niches. If you think of different firms and products as being different species, then you have to be very aware of how that entire network of different companies operates, even if they are quite peripheral to you. It is a process that looks like the fractal, analytical method which is used to analyze structures in materials, natural, technical, security, financial and social sciences in order to make a prognosis of designed structural properties (Mandelbrot, 1977; Mitić, 2017).

The second source is structural deepening (Moore, 2020). It is a very different phenomenon from the previous one: if growth in co-evolutionary diversity happens at the level of the whole system, structural deepening happens at the level of the individual component or unit within the system. As a species, firm, or organization confronts problems in its environment, it responds by becoming more complex. We can see structural deepening at work in many of our technologies. Compare for instance an automobile engine back in the 1960s with one produced today. The modern engine runs much more cleanly, it is far more efficient, and it has other attributes that make it a great improvement over the earlier version. But back in the 1960s, you might have been able to fix the engine yourself. Please, try it today!

Finally, the third is the phenomenon of capturing software, in which larger systems appropriate or capture the grammar that governs the operation of smaller or subordinate systems. Think about the way societies have captured the software, or the fundamental physical grammar, of electricity and have then used electricity in all kinds of marvelous ways to improve people's lives. But in the process, we have made our world much more complex.

Following this line of thought, as habitat destruction and biodiversity loss increase globally, the coronavirus outbreak may be just the beginning of mass pandemics (Vidal, 2020). We cannot predict where the next pandemic will come from, so we need mitigation plans to take into account the worst possible scenarios. The only certain thing is that the next one will certainly come. We must think about global biosecurity, find the weak components and bolster the provision of health care in developing countries. Otherwise we can expect more of the same. The risks are greater now. They were always present and have been there for generations.

It is our interactions with that risk which must be changed. We are now in an era of chronic emergency. Diseases are more likely to travel further and faster than before, which means governments must be faster in their responses to be successful (Fiorini, 2017a). It needs investments, change in human behaviour, and it means we must listen to people at community levels. Getting the message about pathogens and disease to hunters, loggers, market traders and consumers is key. These spillovers start with one or two people. The solutions start with new education and awareness. We must make people aware things are different now. Local communities have the hunger and desire to receive reliable information; they are eager to learn.

Today, leaders need to think of their country as part of a complex system that is comprised of smaller systems and is a part of larger systems that affect their country's resilience at least. They need to take into account the understanding of socio-ecological systems developed around the term "resilience," and more recently the term "panarchy," in the work of Holling, Gunderson (Holling, 1973; Gunderson & Holling, 2002; Holling, 2004), and others. Panarchy theory represents the evolution of complex adaptive systems (that is, systems that adjust or adapt to their external environment as the environment changes) in three-dimensional space. This space is defined by three local variables: potential, connectedness (connectivity), and resilience. When your system has achieved global resilience, the next step is developing the system's antifragility, the ability to adapt and adjust to unforeseen events, to absorb change, and to learn from adversity. Even better, thriving from unexpected events (Taleb, 2012).

Furthermore, network science explains that strongly connected global networks have produced highly interdependent systems that we do not understand and cannot control well. These systems are vulnerable to failure at all scales, posing serious threats to society, even when external shocks are absent (Dehmamy et al., 2018). As the complexity and interaction strengths in our networked world increase, man-made systems can become unstable, creating uncontrollable situations even when decision-makers are well-skilled, have data and technology at their disposal, and do their best (Ravasz et al., 2002).

To make these systems manageable, a fundamental redesign is needed. A global arbitrary multiscale systems science (GAMSS) perspective might create the required knowledge and paradigm shift in thinking (Fiorini, 2016). This GAMSS can also show that until we manage this connectivity better, which could mean, among other changes, reducing our international travel, simplifying global supply chains and bringing some production processes closer to home, we are likely to experience more frequent tipping events of ever-higher destructive force.

When we look at this larger picture, we see a striking reality: The SARS CoV-2 seems well-tuned to exploit the specific characteristics of the world we have created for ourselves, with our massive population tightly linked together by large cities and air travel, exotic tourist excursions and just-in-time supply chains, and marked by brutal inequalities in health care and physical wellbeing. From a technical point of view, the Internet itself, including the Internet embedded in smart things and places, smart cities, and landscapes, could be of unprecedented help in creating new hybrid environmental sets, calling for a new approach to the proxemics of public spaces, and consequently to the design of a newly built environment.

4. Globalization, Connectivity and Uniformity Factors

Recent global crises reveal an emerging pattern of causation that could increasingly characterize the birth and progress of future global crises. Human-induced changes in natural systems now often rival or exceed changes arising from non-human processes (Steffen et al., 2002). Future crises will increasingly arise from the conjunction of the following three underlying, long-term, and causally linked global trends (Homer-Dixon et al., 2015).

The first trend is the dramatic increase in the scale of human economic activity in relation to Earth's natural resources and systems. As of July 29, 2019, humanity has already officially used up more ecological resources that year than the Earth could regenerate by the end of the same year. The occasion even has a name "Earth Overshoot Day". Global Footprint Network, a sustainability organization which calculates the day, says humanity is currently consuming nature 1.75 times faster than the planet can regenerate. "We cannot use 1.75 without destructive consequences," says Mathis Wackernagel, founder of Global Footprint Network, in a statement.

The second trend is the rapidly rising density, capacity, and transmission speed of the connections carrying material, energy, and information among the components of human technological, economic, and social systems (Helbing, 2013). The revolution in information technologies, the quintupling of global trade, and the homogenization of human institutions, culture, and technologies have produced a sharp increase in the connectivity and the speed of operation of human, social and economic systems (Chase-Dunn et al., 2000; Young et al., 2006).

The smart and connected world in which services, products, and people are somehow embedded in broader systems, is reshaping society. Emergent domains such as Web 3.0, Industry 4.0, Government 3.0 (Refer to Gov3.0 project: http://www.gov30.eu/), or even Life 3.0, which discusses the implications of artificial intelligence on the future of life on Earth, are changing the role of digital technologies and data on designing and rethinking human systems. For example, in the industry sector, the pervasiveness of digitization has been reshaping products toward a layered architecture that includes devices, networks, services, and contents.

The third trend is the increasing homogeneity or declining diversity of human cultures, institutions, practices, and technologies (Boli & Thomas, 1997; Meyer, 2000; Young et al., 2006), including technologies that exploit ecosystem services, such as agriculture and aquaculture. The second and third of these trends are reciprocally related, that is, they are both

the causes and consequences of each other, although not exclusively so. Greater connectivity facilitates homogenization, while homogenization encourages greater connectivity.

Therefore, two major key factors, high connectivity and high uniformity, together leave us increasingly vulnerable to global tipping events. Research shows that high connectivity and high uniformity can combine to make large systems, such as our global financial, energy, food and information systems, far more susceptible to rapidly cascading change, in which shocks propagate like a row of dominoes falling over. Taken together, humanity is now among the largest bodies of genetically identical, multicellular biomass on Earth; all told, we weigh nearly a third of a billion tons. Combined with our proximity in huge cities and our constant travel back and forth around the globe, we are now an enormous Petri dish brimming with nutrients for cultivating current and future new diseases.

Complexity scientists are not surprised by this kind of precisely tuned exploitation; it is exactly what one should expect in constantly evolving living systems. New viruses survive or fail by Darwinian logic. In recent years, countless viral mutations have certainly arisen and then vanished without a trace, because they were not "fit" enough to survive, that is, they could not successfully reproduce in the specific world we have created. The high connectivity and high uniformity combination boosts the risk of synchronized crises across normally independent systems. In the current coronavirus crisis, dominoes may soon start falling in major financial systems, especially in the heavily indebted Chinese economy, as the downturn caused by the pandemic drives up the proportion of non-performing loans.

A perspective shift on the ideas of "globalization" and "network" is required. Quite paradoxically, looking at the pandemic behavior, we see that even the present SARS CoV-2 is working apparently "naughtily", showing different faces and impacts on different local situations. But as it has been mentioned before, we also know that this is a relevant part of its genetic program, since it uses adaptation strategies based on mutation to survive at a global level, as a resemblance of Darwinian Law.

One thing is becoming quite clear, the pandemic is spreading fast in the world's crowded and polluted areas. In the first week of April 2020, evidence emerged that dirty air makes COVID-19 more lethal. This fact surprised no one who has followed the science of air pollution, but the scale of the effect was striking. The study, which must still undergo peer review for publication, found that the tiny pollutant particles known as PM2.5, breathed over many years, sharply raise the chances of dying from the virus. Cities are already home to well over half of the world's population and are expected to draw roughly 2.5 billion more people by 2050. They are also hotspots for air pollution.

Urban areas have a high concentration of emission sources: vehicles, buildings, industrial activity, waste, and wastewater, etc... Carbon emissions were once thought of as a costless "externality" by business. But as the evidence of climate change has mounted and public opinion has shifted, energy companies have begun to look at the real financial consequences. This has been most notable in the rising cost of capital for groups on hydrocarbons and ever-cheaper money for renewables. Cleaning the air means improving human health, mitigating climate change, and protecting biodiversity.

The effects of air pollution on people, the environment, and the global economy are profound, and often under-recognized. The burden of pollution tends to be greater for poorer nations, and for marginalized groups in high-income countries. But the good news is that we can eliminate much of this pollution with existing technologies and practices, and at a surprisingly low cost, if we strategically invest in the right infrastructure, services, and incentives. And thanks to continuing advances in air pollution detection and analytics, we will increasingly have the intelligence necessary to drive positive change.

The "monolithic" face of globalization and network we have known and used up to now, is basically representative of the "monolithic" powers behind them. Big giants have played the game and little Lilliputians have been crushed on the way, including those who were on the shoulders of giants when they staggered. Indeed, keeping the universal human rights firmly fixed, the rich cultural, social and economic variety of the human communities on the "globe", the extreme adaptability of the digital "net" can be better focused and linked, in order to pave way for new models of sustainability and anthropic development, more sensitive to the inputs from/to their real local contexts and environment by an active, wiser use of SET.

Let us skip, for a while, the point making SET appropriately available (infrastructures) worldwide, to focus on the point of the interaction between knowledge and know-how (literacy and practice), since in their absence SET simply cannot exist, or, it cannot work effectively. To fully express its potential, SET needs to be adequate to the communities reached, renouncing to propose itself as the past "monolithic" set which has already failed, but predisposing itself to release actions in a very targeted way, according to local realities. The collection and the monitoring of all the local situations, actions, and feedbacks detected, will offer a permanent and dynamic global overview to be processed by human and intelligence algorithms.

Consequently, one priority in the agenda should be mapping knowledge and know-how from/to the human cultural contexts worldwide, with the help of the local institutions. Further priority should be on sharing and transferring knowledge and know-how, paying attention to those local identities, and how they interact inside/forming the global system, based on a "glocalization" approach. Of course, alongside local experiences and traditions, a relevant part in the process will be played by oriented education, to be considered, again, not as a "monolithic" block but as an overly sensitive tool tuned to specific social and cultural realities. Compared to the past, we have greater technology and education resources, then the challenge will be to have a clear understanding of how to wisely, flexibly, and effectively use and manage them, and how to sustain several and differentiated communication and collaboration channels open worldwide, with the aim of building and feeding a real sense of global feeling.

5. Thriving from Complex Systems by a Quantum Understanding of Education

But cascading changes in our global social systems do not always have to be so pernicious like COVID-19. Some might be virtuous, and it is here that we can glimpse those silver

linings. Today's emerging pandemic could help catalyze an urgently needed tipping event in humanity's trust, collective moral values, priorities and sense of self and community. It could remind us of our common fate on a small, crowded planet, a shared spaceship with dwindling resources and fraying, limited natural systems, where each crewmember must make a strong contribution to save our "Apollo 13" mission: to guarantee a sustainable future to our children and the children of our children.

We will not address this challenge effectively if we retreat into our tribal identities and try to wall ourselves off from each other, perpetuating dysfunctional, outdated, mechanistic, reductionist ways of seeing and doing that are part of the problem and not of the solution. COVID-19 is a collective problem that requires global collective action, just like climate change mitigation and global biodiversity loss. Even more effectively, as with climate change and biodiversity restoration, we need the best science we can muster. A 2015 study in the journal *Nature* offers the strongest evidence yet that biodiversity strengthens ecosystems, increasing their resistance to extreme climate events and improving their capacity to stem climate change (Isbell et al., 2015).

Many interdisciplinary, multidisciplinary and transdisciplinary initiatives are under way (Fiorini, 2017b). Here, we offer five examples. The first one is represented by the New Engineering Education Transformation (NEET) initiative at MIT (started in 2017). Offerings are structured as threads built around wider topics of social relevance, e.g. Energy, Digital Cities, Smart Materials, Autonomous Systems. Curriculum is multidisciplinary and contextual, project oriented. The stated vision is to teach how to design and build a new generation of machines, materials, and systems to address the complex societal challenges of the 21st century.

The second one is by The Singapore University of Technology and Design (SUTD) in Singapore, a globally pioneering programme set up in the late 2000s in cooperation with MIT. The programmes offered are structured in "Pillars" and curriculum is delivered through multidisciplinary design projects, which contextualize learning.

The third example comes from the findings of the SHAPE-ID EU H2020 project (ongoing) whose stated aim is "to address the challenge of improving interdisciplinary cooperation between the Arts, Humanities and Social Sciences (AHSS) and STEM (Sciences, Technology, Engineering and Mathematics) and other disciplines". Their recent report identified 25 factors that hinder (or help) transdisciplinarity, broadly classified as institutional, disciplinary and epistemic (SHAPE 2019 Report). Fundamentally, the change must be top-down with a transformation of research funding programmes, accreditation, university structures and career paths. The H2020 programme is a good example of science policy: social impact and integrated system thinking (which goes beyond just interdisciplinary collaboration) are basic requirements in most projects.

The fourth example is offered by the East, from which the present pandemic spread. China has created a network of 10 research institutes in different universities with the common theme of "Ecological Civilization". The network is directly reporting to the highest level of

Chinese authorities, and the goal is to bring ideas to the top to be adopted in the next 5-year plan for practical implementation of the concept of "Ecological Civilization". This is done "à la Chinoise", a sort of enlightened despotism with which we are not in love in the Western world but which seems to be working for their purposes.

The Club of Rome is the fifth and last example of interdisciplinary system and integrated thinking. Founded in 1968 at Accademia dei Lincei in Roma, Italy, the Club of Rome consists of current and former heads of state, UN bureaucrats, high-level politicians and government officials, diplomats, scientists, economists, and business leaders from around the globe. If we look at what happened from 1968 to the 1980s, the period produced a shift in thinking which was actually being adopted by many levels of the establishment at least in the Western world, until Reagan and Thatcher arrived. Since its foundation, it has produced more than 65 reports, declarations and statements. It might be assumed that the reports of the Club of Rome, as a set, constitute the reference points on a map for governance in the future. The report on "The Limits to Growth*"* was intended to serve that purpose to some degree. Many more reports since "The Limits to Growth" indeed constitute markers for such governance. Given that the Club of Rome initiatives of the past, and the bifurcations, together reflect a primarily Western bias, the emergent role of China on the global scene suggests the special merit of giving some consideration to frameworks emerging from that culture.

Fundamentally, the change must be top-down with a transformation of research funding programmes, accreditation, university structures and career paths. To be fully successful, all these efforts must be supported by effective catalytic strategies like the alignment of higher education goals with government goals and strategic investments. This is a particularly important factor to consider as the center of gravity in SET education is shifting to the emerging economies and powerhouses of Asia and India.

Furthermore, new accreditation and assessment frameworks and methodologies for delivering student/project-centered active learning to large student cohorts, with international integrated programmes to offer global perspectives and awareness to students must be made mandatory. Such new disruption with respect to the structured education of the past requires a new generation of faculty with the capacity to deliver student-centred curricula at scale and new university structures. European higher education also faces the major challenge and the ensuing opportunities of globalization and accelerated technological developments with new providers, new learners, and new types of learning.

Such disruption requires a new generation of faculty with the capacity to deliver student-centred curricula at scale and new university structures. "Student-centred learning and mobility will help students develop the competencies they need in a changing labour market and will empower them to become active and responsible citizens" (Bologna Process 2009, p. 1). Current universities are still by large siloed monodisciplinary structures which are unable to get full advantage from new communication technologies and digital transformation. This creates barriers and prevents evolution. Interdisciplinary teaching is underpinned by interdisciplinary research. Furthermore, faculty appointment and promotion systems must be radically changed to encourage and consider interdisciplinary research by young scientists.

During the mid-20th century there was a surge of interest in how children learn, especially after WWII. Maria Montessori first and Loris Malaguzzi later, like their American, Swiss, and Russian contemporaries, emphasized active learning, problem-solving, and self-discovery as critical components of early childhood development and education. Europe has been a rich source of many influential educational ideas. In elementary and early childhood education, two of the best-known approaches with European origins are Montessori and Reggio Emilia. Both are seen as strong educational alternatives to traditional education and as sources of inspiration for progressive educational reform.

The two programs have several key areas of similarity and complementarity. Both are child-centered approaches in which children are viewed as active participants in their own development, strongly influenced by natural, dynamic, self-correcting forces within themselves, opening the way toward growth and learning. The Montessori Method and the Reggio Emilia approach have much in common. Their similarities make it possible to blend them. It is their differences, however, that make combining them so effective. The synthesis of these two philosophies creates an educational method that best develops the whole child. Their integrated approach supported by the digital transformation can create a flexible and effective fast learning environment to explore and nurture future leadership.

While humanity waits on tenterhooks for treatments and vaccines, we need to rebuild our collective trust in new educated scientists in the anthropic scientific method (Meißner, 2015), and scientific findings, based on a deep quantum understanding (Walleczek et al., 2019) of our common shared reality. According to one definition (Echterhoff et al., 2009), shared reality is the product of the motivated process of experiencing a commonality of inner (mental) states (e.g., attitudes or judgments) with others about the world. It is thus conceptualized as an interpersonally achieved, subjective psychological phenomenon which is the common approximated representation of the shared external world representation (Hardin & Higgins, 1996; Higgins, 2019). The beautiful interlocking connectedness of the laws of physics indicates how finely tuned and remarkable the universe is, which proves that the universe is more than just random chance. According to this line of thought, social institutions are shared agreements of the consciousness of individuals, and money is simply a token of trust. It is only a symbol for productive capacity and public trust, not a thing in itself of any inherent value. Individual personality and social culture are interdependent expressions of a unified reality.

Physics does not change, but what is popular in physics does change, and old physics gets rebranded as new physics continuously, till a real "tipping point" materializes. As an example, traditional quantum computer is the research topic "*du jour*". What we call qubits are nothing more than the two-level systems such as spin-1/2 and two-level atoms physicists have studied since the dawn of quantum physics. We must be very skeptical of doing what is trendy and popular because then you are just playing the acclaimed, so-called "leader of the moment" game. Everyone jumps into the field all doing more or less the same stuff because that is where the funding is and that is the easiest way to publish papers.

Our current vision of social reality is based on an erroneous separation of consciousness and force, created by the obsolete, reductionist Newtonian paradigm, which we were educated

with. A quite limited precision and polarized rendering of our universe. In fact, the classic scientific method evolved during the Enlightenment as an impartial, "objective" means of validating truths of natural phenomena freed from the distorting influence of the physical senses, personal belief, superstition, religious dogma, preference and prejudice. It proved ideally suited for a study of material objects and processes that lent themselves to external, finite and precise observation and analysis, apparently.

"Human accomplishment is the product of subconscious and conscious perceptions and forces that are influenced by past events, present perceptions and future possibilities. The reunification of these three dimensions of time into a triple time vision will mark an important contribution to the emergence of the new anthropic scientific method."

But over time the focus of early science on the study of external manifestations of "The Real" (Johnston, 2013-18) gradually morphed into the notion that only phenomena which can be instrumentally measured can be approached rationally and scientifically. Eventually many scientists began to speak and act as if the subjective dimension were somehow less real than the shared manifestations. The study of subjective forms of reality was confuscated by the distorting and unscientific notion of personal preference and prejudice (Jacobs et al., 2014). That which is not observable or measurable as an object came to be regarded as somehow less real than external material things.

The traditional notion of value-free science (Newtonian science) artificially divorced us from the living laboratory in which we live and blinded us to the implicit values that frame our perception (Viceconti et al., 2020) of "The Real" (Johnston, 2013-18). For instance, the development of the technology for social organization lags centuries behind the development of material technologies. What is the value of a perfect theoretical model for decision-making if it does not provide guidance for public policy and private enterprise? Human directed energy becomes force. Force organized becomes power. Power expressed through knowledge, skills, positive attitudes and values is converted into productive results. So, we place our own hope in the possibility of virtuous cascades of such positive, "normative" change, based on contributions from emotional crowdsourcing and crowd-inclusion initiatives, facilitated and amplified by new communication technologies, for convenient and sound solution materialization.

We offer five examples, first recalling the 2006 Netflix Prize which utilized crowdsourcing to develop an innovative solution to improve its recommendation engine. The process lasted 3-years and attracted more than 44,000 submissions. (*https://www.netflixprize.com/*); second, the Serious Games and Participatory Simulation Development to provide input for policy innovation so that stakeholders can obtain a holistic, future-

oriented perspective (*https://ieeexplore.ieee.org/document/6465051*); and then the Internet Engineering Task Force (IETF) RFC System (Request for Comments) and Internet Drafts which has shaped and continues to shape the development of the Internet (*https://www.ietf.org/standards/*). The fourth example is the Crowdsourced Protein Simulation Project that exceeds supercomputers' power. Folding@Home, currently focused on deciphering the workings of SARS CoV-2, is the first project to have exascale-level computational muscle. The number of Folding@Home participants surged from 30,000 in February 2020 to 400,000 in March, and has since increased by a further 300,000. *Ars Technica* reports that it now has a peak performance of 1.5 exaFLOPS, making it seven times faster than the world's most powerful supercomputer. Folding@Home's distributed disease-busting network is now running at over 1,000,000,000,000,000,000 operations per second, at least one or two years before Intel, AMD, IBM, or Cray could do it! The fifth and last example is centred on open data and open source software initiatives combined with crowdmapping. All over the world, organizations are increasingly considering the adoption of open source software and open data. In the geospatial domain, this is no different, and the last few decades have seen significant advances in this regard. A recent review focused on the Open Source Geospatial Foundation (OSGeo) software ecosystem and its communities, as well as three kinds of open geospatial data (collaboratively contributed, authoritative and scientific), confirms that openness has changed the way in which geospatial data are currently collected, processed, analyzed, and visualized (Coetzee et al., 2020).

Global open source geospatial software and open geospatial data communities support the United Nations Charter (UNCUN, 1945), e.g., by achieving "international co-operation in solving international problems of an economic, social, cultural, or humanitarian character" and can facilitate that "All Members shall give the United Nations every assistance in any action it takes in accordance with the present Charter," e.g., humanitarian and peace-keeping actions that require the use of geospatial data. Open data and open source software in a technological and hyper-connected world are, together with the other dimensions of openness offered by the Open Knowledge Foundation, one possible barrier against a society of control. Open source geospatial software and open geospatial data are here to stay and are likely to have more impact in the future.

Furthermore, a new type of social governance has arisen; one enabled by the Industrial Internet of Things (IIoT). Governments now actively engage partners to improve the efficiency and quality of municipal services. Empowered by digital tools, communities and people are active stakeholders in social governance. Co-governance, involving multiple participants, is emerging as a new model for today's increasingly complicated society.

For instance, the "Health QR Code" lets users submit information regarding travel to major epidemic outbreak regions and details about close contact with infected people and other relevant information. A three-colour scale indicates the person's recent virus-related health history, enabling them to cooperatively comply with virus-related prevention and control policies. The industrial Internet provides a fundamental infrastructure for empowering individuals and organizations. Enterprises, government and individuals have all actively

engaged in the war on COVID-19 through this technology and the advantage this creates has helped China almost stop the outbreak.

"The ultimate problem we face today is not the coronavirus, or deadly pathogens, or any other single threat. It is our inability to solve most of the shared existential challenges we face."

The coronavirus emergency is already causing terrible human suffering. But it is also just possible that it could set us on a far better path in the future. It is up to us (Homer-Dixon, 2020). For conscious human beings, the future already exists in the form of our aspirations, expectations, imaginations, perceptions, hopes and fears. Unlike rolling stones and falling apples that are propelled by the past into a future course, human beings are moved to act in the present according to their anticipation of future outcomes. Human accomplishment is the product of subconscious and conscious perceptions and forces that are influenced by past events, present perceptions and future possibilities. The reunification of these three dimensions of time into a triple time vision will make an important contribution to the emergence of the new anthropic scientific method.

Art has the power to move beyond representation and critique into work that directly enables communities to effect change, both in attitude and in action*,* as the breathtaking piece by Flyntz and Chianese shows (2020). As a collective catalyst for technological, social and political change, art is unique in its capacity to provide the tools and platforms for community members to represent their own experiences and aspirations, to enable visionary thinking and practice, and to bring communities together to engage in challenging conversations that can lead to advocacy, action, and change. A marvelous example is the movie directed by Arthur Kanegis, written by Garry Davis, titled "The World Is My Country" (2017). Some artwork directly catalyzes social action; other works prompt reflection and create the opportunity for people to consider the kind of future they want to create. Art can also deepen our understanding of social issues in powerful ways and provide a means for self-representation.

There is an increasing amount of scientific evidence that proves Art enhances brain function. It has an impact on brain wave patterns and emotions, the nervous system, and can actually raise serotonin levels. Art can change a person's outlook and the way they experience the world. Decades of research have provided more than a sufficient amount of data to prove that artistic education impacts everything from overall academic achievement to social and emotional development and so much more. Research has proven the arts develop neural systems that produce a broad spectrum of benefits ranging from fine motor skills to creativity and improved emotional balance. Quite simply, the arts are invaluable to our proper functioning individually and as a society.

The one essential facility we possess for the study of our individual and collective humanity, indeed for the study of all reality, is the power of the human mind and

consciousness. Our capacity to effectively utilize that power of knowledge depends very much on our understanding of its characteristics, modes of operation and its limitations. As is the consciousness, so is the power. Limited precision representation and knowledge means limited power for accomplishment. The future of science requires that we focus much greater effort on understanding the workings and limitations of the human brain in representing "The Real", solving the logical relationship between experience and knowledge extraction from it.

This also means to clear the field from any misleading misconception or misunderstanding, placing emphasis on Art as a process (root) more than on the aesthetic quality of the products (final result). Assuming unpredictability as a substantial part of the process, Art shows itself as an open field, has the ability break down and recombine even consolidated standards. Although it makes use of them all, it can be analyzed from their points of view. Art as a process should not be confused with traditional Science, Techniques or Humanities. Thanks to its holistic approach, not sensitive to the disciplinary barriers, and having no pre-fixed channels to follow, it can uninhibitedly cross any set of disciplinary fields, realizing a sort of "sui generis" or "subconscious transdisciplinarity", sometimes showing the world under a totally unexpected light.

Although it is to be "handled with care" and not directly translated into SET until reaching a deep sense of understanding reality, its unique status may offer interesting cues, and an extraordinary wealth of millenary experiences, profitable to be investigated and processed by appropriate intelligent systems, as well as by human intuition. As Kant observed, "All human knowledge begins with intuitions, proceeds from thence to concepts, and ends with ideas." Einstein stated it this way: "The intellect has little to do on the road to discovery. There comes a leap in consciousness, call it intuition or what you will, and the solution comes to you and you don't know why or how."

Scientists of all stripes should work together to multiply their intuitions and to improve public health, and none should mistake a professional tendency or a specialist's rule of thumb for an unshakable epistemological principle. We must talk of the world. We all need each other's help right now. It is clearer than ever that none of us will be safe until all of us are safe. As former President Ellen Johnson Sirleaf, who beat Ebola in Liberia, put it: "Coronavirus anywhere is a threat to people everywhere." It means stopping this virus from exploiting the inequality between rich and poor people in every country.

While the richest of countries across the globe are getting tested and treated fast, with healthcare and cash to get by, most of humanity faces this crisis with neither. The time has come for a massively ambitious plan to overcome this crisis, on a scale we have never seen before in our lifetimes. We cannot wait. Every government, institution and person must play their part. And the richest and the most powerful among us must bear the greatest cost, as we play our part to bring our world together to beat this deadly virus.

Looking at these challenges collectively makes it increasingly clear that the ultimate problem we face today is not the coronavirus, or deadly pathogens, or any other single threat. It is our inability to solve most of the shared existential challenges we face. We have not been able to create an empowered global public health system to protect ourselves from deadly

pandemics, a global environmental authority to coordinate efforts to save our planet, or a mechanism to prevent the widespread diffusion of weapons of mass murder, all for the same reason. In each of these areas, the narrow interests of our specific nations overpower our collective needs as members of one species sharing the same planet. Our national political leaders have failed to protect us not because they have not done their jobs but because they have precisely done the job we hired them to do.

"Human life cannot be wholly understood in terms of generalizations and statistics, we need to take into account the role of conscious individuality in human affairs."

We must always keep in mind that the pursuit of science itself is entirely a human activity with its own technological, sociological, cultural, mental, psychological and spiritual dimensions. As an example, take The European Organization for Nuclear Research (CERN) (Streit-Bianchi, 2018) and the Joint Institute for Nuclear Research (JINR) which are considered to be the most successful global scientific and technological organizations. CERN is the largest laboratory for particle physics and nuclear physics in the world. It was founded in 1954 by 12 European states, and is located in the vicinity of Geneva at the Franco-Swiss border. Today, CERN includes 23 member states and eight associate member-states. Japan, Russia and the USA have the observer status in it, together with UNESCO, the European Commission and JINR. In 1956, 11 states founded JINR in Dubna, Moscow region, Russia. CERN and JINR have been successfully demonstrating advancement and excellence in science and technology at the global level for more than 60 years. Besides, they have been providing the cultural bridges between numerous states worldwide and enabling them to successfully practice diplomacy through science.

Cooperation between the member states within the two organizations is going on via groups of scientists from the states integrated into the organizations' projects, and companies from the states specialized not only in accelerator and nuclear technologies, delivering advanced technology goods and services to the organizations, i.e., providing industrial returns to the states from the organizations, in many cases by a considerable technological know-how transfer. Such a two-way cooperation ensures continuous concrete contributions to both scientific and technological developments of these states. This example of global cooperation, founded on a direct connection of basic science and high technological development, is unique. It proves that it is possible to carry out jointly national and global interests, irrespective of cultural and ideological differences.

Sri Aurobindo depicts human social evolution as a progressive dance between rising levels of consciousness and rising levels of organization. "Life evolves through growth of consciousness. consciousness evolves through greater organization and perfection of life: a greater Consciousness means a greater life" (Sri Aurobindo, 1970). Biology, culture, and society are dependent at all levels on the vitality of interaction they produce both internally

and externally. Gregory Bateson said, "The evolution is in the context" (Bateson, 1972-2000). So why don't we have a word for mutual learning in living contexts? Nora Bateson is proposing "Symmathesy" (Noun): an entity composed by contextual mutual learning through interaction. Our process of interaction and mutual learning takes place in living entities at arbitrary multiscale levels of symmathesy (Bateson, 2015).

6. Digital Frameworks and Collaborative Innovation Platforms

Many twenty-first-century challenges we have to manage, like the present digital transformation, the Fourth Industrial Revolution, the Internet of Things (IOT), Brain Computer Interfaces (BCI), etc. have social components and cannot be solved by technology alone. Technosocial or sociotechnical interactive systems, be they social or economic systems, artificial societies, or the hybrid system are made up of our virtual and real worlds. Mixed, hybrid, and shared realities built by symbiotic autonomous systems (SASs) and digital twins are characterized by a number of special features, which imply additional risks; the components (for example, individuals or SASs) take autonomous decisions based on (uncertain) future expectations.

As its name suggests, a digital twin is a virtual replica of an object, being, or system that can be continuously updated with data from its physical counterpart. Supported by an estimated 25 billion connected global sensors by 2021, digital twins will soon exist for millions of things. A jet engine, a human heart, even an entire city—eveything will have a digital twin that mirrors the same physical and biological properties as the real thing. The implications are profound: much more precise real-time assessments and diagnostics; repairs literally executed in the moment; and innovation that is faster, cheaper, and more radical. They produce and respond to complex and often ambiguous information. They have to face cognitive complexity. They have individual learning histories and therefore different, subjective views of reality.

Human individual preferences and intentions are diverse and imply conflicts of interest, competition, solidarity, and cooperation. The behaviour may depend on the context in a sensitive way. For example, the way people behave and interact may change in response to the emergent social dynamics on the macro scale. This also implies the ability to innovate, which may create surprising outcomes and "unknown unknowns" through new kinds of interactions. Furthermore, social network interactions can create social capital such as trust, solidarity, reliability, happiness, social values, norms, and culture. The potential power of society is not subject to any inherent limits.

Human capital and social capital are potentially limitless resources. The more we develop them, the more they grow and the greater their capacity for further development. Nevertheless, to assess systemic risks fully, a better understanding of social capital is crucial. Social capital is important for economic value generation, social wellbeing, and societal resilience, but it may be damaged or exploited, like our environment and biodiversity. Thus, the world is confronted by the paradox that vast underutilized social capacities exist side by side with persistent poverty, suppressed rights and unmet needs. Therefore, humans need to learn how to quantify and protect social and common capital in a conscious way first. It is important

to stress that risk insurances today do not consider damage to social capital. However, it is known that large-scale disasters have a disproportionate public impact, which is related to the fact that they destroy social and common capital. By neglecting collective and social capital in risk assessment, we are taking higher risks than we would rationally do.

For today's anthropogenic system, predictions seem possible over short time periods but only in a probabilistic sense. Having all the data in the world would not allow one to forecast the future. Human life cannot be wholly understood in terms of generalizations and statistics (Taleb, 2012); we need to take into account the role of conscious individuality in human affairs. Nevertheless, one can determine under what conditions systems are prone to cascades or not. Moreover, weak system components can be used to produce early warning signals. If safety precautions are lacking, however, spontaneous cascades might be unstoppable and become catastrophic. In other words, statistical predictability and controllability are a matter of proper systems design and operation.

In fact, we need to consider both global and local phenomena and effects, and their reciprocal influences, something that the global digital network may help us to monitor and manage. The data flows recorded and processed would form a permanent and self-updating system. The dynamic retention of data on the network would continuously increase the overall amount of information necessary to statistically simulate future customized scenarios, that is, locally efficient scenarios consistent with the global conditions, and to update them or react to them in a reasonable time-lapse.

The digital transformation we are currently experiencing has necessitated a retooling of the scholarly processes to handle data and software, but this is proceeding at varying speeds across different communities, disciplines, nations, and governments. Today we have a new way of solving really big, hard, complicated problems at a scale, and with a degree of collaboration that was never possible before, but we have still to learn how to manage those resources to let them offer us their best returns.

The collaborative innovation approach for social technology assessment at the government level is not a new idea since the creation of the U.S. Office of Technology Assessment (OTA) by the United States Congress in 1972. This concept was copied in about forty foreign countries and then it was shut down by Newt Gingrich (Republican party) in 1995. The justification was that there is no need to assess the socio-environmental impact of technologies on society because the market already does that. This is the usual neo-liberal economic ideology which of course still rules the Republican party in the USA today. During its twenty-four-years, the OTA produced about 750 studies on a wide range of topics, including acid rain, health care, global climate change, and polygraphs. Princeton University hosts The OTA Legacy site, which holds "the complete collection of OTA publications along with additional materials that illuminate the history and impact of the agency". On July 23, 2008 the Federation of American Scientists launched a similar archive that includes interviews and additional documents about OTA.

A major reason why the OTA must be revived is the accelerating pace of technological innovation, in countries such as China. To illustrate this, we need to assess the effect of AI

(whether advanced in the U.S., China, Israel or elsewhere) on the destruction of jobs; the safety of driverless autos; the morality of the use of CRISPR for genetic engineering; facial recognition as a public safety tool; the impact of social media on democracy and society; and much more.

While the OTA was closed down, the idea of technology assessment survived, in particular in Europe. Formally established in 1990, the European Parliamentary Technology Assessment (EPTA) network coordinates members of technology assessment units working for various European governments. The US Government Accountability Office (GAO) has meanwhile established a Technology Assessment unit, taking on former duties of the OTA. In 2010, GAO joined EPTA as an associate member. In 2019, GAO established a new mission team, the Science, Technology Assessment, and Analytics team, which has primary responsibility for technology assessments.

Today, technology aided collaborative innovation is an important ally in scientific knowledge management and distillation. For instance, to ensure no one is left behind through lack of access to the necessary tools and resources, Zenodo (developed by CERN) helps researchers receive credit by making research results citable and through OpenAIRE integrates them into existing reporting lines to funding agencies like the European Commission (EC). Citation information is also passed to DataCite and onto the scholarly aggregators. It is one of the major working examples of a digital platform for collective intelligence (CI) (Coin, 2020) and collaborative innovation (Fiorini, 2020), a phenomenon where a shared or group intelligence emerges from the collaboration and/or competition of many individuals.

If the coming period of innovation and creativity were to have one overarching theme, it would be "collaboration". Today the "3Cs" of an innovation culture are "Collaborate", "Communicate", and "Create", to develop creative leadership skills and put them to use in your personal life or work. Fostering a culture of innovation will allow you to harness the power of design thinking. You need to learn the process, tools, and techniques of design thinking to generate and validate ideas with and for your interaction subjects. Learn how to engage and collaborate with others for an organizational culture of innovation that is agile and human-centered. Develop the skills, mindset, processes, and actions needed to launch focused and strategic innovation for your work, and for your own life.

One of the most dramatic and not surprising outcomes of the global response to the coronavirus pandemic has been a surge in interactions via video meetings. What was before a corporate paradigm has become the only way for most of us to visually interact with each other. Since January 2020, Google Meet, Google Cloud's video conferencing solution, has seen its peak daily usage grow by 30x. In April, Meet hosted 3 billion minutes of video meetings and added roughly 3 million new users every day.

A new breed of business meeting is emerging, defined less by agendas and pie charts, and more by human connections. Some of these video interactions are clearly remote manifestations of a traditional business meeting or university lesson, as virtually all coworkers, customers and students meet remotely during this time. But in this new world of video interactions, meetings are more varied, as organizations everywhere establish new ways to interact with

each other, their customers, and the world at large. With video meetings, our challenging world is becoming more manageable, thanks to our ability to interact in a more human way, even though we are remote.

For instance, video conference app Zoom's usage has skyrocketed as people have turned to the free video conferencing service to stay in contact with friends, family, colleagues, and even their yoga teachers. But that increased usage has also made the platform a target for hackers, pranks, and harassment. In fact, as Zoom has surged in popularity due to increased usage amid the coronavirus pandemic, federal officials are now warning of a new potential privacy and security concern called "Zoombombing." The term refers to a form of cyber harassment reported by some of the app's users, who reported that some of their calls had been hijacked by unidentified individuals and trolls who spew hateful language or share graphic images. "Zoombombing" has become so prevalent that the FBI issued a news release to warn people of the threat. The FBI received "multiple reports" of video conference calls being interrupted by "pornographic and/or hate images and threatening language," the agency said in its release.

Federal officials urged those using video teleconferencing apps to exercise "due diligence and caution" in their cybersecurity efforts to help mitigate these threats. Both the FBI and Zoom shared some steps to help secure video conference calls and protect people from potential hackers or trolls. They recommend users to make their meetings private (Zoom has options to require a password, as well as a waiting room function to control who is allowed to join the call); avoid sharing the meeting link on public online forums; and limit screensharing to just the call's host. Luckily for those of us who prioritize secure communications, Zoom is not the only videoconferencing tool on the market who has seen its star rise. Cisco Webex has seen a huge surge in usage, as has Microsoft Teams and Google Hangouts and Meet.

Nevertheless, in our modern digital age, there are new exciting ways to interact with our audiences at Conferences and Events using Virtual Reality (VR) and Augmented Reality (AR) social platforms. Both can be strategically used to enhance the experience of event attendees visually while providing direct engagement to the host or sponsor. VR and AR are leading the way in creating unique and singular experiences for attendees. As the use and accessibility of this technology continue to expand, we should expect to see VR and AR make an even larger impact in the years to come. The advantage that AR has over VR is that the former is more accessible to consumers. Given that popular apps like Snapchat already use forms of AR and the iPhone X has AR functionality built into the software, the technology is becoming more available to users.

It makes sense to use VR and AR technology in a way that remains simplistic but still leverages its fascinating capabilities. VR social platforms can be used by businesses in any field, as their feature sets are not geared toward any specific industry. However, these tools are ideal for large companies with employees scattered all over the country, or even the globe, for the following reasons.

As a working example, in March 2020, the IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR) was converted into a five-day all-virtual event in response

to coronavirus concerns. It integrated video conferencing, video streaming, and online chat platforms into a custom-hosted version of the Mozilla Hubs shared virtual world platform. It successfully provided a seamlessly immersive, inclusive, and green experience to its expanded audience of over 2,000 registrants. Taking place entirely online, the event featured all of the content planned for the in-person event, including live-streamed presentations, invited talks, and panels, as well as poster sessions, demos, and a 3D user-interface (3DUI) contest hosted in a social virtual world, deftly utilizing some of the technology that would have been displayed at the conference itself, and creating and sharing its own social and birds-of-a-feather sessions, at ieevr.online.

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

Important environmental benefits were also incurred as a result of the virtual venue change, including reduced carbon impact from no flights. The conference experienced no food waste, as well as no paper waste related to the typical plastic and paper materials used for signage, collateral, and proceedings. According to "Achieving Zero Waste: A Study of 100% Diversion of Convention-Generated Waste", the average conference-goer generates 61 lbs. of waste at a conference, as opposed to 13.5 lbs. generated at home over the same time period (Mantz & Mantz, 2016).

In addition to the tragic human cost, the global pandemic has changed many aspects of our lives, and disrupted industries across the world. When an incident this large and disruptive occurs, it leaves an indelible mark on the people who live through it, not to mention on industry and society as a whole. If you are having trouble keeping up with the changes, hang on, even after the immediate danger of COVID-19 subsides, we are going to be looking at a radically different world. The tech industry showed its ability to step up and meet the challenges of the last few months. When all is said and done, we believe many companies and trends will only continue to accelerate.

While more and more employers have embraced letting their employees work from home in the last several years, we think the COVID-19 experience could represent a real paradigm shift, after the immediate danger recedes. After what basically amounts to the biggest work from home experiment the world has ever seen, we expect many will not be eager to return to the office. Additionally, some employers who may have been dragging their feet on WFH (Work From Home) will now see that it is possible.

Also moving forward, we believe most companies will need to have an explicit "pandemic plan", with the capability to get around 95% percent of their workforce out of the office and working remotely, if need be. An interesting side effect, though, may be the deceleration of

the so-called "open offices" that have become widespread and a return to cubicles, for the sake of hygiene and limiting the spread of pathogens throughout the workplace.

Furthermore, the potential of smart cities, 5G, and edge IoT has grown in response to COVID-19. While this might sound like multiple different sectors, the fact of the matter is that these areas, for the most part, depend on each other to function. These interconnected technologies are actually poised to go through some interesting, if not controversial growth in the coming years as a result of coronavirus. The government may soon have the technology to not only perform facial recognition scans in public places, but to determine, based on body temperature, who is likely to be carrying the virus. This will certainly raise a lot of big brother privacy questions, but as we have seen before, many people are sometimes willing to make compromises on civil liberties in exchange for perceived safety or for the sake of the economy.

7. Conclusion

Leadership ethics explores the relationships between leaders and followers and provides tools for those in leadership roles to bring ethics forward in organizations. It shows how leadership happens on a continuum from the personal to the formal, building from a leader's character and including actions the leader takes, with elements combining to render the impact the leader has. Going forward, for we are never going back, leaders must first ask how the cares and concerns of their employees and the cares and concerns of the people those employees care for are met. How do we return to an acceptable level of productivity and personal freedom while danger, currently in the form of a deadly virus we cannot see, and may not even know we have, lingers? How do we raise people's confidence and comfort in moving about safely?

Some current responses to COVID-19 based on existing policies and methods threaten to undermine democracy and human rights, underlining the absence of human-centered attitudes. Therefore, a new paradigm is essential. Its realization will require the commitment and active involvement of all of us. Human behavior is purposeful, even when it is intended simply for relaxation and enjoyment. Security, sustenance, wealth, status, power, knowledge, beauty, love and enjoyment, self-realization and spiritual fulfillment are common human pursuits, synthetized by the new perspective of the global wellbeing approach. In 1943, Maslow defined a hierarchy of needs (Maslow, 1943). Lasswell grouped them under eight categories of values which human beings seek to realize: power, enlightenment, wealth, wellbeing, skill, affection, respect, and rectitude (Lasswell, 1948), to which Nagan adds a ninth, aesthetics (Nagan & Haddad, 2012; Jacobs et al., 2014).

Knowledge without capital is nothing. Capital without knowledge is a disaster! The mental tendency to divide reality into contrary polar opposites by dichotomization results in a continuous clash between mutually exclusive contradictions that resolve into complementarities at a higher level. As Carl Jung suggested: "Everything needs its opposite for its existence. The indivisible, whole being that the Individual is, is made complete when he accepts and integrates all aspects of his personality, realizing in the process that contradictions are complements" (Jung, 1938-2018).

It will be a twenty-first-century global leadership challenge to learn how to turn these understandings into practical, convenient solutions at the social level and how to trigger the positive sides of cascade effects through active wisdom. In the book titled "Composing a Further Life: The Age of Active Wisdom," Mary Catherine Bateson shares the stories of men and women who are flourishing examples of this "age of active wisdom". Retiring no longer means withdrawing from life but engaging with it more deeply. She redefines old age as an opportunity to reinvent ourselves and challenges us to use it to pursue new sources of meaning and ways to contribute to society (Bateson, 2011).

These are acts of positivity that multiply and can also spread from person to person. In 2010, researchers from the University of California at San Diego (UCSD) and Harvard published the results from their experiments in an article titled: "Cooperative behavior cascades in human social networks" (Fowler & Christakis, 2010). They showed that cooperative behavior can be just as contagious as bad behavior. They showed that positivity can spread from person to person, up to three degrees of separation, with random acts of cooperation, generosity and other positive behaviors. This creates a cascade of cooperation that influences dozens of people who were not involved in the initial trigger event. The results suggest that each additional contribution a subject makes to the public good in the first period is tripled over the course of the experiment by other subjects who are directly or indirectly influenced to contribute more as a consequence. Likewise from GAMSS, positive cascades can produce a large-scale coordination of traffic lights and vehicle flows, or promote the spreading of information and innovations, of happiness, social norms, and cooperation.

Taming cascade effects could even help to mobilize the collective effort needed to address the challenges of the century ahead. "The best way to predict your future is to create it". Abraham Lincoln, 16th President of the United States of America, and countless others have uttered some variation of this quote. That statement was true when Honest Abe first said it, and even more true today, when the world is a whole lot less predictable than it was. "Honest Abe" was a nickname that Abraham Lincoln embraced with pride. He believed in his own integrity and worked diligently to maintain his reputation as an honest politician and lawyer, something that was not always easy in either of those fields. It gives a nod to the problematic issue of predicting our future today, if we add a complex "together" to it.

In fact, looking at our goal to focus on the Global Leadership Challenge in the 21st Century with an integrated and strategic science, engineering and technology (SET) perspective, it seems that we can agree on some pivotal points, such as the need for a transdisciplinary approach to SET, including the contribution of Art regarded as a human process, together with the need for appropriate intelligent strategies enabling the understanding and the enhancement of the local identities behind globalization. In order to figure out realistic and reasonable sets of customized local scenarios consistent with/influencing the global scenario and its evolution and mutations, a strong technological support to sustain easily collective intelligence and collaborative innovation is needed. In this process, the further advantages offered by the synergistic power of the Internet of Web, the Internet of Things, the Internet of Places, considered as a system, are clear.

In this perspective, the leadership agenda may fix some basic steps, from mapping the geographic cultural contexts, to setting the digital network and opening the communication channels worldwide, engaging local institutions to implement the databases, and defining strategies for intelligent data processing aiming at predicting and updating local and global interacting scenarios. A simple chain to be described in the paper, which the worldwide scale of the expected applications makes tremendously complex, not only in terms of policy making and data management and time, suggesting that the appropriate connection between theory and praxis, and its "customization" in the various geographic contexts of life, will be the most challenging point to reach. However, the Leadership we are aspiring to does not have any chance to be realized without SET being supported by Art, and we have no chances to feed SET without setting human-centred education and lifelong learning as priority points in the 21st Century Agenda.

Whether we like it or not, we have been born on this earth as part of one great family, of one large crew. Rich or poor, educated, or uneducated, belonging to one nation or another, ultimately each of us is just a human being like everyone else. Furthermore, we all have the same right to pursue happiness and avoid suffering. When we recognize that all beings are equal in this respect, we automatically feel empathy and closeness towards others. Out of this comes a genuine sense of universal responsibility: the wish to actively help others overcome their problems. "Because we all share this small planet Earth, we have to learn to live in harmony and peace with each other and with Nature. This is not just a dream, but a necessity," according to Tenzin Gyatso, the 14th Dalai Lama (Gyatso, 1989).

2020 will be remembered as the year when we faced the greatest global crisis since the Second World War, and its impact will be felt for generations to come. For those of us who campaign for openness, our beliefs were already under threat before this outbreak in many different and challenging ways. Now, with disinformation becoming rampant, governments introducing emergency measures, and restrictions being imposed on people, our endeavour is even harder.

But there is hope. Openness is the way through which we will get through this global crisis. Open research and sharing data and information openly will likely lead to the creation of a vaccine in record time which will save lives hopefully. If ever there was an example of the importance of open knowledge to the public, here it is. We will get through this, and we will emerge on the other side of the coronavirus pandemic. When we do, our world will have changed. Our job is to make sure that the future we emerge into is a fair, free, open, and sustainable future.

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Civil Society and Youth Leadership for Transformation

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Abstract

This discussion paper looks at the current historical momentum and potential future development of civil society and youth leadership for a systemic transformation to a sustainable new civilization. It identifies emerging challenges, obstacles, and some of the innovative new leadership strategies that have been developed to overcome them. Civil society is central in the process of transformation in a dual sense: As the target of transformation— it is civil society at large together with governments and the private sector that must shift to sustainable practices in our daily lives,—and as an instigator of change—individuals, informal networks or organized groups of citizens specifically dedicated to promoting this transformation. This boundary between recipients and agents in society is fluid, as more and more people take action or join organized efforts to elicit a purposeful transformation.[1]

1. Introduction: Civil Society and Youth Leadership for Transformational Change

1.1. New Leadership Strategies: From Discourse to Practice

Our collective failure to effectively address today's unprecedented social and ecological challenges raises the prospect of a catastrophic collapse.[2] This failure is not surprising, however. Transforming the entire way of life of whole populations, at a time when we are only just beginning to experience the dire consequences of our unsustainable practices directly, requires extraordinary awareness, foresight and courage, especially from those who would lead the transformation. Transformative leaders thus require a capacity to effectively communicate the need for change to the public, and sensitivity in dealing with the realities and aspirations especially of people in developing countries.

Civil Society and Youth (CS&Y) organisations[3] have spearheaded efforts to raise consciousness of today's systemic challenges among the general public, and they are now

voicing their concern with ever-increasing urgency. An example is the *Bulletin of Atomic Scientists'* recent decision to move the so-called Doomsday Clock to just 100 (metaphorical) seconds before midnight, the worst assessment of global security in the clock's 75-year history (Kluger 2020). This begs the question: How much impact do such civil society actions have?[4]

The consciousness-raising efforts of CS&Y leaders have reached many global citizens, and certainly are noticed by those already convinced that the time for action is now. Success has been limited by the effect of a crisis-denying or crisis-ignoring counter-discourse, however, promulgated by vested interests and partisan forces with control of traditional mass media and substantial influence also over newer, digital and social media. This counter-discourse has found fertile soil in public sentiments of fear, distrust, unconscious change resistance, and justified resentments arising from growing inequality. A significant number of people in many countries thus continue to cling to an attitude of stubborn denial and prefer to put their faith in isolationist (anti-migration) and reactionary nationalism rather than in global cooperation and the UN's SDGs (Reuter 2018). Thus civil society initiatives to promote a transformation to sustainability generally find themselves operating in public spaces ever more challenged by a deluge of data, information, advertisement and entertainment.

Even those members of society who have been convinced of the need for transformation find it difficult in their own daily lives to extricate themselves from the systemic compulsions of prevailing cultural and economic orders.[5] This reflects a general lag between the growing momentum of progressive ideas in public discourse and the conservatism of practice within an essentially still neoliberal economic setting. Many CS&Y organisations have begun to realise they need to focus on transformations of practice, and for some this entails calls for a "Green New Deal." Such a new deal would provide a framework for unprecedented cooperation between sectors, and the approach would have to be peaceful, inclusive, demand-driven, rational, farsighted, compassionate and courageous in order to succeed. A business-as-usual approach with piecemeal adjustments to current policies and individual practices, based on a mere extension of conventional thinking, will not suffice this time.

The correct general strategy, in short, is to generate wide public support for the aspirational vision of a holistic transformation at a systemic level on the basis of a new discourse or 'narrative' of sustainability and sufficiency,[6] while moving increasingly from discourse toward transformative practice on the basis of a Green New Deal or 'eco-social contract'. The more difficult question is: What are the specific strategies or tactics that will empower civil society to do its part toward achieving the SDGs?

1.2. Contextualising the Role of Civil Society and Youth: Political Obstacles

The remainder of this discussion paper seeks to identify some of the innovative new strategies and forms of leadership that are emerging in civil society, a complex sector within which the younger generation are a subgroup especially affected by today's challenges, for three reasons: the extraordinary threat these challenges pose to this generation's future, the often-outstanding contribution of youth to innovation and transformations throughout human history, and the fact that today's youth are tomorrow's leaders.[7] In order to evaluate the

viability of any new strategies for transformation, however, it is important first to understand the obstacles civil society must overcome.

There has been much controversy about the meaning of 'civil society' reflecting protracted political struggles between those who would like to mobilise it and privileged groups who fear such mobilisation. Historically the term civil society can be traced to Aristotle's concept of the 'political community' (*koinōnía politikḗ*), which builds on the assumption that all social life is essentially political because everyone has interests. This concept was translated into Latin as *societas civilis* by the Italian humanist Leonardo Bruni during the Renaissance. In the tradition of Hegel, de Tocqueville, Marx and Tönnies, however, most modern social theorists have argued that a well-functioning civil society cannot simply be taken for granted. Rather, it is reliant on the provision of adequate civic education and freedom of political organisation (which is often lacking in reality). Robert Putnam (et al. 1994) later added that civil society also needs to organise itself well if it is to generate social capital in a non-partisan way, free of vested interests. This is how civil society is still widely understood in contemporary social science, namely as *the sum of all such public organisations and movements within a society that are capable of generating social power independently of the state and vested private interests*.[8]

There have been numerous cases of instrumentalization or co-optation of civil society organisations by vested interests, including, occasionally those of CSOs.[9] The need to ameliorate this risk has led to some interesting innovations. The anti-globalisation movement of the 1990s, for example, considered some of the more strictly organised and hierarchically governed CSOs at risk of becoming part of the machinery of neoliberal globalisation, distant from the concerns of ordinary people and sometimes outright corrupt (Klein 1999). The informal leadership of this movement thus rejected organisational development toward a fully-fledged CSO, though arguably to the detriment of the movement's efficacy and impact (Graeber 2012). All CSOs and even unstructured social movements are bound to interact with the state and business sector in some ways, but must nevertheless be able to defy external control if they are to genuinely voice the interests and retain the trust of the general public. A degree of organisation may thus be imperative for CSOs, and yet it is not conducive to reproduce the hierarchical structures of states and corporations. This dilemma is difficult to resolve. A range of different models can be observed, from fiercely independent CSOs to deliberately unstructured social movements. In many cases the difference is merely developmental, given that movements often evolve into more tightly organised CSOs over time, while many CSOs in turn aim to promote mass movements around the causes they champion. A more inclusive term, "civil society actors" or CSAs, will thus be used hereafter to designate this broader range of social initiatives, ranging from movements to organisations.

Another important development was that, under the neoliberal discourse of 'restructuring' that swept through many countries, civil society came to be more sharply distinguished as a 'third sector' whose primary role it was to relieve the state and business sectors of their duty of care toward the public, rather than to criticise any state or market failures such as the destruction of the natural environment or inequality.[10] By stressing the centrality of consumer choice in selecting "sustainable" products, liberal individualism implied that

control lies with the consumer and that social movements are unnecessary. The third sector's existence was also used to legitimise the dismantling of government welfare systems.[11] This triggered a push-back from CSAs such as the anti-globalization movement, which criticised the reductionist designation of civil society organisations as 'NGOs'.[12] Such battles over the meaning and purpose of civil society initiatives continue, and the status quo varies from one country to the next.

Have today's CSAs brought about a systemic transformation? Certainly not yet. CSAs have done much to prepare the ground for change but, much like other sectors, partake in the general societal failure to mobilise for a transformation to socio-ecological sustainability *with the speed and on the scale* this multidimensional crisis demands. For now, improvements made are not adequate to keep up with the escalating magnitude of the challenges outlined in the UN's Sustainable Development Goals (SDGs).

Internal disagreements in the sector are part of the problem, and need to be addressed.[13] More importantly, CSAs' capacity must be improved by employing innovative strategies designed specifically for transformative impact on public opinion and on practice. Some case studies of innovative CSA leadership are now discussed to bring us to the cutting edge of contemporary strategies, before looking to the future in the final section. Many innovations, it turns out, come from groups of young people unfettered by political entanglements, as was true also of other revolutionary transformations in history. Youth are prominent among many CSAs, and cannot be separated from them. Conversely, most youth movements also receive substantive support from adults.

2. Case Studies of Transformational Leadership in Civil Society

A few case studies may illustrate the potential as well as remaining limitations of recent and contemporary movements and organisations. The aim is to provide empirical case material from which we can deduce more general strategies for transformational leadership in this sector, and possibly beyond. Case studies were selected from across the spectrum of CSAs, ranging from unstructured movements to more highly structured CSOs.

2.1. Occupy Wall Street

This movement began on September 17, 2011, with a large protest against economic inequality held in New York's Wall Street financial district. Famous for its slogan "We are the 99%", the movement successfully thematized inequality as a direct consequence of plutocracy. The mysterious hacker community *Anonymous* then pushed the OWS meme into the mainstream media with a video communique endorsing the action (White & Lasn 2011). The protests attracted sustained media attention over several months as they spread to other cities and countries,[14] notwithstanding some 8000 arrests in the US alone.

As Michael Kazin (2012) noted, the movement espoused principles of direct action and direct democracy, rejected existing political institutions to the point of refusing to even direct any demands at them. *Occupy Wall Street* was ultra-egalitarian, deeply environmentalist, multicultural and scrupulously non-violent. Some innovative methods included the use

of social media to mobilise 'flash mobs' that proved difficult for police to counteract. Commitment to equal distribution of power (direct democracy) was demonstrated by refusing the establishment of an internal hierarchy or representative structures. OWS instead adopted mutualism, consensus and self-organization as its core principles.

> *"The shift in public discourse achieved by Occupy Wall Street movement was such that even the World Economic Forum, a peak institution of the 1%, picked up on the theme of inequality."*

The protestors, predominantly young people, managed to mainstream the discovery that inequality had been escalating dramatically after the neoliberal reforms of the early 1980s. Neoliberalism had been implemented in the US and UK under President Ronald Reagan and Prime Minister Margaret Thatcher, then spread around the world. The realisation that inequality had reached unprecedented extremes under neoliberal governments first came from the work of pioneering researchers, one of them Harvard University professor, Elizabeth Warren (2006), once a 2020 Democratic Party presidential candidate, and proponent (along with, if less ardently, Bernie Sanders) of a Green New Deal in the US. A later reinforcement came from Thomas Piketty's (2013) best-selling book, *Capital in the 21st Century*, which showed that enormous concentrations of wealth and power perpetuate and institutionalise inequality through the overwhelming influence of the 1% on national and international policies and actions, creating a vicious circle of impoverishment, while also enabling a reckless extractivist attitude toward nature.[15] The Global Financial Crises of 2008 in turn had highlighted the dangerous systemic risks caused by neoliberal deregulation and unbridled greed.

OWS as such is now largely inactive, but clearly it did not exist in isolation and its ideas live on. The core achievement of OWS was the mainstreaming of information already available in academic and activist circles, while in turn encouraging countless other academics to contribute to a growing mountain of data on inequality and thus keeping the discussion alive, long after the protests had ended. Labour unions and NGOs such as Greenpeace expressed their support, as did a number of leading politicians and intellectuals, including David Graeber and Slavoj Žižek. In short, a kind of "widening circle" emerged as Tellus Institute founder Paul Raskin had envisaged in 2011: "a global citizens movement (GCM) [that] would work on all fronts, comprehending the various struggles for the environment and justice as different expressions of a common project." (Raskin 2011)

The shift in public discourse achieved by this broad alliance was such that even the World Economic Forum, a peak institution of the 1%, picked up on the theme of inequality. In 2013 WEF founder, Klaus Schwab, suggested in an interview that neoliberal capitalism was threatening to devour itself.[16] At the 2017 Annual Meeting in Davos, the WEF's International Business Council (IBC, established in 2001) then issued a "Compact for Responsive and Responsible Leadership", signed by more than 140 CEOs. The compact (p.1) notes that

"society is best served by corporations that have aligned their goals to the long-term goals of society," and identifies the UN Sustainable Development Goals (SDGs) as the framework for measuring such alignment.[17]

Despite such ongoing admonitions from the implicated elites, OWS protest actions have not spelled the end of the prevailing political-economic order, nor spelled out how the broad aim of eliminating perverse inequality could be achieved. And while neoliberal ideology has been discredited in public and academic discourse,[18] the battle for a commensurate transformation of the political economy is still raging to this day. For example, many of OWS' ideas are being thematized in the 2020 US presidential election campaign.[19]

2.2. The Online Campaigners: MoveOn, Avaaz, Getup!, 350.Org & Similar Platforms

The impact of digital media on civil society's transformational potential and on its strategies of choice can hardly be overstated. This impact is so pervasive as to be almost universal, but it is most obvious perhaps among a group of CSAs that emerged around the turn of the millennium and specialised on raising public awareness and generating political pressure with online campaigning for a cluster of interrelated social and ecological causes. *MoveOn*, *Avaaz*, *350.Org* and *Getup* are among the most successful of these platforms.

MoveOn began as an e-mail group in 1998, created by software entrepreneurs Joan Blades and Wes Boyd for the purpose of a petition asking the US Congress to forego the impeachment of President Bill Clinton, which they saw as a distraction. The petition was very successful, gathering half a million signatures, and the couple went on to launch other campaigns, against the invasion of Iraq, for example. *MoveOn* also raised millions of dollars for Democratic candidates from Barack Obama to Bernie Sanders, and more recently gave support to Elizabeth Warren. While the platform thus has partisan, liberal progressive leanings, its methods were highly innovative and inspired other, more independent CSAs (Karpf 2009). *MoveOn* had combined net activism normally aimed at discursive change with practical political activism. Its website states that "MoveOn members are committed to an inclusive and progressive future. We envision a world marked by equality, sustainability, justice, and love. And we mobilize together to achieve it."[20]

One of the second-generation platforms inspired by this success was *AVAAZ*, of which *MoveOn* was a co-founder together with *Res Publica* and the *Service Employees International Union*. While various foundations funded Avaaz staff and start-up costs, the platform has not accepted donations from corporations or partisan foundations since then. Some remarkable victories have been achieved by *AVAAZ*, detailed on its website, foremost in raising public awareness of the climate crisis. Christiana Figueres, former Head of UNFCCC, is cited, saying "Avaaz has been fundamental to mobilising broad support for climate action. Thank you Avaaz, you are music!"[21] This is no exaggeration. *AVAAZ* has very strongly lobbied the financial sector (as have many others),[22] for example, pushing toward divestment from fossil fuels. *AVAAZ* often works in tangent with other platforms such as *350.org* to mutually amplify related campaigns. The latter was founded in 2008 by a group of university friends in the US along with Bill McKibben, who had written one of the first books on global warming for the general public.

The former advocacy director of *MoveOn*, Ben Brandzel, also helped disperse the new model. In 2007 he advised a fledgling Australian Internet platform called *GetUp!*, which has since exceeded the successes of *MoveOn* by becoming a major force for promoting a progressive agenda in this country. *GetUp!* "gives everyday Australians the chance to make extraordinary impact—online, across the airwaves, and in the streets," according to its website.[23] The greater impact of the movement is based on further innovations, such as stationing thousands of volunteers at election booths to inform voters on policy differences between major parties on key issues such as climate change. *GetUp!* also organises protests and crowd-funded advertising campaigns to put pressure on government and corporate leaders at specific moments when vital decisions are being made.

> *"Reminiscent of the famous fairy tale of her fellow Scandinavian, Hans Christian Anderson, The Emperor's New Clothes, Greta's action became an emblem of the powerful capacity of children to expose that which is obvious but still covered in denial."*

The case of the campaign platforms shows once again how closely interwoven the recent activities of different CSAs have been in practice, though they may also to some extent compete for funding and attention. They are, one could say, an "interoperative coalition of courageous individuals, and forward-thinking organizations that explicitly express their commitment to the aspirations of civil societies globally."[24] And once again, while participation is intergenerational, young people have been particularly prominent among the leadership of these platforms.[25]

2.3. Fridays-for-Future

The recent civil society movement that has become most iconic of youth leadership, however, certainly with regard to climate action, is *Fridays-for-Future* or *FFF*.[26] Despite the meteoric rise to fame of its intrepid founder, the movement—for better or worse—is decentralised and horizontalist in its organisation, akin to OWS and also to the French *Yellow Vest* movement (*Gilets Jaunes*).[27] The movement was inspired by a 15-year-old teenager, Greta Thunberg, who started a three-weeks vigil in front of the Swedish parliament to draw attention to the climate emergency in August 2018. Instagram and Twitter postings of her actions soon went viral and inspired many others to follow her lead, inspiring school strikes held predominantly on Fridays. Reminiscent of the famous fairy tale of her fellow Scandinavian, Hans Christian Anderson, *The Emperor's New Clothes*, Greta's action became an emblem of the powerful capacity of children to expose that which is obvious but still covered in denial. In this sense, FFF's success was the culmination of the work of numerous other CSAs, including those detailed above, which had made ecological and social injustices abundantly obvious by this time.

FFF is a dynamic global student movement comprising millions of passionate young activists around the world (the website lists contacts for 33 countries as of 30.1.2020) who

insist their voices must be heard on the defining issue of their generation. *FFF* also knows its limitations, however, and directly appeals to older generations to do their part. The website's 'about' section states: "*Fridays for Future* does not have the capacity or the competence to evaluate solutions. If you have a solution, we therefore urge you to send your contribution to those who do, so that it can be put to use." Many teachers, parents and scientists support FFF. The movement also cooperates with many likeminded other CSAs, for example, by re-posting videos produced by *Extinction Rebellion*, a movement founded in the UK in May 2018, and by the youth wing of the latter, founded in July 2019.[28] Unlike the *XR*, who employ a 'disruption strategy' reminiscent of Mahatma Gandhi's strategy of civil disobedience, such as provoking mass arrests with their spectacular and often highly artistic performances, *FFF* tends to evade direct confrontations with the state (and perhaps also vice versa) and adopts a 'shaming strategy'.[29] In 2019, *FFF* was chosen for the UNEP's 'Champion of the Earth'' award as well as Amnesty International's 'Ambassador of Conscience' award, while Greta gave speeches at the UN and *WEF*, was named *Time Magazine*'s person of the year, and nominated for the Nobel Peace Prize. Her status as a young high school student did not prevent her opponents from attacking her, but some distasteful attempts to ridicule her on *Fox News* and elsewhere seem to have backfired.[30]

Another, similarly 'gentle' approach is based on "incentive strategies," such as those employed by the *Forest Stewardship Council*. The FSC created a new reputational incentive for companies to gain a label certifying them as eco-friendlier than their competitors, are also effective: Nearly 200 million hectares of forest have now been certified by this organisation.[31]

2.4. Greenpeace

From humble beginnings as a small group of activists in 1971, protesting against nuclear tests, *Greenpeace* has continuously grown by adapting to evolving challenges and opportunities. Emblematic of a well-organised and tightly structured CSA, it is today an international NGO with 26 regional offices (each with its own board of directors) operating in 55 countries, more than 2,000 staff, 15,000 volunteers and 2.8 million members.[32] Independence is a core principle, and hence *Greenpeace* relies solely on individual contributions and does not endorse political candidates. It does not accept any form of violence as a method to achieve its goals. Greenpeace nevertheless believes in protesting through direct action, as this brings positive results and can inspire people and organizations to change their attitude towards nature. Current protest and strike actions focus on stopping deforestation for palm oil, sustainable food production, reducing the use of plastic, saving the Arctic from the effects of climate change and many other environmental causes at multiple scales. In doing so, the organisation often joins hands with partners operating at a national and local level.

Among many major successes for *Greenpeace*, an indicative recent case was the decision by TransCanada to abandon the Energy East tar sands oil pipeline and absorb a one-billion-dollar loss on the project in October 2017, after years of *Greenpeace* campaigning, demonstrations, often working in collaboration with First Nations, workers, local environmentalist groups

as well as international supporters. An internal report says that: "It was because we wrote letters, took to the streets and the banks, pressured governments and built broad coalitions that we were able to delay this project, and ensure that once the project's climate impacts were assessed even TransCanada recognized there's no place for Energy East in a climate safe world."[33] Strategies include volunteer training, tool kits for local groups of mainly young activists, and providing opportunity to such activists to launch their own online petition on a platform called GreenpeaceX. It is clear that *Greenpeace*, though nearly 50 years "old", has been able to renew itself intergenerationally, has kept up with cutting edge campaign tools, and still sees itself as part of a wider, evolving grassroots movement.

2.5. The Indonesian Farmers Union

It is easy to recognize the impact of organisations and movements that attract the attention of international media, but when it comes to transformational action on the ground there are many unsung leaders, especially in the developing world. An indicative example, relevant to SDG 2 (Alleviating Hunger), is a new movement of farmers for social justice and environmental sustainability in Indonesia (Reuter 2019). At the national level this broad movement is represented by new non-partisan mass organisations. The largest is *Serikat Petani Indonesia* (*SPI*, 'Indonesian Farmers Union'), founded at a national gathering in Sumatra in 1998, marking the rebirth of independent farmer organisations after 32 years of political oppression under the military dictatorship led by General Suharto. *SPI* is a federation of the countless small, local, independent farmer cooperatives that proliferated after 1998, and is fiercely independent. *SPI* sees public policy as hostile to farmers and serving the interests of a corporatized agroindustry. Conflicts with government agencies persist.

With 1.5 million members *SPI* has considerable political clout, enabling it, for example, to stage demonstrations or bargain directly with political parties. Through its branches on all main islands of the archipelago, *SPI* promotes sustainability, food sovereignty and ecological renewal—based on a blend of neo-traditional and modern organic farming methods,—as well as rebuilding local communities and economies. Human rights, land reform, fair trade and other agrarian justice issues are central preoccupations. Seed sovereignty is a priority too, and *SPI* thus has collected some 250 local rice varieties, which are shared and propagated through an ingenious seed multiplication scheme. *SPI* encourages organic production but not to maximise prices, as this would compromise the human right of low-income consumers to healthy food. Farmers instead benefit from 'going organic' by reducing input costs, vulnerability to pests and increasing long-term yields. The aim is to supply food directly from farmers to consumers, using social media or, increasingly, dedicated online platforms.

Farmer education and field schools teach preparation and use of organic fertilisers and pesticides; sustainable land management; prevention, identification and eradication of pests; crop observation; harvesting and storage; as well as organisational skills and human resources management. This education is continuous and long-term, peer-based and modular, growing exponentially as trainees become trainers. *SPI* instructors have also been flown to Vietnam and elsewhere with the help of an international farmers movement, *La Via Campesina*, to train fellow farmers there, who are starting similar movements for socio-ecological sustainability.

Given the strong cross-relevance of farming to other SDGs (including climate change, water, biodiversity conservation, poverty, education), national farmer CSAs in many countries and their global networks, such as La Via Campesina, are a major force for real, transformative change at the level of practice. Their work uses a combination of "entrepreneurial" and "community strategies" to achieve transformation, with tangible and growing success.

3. Trends and Strategies for Realising the Full Transformative Potential of Civil Society

3.1. Trends

Three basic trends stand out in civil society today.

First, the field for CSAs promoting ecological and social justice is a very crowded field indeed, with many thousands of organisations vying for influence at global, national, regional, and local levels. The overall number of CSAs has grown swiftly in recent decades. The 'Security & Sustainability Guide', a project of the World Academy of Art & Science, provides a partial list of organisations in this rapidly expanding field.[34]

Second, while this rapid growth creates an element of competition, the armada of today's eco-social sustainability CSAs does increasingly act in interoperative ways.[35] All are increasingly conscious of being part of a broader front for transformative change, despite a continuing element of fragmented thinking and competition for influence and funds. A recent report speaks of the emerging interoperable conglomerates of activism as 'Transformation Systems', whereby "A T-system comprises all those initiatives nudging a status quo system […] in a similar transformational direction. These efforts may operate alongside a status quo system [...] But T-systems are focused on change and innovation, compared with the status quo's emphasis on production and administration. They require their own distinctive identity, skills, and organizing space to operate."[36] Most of these conglomerates are still of a partial and transitory nature, but there is a growing incentive to achieve greater interoperability as CSAs become more desperate to achieve timely transformative action.

Third, we noted that most of today's interlocking T-Systems are powered by Civil Society and Youth Actors, who together oppose the alternative ideology of nationalism and climate change denialism peddled by the populist 'Alt-Right' movement (Hawley 2019) and its powerful captive state and private sector backers, in the name of conservative values and 'freedom'.[37] In some countries society has been drawn into a state of polarisation by these forces, while in others, particularly autocratic ones, a reactionary agenda has gained ascendency.[38] Much of this variability depends on how much support transformative CSAs receive from progressive elites and their leaders, as well as still independent and genuinely informative media.[39] From the perspective of science, the facts would seem to speak for themselves: systemic transformation has become a precondition for human survival. This sobering truth perhaps cannot be denied for much longer but for now the facts are still not being heard loudly and clearly enough to convince everyone, most likely due to inadequate outreach toward the general public (Marien 2019). CSAs and forward-looking members of political, corporate and financial elites are beginning to form a coalition of common

understanding around this truth, however, with some companies now changing their focus from shareholders to stakeholders, espousing ESG values (environment/social/government) or the "triple bottom line" (people/planet/profit). This is promising, as far as it goes.

3.2. Associated Obstacles and Solutions

In light of these trends, two core obstacles can be identified:

1. Rising fear within the broader society has the potential for violence. This fear must be met with a clear narrative and transparent plan of action that is scientifically sound, just and achievable. Dealing with a public that is feeling tired of mere narratives of change, CSAs would also be well advised to focus more on how to make tangible progress toward a sustainable future, on many fronts, and on thus re-building people's confidence. Some are doing just that, but possibly too late. As of late March 2020, the global COVID-19 pandemic has increased the level of fear, and limiting the crisis has become 'job one' for every government and leader on earth, and rightly so. Given today's situation and informed predictions of what is to come, the UN's 2030 Agenda has been thrown into disarray by the failure to prepare for such a global pandemic, despite repeated warnings from virologists. At the same time, a successful mobilisation to address this health crisis, could help build confidence in our collective ability to address also the much bigger climate and ecological crisis.

2. CSAs must continue their struggle against political change resistance from powerful reactionary actors and their determined, if often wilfully blind followers. Perhaps such resistance can also be reduced at its core if leaders do not obstruct or prevent a reverse 'restructuring' of the neoliberal, extractivist and polluting economy toward socio-ecological sustainability.[40]

The second issue begs the question: What will become of the naked emperor with his imaginary clothes? Hans Christian Anderson, wisely perhaps, left this moot question open:

> *"But he hasn't got anything on!" the whole town cried out at last. The Emperor shivered, for he suspected they were right. But he thought, "This procession has got to go on." So he walked more proudly than ever, as his noblemen held high the train that wasn't there at all.*[41]

The transformation that is now urgently needed will lead to the stranding of assets worth many trillions of dollars in the fossil fuel industry alone. There will be jobs that are no longer needed, and workers to be retrained or compensated, new industries to be built and jobs created, landscapes to be restored through regenerative agriculture and rewilding, all of which ultimately flows from a commitment to life-affirming values. If the emperor is to acquiesce to the truth and play a new game, however, it is likely to require a mix of negotiation and maximum pressure. CSAs may keep building the pressure, as they have been doing, until the emperor must relent, but it may also be that CSAs have already reached the limits of their social power, short of adopting revolutionary means and risking a coercive backlash from privileged actors. So far, CSAs like Greenpeace or FFF simply do not yet have the

numbers on the street to force the issue, even if they wanted to.[42] Perhaps the emperor(s) will start to look for a non-confrontational way out rather than risk reaching a political tipping point. For now, the procession continues, but as time runs short, the scope for avoiding confrontation narrows. For that reason, civil society must use this present time well to maximise its peaceful pressure tactics, some of which are listed below.

3.3. Specific Strategies or Tactics to enhance CSA capabilities

1. Develop innovative forms of decision making for civil society organisations that will empower collective action without producing new hierarchies. For example, WAAS Fellow Mariana Todorova has developed a blockchain-based digital tool (DG Agora) to enable precise and cost-effective decision-making consistent with the direct or 'liquid' democracy principles espoused by OWS and others. It serves to empower public companies, NGOs, political parties, governmental bodies or social movements with a novel cost-effective communication system that facilitates engagement with their shareholders, members, stakeholders or voters in an inclusive secure way in a spirit of liquid democracy.[43]

2. Consciously utilise interoperability through partnerships or alliances between CSAs pursuing similar causes, while also leveraging their different capabilities. For example, the *International Campaign to Abolish Nuclear Weapons (ICAN)* is a global civil society coalition working to promote adherence to and full implementation of the Treaty on the Prohibition of Nuclear Weapons.[44] *ICAN* is more impactful than the plethora of its constituent organisations working in isolation but also benefits from their diverse capabilities. Such cooperation will need to be intensified further in order to mobilise civil society protesters in a synchronised manner and in sufficient number to force political change.[45] Failure to mobilise, based on the false idea that "great progress is already being made," on the other hand, is likely to lead to the self-marginalisation and eventual collapse of CSOs (Marien 1983).

Take steps to bridge gaps between global goals and local community-based action through more partnerships between global and local CSAs and gaps between CSAs in the Global North and South (as Greenpeace is doing), as well as initiating more South-South partnerships (such as *La Via Campesina*).

1. CSAs with relevant experience and capability need to help equip local CSAs with modular training, tool kits and access to technology such as campaign or blockchain platforms, and condensed information packages such as MOOCs.[46]

2. Reorient online campaign networks from an exclusive discourse transformation focus toward the transformation of practice, for example, through voter education, product or company boycotts, divestment campaigns and behaviour-change pledges (for example, GetUp! campaigns, but also the UN's Global Compact for companies and cities).[47]

3. Combine and cross-amplify the effect of CSA tactics such as the 'shaming, disruption and incentive strategies' discussed above, and consider peaceful civil disobedience tactics in the tradition of Mahatma Gandhi.

4. Use global CSAs media reach to publicise successful local transformative action in communities (e.g. farmers and small entrepreneurs) so as to provide knowledge transfer and inspire other communities worldwide to follow their example.

5. Create partnerships with engaged academic actors such as WAAS, to ensure claims made by CSAs are in line with the latest research findings. This is vital to avoid factual mistakes that can erode public trust.

6. Seek dialogue and create platforms for encounters aimed at building partnerships with progressive media, corporate, finance and state actors. Many partnerships are being formed. The World Academy's Security & Sustainability Guide (SSG) makes reference to some notable ones.[48] Others include the Katharsis Foundation currently being established by a group of WAAS and CoR Fellows, and the Future Capital Initiative,[49] also supported by WAAS.

7. Create a fund in which money and pledges are received, managed and allocated in support of worldwide SDG efforts by CSAs. Such a fund would require a bank, location and processes that do not allow interference by organisations or individuals lacking genuine commitment to the SDG campaign.[50] As well, it will be important to identify and acknowledge the efforts of existing, compatible funds, in order to avoid wasteful duplication and competition. The SSG lists some 70 grant-giving foundations.

8. Strengthen the economic narrative around the need for transformation (e.g. by calculating the mounting cost of climate change, biodiversity loss and inequality and also the potential economic benefits of timely transformation). "Green capitalism" and "green growth" should be promoted as serious alternatives to the simplistic capitalism/ socialism dualism, while similar fears about one-world government should be assuaged by stressing the autonomy of states in how exactly they chose to pursue the SDGs. A green economics alliance or coalition is needed to unite existing efforts by a variety of organisations, including the WAAS New Economics working group.

9. Unite efforts to convince the public that transformation is feasible and highly desirable, and prominently involve CSAs in this process.[51] Awards for the best initiatives could be part of this (such as the World Future Council's "Future Policy Award").[52]

4. Concluding Remarks and Recommendations

No matter what strategies we chose to employ, it remains true that society may struggle or fail to transform itself voluntarily, in the absence of palpable adaptive pressures. The global corona virus pandemic crisis is an opportunity for humanity because it certainly creates such pressure. For many countries in the developed world, which are also the main source of global challenges such as global warming, this pandemic is by far the greatest physical challenge since World War II. It is an occasion to test our ability to adapt and, if we succeed, perhaps we will find the courage also to address the much bigger ecological crisis.

Adapting to the risk of spreading infection, we are now forced to stay home, to slow down, to down-shift and break our addiction to speed, hyper-mobility and often mindless

consumption. To our own surprise, we find that we can adapt rather quickly, if pressed hard. Perhaps we will not want to return to business-as-usual, but will find some of the changes are in fact delivering co-benefits, such as reduced carbon emissions.

"Leaders in all sectors must grasp the opportunity to summarise the lessons and to smooth the path forward by proposing practical and fair solutions."

The shift we are now forced to make is ultimately a moral shift. What is really important, we must ask? What can we do without and, perhaps even, good riddance? Humanity might take this opportunity collectively to reflect on the way forward. Quite apart from the current pandemic, climate change is also starting to bite us harder and harder, as was illustrated—to name but one example—by Australia's massive wildfires recently. Leaders in all sectors must grasp the opportunity to summarise the lessons and to smooth the path forward by proposing practical and fair solutions.

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Notes

1. Transformation can be defined as "profound and enduring nonlinear systemic change, typically involving social, cultural, technological, political, economic, and/or environmental processes" (Linnér & Wibeck 2019).

2. On 13 March 2020, for example, the CEO of the World Future Society called for hundreds of thousands of volunteers to help address "the risk of major, even total societal system collapse."

3. Although a focus in this essay is on youth organizations, women's organizations have played at least as important a role. The World Academy's Security & Sustainability Guide (SSG) already lists 31 that are noteworthy. See: http://worldacademy.org/program-page/security-sustainability-guide

4. Civil society leadership impact is difficult to quantify without a designated and effective mechanism for impact assessment. One exemplary effort in this direction is Yale University's *Program on Climate Change Communication*; see https://climatecommunication.yale.edu/

5. Cultural and economic orders are always local and hence diverse, although today they also share a common experience of globalisation. Diversity needs to be considered in discussions of systemic changes. Nevertheless, a diversity of local actions may well serve a common global goal.

6. Donella Meadows, the early environmentalist and lead author of the Club of Rome's famous report, *Limits to Growth*, later listed a number of key leverage points or "places to intervene in a system" (Meadows 1999). She argued that the most important leverage point is transcending paradigms or mindsets – the narratives we tell ourselves about ourselves, our place in the world and our purpose as human beings.

7. Many youth organisations are in fact organised to some extent by adult-led organisation, such as the UN's 'Young Leaders for the SDGs IUCN's 'Intergenerational Partnership for Sustainability', International Solar Energy Society's 'Young ISIS' (student members), Japan for Sustainability, and Earth Guardians. These adult-initiated youth groups may be as influential or more so than many purely youth-led groups.

8. The same need for a high degree of independence also applies to the 'fourth estate', the media. While leaders often have their own reliable information sources, a press that is independent of government as well as corporate influence plays a decisive role in disseminating the information necessary to mobilize an informed response by civil society at large. The reputation of the free press seems to be more and more in danger as the number of journalists decline. Sadly, while a new, parallel network of online news now busily points out the flaws of established press channels, it often delivers ideologically tainted and socially divisive coverage rather than a more balanced alternative picture. Nevertheless, alternative sources of news can also be excellent.

9. This cannot be said of all organisations that self-identify and are registered as NGOs. Global NGOs have been predominately located in western countries, more specifically clustered in ten big cities: Stockholm, Copenhagen, Amsterdam, London, Paris, New York, San Francisco, Boston, Washington and Oakland. A few have been used to advance western interests abroad in a less than fully transparent manner or even of carrying out espionage or interventions in domestic affairs, leading to a tightening

of controls of foreign NGOs in many developing countries, including Russia, China, India, and Turkey in recent years. It also led to the creation of a UN high level panel on civil society in the 1990s. In some cases governments use such accusations to justify the persecution of NGOs that uncover inconvenient truths about their own malpractices.

10. The extent of this failure could be debated in light of the fact that many people also have been lifted out of extreme poverty. The largest contribution, however, has come from China, which is not a neoliberal market economy.

11. These observations do not apply to countries where a totalitarian state actively suppresses civil society actors and thus must assume the full responsibility for social welfare, if there is to be any.

12. It is important, in this context, to understand that an 'NGO' such as Greenpeace is ultimately a 'government allowed non-government organization', insofar as formal NGOs need to be registered and act in conformity with legal provisions in their country of registration.

13. There are some basic and often unacknowledged conflicts among green leaders: notably, between so-called realist ("realos") and fundamentalist ("fundis") positions of, for example, those seeking green economic growth vs. those who argue for degrowth, or between those viewing nuclear power as part of the clean energy solution vs. those to whom any form of nuclear power is anathema.

14. In Germany, for example, it sparked the formation of the 'Blockupy' alliance, a network of organizations and grassroots activism that emerged in 2012 in response to the protracted euro crisis and the austerity politics imposed by the so-called troika of creditor agencies.

15. On inequality and how to address it, see also Piketty (2020), Saez & Zucman (2019) and Stiglitz (2019).

16. https://www.cnbc.com/id/100394650

17. http://www3.weforum.org/docs/Media/AM17/The_Compact_for_Responsive_and_Responsible_Leadership_09.01.2017.pdf

18. Following Nobel Prize-winning columnist, Paul Krugman, neoliberal economics may be a "zombie idea" that just keeps coming back, that is, a belief or doctrine that has repeatedly been proved false, but refuses to die and just keeps shambling along, "eating people's brains" (NY Times Op-Ed, 4 Feb 2020, https://www.nytimes.com/2020/02/17/opinion/bloomberg-buttigieg-economy.html). See also Krugman (2020).

19. The same can be said of the previous election, where anti-elite sentiment was successfully exploited by Donald Trump. This act of co-optation of public sentiment was a major setback for the social cause of equality, given that his subsequent policy decisions were quite the opposite of "draining the swamp" (of Washington), which he had promised to do.

20. https://front.moveon.org/ Note that the resources of platforms such as MoveOn come largely from many small donations from subscribers.

21. www.avaaz.org/page/en/

22. Marien & Sales (2017) describe some 150 organisations involved in similar lobbying, including Business-Led Groups (e.g. World Business Council for Sustainable Development), Ethics-Driven Groups, Broadened Accounting (e.g. the Sustainable Accounting Standards Board), Certifying Organizations (such as the Forest Stewardship Council, p.6), Green Investing, Green Consulting and Green Business Publishers (such as GreenBiz).

23. https://www.getup.org.au/

24. David Harries, Pugwash Canada, personal communication, 18 March 2020.

25. There is a risk of another generation gap arising, similar to what happened after WW2, if youth disappointment with the older generation increases much further. Intergenerational civil society movements are an important preventative.

26. www.fridaysforfuture.org/

27. The Yellow Vest Movement apparently had "no leadership structure, no single, accepted programme of demands" (Lichfield 2019:1), though some individuals now have taken steps to create lists for the next election. Briefly on the rise of the Gilets Jaunes: In May 2018, a young entrepreneur of French West Indian origin, Priscillia Ludosky, 31, placed a petition online complaining about the high cost of petrol and diesel in France (ironically, a measure to reduce CO_2 emissions). In October she was contacted by Eric Drouet, a 33-year-old lorry driver who helped to promote her original petition. The first day of protests, on 17 November 2018, mobilised a staggering 283,000 people across France.

28. https://rebellion.earth/the-truth/about-us/

29. *XR* has raised three general demands: 1) Government must tell the truth by declaring a climate and ecological emergency, working with other institutions to communicate the urgency for change; 2) Government must act now to halt biodiversity loss and reduce greenhouse gas emissions to net zero by 2025; and 3) Government must create and be led by the decisions of a Citizens' Assembly on climate and ecological justice. The third point is most relevant to the present discussion as it asks governments to provide civil society with more space to lead a direct democracy-style decision-making process regarding the environment. Their vision is for a new culture that is fit to ensure the survival of the next seven generations.

30. See www.thedailybeast.com/fox-news-guest-calls-greta-thunberg-mentally-ill-swedish-child-as-right-wing-unleashes-on-climate-activist. Similar abusive comments were made about Thunberg in Canada, Australia and elsewhere by denialist politicians and media personalities.

31.   https://fsc.org/en/page/about-us

32.   www.greenpeace.org/international/

33.   See www.greenpeace.org/canada/en/story/510/victory-people-power-just-stopped-another-pipeline-bye-bye-energy-east/ More recently, the company TECK cancelled their application for the Frontier Oil Sands Mine in Northern Alberta; see https://www.cbc.ca/news/politics/tasker-teck-frontier-future-oilsands-1.5475658

34.   See https://securesustain.org/. The WAAS Security & Sustainability Guide is a continuous project. It identifies literally thousands of organizations vying for attention, more than 2,000 so far, with new organizations, alliances, initiatives, networks, and institutes being formed daily, and many established organizations adding new programs. The rate of growth is steady and probably increasing, and more than half of these organizations have been formed since 2003. Note that it can be difficult to delineate what constitutes a CSO. For example, academic organisations and institutes or unstructured social movements may not be counted as CSOs but do fit the definition of CSAs in most cases.

35.   On social sustainability and also social tipping interventions, see Otto et al. 2020. The authors discuss the potential of social tipping interventions (STIs) that would "activate contagious processes of rapidly spreading technologies, behaviours, social norms, and structural reorganization." Examples include removing fossil fuel subsidies and strengthening climate education.

36.   http://www.futureearth.org/publications/our-future-on-earth (page 84).

37.   See also www.counterpunch.org/2019/05/03/the-billionaires-behind-the-far-right/

38.   There appears to be few genuinely progressive regimes; perhaps Finland and New Zealand. Of note is that no regime is fully supportive of a Green New Deal or fully implementing the SDGs.

39.   The general arguments against climate action and the Green New Deal, at least in the US, are in three categories: 1) Economic: a transformation would be too costly; 2) Governance: pro-"freedom" and fearing any form of greater regulation would lead to "socialism" and big government, as well "domination" by the UN; and 3) Risk: the dismissal position that accepts global warming but cautions against "prophets of doom" who warn of climate catastrophe.

40.   See the Extractive Industries Transparency Initiative's EITI Standard: https://eiti.org/document/eiti-standard-2019

41.   The text of the fairy tale in English translation can be found at   https://andersen.sdu.dk/vaerk/hersholt/TheEmperorsNew-Clothes_e.html

42.   Unlike the recent protests in Hong Kong, for example, the push for a transformation to sustainability does not necessarily equate to a push to topple the government per se, and thus may meet with less resistance.

43.   Mariana Todorowa, 2020, *DG-Agora 2.0*, unpublished manuscript.

44.   https://www.icanw.org/

45.   Many forces act to prevent the implementation of innovative forms of social organization within and cooperation between institutions. Conservative leadership hierarchies may be more focused on self-preservation than on their organisation's proclaimed aims. The logic of capital and money-dependence does not stop where civil society starts.

46.   An example of the latter is the series of excellent MOOCs offered for free by the UN-sponsored *Sustainable Development Solutions Network*, run by Jeffrey Sachs.

47.   See https://www.unglobalcompact.org/what-is-gc and https://citiesprogramme.org/

48.   http://worldacademy.org/program-page/security-sustainability-guide

49.   http://www.worldacademy.org/files/washington_dc_sep_2019/SBrunnhuber_A_WAAS_Initiative.pdf

50.   The index of the World Academy's SSG lists some 70 grant-giving foundations that support SDG efforts by CSAs. Meanwhile, Jeff Bezos, the world's richest man at present, has recently pledged $10 billion to fight climate change. The degree to which CSAs must meet pre-set conditions to receive grants varies.

51.   Prominent recent efforts to date in this direction include the report 'Transformations to Achieve the Sustainable Development Goals' by 'The World in 2050 Initiative", IIASA, July 2018 (https://iiasa.ac.at/web/home/research/twi/Report2018.html), as well as the Stockholm Resilience Centre report to the Club of Rome, 'Transformation is Feasible: How to Achieve the SDGs Within Planetary Boundaries,' Oct 2018 (https://www.stockholmresilience.org/publications/artiklar/2018-10-17-transformation-is-feasible---how-to-achieve-the-sustainable--development-goals-within-planetary-boundaries.html).

52.   https://www.worldfuturecouncil.org/press-release-2018-fpa2018-winners/ and the Future Earth report 'Our Future on Earth' already mentioned in FN 36.

Protecting and Promoting Individual, Social and Planetary Health with People-centered and Sustainable Leadership Styles

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Abstract

Individual health, social health and planetary health are under attack and not effectively protected and promoted and the root causes are socially construed realities, narratives and cultures that still use and teach new generations obsolete mechanistic reductionist perspectives. That makes people and institutions blind even if they are well intentioned and are not bent to exploit people and the environment, and thus end up ignoring the impact of their actions; still they do not see the obvious, that we live in an interconnected world in which any single variable has influence on the whole and vice versa. We need urgent implementation of ecological system thinking in practice and must consider all dimensions of life: physical, biological, psychological, social, cultural and spiritual. Health is created, promoted or destroyed each day in the way people, leaders, institutions and governments see and measure realities, therefore how we see and create realities, set goals and the tools we use to promote change matter. Effective leaders for the XXI century need to be well aware of these issues and have the knowledge, know-how to apply such knowledge and have the attitudes and ethical values to pursue their mission. In order to be effective leaders that are part of the solutions and not of the problems they need to be people-centred generative and transformational leaders, fostering the emergence of new leaders instead of being bent of getting more followers.

1. Preamble

The current crisis reminds us that there are few things more fundamental, primary, and important than human wellbeing. All other aims—political, economic, social and ecological—are relative¸ conditional and predicated on their contribution to this ultimate goal. Crises such as COVID-19 also compellingly remind us that the wellbeing of each is conditional on the wellbeing of all. Tiny microbes have been traveling the globe and devastating huge populations since long before transoceanic sea and air transport became prevalent. There are no borders or boundaries that can provide a foolproof protective wall against threats such as

global warming, nuclear radiation, financial meltdown, economic collapse, addiction and the forced migration of environmental and political refugees. Global leadership for the common good of all human beings is an urgent, unconditional necessity in the 21st century. World Health Organization and other international organizations are central and essential pillars of the global system for multilateral cooperation. National sovereignty, military preparedness, electoral majorities, law enforcement, technological advancement, competitive efficiency, financial markets, and profit maximization may be useful and very important within proper context and limits, but they can never be more than subordinate means to the common good of all humanity—"We the People". Insistence on anything else is either blind ignorance or suicidal barbarism.

Historically, epidemic disease has proven to be a greater threat to humanity than all the wars fought for conquest, independence, or commercial profit. The Plague of Justinian, the Black Death, Smallpox, and Cholera are among the most notable and well researched. The Spanish Flu is estimated to have taken the lives of 50 million people after WWI, roughly equivalent to some estimates of the total loss of life in both world wars.

Yet pandemic diseases also rank among the most dramatic instances of effective transformational leadership in the history of civilization. The polio virus, which paralyzed or killed a half million people yearly at its peak in the early 1950s, was nearly eradicated globally after mass vaccination campaigns starting in the late 1950s. Smallpox was finally eradicated in 1980 following a two-decades-long global campaign spearheaded by the WHO with unprecedented US-Soviet collaboration right in the midst of the Cold War. Fatalities due to HIV/AIDS Pandemic, which had become the leading cause of death of Americans in the 25-44 year age group, were reduced by 45% globally between 2000-2018 following the establishment of UNAIDS in 1996 to coordinate global action supported by international funding by the US and other nations.

These and other successful global initiatives confirm that concerted, globally coordinated action can dramatically reduce these and other threats to human wellbeing within a short time. They also highlight the fact that pandemic disease and related health problems cannot be regarded simply as health problems. As we witness today they powerfully impact the national and global economy, governance and political stability, social harmony and security at all levels and in all sectors.

Invaluable leadership principles and strategies can be drawn from humanity's cumulative experience in successfully addressing the common threats to wellbeing, most especially from the efforts since the establishment of WHO and the first steps taken to develop a comprehensive, inclusive global system. Much can be learned about the critical catalytic impact of public health programs, government regulations and monitoring systems, public awareness, mainstream and social media, non-governmental organizations, scientific research, technological development, all levels of the educational system, and the powerful contribution of the arts.

Effective leadership in this field must encompass all these and many other elements applied in concert as elements of a comprehensive integrated program backed by the collective will of humanity. The strategies outlined in this paper are a distillation of the experience, knowledge and wisdom derived over the past half century that can be effectively applied to achieve a quantum leap in human security and wellbeing in the near future. They are based on the United Nations Agenda 2030, endorsed by all 193 Member States.

2. Context: Problems and Intersectoral Costs (Burdens for the Whole Society)

Today, the world is simply not producing healthy societies. Although there have been general improvements in health and increasing levels of wealth, improvements are not equally distributed globally or locally. Changes in society and technology are also undermining some of the progress already made towards healthier societies. Many people are suffering from the effects of poor air quality, food systems which promote unhealthy choices, lifestyle cultures which do not encourage physical activity, structural poverty, stress and mental illness, and climate change. The Ottawa Charter (WHO, 1986) a blue print of total ecology, is still valid today. WHO identifies five components of health promotion and prerequisites for health: peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice and equity. Health and wellbeing are a social construction of reality. One of the World Health Organization's key targets for 2023 is to improve the health and wellbeing of one billion people around the globe. So how do we start to understand and apply a proper response to building healthier societies?[*]

Health inequities within and between countries reflect economic and social divisions across society.[1] As economic pressures bite and health care costs rise, the risk of exclusion increases, too often leaving behind those with the greatest health needs. The root cause of more inequities at the global level come from our mechanistic reductionist perspective ignoring the impact of the single action on the whole. We need urgent implementation of ecological system thinking in practice and to be able to consider all dimensions of life: physical, biological, psychological, social, cultural and spiritual.

The challenge health expenditure poses to governments is greater than ever. In many countries, the health share of government budgets is larger than ever, and health care costs have grown faster than GDP. But for at least some of these countries, data show a lack of correlation between health expenditure and health outcome. Many health systems fail to contain costs while financial pressures on them make getting the balance right for health and ensuring social protection ever harder. **Costs are primarily driven by the supply side**, such as new treatments and technologies, and people's rising expectations of protection from health risks and access to high-quality health care.

Real health benefits can be attained at an affordable cost and within resource constraints if effective strategies are adopted. A growing body of evidence on the economics of disease prevention shows how health costs can be contained, but only if they

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[*] Report of Wilton Park 2020. Healthy societies for healthy populations

also address inequalities across the social gradient and support the most vulnerable people. At present, governments spend only a small fraction of their health budgets on promoting health and preventing disease.[*] For example, the world population of adults over the age of 65 is increasing faster than any other age group.[†] While this demonstrates a trend toward greater longevity, this trend is not matched with the maintenance of health in later life. At present, adults over 65 are one of the largest consumers of healthcare. With this population expected to double by the year 2050 in many countries, we face a potential economic healthcare crisis and significant loss of welfare and wellbeing unless approaches to healthcare and disease preventions change in the very near future.

> *"Innovations that are successful in one place may not be successful in another. Constant contextualization is necessary to maximize the likelihood of success."*

No one sector, discipline, stakeholder, community or country alone has the solution. Leadership is crucial at all levels—community, local and national government, regional and global—to undertake cross-sectorial action which results in healthier societies. Striving for equity in all efforts to create and sustain healthy societies is paramount. New collaborative and cooperative approaches in practice are needed if universal health coverage and wellbeing are to be a reality for the countries of the world.

3. Analysis of the Origins of the Problem

Health has greatly improved in recent decades—but not everywhere and not for everyone equally; this is unacceptable. Many groups and areas have been left behind and, in many instances, as economies falter, health inequalities are growing within and between countries at the worldwide level. Rapid growth of chronic disease and mental disorders, lack of social cohesion, environmental threats and financial uncertainties make improving health even more difficult and threaten the sustainability of health and welfare systems. Creative and innovative responses, to which there is real commitment, are needed.

In the World Health Organization's constitution, health is defined not merely as the absence of ill health but as a state of complete 'physical, mental and social wellbeing'. This definition should be a reality for everyone, and in the spirit of the Sustainable Development Goals, no one should be left behind. We should all aim to create a world where good health is a choice that all people are willing and able to make. The question is how do we get there? WHO has a set of current targets for 2023, one of which is to ensure that one billion people have better health and wellbeing. How can we all—in whatever sector or area we work— contribute to this target?[‡]

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* WHO report Health 2020 http://www.euro.who.int/__data/assets/pdf_file/0006/199536/Health2020-Short.pdf

† United Nations 2019 Revision of World Population Prospects https://population.un.org/wpp/

‡ Report of Wilton Park 2020 Healthy societies for healthy populations

4. Examples of Effective Leadership and Good Practices from the Past

Thus we need new systems of collaborative leadership to encourage innovative approaches to social mobilization for equitable, sustainable and accountable health development.

What makes societies prosper and flourish also makes people healthy—policies that recognize this have more impact. Fair access to education, decent work, housing and income all support health.

Health contributes to increased productivity and creativity, a more efficient workforce, healthier ageing, and less expenditure on sickness and social benefits and fewer lost tax revenues. The health and wellbeing of the population are best achieved if the whole government works together to address the social and individual determinants of health.[2,3] To be more effective health services need to be reoriented with person-centered and people- centered approaches that strive to include and empower individuals and communities.

Good health can support economic recovery and development.

Health performance and economic performance are interlinked—improving the health sector's use of its resources is essential. The health sector is important for both its direct and indirect effects on the economy: it matters not only because of how it affects people's health and their productivity but because it is now one of the largest economic sectors in every medium.

The focus needs to be on the **right to health and commitment to universality, solidarity and equal access as the guiding values for organizing and funding the health systems of each country**. They aim for the highest attainable level of health regardless of ethnicity, sex, age, social status or ability to pay. These values include **fairness, sustainability, quality, transparency, accountability, gender equality, dignity and the right to participate in decision-making.**

"People-centred and planet-sensitive" approaches (Bali Communiqué of the High-Level Panel, 28 March 2013) include: addressing community resilience and the participation of empowered populations, social inclusion and cohesion; promoting assets for wellbeing; mainstreaming gender and building the individual and community strengths that protect and promote health, such as individual skills and a sense of belonging. Setting targets for reducing health inequalities can help drive action.

*Research shows that **effective interventions require a policy environment that overcomes sectorial boundaries and enables integrated programmes**.*

For example, evidence clearly indicates that integrated approaches to child wellbeing and early childhood development produce better and fairer outcomes in both health and education. Urban development that considers the determinants of health is crucial, and mayors and local authorities play an ever more important role in promoting health and wellbeing. Participation, accountability and sustainable funding mechanisms reinforce the effects of such local programmes.

5. Suggestions for Remedial Strategies and Actions for a Sustainable Future (Sustainable Ways of Thinking, Coping and Being)

5.1. Innovation to Support Implementation of the WHO Framework on Integrated People-Centred Health Services (IPCHS)

Common and shared goals between all relevant stakeholders are to "significantly improve the health and wellbeing of populations, reduce health inequalities, strengthen public health and ensure people-centred health systems that are universal, equitable, sustainable and of high quality".

"Transformational leadership is the process in which "leaders and followers help each other to advance to a higher level of morale and motivation" and to achieve common goals."

Some key messages to implement Health For all reducing health inequalities, improving leadership and participatory governance for health through innovations are:[4]

- Health systems around the world are struggling with poor access to essential quality health services, fragmentation of services and overall lack of resources.

- This creates an urgent need for creative and innovative solutions to these and other problems of health system and services.

- Health care innovations generally fall into three categories: products, processes and structures. Innovation is not limited to expensive new drugs and technologies.

- These innovations undergo a complex implementation process involving adoptions, implementation, sustainability, diffusion, dissemination and scale-up approaches.

- Innovations that are successful in one place may not be successful in another. Constant contextualization is necessary to maximize the likelihood of success.

- Early and intentional involvement of diverse stakeholders in the innovation process is crucial to foster integrated and people-centred solutions and provide continuity and coordination of care.

- Institutionalization of innovative processes and structures is necessary to avoid short-term and unsustainable initiatives.

- Policy makers are uniquely situated to foster innovation at regional, national and international levels.

- A combination of strategies is needed to effectively implement the proposed options.

  – Leadership approaches and organizational characteristics that favour innovation can increase innovative outputs.

- Policy makers can create a strong innovative vision by compiling existing innovation strategies and facilitating dialogue with diverse stakeholders.
- Creating a centralized hub for social innovations can help spread relevant innovations that can be adapted to local contexts.
- Education and training in the methods of social innovation for diverse stakeholders can increase innovative capacity in the health care system.

The following policy options have been considered:

1. Fostering characteristics of organizations and health systems that encourage innovation
2. Transformational and distributed leadership to foster innovation across health sectors
3. Promoting social solidarity economy with innovative solutions
4. Building and retaining human resource capacity for leadership and innovation

Fostering characteristics of health systems and organizations that encourage innovation. Characteristics of innovative **organizations** and **health systems** include aspects of culture and mission. Organizational cultures that foster innovation encourage openness, constantly celebrate successes and have strong shared values and a clearly communicated narrative. The most innovative groups have an intense focus—such as the focus on a patient in health care—and encompass cross-functional teams that can bring diverse skillsets to bear on a single problem. Innovative groups also tend to have risk-taking cultures that are tolerant of failure. Creating enabling environments that encourage these characteristics, including safe spaces for innovation to occur, can help guide innovation leadership efforts.

Transformational and distributed leadership to foster innovation across health sectors. Transformational leadership is the process in which "leaders and followers help each other to advance to a higher level of morale and motivation" and to achieve common goals.[5] There is a robust literature connecting transformational leadership to innovation, and this has been extended specifically to health care systems. It has been associated with a wide range of positive outcomes, including attitudes toward evidence-based practice and increased health care staff's satisfaction and wellbeing. Distributed leadership is often defined in different ways in the literature but generally deals with the concept of shared leadership across an organizational structure. Individuals can move back and forth between leader and follower roles, and followers are not passive absorbers of leadership but also influence leaders. Distributed leadership has been identified as key to sustaining culture change in health systems. This leadership method helps create an environment where staff can participate in and manage the change process, which leads to more sustained change. These leadership methods have the potential to address many of the determinants of innovation mentioned above (see policy option 1). At the health system level, transformational leadership can ensure a strong and clearly expressed set of shared values and an intense focus on the patient. Transformational leaders can build an organizational vision to guide efforts at the individual, organizational and system levels. Distributed leadership methods can encourage a culture

of openness and create more interdisciplinary and cross-functional teams. Similarly, both leadership methods can ensure that new innovations are accountable to users by involving them in the leadership structure. Importantly, transformational and distributed leadership are not mutually exclusive but rather complementary. Transformational leadership allows for a strong culture of innovation to be established through a mutual effort by leaders and followers from across levels of the health care system. Distributed leadership can help ensure the maintenance of this culture by creating an enabling environment and avoiding top-heavy leadership structures. Both encourage an open and participatory environment.

Promoting social solidarity economy with innovative solutions like collaborative and community-led models. Social solidarity economy covers a diverse range of organizations and enterprises that prioritize social considerations and involve forms of management or governance that are more horizontal. It is based on an ethical and values-based approach to social and economic development that prioritizes the welfare of people over profits. The solidarity economy has a focus on the empowerment of marginalized and underserved groups and engages in holistic anti-poverty and inclusion projects. It recognizes the importance of linking with social movements because system-wide changes cannot be achieved by a single initiative.

Nordic countries are a good example of how social solidarity contributes to healthy living and the interface between economic, social and environmental objectives and a positive influence on health over time. Here, neighbouring countries have enjoyed historic peace among themselves and worked together collaboratively to create similar welfare states. High levels of trust between citizens, good governance, democracy and political systems based on civic rights and participation all play a part in contributing to healthy societies. How can this type of model be fine-tuned and contextualized for other countries and what are the cultural and contextual values and principles to be considered to create positive impact?

Building and retaining human resource capacity for leadership and innovation. Capacity for innovation by individuals includes topic- or context-specific knowledge as well as skills and experience in the process of innovation itself. Capacity building and education across the diverse set of stakeholders involved in innovation are necessary to create an enabling and sustainable environment to facilitate community-led approaches and a social solidarity economy (see policy option 2).

Characteristics of **individuals** associated with innovation in the workplace focus on the requisite knowledge and aspects of personality. Knowledge factors include education, intelligence, clarity of thought and domain-specific knowledge. More general personality factors include creativity and openness as well as an intrinsic motivation to solve problems with perseverance. Importantly, domain-specific knowledge is not necessarily highly technical knowledge. This can also be first-hand knowledge of how systems work on the ground, how these systems work for users or other similar knowledge bases related to implementation of services. Innovators in health institutions also demonstrate a sense of mission, the capacity to make hard decisions, and the ability to clearly communicate ideas and goals.

5.2. Engagement towards health-related SDGs

Currently, at least half of the world's population still do not have access to the full range of essential health services and about 100 million people are pushed into extreme poverty each year because of out of the pocket spending on health. The **Universal Health Coverage (UHC)** means that "all individuals and communities receive the health services they need without suffering financial hardship", it includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care. In the post Millennium Development Goals context, health is now positioned in the broader framework of the **Sustainable Development Goals (SDGs)** and nations of the world had to set the UHC when they adopted the SDGs in 2015.

To achieve UHC by improving the quality of health services, access and equity, global public health has to **focus on community engagement** as countries face complex health challenges that stretch and test the capacity and resilience of health systems and the populations they serve; **those challenges** are urbanization, poverty, migration, poor environmental management, man-made and natural crises, disease outbreaks, floods and armed conflicts.

The concept of "community" and "community engagement" are not new; **back in 1978, in the Alma Ata Declaration, community participation was determined as a fundamental component of primary health care**. The notion of community participation was revitalized as **"engagement and empowerment"** and became a core strategy of the WHO Framework on integrated people-centred health services (IPCHS) adopted by member states in 2016.

The broad definition of community engagement is "**involving communities in decision-making and in the planning, design, governance and delivery of services";** this definition does not stress the difference between "engagement", "participation", and "empowerment". To understand the scope of the present policy note and the guidelines selected to implement community engagement, it is important to introduce the differences between engagement, participation and empowerment.

Public health is defined by WHO as "the science and art of preventing disease, prolonging life and promoting health through organised efforts of society"; public health not only focuses on the eradication of particular diseases, but on the **entire spectrum of health and wellbeing**, it requires an interdisciplinary approach to achieve such goal. Because health has a multidimensional consideration, modern public health practices require **multidisciplinary teams to reach physical, psychological and social wellbeing of populations**. An important aspect of health and wellbeing has been highlighted by research: if people and community have control over their lives, they will be healthy and adopt healthier behaviours. Health is a "state of complete physical, mental and social wellbeing, not just the absence of disease or infirmity", thus it makes sense to stress the strong link between factors facilitating health and wellbeing rather than only focusing on the cause of disease.

Communities have their own strength and assets to be able to have an active dialogue with services providers. It follows the concept of public health that is reached by "organised efforts of society", which implies that all parts should be involved, not only services providers,

but also "services users". **Coproduction** changes the dynamics between individuals and communities and create more collaborative relationships. The current challenge is to consider citizens not as passive recipients of services but as assets and expertise holders, which they can offer to others and can help improve the way services are delivered. By allowing individual and communities to be an active part of their health and wellbeing, those will become sustainable. We need to promote Person-Centered Care and people-centered participatory qualitative research practices. Qualitative research has the same scientific validity as quantitative research and as an additional value it empowers participants and promotes learning of all stakeholders; see for example participatory action research, focusing on the strengths of participants in order to find new forms of knowledge and collective action to achieve positive change.

Engaging individuals and communities has been advocated as a potentially useful strategy to reduce health inequalities, as people with low socioeconomic status, socially excluded people tend to have poorer health than other members of society. More specifically, health inequalities are related to modifiable health determinants such as housing, employment, education, income, access to public services, and personal behaviour; whereas determinants such as age, sex, and genetics are fixed.

In the current field of health challenges, seeking a new path to leave the old paternalistic approach behind to embrace health, individual and community engagement towards community empowerment has become the key component for policy makers to achieve public health goals towards health and wellbeing. It is policy makers' ethical duty to consider individual and community engagement as part of the creation of new structures and new practices, embedded as a long-term solution to social issues. Some case studies show that patients and communities lose faith in the paternalistic decision-making approach, especially in the area of public health, where public service users want their opinion to be taken into account. Policy makers have considered ethical decisions to "generate and sustain trust, demonstrate respect, responsibility, fairness and caring (…) these behaviours provide a foundation for making better decisions by setting the ground rules for our behaviours"; decision makers have to leave the paternalistic approach, as highlighted by WHO's seven focal points from key technical areas from Service Delivery and Safety department, Health Promotion, and Governance & Finance during interviews. They must consolidate their positions based on ethical decisions, trust and respect by embracing the individual and community engagement and empowerment.

6. What kind of effective leadership and change agents are needed to promote change?

In this section, we have focussed on two important components of effective leadership, the authentic leadership has been described very well by **Bill George's model which focuses on the different qualities an authentic leader has (or can develop)**. If a leader demonstrates these qualities or characteristics, they will be a more authentic leader and able to promote the emergence of natural grassroots leaders, who will respond positively and the organization will benefit. There are five dimensions described by George, and each is associated with

an observable characteristic: purpose and passion, values and behavior, relationships and connectedness, self-discipline and consistency, and heart and compassion (Penn State, 2017). All these dimensions need to fit with effective education, equitable and sustainable economies and governance design.

Promoting participatory governance, social participation and accountability. Engaging populations, civil society and communities in national policy- and decision-making

Governments increasingly recognize the need for more participatory and inclusive processes in decision-making. National health policies, strategies and plans are more likely to be implemented effectively if their development and negotiation are inclusive of all relevant stakeholders. Engaging with populations, civil society and communities is also an important means to gauge expectations and opinions on health related-matters; this can contribute to responsive and people-centred health systems. Participatory governance thus entails bringing in the voice of end users of health services as well as the general population—in essence, all those affected by health reforms.

There are a variety of mechanisms for fostering dialogue which not only empowers people but also helps to hold governments accountable for their commitments.

WHO provides technical support to countries in this area of work. It also contributes to the evidence base on how population engagement mechanisms can work, in which settings, and how. The upcoming *WHO Handbook on Social Participation for UHC* further serves as a guidance document to member states to strengthen systematic and meaningful government engagement with populations, civil society and communities by drawing from examples of best practices to establish, set up and institutionalize such mechanisms in national policy, planning and review processes.

7. What the coronavirus means for the future of civilization?

COVID-19 is showing us that when humanity is united in common cause, phenomenally rapid change is possible. None of the world's problems are technically difficult to solve; they originate in human disagreement. In coherency, humanity's creative powers are boundless. COVID-19 demonstrates the power of our collective will when we agree on what is important. What else might we achieve, in coherency? What do we want to achieve, and what world shall we create? That is always the next question when anyone awakens to their power.

In the current coronavirus emergency the coping efforts are mostly directed to the containment of the spreading of the pandemic, confining people to their homes, restricting social and economic activities, activating emergency economic and fiscal support to individuals, small and medium enterprises etc., while schools and universities are offering traditional online courses to their students.

As Albert Einstein once stated: "*We cannot solve the problems of today at the level of thinking at which they were first created.*" COVID-19 has dramatically underlined that everything is connected.

We can facilitate human capital development of different stakeholders and epistemic communities by engaging in a process of listening and learning from each other, sharing best practices and expertise. In other words, we can facilitate the emerging of natural leaders as a value-added process that is also an example of a concrete sustainable product.

We live in a period of growing complexity; to meet our present and future challenges we need new and effective ways to cope: a sustainable way of being, which enables us to navigate in the rippling currents of change.

We may be missing a very crucial point in failing to understand how this catastrophe came about and why and how we failed to deal effectively with it. We urgently need to acquire the tools that enable us to have a systemic understanding of situations and help us effectively prevent reoccurrences. We need to understand correctly the problems that in part created and further aggravated the present situation.

From a sustainable bio-psycho-social point of view the coronavirus pandemic was highly predictable, but governments did little or nothing to prevent it and failed to deal effectively with the problem.

Worst of all, some governments spread another lethal virus: Fake News, by negating the existence of the problem, silencing doctors and experts who gave early warnings, then downplaying the seriousness of the emergency, blaming the press for reporting the problem, intentionally lowering the actual number of deaths, failing to activate the emergency measures needed to cope effectively, causing negative multiple interconnected and intersectorial consequences, and in so doing, worsening the situation and debilitating the society's capacity for resilience.

Now all efforts, including economic investments, are focused on helping the different sectors of society get back to normal as soon as possible. However, going back to business as usual would be a very serious mistake, bound to unwittingly create more catastrophes. This experience needs to be a moment of reckoning.

The coronavirus disaster clearly underlines that in the Antropocene Era we cannot deal with reality in a mechanistic, reductionist way. We live in a world of complex relationships where everything is interconnected and therefore has a reciprocal impact.[*]

We need at this very moment to facilitate all the stakeholders, decision makers, opinion makers, experts, professionals, leaders from every aspect of society, public and private institutions to develop resilient and sustainable ways of thinking and feeling.

Let us unite in a common effort. Let us empower ourselves and develop resilient and sustainable communities, societies and cultures. We cannot afford to miss the lesson and waste an opportunity to learn new and more effective ways of being.

The areas that can be analysed to reconsider our world perspective are:

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[*] Brown C, Goldblatt P, Shriwise A et al. COVID19: Considerations on social and economic impacts and mitigation. Working paper. Copenhagen: WHO Regional Office for Europe; forthcoming.

- Establish clear vision, new narrative and communication of healthy societies through a process of co-creation to ensure broadest possible ownership including communities and citizens.

- Focusing more attention on understanding the context and drivers of healthy society and with a holistic perspective and based on the process of experiences of people

- Identify future leaders and champions of healthy societies and find ways to support them.

8. Conclusion

The United Nations' "Agenda 2030" is aimed in an integrated manner at the entire multitude of global risks: end poverty; end hunger; encourage good health and wellbeing; provide quality education; promote gender equality; provide clean water and sanitation; promote affordable and clean energy; provide decent work and economic growth; address industry, innovation and infrastructure; reduce inequalities; develop sustainable cities and communities; encourage responsible consumption and production; take action on climate change; promote life below water; promote life on land; work towards peace, justice and strong institutions; and create partnerships to achieve these goals.

However, recent political changes have placed this hope at risk. To increase the likelihood of success, higher education institutions worldwide must teach and train today´s students—tomorrow's decision makers — to think both critically and ethically, to learn to cope with ethical dilemmas and apply systems-thinking approaches to serious and complex societal problems.

Credits

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Current Tasks of Academies and Academia

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Abstract

The present article is written as an issue paper on academies for the GL-21 Project. It traces activities of academies and their associations in the present information-rich society. The state-of-the-art of the academic world is briefly described. This permits to focus on general trends in knowledge management in general and the role of academies. The successful strategies and interdependencies form the framework of activities, where one should also understand the possible obstacles. The impact of these activities together with ideas for more social responsibility and cooperation are examined. The unique position of WAAS in organizing a network for social progress is underlined.

1. Background on Academia

In general terms, Academia as the learned world is connected with studying and thinking on a wide range of themes, including community and environment. This learned world is comprised of universities, academies, research institutes and professional associations, all of which are concerned with the pursuit of research, education and scholarship.

The most important groups within Academia are the following:

• National Academies are, by definition, bodies of selected distinguished scientists with varying degrees of oversight by the nation states to which they belong. In this way, National Academies are really cross-cutting bodies for research and knowledge, sometimes clustered into general fields such as humanities, social science and natural science academies.

• Universities are at the forefront of higher education of the general public and of future generations of academics, as well as the creation of knowledge.

• Specialized research institutes are mostly IGOs launched by states or international authorities for fostering research in particular fields.

- International Unions unite scientists and scholars within constituent National Associations for particular fields of natural and social sciences and are the main organisers of professional conferences that drive new trends in research.

- Various knowledge-sector NGOs and networks, launched either for promoting research or uniting scientists and scholars, enrich Academia with their bottom-up initiatives.

In this issue paper we focus on activities of National Academies of science and arts and their international networks (education and science are topics of other issue papers). National Academies have a long history and a wide range of activities and aims (Engelbrecht and Mann, 2011; Šlaus, to be published), including:

- promoting research and scholarship in all fields of natural and social science, engineering and humanities, and recognizing excellence in science and arts;

- supporting science at national, regional and global levels;

- maximising the impact of scientific understanding;

- advising governments, policy-makers and society.

National Academies have been founded in most countries of the World. Some of them are the learned society type (fellows only), while others also have research institutes (research staff in addition to fellows). These structures have developed historically and depend upon the system of research in a particular country as well as the general governance system of the state. Usually there is one National Academy in a country, although in some cases there might be more. In addition, there might be national academies for particular branches of knowledge such as medicine, engineering, arts, etc., for example in the USA, France, Spain, Australia and Russia. In most countries the National Academies are state institutions but in some countries, they have the status of an NGO.

Scientists were among the first to recognize the importance of international cooperation and knowledge exchange. The global umbrella organisations of academies thus have a history of more than over a century: ICSU was founded in 1899, ISSC in 1952 and their merged successor organisation, the International Science Council (ISC), was launched in 2018. The latter is the World's premier representative scientific organization today, uniting more than 140 national and regional academies together with research councils and 40 international scientific unions and associations. Meanwhile, the InterAcademy Panel was launched in 1993 and its successor InterAcademy Partnership (IAP) in 2016. The IAP includes also the former InterAcademy Medical Panel, InterAcademy Council and regional networks in Asia/ Pacific, Europe, Americas, and Africa. The IAP brings together more than 140 national and regional academies. The International Union of Academies (UAI) founded in 1919 created additional possibilities for cooperation among academies in philology, history, moral sciences and political sciences. It unites more than a hundred academies from 63 countries from all continents.

The regional networks of academies are also important actors in formulating science policy. In Europe, ALLEA has 57 member academies from 41 countries (as of 2019), while EASAC

has member academies from all the EU countries together with Norway, Switzerland and Academia Europaea. There are regional networks of academies in Asia, Americas and Africa.

Academia Europaea and the European Academy of Sciences and Arts, finally, are examples of regional academies with individual fellows from across countries in the region concerned, in this case Europe. Other thematic and regional organisations include the Academy of Sciences for the Developing World (TWAS), later renamed the World Academy of Sciences; the Islamic World Academy of Sciences (IAS), Latin American Academy of Sciences (ACAL), African Academy of Sciences (AAS), Academia Europaea (AE) and others.

In addition to international networks of national and regional academies, there are global academies whose fellows are top scientists and artists from various countries around the world. On the initiative of Albert Einstein, Robert Oppenheimer, Bertrand Russel and other prominent scientists and thinkers, the World Academy of Art and Science (WAAS) was launched in 1960. Presently, WAAS has more than 700 Fellows. The objectives and purpose of WAAS are stated in its Statutes as follows:

- to contribute to the progress of global civilization, human welfare, evolution of global governance, peace, sustainable development and the realization of human dignity through transnational studies, projects, appraisals and recommendations; and

- to function as a transnational forum for interdisciplinary discussion of art and science and the social consequences and policy implication of knowledge.

The Global Young Academy (GYA) was launched in 2010 and has about 200 Fellows. The declaration of young scientists before launching the GYA characterizes their willingness to act: "Making a better world needs better science—we young scientists are ready to contribute our share".

NGOs like AAAS, Euroscience and others in principle also unite all scientists. A prominent place for discussing global problems is the World Science Forum, started by the initiative of the Hungarian Academy of Sciences in Budapest. ISC, IAP and TWAS have regular meetings called Science International. Meanwhile, analytical IGOs like OECD, or PP Cooperation like WEF unite societal sectors.

In order to characterize the general picture of Academia, the general international organisations for universities must also be briefly described. The International Association of Universities (IAU), founded in 1950 under the auspices of UNESCO, unites about 650 universities from 130 countries. The IAU is called the global voice of higher education, stressing leadership and internationalisation. Other regional associations of universities, for example in Europe (European University Association (EUA), League of European Research Universities LERU, Coimbra Group, etc.), unite universities in a particular region. Some associations are founded on language principles, such as the Association of Commonwealth Universities or L'Agence Universitaire de la Francophonie. These associations (and many more) share information about innovative structures and strategies that help universities face the challenges of global development that should be reflected in higher education.

2. Challenges and Possible Activities

From the viewpoint of the academic world "a fundamental challenge to contemporary science is to identify manageable pathways to global sustainability through the complex web of cause and effect connecting planetary, social and economic processes, and to assist in the creation and promotion of policies and public action that can move societies along them."(ISC, 2019) This idea is supported also by academies, including WAAS (see above).

The main role of academia (universities and academies) is knowledge generation, management and dissemination. This must be supported by education. Academia is nowadays an important player in addition to the trifunctionality of state, civil society, private sector model, according to Governance Model 3.0 #Next Gen (Destatte, 2019). Here we focus on the perspective of National Academies.

National Academies and their international networks (see background) and their members have formulated strategies in order to address global challenges (ISC, 2019; IAP, 2019; ALLEA, 2019a, 2019b; Bishop and Baudains, 2010; UN Policy Note, 2014; UNDP Sustainable Development Goals 2015). For example:

ISC (2019) has indicated four main domains for action:

- the 2030 agenda for sustainable development;
- the digital revolution;
- science in policy and public discourse;
- the evolution of science and science systems.

IAP (2019) has formulated the following strategic objectives:

- to build the capacity of regional networks of academies and their national members;
- to empower academies and networks to provide independent, evidence-based, authoritative advice on global, regional and national issues;
- to promote the importance of science in research, education and literacy;
- to build IAP as a progressive and more resilient global academies network.

WAAS is actively working on:

- introducing collective membership of WAAS;
- encouraging activities jointly with national academies;
- explaining the ideas of new paradigms to society and policy-makers;
- joining Science International to cultivate contacts with the ISC and the IAP;
- strengthening contacts with global institutions like the UN, UNESCO, World Bank, etc.

In all these activities the importance of education must be stressed. Education for the future means that (i) curricula are designed to convey knowledge about major transitions of the world and its complexity; (ii) graduates of today are equipped to tackle the foreseeable

problems of the coming 30-40 years as well as unknown challenges; (iii) research in universities contributes to 'hot' problems within society while also allowing scientists and scholars the necessary freedom in research to find unexpected knowledge (blue sky research).

3. Interdependencies and Obstacles

In this complex world, people, their associations, states and actions are all linked and dependent upon the environment. This means that knowledge about complex systems must be disseminated as a part of education at all levels, and also to present policy-makers. Every change in one field of human activity might influence others and the links between policy actions should always be indicated in terms of their cross-cutting effects. These links might be shadowed by political actions.

As far as obstacles are concerned, IAP has listed the following (IAP Report, 2019):

• science and policy worlds are different and typically weakly connected;
• the scientific research is conducted in disciplinary silos;
• interactions between the SDGs and their targets are complex and poorly understood (inherent complexity of the SDGs);
• the lack of reliable data;
• the lack of funding and other incentives.

WEF has pointed out trends that must be taken into account (WEF Report, 2017):

• rising income and wealth disparity,
• changing climate;
• increasing polarization of societies;
• rising cyber dependency;
• ageing population.

National Academies often face (see also above IAP, 2019):

• local political turbulence;
• difficulties obtaining funding for their projects;
• weak links with their respective governments.

WAAS, with its many initiatives, needs:

• to foster a post-internationalist sense of the knowledge sector as a global community;
• to further develop links to other sectors at a global level;
• to specify and focus on core activities;
• to actively involve more of its members;
• to find stable sources of funding and thus provide stronger incentives for member involvement.

4. Successful Strategies and Impact

The academic sector has identified several shortcomings on which appropriate action should be taken (IAP Report, 2019):

- increase understanding between science and policymaking communities;
- bridge the gap between knowledge supply and knowledge demand;
- facilitate the development of science, technology and innovation for the SDG roadmaps and action plans to 2030;
- facilitate the reorientation of research and research support systems, so that they are more conducive to supporting global goals.

"Lessons concerning the weaknesses of social systems must be studied in depth and analyzed to understand why and how conventional thinking has led to global crises, the vulnerabilities generated by globalization and networking, and the ideas needed to foster effective social innovation."

Clearly the joint efforts of WAAS, IAP, ISC and other global organisations could accelerate the progress. One should also be aware of risks (WEF Report, 2017) in technological changes and new global economic and geopolitical imbalances, which requires scientific research. Here WAAS might play a leading role in indicating global trends and associated directions for research and academic debate.

Key imperatives for WAAS are:

- using its scientific potential and shaping mindsets;
- establishing good links with national academies and their international networks;
- stressing human-centred knowledge applications, human rights and inclusiveness.

In order to maximize the impact of all activities concerning research, education and the management of knowledge, several general principles must be followed (LERU Report, 206; 2017):

- the core values in research activities are excellence, openness, ethics and research impact;
- there is a clear need developing the capacity to conduct more research on transition problems;
- fostering transition from disciplinary-organized research to inter- and transdisciplinary research and creating the next generation of interdisciplinary researchers;
- developing open and explicit structures in universities corresponding to future-oriented policies;

- taking into account societal impact in the evaluation of research and education;
- generating cooperation and informal networks;
- fostering both problem-focused and academically oriented (blue sky) research;
- establishing clear messages and communication strategies to inform society about research results and possible trends;
- preventing the misuse of science;
- resourcing its action plans at national, regional and international levels.

Concerning the main challenges of research, the UN's 17 SDGs with their targets and indicators (Agenda 2030) are widely recognised as strategic goals for research and educational institutions. These goals are interdisciplinary but still some important fields of prospective study need to be stressed (ISC, 2019; IAP, 2019; IAP Report, 2019; WEF Report, 2017; EC SAM Report, 2017):

- Earth system megatrends (ecosystems, urbanisation, land degradation, water pollution, migration, etc);
- secure, clean (low carbon) and effective energy;
- emerging healthcare technologies;
- digitalisation and big data analysis;
- security (including cybersecurity) and defence;
- climate-compatible and sustainable agricultural management for food security;
- value changes, environmental consciousness and cultural dimensions of climate change;
- smart, green and integrated transport;
- humanities for interpreting all the changes and their ethical dimensions;
- basic sciences (particle physics, genetics, space studies, etc.) which form the foundation for future (yet unknown) applications and/or technologies.

WAAS has issued a Statement on Planetary Momentum (April 2020). The following has been stressed:

The community and its leaders should find the ways to change the situation from disunity to global solidarity again based on complementary top-down and bottom-up initiatives. Academia should analyze the risks and formulate paths to innovation and cooperation together with personal responsibility. Attention should be paid to decision theory, rational choice and values in framing solutions, taking into account the complex relations, interactions and reciprocal immediate and long-term influences involved. It also means that transdisciplinary thinking is needed. All sectors should seize the opportunities to alter established practices which have failed and have no future. Lessons concerning the weaknesses of social systems must be studied in depth and analyzed to understand why and how conventional thinking has led to global crises, the vulnerabilities generated by globalization and networking, and the ideas needed to foster effective social innovation. It calls for changes from technology-driven society to human and human-oriented technology utilizing opportunities generated by the

digital revolution as illustrated by web-based distance learning, which is already permeating our education system and work places.

One role of Academia, especially of National Academies, is to mobilize all scientists and scholars to convey information about scientific results to the wider society. This role becomes extremely important in today's information-rich globalized world where fake news and non-scientific ideas can spread widely and quickly. Integrity of research and a sound open-data policy must be supported by the scientific community in confronting threats to politicize scientific research. Here academies are at the front-line of activities (ISC, 2019; ALLEA, 2019a, 2019b). A general understanding of the complexity of world is present in the scientific community but not so well understood in the wider society. That is why *science education* is extremely important at all levels, from primary schools to policy-makers.

5. Conclusions

The activities of academies can cover many questions about social and technological development. Recent books by leading academics have listed many challenges and unanswered questions (Djurovic, 2017; Christophorou, 2018) for extending the boundaries of knowledge. Academies know their responsibility (see strategies of the ISC, 2019; and IAP, 2019), but the crucial problem is how to turn knowledge into action.

WAAS has a unique global position compared to other academies, and wide experience in dealing with problems on a large scale. The analytical knowledge derived from thematic meetings and intense discussions among leading experts allows for more advanced formulations of social policy goals, has revealed principles of human-centred economy and education, developed an understanding of the role of social power, and promoted science diplomacy, anticipated future challenges and promoted creativity. This work must be continued, imbued with the academic spirit envisaged by the Founders of WAAS. WUC courses on transforming the world and on complexity may serve as one way of disseminating these ideas.

The imperative for WAAS is to turn ideas into action by organizing a network for social progress. The challenge is to start actions guided by a human value system cognizant of the facts of science and willing to accommodate them. It means a tight cooperation with other actors, both NGOs and IGOs. It also means creating more activities that could change the mindset of society and policy-makers for a better future.

Effective leadership must be based on knowledge and knowledge generation needs effective structures, management and communication. Academies are leaders in thought, collective wisdom and social power.

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Multilateralism: Its Past, Present and Future

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Abstract

The narrative 'sweeps through' history, starting with the Treaties of Westphalia in 1648, on to the Congress of Vienna of 1814-15, to the current terminology of 'modern multilateralism' with its lineage from the Versailles Treaty of 1919 and the League of Nations, to the United Nations Monetary and Financial Conference at Bretton Woods in 1944, the European Coal and Steel Community of 1950, to the Nuclear Non-Proliferation Treaty (NPT) of 1970 and concluding the sweep with the Helsinki Process culminating in 1975. The objective of the 'sweep through history' and its main thrust is to analyze how at different times, the world powers of the day turned to multilateralism only after some prolonged, devastating conflict that they had had either blundered, or charged into, left them with no choice, but to sit down and talk, negotiate and take into account a balance of the interests of all parties. All these build up to a point where the narrative explores today's challenges and 'attacks' on multilateralism and the seeming inability of the international community to reengage and work together, to stem, in the words of the United Nations Secretary-General "the wind of madness sweeping the globe." The article makes the case, essentially, for the obvious: we are on the verge of blundering into something far more devastating than the world has experienced before for a variety of reasons, not least among them, unusually deteriorated relations among the most heavily armed and powerful States, a climate catastrophe that is already at our doorstep, the dark side of the unprecedented, quantum leaps in technological development, the deficit of trust among peoples, countries, communities and societies. Add to that the 'game-changing' COVID-19 pandemic and what the world has before it, is a stage set for planetary calamity. We should pull back from the precipice in time. Multilateralism, modern multilateralism, which marks its 100th anniversary this year, is the only way to do this.

In the middle of the seventeenth century, there was no such thing as the International Day of Multilateralism and Diplomacy for Peace, which the international community now celebrates every April. However, diplomacy for peace through multilateralism was precisely what the 109 delegations from all over the tattered European continent were engaging in in 1648, in the cities of Osnabrück and Münster. They had no choice but to come together and talk, albeit without once mentioning the word 'multilateralism,' which had not been coined yet. Through their own folly, unbridled egos, avarice, religious and national intolerance and total disregard for any, other than their own economic and political interests, the various states, royal houses, fiefdoms, religious heavyweights and lesser bishoprics of the day, had bled dry their countries and territories and the peoples of the entire European continent as a

result of a combined 110 years of war and devastation. The resulting set of treaties known as the Peace of Westphalia—without going into their enduring importance for international and interstate relations—set the precedent of peace established by means of diplomatic congress. Even though history remembers many other instances of multilateral negotiations when peace, or any other parleys were held by more than two parties, the Peace of Westphalia is considered the prototype and ancestor of modern multilateralism.

With the need to diffuse the effects of the French and American Revolutions and bring order and stability back to their unsettled world following the upheaval of the Napoleonic Wars, the major powers of the day again turned to the multilateral tool at the beginning of the nineteenth century in the context of what has remained in history as the Congress of Vienna. With over double the number of parties considered to have taken part in the Congress, compared to Westphalia,—from formal diplomats of established empires, to those of lesser crowned heads of different shapes and sizes, to representatives of what in today's terminology would be referred to as civil society—the Congress of Vienna established major ground rules for the interaction of the Great Powers in Europe, at the same time as they carved up and re-carved the map of the continent. Multilateralism had again proved its worth and would contribute to keeping the peace in Europe for practically a century, until the time when shots rang out in downtown Sarajevo in the summer of 1914.

The blueprint of the Congress of Vienna and the multilateralism tool were dusted off a century later, after the world realized that it had to tend to the wounds it had inflicted on itself by sleepwalking into the tragedy and carnage of a world war. The Paris Conference and the resulting Versailles Treaty of 1919 have the distinction of marking the birth of modern multilateralism, the hundredth anniversary of which we are currently commemorating. The embodiment of U.S. President Woodrow Wilson's Fourteenth Point, the League of Nations, which tragically for the League, the United States itself chose not to join, has enduring importance not only as the prototype, but in many areas, the precursor to the United Nations. However, due to a multitude of unresolved problems, hurt national feelings, race-based aggressive ideologies born out of economic and political instability and resentment on the part of the vanquished, an altogether dysfunctional financial and monetary system left behind by the collapse of the gold standard in 1914 and myopic, self-centred policies of some major players of the day, not unlike those on the current international landscape, resulted in that world not lasting even a full twenty years and deteriorating into the second, this time, bloodiest conflict in the history of humankind.

Determined not to repeat the mistakes of their predecessors, the leaders of the great powers, leading the nations united by war, worked with foresight, wisdom and determination to create the ultimate multilateral tool, a universal world organization, the United Nations, "to save succeeding generations from the scourge of war" and build a peaceful future for the world. This major undertaking succeeded in achieving this overarching aim for the past 75 years, at least. But the leaders of the day realized that no political organization of the countries of the world could be firm and last if the financial and monetary policies were not redressed in step. In fact, forty-four nations came together already in July 1944 at the United

Nations Monetary and Financial Conference at Bretton Woods, New Hampshire, in order to not only design an entirely new set of monetary rules, but to also ensure that twentieth century multilateralism could endure and work. This cleared the way for the creation of the United Nations itself the following year. This was also a welcome signal that this time, the United States of America was not going to abandon its newborn.

"[We need to] take a step back and reflect on how multilateral diplomacy has developed over the past 100 years from the League's initial steps to the complex and comprehensive work of the United Nations today."

Europe, devastated by the war and determined that the age-old enmity between France and Germany should not lead to another conflagration on the continent, took multilateralism to a new, supranational level, through the creation in 1950 of the European Coal and Steel Community. Through a variety of transformations, it has grown from the original six signatories to the most unique and unprecedented concept and reality that is the European Union today.

When the folly of the darkest years of the unregulated arms race of the Cold War culminated in the world coming to the brink of nuclear war between the nuclear superpowers over a small island in the Caribbean Sea in 1962, it was a sobering wake-up call. It made the main adversaries, their respective camps and the entire world turn to multilateral solutions, the most important being the 1970 Treaty on the Non-Proliferation of Nuclear Weapons. The bedrock of the Treaty, intended to prevent the international community from ever finding itself on the nuclear precipice again, is threefold: to prevent the spread of nuclear weapons and weapons technology by securing it within the 'club' of established nuclear states; to help induce non-nuclear states to renounce seeking nuclear technology by sharing with them the benefits of the peaceful uses of nuclear energy; and, as the overall ultimate goal, furthering nuclear disarmament and general and complete disarmament.

Multilateralism was not only resorted to when the world found itself in dire straits. Coming on the heels of the successful settlement of the issue of a divided Berlin through the 1971 four-way agreement on Berlin, the multifaceted Final Act of the Conference on Security and Cooperation in Europe signed by 35 European countries and the United States and Canada in Helsinki on 1 August 1975, was conceived as an effort to further reduce tension between the Soviet and Western blocs by securing their common acceptance of the post-World War II status quo in Europe. Regarded at the time by the West as a success for the Soviet Union in solidifying its hold on Eastern Europe, its third main substantive area or 'basket' ensured that human rights issues would legally no longer be something that the USSR could refer to as "its domestic affair" and in so doing had a far-reaching effect on U.S.-Soviet relations and the outcome of the Cold War.

Why this jaunt through history, one may well ask.

Primarily because, in the face of today's challenges and 'attacks' on multilateralism and the seeming inability of the international community to reengage and work together, to stem, in the words of the United Nations Secretary-General "the wind of madness sweeping the globe," we need to look back and learn, how our forefathers dealt with critical situations they had gotten themselves into in past centuries.

Last year marked the hundredth anniversary of modern multilateralism, dating from the Versailles Treaty of 1919 which established the League of Nations. And this year marks the 75th birth anniversary of the United Nations. These two important anniversaries, coupled with the very disturbing situation in every aspect of life today, require us to take a step back and reflect on how multilateral diplomacy has developed over the past 100 years from the League's initial steps to the complex and comprehensive work of the United Nations today.

The First World War marked a watershed in many ways, and one of them was the demise of the old idea that balance-of-power politics could be a sustainable and long-term guarantor of peace. An alternative international order was needed and so emerged multilateralism, finding expression in the League of Nations in Geneva and later, in the establishment of the United Nations in 1945. And thus, in the multilateralism of the 20th century, violence and unbridled nationalism were replaced with the rule of law, and conflict with cooperation as the basis for global governance.

There is reason to look back with satisfaction. Extraordinary advancements have been made in peace, rights and well-being over the past century, from conflicts prevented or defused by quiet UN mediation, to the elimination of deadly diseases like smallpox; from the provision of safe drinking water and emergency supplies, to the preservation of historic, cultural, and natural sites the world over.

However, two decades into the twenty-first century, we find ourselves facing 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, rampant inequality both between and within countries, escalating disputes over trade, sky-high debt, threats to the rule of law, the methodical and deliberate dismantling of disarmament commitments, attacks on the media and civil society, and much more.

These ills affect people everywhere and they are all connected: climate disasters entrench poverty; poverty breeds conflict; conflict triggers refugee flows, and so on. Together, these threats are deeply corrosive. They generate anxiety and breed mistrust. They polarize societies—politically and socially.

To further complicate this, we no longer live in a bipolar or unipolar world; and not yet in a multipolar one, but, rather, in an unsettled world with multiple actors of different calibre with clashing interests and often isolationist politics of fear and resentment. Much to the detriment of the overall world situation, the crucial relationship between the America-China-Russia triangle has rarely been this dysfunctional. None of them has balanced realistic policies towards each other, just reactions rooted in past instincts and old comfort zones. The overall world security

situation is the worst in decades, maybe ever; the past rigid security standoff of the Cold War had its structure and rules. Today, with no rules, those who are called upon to provide 'adult supervision' are themselves in need of it. This sets a bad example for the rest of the world, particularly with respect to the utility of nuclear weapons. The international community is losing one pillar after another of the international disarmament and arms control architecture with no proposition of viable alternatives, and increasing reliance is emphasized on the very nuclear weapons that the established nuclear powers are urging others not to acquire.

Instead of seeing the need for that elusive common purpose in working out a *modus vivendi* among them, the nuclear superpowers still operate with terms such as 'pushback', 'like-minded countries', 'hegemon', "zero-sum game," etc., perpetuating 20th century failed concepts well into the 21st.

In a worrisome related development, medium-sized powers are increasingly acting autonomously from the major powers and are using force without accountability to any of the bigger players. It is impossible to look at Syria, Libya, or Yemen, for example, and not recognize the role of regional powers outside. And the same is true for other conflicts around the world. Security Council resolutions are being ignored.

We are also seeing increasingly militaristic rhetoric and activities, growth in nationalist and isolationist politics of fear and resentment, and the burgeoning role of technology and the private sector—including social media—in international relations.

Power relations are becoming unclear. Multipolarity without strong and accepted multilateral instruments is inherently unstable, volatile, and dangerous. There is a feeling of growing instability and hair-trigger tensions, which makes everything far more unpredictable and uncontrollable, with a heightened risk of miscalculation. What we have is a world of great asymmetries and fragmentation at all levels—political, economic and social.

To say that the world is in transition, would be a gross understatement. What we are living today is not a routine changing environment. Rather, we are transitioning to a different era, something that only occurs maybe every other century. A new social and economic paradigm is emerging, and we all need to join forces to ensure that these changes have positive impact on all. The dramatic and fast-evolving human, social and economic impact of the COVID-19 pandemic only further strengthens this point.

At the start of 2020, who could have imagined that a disease outbreak could turn the world upside down in such a short time and in such a dramatic way: hundreds of thousands of lives lost all over the world, nationwide lockdowns, economic activity at a standstill in most parts of the world, reintroduced border controls within the Schengen Area and many other unprecedented measures.

The human toll of the pandemic continues to grow by the day, devastating entire families and communities. Its impact on societies and economies is also yet to be fully assessed. The "Global Lockdown" will cost the international economy dearly in the months and years to come and will have devastating consequences on labor markets, affecting to some degree more than 80% of the world's workforce. The world is about to plunge into a global recession

of record dimensions, far worse than the one that followed the global financial crisis of 2008-2009. Moreover, the pandemic will likely exacerbate extreme poverty and hunger rates in the developing countries for years to come.

The ongoing pandemic is one of the most acute challenges to international cooperation since the end of World War II. We are now facing multiple crises—an ongoing global health emergency, a financial crisis, and a collapse in commodity prices, which compound the existing global threat of climate change, conflicts and poverty, none of which recognize borders, as COVID-19 does not.

Given the magnitude of the unfolding crisis, the already profound mistrust in global governance institutions has deepened further. The past weeks have seen a spate of opinions proclaiming the end of globalization and blaming international institutions for the lack of coordinated and effective response.

Global challenges of such magnitude require concerted, collective responses. Yet, at this very moment, multilateralism itself is being put into question and increasingly ignored as a tool and concept. As Secretary-General Antonio Guterres recently observed, "Multilateralism is under fire, precisely when we need it most!" In this moment of geopolitical flux, against the backdrop of a spike in the number and complexity of global problems, what we are seeing is a decrease in will for common action and no common purpose anymore.

2020 is a watershed moment for humankind. More than ever, the international community needs a working system of common rules and shared foundational principles. Multilateralism is one of the best known and most universally recognized principles of international relations. What we need today is the development of a more modern multilateralism, one that is more inclusive and collaborative.

Similarly, leadership must come from all quarters and all levels; gone is the time for a handful of leaders and small groups of countries. Conveniently, there are no such leaders around, anyway!

Multilateralism is no longer just about states, either. In today's interconnected and interdependent world, governments and intergovernmental organizations alone cannot effectively address complex global challenges such as climate change, conflicts, development and migration. These challenges require our collective response. It will require efforts from everyone: from the United Nations and governments, to the private sector, civil society, academia and, most importantly, youth. The increasing engagement of youth is essential, given the state of our planet. In the words of Secretary-General António Guterres, "it is not enough to proclaim the virtue of multilateralism; we must prove its added value." This is the new multilateralism. Countries do not have a monopoly on commitment and good ideas. Global challenges require us all to work together for global solutions. International relations do not have to be a "zero sum game".

Global challenges are also global opportunities: and they can only be addressed collectively. This reality is reflected in the policy frameworks of 2015. Ironically, the same governments that are drawing further and further apart on the vital security, economic and

social issues today, found it possible to come together in 2015 to reach agreements of truly historic proportions: the Paris Accords, Financing for Development and the 2030 Agenda. This gives a unique chance to shape a new governance landscape and the 2030 Agenda for Sustainable Development is our common roadmap.

The United Nations remains the only truly global, truly neutral, truly legitimate table around which all stakeholders can come together to find solutions. Contrary to those who speak about the crisis or the decline of multilateralism, the reality is that there is no alternative to multilateralism, especially now. However, a myriad of national governments, international organizations, NGOs and humanitarian actors can only be effective if they act in a coordinated manner.

In this fast-changing environment, new diplomatic policies and practices based on the principles of solidarity and inclusiveness are urgently needed, bringing together all relevant actors, from civil society, think tanks, academia to regional development banks. The collective response has an uneven record, with tensions often undermining the effectiveness of multilateral decision-making processes. But the world needs to be optimistic and hopeful.

We are on the verge of blundering into something far more devastating than the world has experienced before for a variety of reasons, not least among them, severely disrupted relations among the most heavily armed and powerful states, a climate catastrophe that is already at our doorstep, the dark side of the unprecedented, quantum leaps in technological development, the deficit of trust among peoples, countries, communities and societies. Add to that the 'game-changing' COVID-19 pandemic and what the world has before it is a stage set for planetary calamity.

We should pull back from the precipice before it is too late.

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Global Leadership in the 21ˢᵗ Century

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Abstract

This generation has grown in the belief that history has ended before them, that now we live in an era of comfort and stability. Indeed, the post-Cold War context has given birth to beliefs that global solutions could be agreed upon and implemented to tackle global challenges. This proved to be an illusion. Awakening from a happy slumber to face reality was bitter. The COVID-19 crisis shock reminds us that we live in history, that the world is continuously morphing. The pandemic and its aftermath is not so much a turning point but a catalyst and activator that brutally reveals and intensifies tendencies in the transformation of the world that arrived long before the current crisis. Change and leadership are absolutely inseparable. However, it is exactly at this time of rapid change that there is an overall feeling of political leadership deficit. What shall we expect in the post-coronavirus world? Does leadership still matter? And if yes, what kind of leadership? If we want to cure the disease rather than its symptoms, it is time to start thinking in terms of synergies and opportunities, outside the usual multiple-choice box of threats and priorities. Only new "effective multilateralism" can re-establish trust, based not on traditional states' balance of power and interests but on globally shared risks and concerns of communities. The real transformational leadership required today lies not in enhancing what is, but in advancing toward what will be!

> *"Management is doing things right; leadership is doing the right things".*
>
> **– Peter Drucker**

This generation has grown in the belief that history has ended before them. Revolutions, wars... All this was before them. We live in an era of comfort and stability. Everything is calculable, predictive, almost predetermined. Everything is the same: boundaries, lifestyles, growing standards of living. We have not learned the shocks of the 20ᵗʰ century—the orphan of the Belle Epoch as the "sorcerer's apprentice" summoned the genie, the monster, that it failed to cope with—and as a result, the monster killed it.

Indeed, the post-Cold War context has given birth to firm beliefs that global solutions could be agreed upon and implemented to tackle global challenges. Binding global agreements and international law would be implemented and enforced with the help of strong international institutions. The world moved from MDGs to SDGs, from G7 to yet another G20 session. We have developed a whole set of complicated and elaborate political "newspeak" that screens us from the real-world problems: "underprivileged people", "overseas contingency operations", "targeted killings", "nature-based solutions", etc. We have done everything to generalise the

problems, thus decoupling ourselves from genuine human suffering—"capacity building", "rights-based approach". The future, it seemed, belonged to unbridled globalisation.

"The current crisis will be not so much a turning point but a catalyst and activator that brutally reveals and intensifies those tendencies for the transformation of the world and human behaviour that have already matured and have begun to appear in concrete social and political practices."

This proved to be an illusion. The institutional architecture of globalisation failed to develop as had been hoped. The World Trade Organization, established in 1995, today finds itself in agony, just 25 years after its creation. Plans for global institutions to oversee investment, competition, or climate and environment are shelved. The whole system of the basic international arms control and security agreements (from NPT to Open Skies and New START treaties) is in limbo. The past five years have seen worsening trends across conflict indicators: more wars, more people killed and civilians increasingly targeted.

- Over 68 million people are now displaced due to conflict and persecution—more than ever in recorded history.
- At least 70 conflicts involve non-state actors, a historic high.
- An estimated 151,887 people were killed in conflicts in 2018.*

Lately we have entered what media calls "a perfect storm"—COVID-19 pandemic and the general failure to coordinate response across the states' borders is costing lives, creating untold economic damage, and enacting disproportionate harm on locked down individuals, isolated households, and communities. All this is perceived as a shock of unprecedented proportions compared already to the damage caused by the two world wars. This can be justified exclusively by the existing inadequate level of historical knowledge.

However, we live in history. Nothing is guaranteed to anyone. The borders of states are changing before our very eyes. Wars begin and end. Heresies are born. Church schisms erupt. Deep tectonic shifts are taking place in politics. We cannot accommodate this, and we perceive every serious phenomenon apocalyptically.

Not long ago, history used to be determined by leaders. Alexander the Great, Julius Caesar, George Washington, Napoleon, Bismarck, Churchill, Stalin—major world political actors, both heroic and villainous, were thought to drive the world. But then a new trend rose to tell the same stories in terms of deeper structural root causes: geopolitics, power balances, interests, globalisation, ideological conflicts. Leadership came to be seen as just projections of other, more important trends; leaders' personalities and their characters were essentially

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* https://staging.crisisgroup.org/who-we-are

instrumental, if not irrelevant. What mattered was not the "titans and tyrants" but megatrends and "formative impacts".

What shall we expect in the post-coronavirus world? Does leadership still matter? And if yes, what kind of leadership?

I am sceptical regarding the claims that the world will be different after the crisis. The world is continuously morphing and has never changed abruptly. The current crisis will be not so much a turning point but a catalyst and activator that brutally reveals and intensifies those tendencies for the transformation of the world and human behaviour that have already matured and have begun to appear in concrete social and political practices long before the current crisis has had its impact. However, the crisis by all means will dramatically boost the speed of these changes. As a result, the current world will undoubtedly seriously change, and much faster than by a calm evolutionary process.

Change and leadership are absolutely inseparable. However, it is exactly at this time of rapid change that there is an overall feeling of political leadership deficit.

COVID-19 came as a stress test many world leaders have not passed. U.S. President Trump has been gambling with people's lives in an attempt to "outwit" the virus, China's leader Xi Jinping willingly or not prevented any collaborative action to contain the pandemic, while President Putin has "self-isolated" politically, leaving all the responsibilities to Russia's regional authorities.

In fact, politics started lagging behind the transformation process long before the coronavirus crisis. Instead of transformative leadership we have been witnessing isolated efforts to react to the challenges in a "baby-sitter" pattern, when top priority is assigned to where the most noise comes from. The lack of systemic response is the main reason of the multiplying crises we face—not only coronavirus, but equally security, climate, food, water, energy, poverty.

As the days pass by, leadership flaws are turning more and more noticeable internationally. The United Nations Security Council could not agree on a COVID–19 resolution, as the US and China could not concur. Furthermore, the G-20 and the G-7 have been unable to reach even basic decisions on global economic recovery; the G7 was incapable of even issuing a final statement, as the US wanted to "coin" COVID-19 as a 'Chinese virus'. Instead of real efforts to build up cooperation, we are witnessing an endless blame-game. Lately, it was the UN Security Council and World Trade Organization that were under attack. Presently, the World Health Organization (WHO) is the target, exactly when the world needs it like never before.

The epidemic is essentially a public health crisis with massive economic and social effects. In fact, political decisions that guided governments to keep it at bay facilitated the spread of the virus. Clearly the lack of political leadership has already multiplied the price the world is paying on all counts—life loss, economic and social consequences, departure from democratic norms.

World politics is increasingly defined by countries' internal problems, and not the challenges of world transformation. Or, rather, responses to these challenges become more

and more the consequence of internal disruptions, exacerbating international contradictions and making them increasingly difficult to untangle. Think about the impact of the upcoming US elections, stability of the ruling regimes in Russia or China and the Brexit agenda of the UK!

"The pandemic has exposed the chronic contradictions between European values and the increasing nationalisation of members' interests."

Every day political news continue to exceed the imaginations of absurdist novelists and comedians, amongst others—President Trump plays golf as the US coronavirus death toll approaches 100,000, Hong Kong police uses tear gas and water cannon to disperse protesters against Beijing's plan to impose national security laws on the city, Russia demands an apology from Bloomberg news agency over a report it published about President Vladimir Putin's low trust rating among Russians—reminding us of Mark Twain's words "It's easier to fool people than to convince them that they have been fooled."

However, judging by the political response to epidemics and their consequences, we seem to be witnessing again the attempts to reshuffle the core pieces of the post-Cold War international order. A new era of great power competition is unfolding between the United States and China accompanied by a growing leadership vacuum in what has become known as the liberal international order.

Perhaps the most significant of these shifts is the unmistakeable demise of Pax-Americana. The COVID-19 outbreak is the first global challenge that has witnessed the complete absence of American and generally Western leadership. It has also thrown into sharp relief the social and governance vulnerabilities of the West more broadly. Even the EU had to struggle to equitably distribute resources between its member states (so far not very successfully). The pandemic has exposed the chronic contradictions between European values and the increasing nationalisation of members' interests. It turns out that national identities and historical memories do not match across EU. For example, some politicians in Poland argue that the Vatican and the USA brought freedom to the Poles, and the Spaniards remember that it was the Vatican and the USA that extended the dictatorship for forty years, just to prevent the left-wing forces from coming to power. Thus, the gap—between North and South Europe over economics, and Western and Eastern Europe over values—seems likely to widen.

The weakened transatlantic core of the international liberal order is likely to slip further in relevance in the post-coronavirus world. While no one can tell what the future order will look like, it is becoming obvious that new instruments and institutional tools are needed to prevent a situation in which not much may be left for recombination.

Therefore, transformational leadership is required today, which is not about enhancing what is, but advancing toward what will be!

The current systems and institutions of international cooperation were built to address 19th and 20th century problems. But in today's complex and fast-paced digital world, these structures cannot operate at 'internet speed'. Two thousand years ago the entire Pax Romana was doomed like a dinosaur whose brain was too small for such a huge body. Our current world system seems to have similar constraints.

> *"This is not a crisis of globalisation, but a crisis of financial and economic neoliberal globalisation."*

In his Prison Notebooks, the Italian philosopher Antonio Gramsci wrote: "The crisis consists precisely in the fact that the old is dying and the new cannot be born; in this interregnum a great variety of morbid symptoms appear." In a way, this is an apt description of the world order today.

As a result, the current "interregnum" world order is characterised more and more by a general crisis of leadership and decline in governability.

And it is not that the politicians do not realise it. Germany's Chancellor Angela Merkel concedes that "the well-tried and familiar framework of order is under strong pressure at the moment." According to Foreign Affairs Minister Heiko Maas, the situation is even worse: "That world order that we once knew, had become accustomed to, and sometimes felt comfortable in—this world order no longer exists." Many also believe that what is known as the liberal international order has been damaged to such a degree that it is hard to return to the *status quo ante*. As French President Emmanuel Macron puts it, this is not "an interlude in history before things return to normal […] because we are currently experiencing a crisis of the effectiveness and principles of our contemporary world order, which will not be able to get back on track or return to how it functioned before."[*]

In fact, our future is already with us, but our past does not let us out of its tenacious paws!

The new actors are already entering politics: the state maintains (so far?) a monopoly on certain policy areas, but non-state actors play an increasingly important role on the stage of defining the problem, analysing the problems' links, and ultimately shaping the political discourse. The Danish government recently decided to establish the post of an Ambassador responsible for relationships not with other foreign states but with… corporations. The "Digital Ambassador" of Denmark will be facilitating relationship between Denmark and (!) Apple, Google and Microsoft. The French followed suit last year.

Big data companies (Google, Facebook, etc.) have already assumed many functions previously associated with the state, from cartography to surveillance. Now they are the primary gatekeepers of social reality. People today engage in social issues mainly through

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[*] http://cpcml.ca/Tmlw2019/Articles/W4900517.HTM

civil society and the use of social media as their primary tool. Facebook this year has reached almost 3 billion users. This holds fascinating prospects for de facto global citizenship and social action, but it does undermine the nation-based representative model of democracy.

The role megacities and provinces played in planning and organizing responses to the pandemics, becoming in fact decisive actors across the globe in this struggle, could dramatically redesign the essential services provision in a more resilient fashion in future man-made or natural disasters, defined less by national identity and more by security, services and well-being they provide for the people living within the municipal areas. The contours of this trend have materialised in the recent legal claims against sovereign state—China, filed by the states of Missouri and Mississippi.

The pandemic has seemingly boosted the process of de-globalisation. However, this is not a crisis of globalisation, but a crisis of financial and economic neoliberal globalisation, based on the belief that social benefits and regulations were a burden on the economy that hampered growth, and that "a rising tide lifts all the boats". However, contrary to expectations, the tidal wave has overturned many boats.

Consequently, regional integration is challenging and has slowly been replacing global integration. Subnational structures (megacities and provinces), empowered by digital technology and capable of responding at faster speeds than states, would inevitably forge their own trade agreements, public health arrangements, and climate change accords with other cities globally, via direct diplomatic relations.

By all means this list is not exhaustive and there might be many more possible stakeholders in the new global governance structures.

Indeed, we are going through what by every measure is a great crisis, so it is natural to assume that it will dramatically accelerate the march of history. The world is on the edge of a systemic reset.

The "perfect storm" we are living through, on the one hand, could further undermine the existing international institutions, reinforce nationalism and spur deglobalisation, the symptoms of which are well visible already.

But on the other side, it could also upgrade multilateralism, a glimpse of which appeared in the G-20's offer of debt relief to some of the world's poorest countries; the "Merkron agreement" (Macron and Merkel initiative of the European €500 billion Recovery Fund) that the EU will share a significant amount of joint debt (some even see the initiative as a step toward establishing a single European nation); a joint plea from more than 200 former national leaders for a more coordinated pandemic response; an unprecedented multinational pact to arrest the crash in oil markets and the recent world scientists' proposal for a strategy to improve the disjointed vaccine development process in which there argue: "To return to a semblance of previous normality, the development of SARS-CoV-2 vaccines is an absolute necessity. To achieve this goal, all the resources in the public, private, and philanthropic sectors need to participate in a strategic manner."

The pandemics and its consequences have tragically put on display the already tangible process of 20th century political structures drowning in a 21st century ocean of deregulated finance, artificial intelligence, autonomous technology, religious militancy and great power rivalry. For increasing numbers of people, our nations and the system of which they are a part now appear unable to offer a plausible, viable and secure future.

Today's circumstances call for an updated "operating system"—call it "effective multilateralism" or "pluri-lateralism"—that is based not only on a Westphalian sovereign states pattern but which also involves nascent stakeholders of the global international society. The gap between the expanding networked pluri-lateral world and governance, traditionally understood and applied within post-Westphalian concepts, is widening and feeding disorder and disruptiveness of the global system. And this gap will not be bridged by any new iterations of a traditional uni-, bi- or even multi-polar global world order.

Coming back to the current crisis, if we want to cure the disease rather than its symptoms, it is time to start thinking in terms of synergies and opportunities, outside the usual multiple-choice box of threats and priorities. Only new "effective multilateralism" can re-establish trust based not on traditional states' balance of interests but on globally shared risks and concerns of communities.

True transformative leadership is all about "uncorking" the future, rather than trying to rekindle the past.

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Innovative Financial Engineering to Fund the SDGs
A WAAS Initiative[*]

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Abstract

Development needs have primarily been financed through private sector financing, conventional public sector funding and philanthropic commitment. These traditional sources are not sufficient in scale and speed to meet the pressing finance needs. The world community is too busy repairing, stabilizing and refunding the given to maintain the stability of the existing system, relying on a mechanical model. Out-of-the-box approaches which blend in with the given tools, providing new financial engineering are required. The introduction of a parallel electronic currency specifically designed to finance global commons and human-centered economy would provide a systemic non-linear and complex approach to create the necessary resources to achieve the UN SDGs and addressing asymmetric shocks (COVID-19, among others), while stabilizing the existing monetary system. The development of cryptocurrencies based on blockchain distributed ledger technologies has prompted leading central banks and other agencies around the world to study the potential application of this approach to directly inject purchasing power without dependence on the banking system. Proposals are now being studied by an international expert group on how this approach can be utilized to finance the huge multi-trillion-dollar annual investment requirements for achieving the Sustainable Development Goals, with special emphasis on investments in human resources and environmental protection. A first outline is given in this preview. A full report (The Tao of Finance) of the expert group will be published in late 2020.

1. Introduction: The Traditional Way

In 2015, world leaders signed up in NY for a future road map with 17 Sustainable Developments Goals (SDGs) to improve Humanity, the Planet, Wealth, Peace and Partnerships. Most of these SDGs focus on common goods such as clean air, universal access to health care, education and maintaining biodiversity. These goods are not exclusive and should be accessible to and enjoyed by everyone. Each of these goals have enough scientific

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[*] The TAO of Finance-Initiative of WAAS: The current proposal is the result of 4 years of an ongoing interdisciplinary process of over 40 expert hearings, panels, background discussions and multiple conferences among scholars, regulators, executives, politicians and non-profit activists to elaborate the new role of financing the future and the future of finance.

evidence, technological know-how and political consensus to be achieved, and are valid for the entire planet. But these goals are expensive to achieve and require approximately 5 trillion USD/year over the next 15-20 years to finance. Our global Gross Domestic Product (GDP), which includes all goods and services, is approximately 80 trillion USD/year. The conventional way to finance social and ecological projects globally has been by redistributing the money remaining at the end of this pipeline. Historically, the world community has spent 0.7% of global GDP—roughly 500 billion USD/year—to finance common goods. Other than the Scandinavian countries, the vast majority of the world has never attained this 0.7%. But even if all countries attained the 0.7%, this sum is realistically not enough to finance our future. Approximately 8-10 times more funding—equivalent to 5 out of the 80 trillion USD global GDP—is required to meet the social and environmental challenges we face. Withdrawing 5 trillion from the economic process, even in a gradual manner, would lead to a global recession. In fact, it is impossible to finance our future solely through monetary re-distribution. In addition, the stability of the financial system itself is an impediment to sustainable financing.

2. Money is not a Natural Law but a Social Convention

Money is neither a thing nor a natural law. It does not arise naturally in any given society, but is the result of a human invention, backed up by a narrative shared by billions of anonymous humans interacting with each other round the clock in order to improve the welfare of each individual and society as a whole. The more stable, reliable, and trustworthy this social invention is, the more powerful it will become to achieve the purpose each society has set for itself. It is reciprocal trust and mutual tolerance that have the ability to catalyze greater human potential. The opposite is true, too. The weaker, more unstable, more speculative, unreliable and unfair a system is, the less capacity it has to exert its full positive influence on society and its members. Similarly to any social organization and invention such as language, the internet, or the legal system, the monetary system can be used for good or bad. The ultimate purpose of a monetary system should be that of promoting, facilitating and supporting human welfare, security and wellbeing. In this sense the financial system acts like a catalyst, enabling multiple interactions and infinite transactions between humans beyond space and time without becoming altered in the process. However, the more complex and interactive a society becomes, the more carefully the design of this invention needs to be scrutinized.

3. How does Money come into the World?

It is not the production of goods and services, nor the pattern of our consumption, that helps us understand where money comes from, but the underlying values that determine the nature of any monetary system in any society.[*] Money is a social invention, a legal act

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[*] 97% of the money in circulation is generated through the commercial banking system by a credit creation process. 3% is created by the central banks (base money and/or cash). This 3% also acts as a loan to the commercial banking system. In modern times, central banks generate base or hot money as loans and purchase state or corporate bonds as collateral. This is how money comes into the world. This procedure increases their balance sheets, stabilizing our economy and our society as a whole. Theoretically there is no limit to the amount of central bank loans possible. Grauwe (2019)

and a convention, not a natural law or a thing. Accordingly, we can change it. In this sense, the financial system is one of the most powerful tools facilitating societal achievements that humans have ever invented.[*] Rather than rejecting the internet, our language, the marketplace, and governmental institutions when they serve less noble or ethical purposes, we try to improve their design or usage and minimize their negative externalities. This should also hold true for the financial system. Because the monetary system affects so many aspects of human activity, its steering power should increase benefits and achievements every time it is used. But money not only enables commercial transactions. It is able to facilitate human welfare from a much larger perspective, converting individual goods or services into almost any other desirable social good. In this sense, the financial system not only catalyzes and multiplies, but also potentially transforms our society, channeling the liquidity towards where it can create the most welfare for most people.

4. Discovering New Territory

Over the last 40 years, the financial system has become more unstable, with over 425 banking, monetary, or currency crises; and with every consecutive event, higher debt load and greater expenses amounting to more than 10% of the GDP. Because of this, the world community spends much effort repairing, stabilizing, and refunding the monetary domain to maintain the status quo. This limitation in our financial system thwarts any improvements in the technological and political field to make the world a better place. Is there a different way to finance our future? Using systems thinking, we propose an outside-the-box solution to generate the funds needed to finance global common goods: (a) Central banks would be given an extended monetary mandate to create and issue the 5 trillion US Dollar-equivalent liquidity using block chain technologies.[†] Alternatively, (b) properly regulated corporate initiatives (cryptocurrencies) or complementary communal currencies (LETS; Regiomoney) would receive a mandate to issue additional liquidity. These funds would be earmarked and used exclusively to finance SDG-related projects[‡]. This electronic liquidity would run through monetary channels other than the ones in the conventional system. We would then have a supplementary currency operating in parallel to the conventional monetary system generating the 5 trillion USD-equivalent annually needed for the next 20 years.[§]

Research on optional parallel digital currency systems has shown a dozen positive effects. For example, this new technology could be used to create and channel targeted financial liquidity to millions of African citizens through their mobile phone network. In India, the existing microcredit banking system could be used to transfer additional liquidity to millions of Indian citizens. Any dollar spent and invested through these green, parallel channels has

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[*] See Jacobs (2016); Jacobs & Slaus (2012).

[†] Whereas the quantitative finance programs of central bank after the 2008 crisis increased the API (asset price index) and were primarily created to stabilize the banking system, our approach is using different monetary channels and different technology (DLT) to guarantee that the additional liquidity is solving real economic problems (hunger, poverty, global warming and the loss of biodiversity).

[‡] A so-called *digital smart contract* implemented into the distributed ledger technology would allow to trace each economic transaction, allowing green investments and consumptions pattern and prohibiting others (buying guns, alcohol, drugs among others).

[§] Such a parallel, digital, optional monetary mechanism has a positive impact on the price level (stabilizing the CPI), prohibits fraud and corruption, increases potential green public revenues, and will finally shift our entire society from a war prone state towards a more peace prone state. Technical details are explained in the report (Brunnhuber et al., 2020).

the potential to reduce or even eliminate absolute global poverty substantially. The electronic format would prevent corruption and fraud, as each transaction is transparent and public. Once the currency is eligible to pay taxes, communal offices would have additional liquidity to rebuild public infrastructure such as kindergartens, public parks, communal hospitals and public libraries. And the millions of nongovernmental-organizations globally would finally receive the funding they need to properly do their jobs. This targeted added liquidity would enhance education and access to universal health care that would otherwise never happen. It would reduce resource depletion and clean up air avoiding the negative effects on our planet and common health. We would eventually tap into the untapped potential of millions of unemployed individuals through the creation of new jobs, thereby unleashing the creativity of billions of humans.

> *"If we are prepared to change our mindset and the underlying narrative about money, unlimited options are possible."*

What would be the effects on the conventional economy? The annual 5 trillion USD-equivalent added liquidity would not hurt or harm the conventional economy. In fact, the opposite would be true. Corporate and state planning, production and price level would become more robust and reliable with a longer-term vision. Furthermore, it would stabilize the cyclical economy of booms and busts. And such a parallel system is far from being inflationary. Applying the right monetary channels, additional liquidity injected to reduce poverty and hunger, increase the access to health care and education and invested in renewable energy will eventually reduce the pressure on the general consumer price (CPI): Reduced costs for damage control, increased productivity of a more healthy and educated population and the economy of scale are some of the components that enable a parallel currency system to operate rather in an anti-inflationary and anti-cyclical manner.[*]

Despite arguments to the contrary, we need much more financialization (Finance/GDP). However, it must be designed in a more democratic and human-centered manner, to protect the planet while increasing wealth for the two thirds of the global population and to cope with ongoing asymmetric shocks (COVID-19, global warming) the world community is facing. If there is a single most important variable beyond technology, governance, behavioral changes and demography to change the world, it is a parallel monetary system. This is the "game changer". All this can be started in less than 6 months, if the largest Central Banks agree to create a parallel, optional complementary currency and all this could be implemented on a country level in 12-16 months with measurable outcomes. We are aware that a redesign of the financial system does not solve all our problems, but all our problems can more easily be addressed by it. This, or a very similar mechanism, is the missing link to achieving greater Humanity, Wealth, Peace, a greener Planet and better global Partnerships.

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[*] The impact of a parallel currency system on the CPI (Consumer Price index) is further explained in the upcoming report (Brunnhuber et al., 2020).

5. A Blended Six-pack is Required

A mix of policy instruments is necessary to tackle the challenge of financing our future. The six most relevant financial engineering tools to do so and establish a more sustainable common future at the same time are structured like a staircase (see Figure 1). This stepped approach is sensitive to time, to the capacity for collective action, and considers a balance between current and future generations.[*] It builds upon the wisdom and experiences we have gained in traditional finance in the past (regulatory efforts, taxation, impact funding) and extends that wisdom and those experiences into the future, adapting and enriching the instruments in question according to the challenges ahead. In general it has the following rationale: the more time available and the stronger and denser the multilateral agreements on which global transactions are built, the more likely it is that the lower traditional steps are favored. Conversely, the less time we have and the more multipolar or bilateral our world becomes, the bolder and more unconventional the monetary and financial decisions must be, as embodied in the higher steps. This will finally lead to supplement the residuum left by additional liquidity injected through a parallel financial system.

Figure 1: The Six Pack and the Stepped Approach
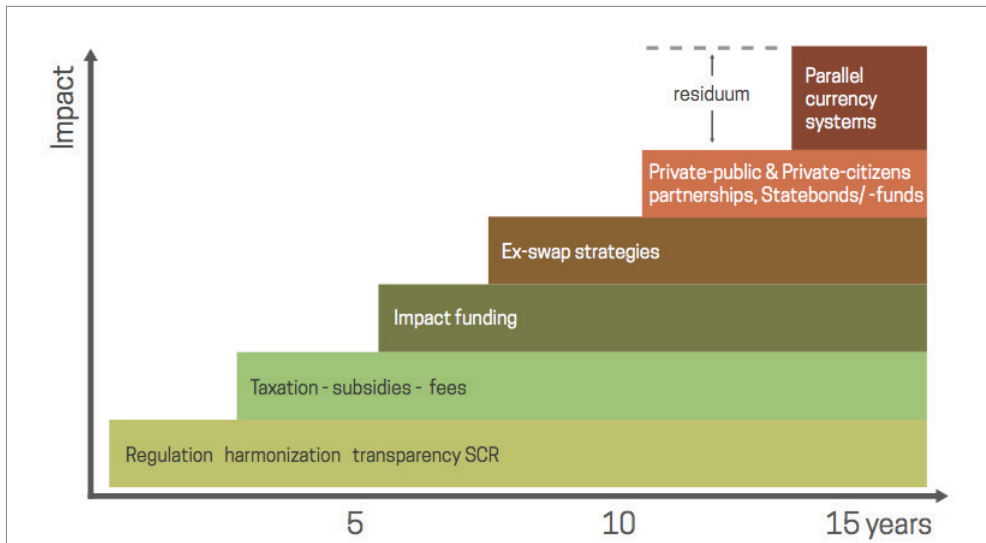
6. Some More Concrete Examples

Some examples, where conventional financial tools can be further developed using the parallel mechanism to stabilize and steer our society towards a more sustainable future, are summarized in Table 1.

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[*] Sachs (2015); Orlov (2018); Claringbould et al. (2019), Heine et al. (2019).

Table 1: Concrete Examples of How a Parallel Optional, Digital Monetary System can help Finance our Future and Cope with Asymmetric Shocks

Green Bonds	**Catastrophic Bonds (CAT-bonds)** **Pandemic-emergency facilities (PEF)** **Forced Migration Facilities (FMF)** **Harvest Default bonds (HAD)**
Green Credit Easing	**green TLTRO (Targeted Long Term Repurchasing Organization):** Conditioned Lending for SME, Private Households and public sector entities to finance green investment, consumption. **Green Repurchasing agreement: (Repos)** Green assets are eligible to borrow liquidity from Central banks. They serve as collaterals for financial institutions for short term refinancing and operate as a criterion in case of a haircut.
Green Quantitative Easing	**Additional base money** issued for Developing banks/ EIB, operating also financial intermediaries for conditioned green lending.
Green Private Public Partnerships (PPP)	**Performance Contracting** between the private and the public sector, where the public infrastructure remains in public ownerships, the management is running through private companies.

Let us take this argument one step further: catastrophe bonds (CAT bonds), pandemic emergency facilities (PEF), forced migration facilities (FMF) and harvest default bonds (HAD) all operate along a similar principle: a region signals a hazard and asks the World Bank for financial insurance assistance. The World Bank or the IMF then issues bonds with an interest rate and a complex contracting agenda to the private sector, which buys up the bonds. The contract determines when and how the private sector must commit to paying for the hazard or alternatively is reimbursed if the hazard has not occurred. Examining harvest default bonds more closely, we see 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 them with a risk premium. A supplemental digital currency, as explained in this text, 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 World Bank's balance sheets increase in the first place. In the case of a harvest default, the World Bank will need to write the event off and decrease its balance sheets in the second place, but millions of farmers are saved from insolvency and can continue their business.[*]

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[*] Or take the TLTRO (Targeted Longer-Term Refinancing Operation) programs run by several central banks. In its traditional reading, a TLTRO is a form of conditioned lending to SMEs, private households or public entities. A green TLTRO would then condition additional credit easing towards green investments. Dag Hammarskjöld Foundation, (2019); Breitenfellner et al. (2019); NGFS (2019).

In fact, there are almost unlimited permutations possible, as each of the financial facilities is backed up by Development Banks (like EIB or World Bank), 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 are possible.

7. Conclusions

It is an erroneous conclusion to assume that human social systems are inherently physical and the principles of entropy and the laws of mechanics apply to society as well as physical nature. Human beings at higher levels of consciousness are creative and not merely (re-) productive; creativity is capable of creating infinitely more from less and sometimes even from nothing. Humans' perception of money often is like a fish's perception of water. Fish see water as neutral, unchangeable, like a natural law. Similarly, many of us consider money a neutral element that helps us accomplish our individual desires and societal goals. Money is seen to be like a thermometer: we insert it into water and it simply measures the temperature. But money is not neutral. If we want to understand the nature of water, we need to first step out of it, then examine it. The same is true of the monetary system.

There is a subtle but substantial difference:

Acknowledging that there are over 40 trillion USD in assets under management (AuM), a global bond market with outstanding interest bearing loans of over 100 trillion USD and locked-in assets in the fossil energy sector, the so called carbon bubble of over 20 trillion USD, we are not proposing a potential best and ideal typical solution for the financial system (which will remain a theoretical proposition). We are rather advocating for the single practical best next step in the development of our monetary system that maximizes our ability to finance our common future over the next 15 years.

If we consider the current COVID-19 pandemic as one of the first asymmetric shocks the world community is facing in a long series of future shocks to come, we should take this argument two concrete steps further: First; if a governmental body (for example, the EU) is setting an agenda where the leading monetary regulators, financial secretaries and heads of states (all together not more than 50 people) agree to such a parallel monetary mechanism, allowing citizens to pay taxes and to pay wages, this can be implemented technically in less than 18 months; And if, as a second step, the lead investors (not more than 50 people, meeting at the World Economic Forum (WEF), for example) are introduced to this parallel monetary mechanism, allowing to shift their assets into this ‚green new market place' by additional new financial tools (partly explained in this text and further explored in the upcoming report, TAO of Finance'), we have a reasonable chance to get out of the incremental way of doing politics and transform our profit, our people and our planet.

From a systems perspective, the well-known ritual of debate between neoliberal and Keynesian arguments (between austerity and stimulus) is relatively unproductive, intellectually exhausting and economically inefficient. Identifying the smallest common denominator will

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[*] China has announced to roll out a state-run, blockchain-associated digital currency by the end of the year 2020. We will have to explore how this will meet the requirements of an open society explained in this text (A. Mukherjee, Bloomberg).

lead to a suboptimal solution. It resembles a "feel-good" exercise or a symbolic gesture with next to no practical use that does not change the game. Instead of repeating the debate over and over, it would be more fruitful to identify the unquestioned commonalities that both parties rely on, of which the monetary monopoly and linear, sequential thinking are undoubtedly two characteristics. Societal change always starts with the minds and hearts of individuals and small groups who are prepared to think, feel and act differently. In contrast to former times, this change has accelerated and gained momentum in recent decades and years. Whereas most changes in history took place unconsciously, we are now in a situation to refer to scientific information and data and apply that knowledge and wisdom in order to take charge of this process intentionally and consciously, steering our society towards higher values, increased wealth and greater sustainability. Consciously we are able to convert the best ideas into power and promote "leadership in thoughts that lead to actions" (WAAS' motto). Whereas any scientific knowledge remains divided, the reality will always remain an unseparated, integral whole. The financial mechanism described in this text acknowledges the empirical findings of different disciplines, applying new technologies and approving new monetary governance. It should be part of a future social equation that maximizes individual freedom, embedded in a social construct that catalyzes the change required. This "TAO of Finance" should be a main component of such a future.[*]

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[*] Catalyzing strategies for socially transformative leadership (WAAS, forthcoming 2020).

The New Growth Model and Economic Policy Platform

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Abstract

Structural crises of the past have had a significant impact on the world economy even before the COVID-19 pandemic emerged in 2020. The ongoing medical crisis exacerbates the double dip recession we have witnessed before. Challenges are consequential. By checking the pulse of the global economy, we see a high level of risk, fragile growth outlook, and increasing tensions between economic scholars and architects of the system over the evident polarization regarding rules concerning new economics. It is undeniable that the global economy has imbalances, like high financialization, income inequality, climate change and economic shutdown. So, it desperately needs a new platform for shaping a better future. Identification of inflection points in the line of reasoning will help reveal the compatibility of emerging conceptual platforms.

1. Issues to be Addressed

Neoliberal capitalism, as the latest version of free-market capitalism, has driven severe social and health problems. It also continued environmental degradation caused by the former version of liberal capitalism. The system places the human economy and society at great risk.

There are many well-known and extensively discussed structural imbalances of neoliberal capitalism, including financialization, income inequality, and anthropogenic climate change. The economic systems operating in many countries produce unsustainable growth, many crises, and inflating and bursting bubbles.

Unregulated negative external effects incentivize companies to cause environmental and social harm. They create a situation in which companies maximize profits by degrading the environment. Government internalization (or monetization) of externalities is essential for creating impact investments that produce environmental and social benefits. Most of the problems addressed by the SDGs can be considered as 'externalities.' Under current systems, it is difficult to internalize these costs and problems, and thereby incentivize companies to resolve them.

Current economic systems largely ignore the rules and operating principles of nature. In our highly speculative society, financial risk-takers externalize costs and unintentionally cause many problems. Economic goals (growth) often are in conflict with ecological limits and implied goals (limited growth, balance).[1]

To become sustainable, economic systems must abide by the objective, observable limits and laws of nature. Sustainable and inclusive economic systems should be based on the circular processes of nature. Macro and micro levels should be guided by the precautionary principle or reversibility principle (ability to reverse course if actions or technology are shown to be harmful). Structural imbalances and asymmetric shocks, like climate change and pandemics, cannot be managed exclusively by the 'invisible hand' of the market. A new growth model respects the 'visible hand' of the state and biosphere laws. New circular economic policies (structural and industrial) are needed. Impact investments and the broader economy emphasize the 3R principle (reduce, reuse, and recycle).

"New systems must overcome the "virus of neoliberalism", and its major principles of deregulation, liberalization and privatization."

The structural recession of 2008 illuminated weaknesses of current economic systems. COVID-19 has created further economic, health and other problems, including deflation in commercial markets and value destruction in capital markets. The economy remains on pause.

The pandemic has shown that neoliberal rule and end-to-end privatization are not solutions for network technologies, natural monopolies, industries with unregulated externalities, and social services. For example, in healthcare, market forces do not function well in an environment where all players are private (clinics, medical insurance, pharmaceuticals, medical equipment suppliers, research labs, etc.). Similar situations exist in education, science and related activities.

Economic systems with structural imbalances are unable to effectively react to asymmetric shocks like climate change and pandemics. New systems and strategies for implementing them are needed. People and technology must be mobilized toward implementing more sustainable and inclusive growth and economic systems. This paper discusses principles and rules for achieving this transition.

2. Solutions and Remedies

COVID-19 has compelled governments to implement massive and targeted policies. They did whatever it took to protect citizens and healthcare systems. In the first quarter of 2020, G-20 countries spent about 7 trillion US dollars on relief and stimulus programs.

Today no one is talking about a V-shaped recovery. The essence of recovery should be how to avoid a double-dip recession, L-shaped stagnation, or freefall. Effective crisis management and turnaround strategies are needed. Due to structural imbalances faced in the past, care must be taken to ensure that relief and stimulus programs providing short-term solutions do not create long-lasting problems.

After completion of crisis management programs, the next step in recovery will be turnaround strategies. But implementing a new growth pattern that is sustainable and inclusive for people and nature is not possible without a paradigm change and new economic rules. Current systems, with their long-term ignorance of negative external effects, have produced extensive unmet needs and underutilized, or wrongly utilized, potentials.

"It is necessary to avoid the main legacy of neoliberal capitalism—benefiting a small portion of society, while causing many environmental, social and economic problems. To achieve this, regulation is critical."

Nearly all economic scholars agree that advanced economies are at the end of a long cycle of neoliberal capitalism supremacy. New models of growth and economic policy platforms must more effectively address the structural imbalances of neoliberalism and asymmetric shocks like climate change and 'black swan' events. The UN Sustainable Development Goals provide economic targets and guidelines.[2] Under sustainable economic systems, businesses will focus on meeting the needs of all stakeholders, not just shareholders.

New systems must overcome the "virus of neoliberalism", and its major principles of deregulation, liberalization and privatization. We must avoid inertia and a leadership vacuum, which Z. Bauman[3] eloquently called the "liquid modernity".

Sustainable economics would not replace the main pillars of capitalism, such as private property and market mechanisms. Instead, transition would involve eliminating the negative external effects of the previous growth model, expanding impact investments, improving the relationship between capital and labour during the Fourth Industrial Revolution, and making capital available for beneficial start-ups and innovations. Conceptual breakthroughs in economics, for example as in Mazzucato et al.[4] and Stiglitz[5], support this line of reasoning.

New systems will not be in some form of an authoritarian capitalism (state capitalism), but more progressive, less conservative and balanced models of stakeholder capitalism. This system is gaining increasing support for addressing social, climate and healthcare crises. The approach positions private and public companies as trustees of society.

Businesses in stakeholder capitalism are not acting philanthropically. They are focused on benefiting all stakeholders and the environment. Instead of short-termism, stakeholder capitalism helps to propel the economy forward, while acting in a more socially responsible way.

The landmark Paris Agreement signals the necessity of transitioning from a linear growth model to a circular one.[6] Despite high ambitions and ongoing negative consequences of climate change, almost nothing has been done over the past five years.

After successive crashes in capital markets, M. Friedman's[7] view that a company's purpose is "just creating value for its shareholders" is becoming discredited. Lack of universal mobility, inequality and market concentration creates major problems. The economy must be refocused on benefiting all of society over the long-term.

In the new platform, economic activities will be focused on intentional policies. Government spending will emphasize industrial policies: horizontal, vertical, environmental, and medical. Mitigation of the climate crisis depends on development of renewable carbon-neutral energy technologies. These technologies are disruptive by definition.[8]

The above concepts work in synergy. They have been discussed in more detailed papers that are focused on the growth model[9] and economic policy platform.[10]

3. Interdependencies

Mitigation of the current crisis is focused on protecting people and the healthcare system now, as well as helping the economy to rebound later. A good way to do this is to simultaneously focus on flattening the pandemic curve to prevent overwhelming the healthcare system, while implementing programs that increase economic output and avoid long-term decline.

A key aspect of the Fourth Industrial Revolution is the growing use of ICT. New technologies can accelerate achievement of the SDGs. With new technological opportunities, Industry 4.0 can drive sustainable and inclusive growth of all economies, developed and developing. Only a fraction of this huge potential is being utilized at scale.

A new economic policy platform has a long list of policy targets. These include inflation (low and stable), output gap (low and stable), and ensuring environmental and human health protection.

The coordination between industrial and core policies is crucial. Under a new economic system, we think about core policies in a structural way. For example, effectively addressing the climate crises protects society and generates new business opportunities. Climate related risk adaptation and mitigation are predicted to generate huge investment opportunities of up to $26 trillion by 2030.[11]

Automatic stabilizers help to align industrial policies with core policies (monetary and fiscal). This is a very old idea, actually a very Keynesian idea of countercyclical measures related to intertemporal reallocation of fiscal burden. According to O. Blanchard,[12] with the increase in the number of state-owned sectors, automatic stabilizers will play a greater role. Pro-development measures, particularly industrial policies, mean more reliance on fiscal automatic stabilizers (carbon tax, universal profit tax, universal medical tax, universal income, etc.) to prevent excessive build-up of debt and contain inflationary consequences of fiscal stimulus. Also, there is significant progress in implementation of monetary automatic stabilizers (neutral interest rate, loan loss provision, FX rate, etc.).

4. Obstacles and Difficulties

A turnaround regularly needs decisions that benefit humanity but are difficult to implement. It is necessary to avoid the main legacy of neoliberal capitalism—benefiting a small portion of society, while causing many environmental, social and economic problems. To achieve this, regulation is critical.

> *"At the macro-level, we must focus on social well-being indicators, instead of GDP. At the micro-level, in addition to financial metrics, ESG metrics are needed to drive business improvement. How should this new performance measurement system be defined and established?"*

The COVID-19 pandemic policies are likely to produce some of the same problems as past measures. To monetize debt (public and private), central banks granted unlimited expansion of the balance sheet through quantitative easing. Bank bailouts were undertaken with almost no accountability and unprecedented flexibility in the interpretation of regulatory rules. Tax stimulus shows a continuation of low tax policies.

5. Best Practices and Successful Strategies

The amalgam of shareholder capitalism, market fundamentalism and supply side economics cannot be entirely blamed for the free-market economy's inefficiencies. But, it has helped to clarify the problems of neoliberal capitalism. In free-market economies, there were many propositions that were taken for granted. For example, by giving away natural resources as 'free goods' and ignoring negative external effects of their use, economics allowed manufacturers to exploit nature without paying the full cost. Institutions like the Club of Rome used reason, scientific evidence and truth to develop and advocate economic policies that resolved these problems.[13]

An inspiring framework for new economic rules is based on the "managed capitalism" ideas of Raghuram Rajan.[14] Despite export growth, developing economies regularly entered a "middle income trap" due to growing indebtedness. A shift to sustainable growth required an increased state role in technology development and related industrial policies. This was the seed of the framework known as "heterodox". Interest in new industrial policies grew after the Great Recession of 2008.[15]

6. Potential Strategies to be Considered

A Heterodox policy platform in Finland functioned through two different strategies: "verticalization" in fields like science, research and development, education and health care along with "horizontalization" of innovative solutions through the marketplace. When

combinatorial innovations dominate the competitive dynamics, it is not possible to innovate in isolation. Infrastructure and coordination between key players (government, research labs, universities, special purpose financial institutions, businesses, etc.) are necessary, more than ever before.

In other areas, the situation is exactly the same. For example, lifelong learning needs coordination through horizontal industrial policies. The new dimension of competition is competition in the speed of learning. Learning is only part of the job (or learning-by-doing). It also includes unlearning and relearning (or learning-by-learning). There are three types of industrial policies: horizontal, vertical, and environmental. Horizontal (or industry-neutral) policies tackle research and development, education, healthcare, etc. Vertical policies are dedicated to tradable sectors (export expansion and/or import substitution). Environmental policies include global warming mitigation and medical security. Thanks to automatic stabilizers, all policies function based on the reversibility (or feedback loop) principle. The concept of automatic stabilizers helps to harmonize industrial policies with core policies (monetary and fiscal).

Export-driven growth based on high tech is not easy to implement after deindustrialization. A shortage of employees with digital skills is a substantial threat to any industrialization trajectory. According to J. Lorre,[16] 10 million global manufacturing jobs remain unfilled.

One of the key problems is financing of industrial policies. The global financial system is on the verge of fundamental reallocation of capital toward carbon-neutral technologies and medical security. To deal with the climate crisis, development of new asset classes, like "green bonds" and "green credits" is critical. Better quantification of the associated financial risks of climate change led central banks to stress-test commercial banks in relation to climate and medical risks.

Pensions, social security programs and long-life insurance are important, perpetual source of funds for the investment needed to achieve the SDGs. These funds require the backing of their long-term liability side. Long-term bonds with high yields are a perfect match to attract savings.

In today's world, savings are limited. Environmental and social benefits related to the SDGs are regarded as "positive externalities" of investments. There are many variations of the "shadow prices" concept, such as pollutant gasses emission trading, green bonds, guaranties for green credits, and tax cuts (or increases) that could help to internalize these benefits. "Negative externalities" should also be regulated, for example with "carbon taxes", universally defined at a global level.

Informed by mistakes of previous crises, current policies must have additional conditions. Relief and stimulus programs should require businesses to increase production, employ people, and reward value creation instead of value release and extraction. New policy measures particularly should encourage investment in sustainable growth, reduced carbon emissions and enhanced medical security.

Switching from private to public sector money creation is another large source of investment and stimulus funds. In theory, there is no limit to money and credit expansion. As a result, supplementary digital money and credit channels for new carbon-free industrialization could be used parallelly with existing channels. Money will be used to fund economic and social development, instead of it being printed to fund real estate and other bubbles.

7. Questions to be Answered

First, should we have dual economic policies—one for good times (neoclassical) and one for bad times (Keynesian)?

Second, a new performance measurement system is needed to achieve the SDGs. These metrics will facilitate implementation of inclusive and sustainable economics. At the macro-level, we must focus on social well-being indicators, instead of GDP. At the micro-level, in addition to financial metrics, ESG metrics are needed to drive business improvement. How should this new performance measurement system be defined and established?

Third, what are the financing and investment mechanisms needed to fund the transition to sustainable economies? How can these be established and expanded?

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Job Creation through Sustainable Investing Using Human-Centered AI:
An Integral Approach

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Abstract

The COVID-19 pandemic has vividly demonstrated that humanity is not well prepared to address global challenges, particularly existential threats. This paper shows us how to restart the economy and ensure employment using an integral approach to sustainable investing in early stage start-ups using human-centered AI. As stimulus packages are being made available, the need for fast-tracked, digitized and scalable investment decisions for implementing the UN SDGs within Planetary Boundaries becomes an obligation. Based on three decades of investment track record and four years of AI application data, this paper shows how to identify the black swans of integral sustainability and how to significantly improve the de-risking processes through human-centered AI. This AI has proven that automation of the investment analysis and prediction process using collective intelligence and machine learning results in a successful prediction accuracy that is four times higher than current methods and scalable.

1. Introduction

It is only 2020 and already we are confronting the fourth pandemic of the century: COVID-19 was led by SARS in 2001–2004, H1N1, the swine flu, in 2009, and Ebola in 2014–2016. Although we could have heeded, for example, Bill Gates's warnings of many years[*] about our collective vulnerability in the face of a pandemic, we did not, as it is now demonstrated by the general lack of preparation in the face of the COVID-19 outbreak. Unfortunately, the frequency of such infections is likely to increase due to a combination of natural disasters and irresponsible human behaviors inflicting constant damage to wild animals' habitats and driving animals into urban areas. As both climate change and the global population continue

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[*] https://www.gatesnotes.com/Health/Pandemic-Innovation & https://tinyurl.com/t8lcmc6

to grow, so too do the extent and scope of the crisis.[*] One related vulnerability is that how we respond nationally and internationally to this and comparable crises could determine the future of democracy.[†] Governments around the world are taking drastic measures to address the COVID-19 pandemic but seem to be even less well equipped for the subsequent recession, or depression, caused by it. Why? Because current stimulus packages are similar to those issued in 2008 in response to the financial crisis that provided liquidity to an already bankrupted financial system without changing it at its core—such packages were essentially fiscal enablers.[‡] The COVID-19 crisis is only reviving the problem and so systemic change becomes inevitable if we want to protect democracy and ensure the future of life on our planet.

Scientific reports[1] are warning about climate emergency with only 10 years left to address it.[§] Led by the European Commission, the political will to respond is also manifesting through the European Green Deal[¶] and its 10-step action plan for implementing sustainable finance,[**] aimed at transforming the economy to achieve carbon neutrality by 2050. This long-term strategy includes three points of particular importance:

1. *Taxonomy*, a unified green classification system

2. Sustainability-related *disclosures* to ensure that manufacturers and distributors of financial products fully inform investors about the impact of sustainability on decisions and financial returns.

3. Climate *benchmarks* and environmental, social, and governance (ESG) disclosures to help investors adopt climate-related strategies.

While exponentially growing technologies[2,3] are shifting the world economy,[4] the massive amounts of capital made available by current stimulus packages must be allocated in line with the requirements of systemic change while enabling accelerated job creation and ensuring the restart of the economy across the board. This transformative action is important because it also addresses the big question on how investors (businesses and entrepreneurs alike) can contribute particularly from an early stage investing (Business Angels and Venture Capital) perspective. Small to medium enterprises (SMEs) are a significant economic force globally—with a contribution of "about 90% of businesses and more than 50% of employment worldwide. Formal SMEs contribute up to 40% of national income (GDP) in emerging economies"[††] and in developed countries too. For example, in Germany, SMEs' "contribution towards Germany's economic strength, [represents] approx. 35% of total corporate turnover... In terms of their contribution to GDP, these companies even account for close to 55%."[‡‡]

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[*] https://tinyurl.com/u2uupjm and https://tinyurl.com/uy48874

[†] https://tinyurl.com/rgxhpx9

[‡] https://tinyurl.com/saa7hmw

[§] UN Paris Agreement 2015, https://tinyurl.com/y9e8fufg

[¶] European Green Deal, 11 December 2019, https://tinyurl.com/vlplq5l

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Therefore, early-stage investing is also undergoing massive transformations as it is adapting to the changed context and must become more efficient, more effective, and scale fast. It can transform and respond quickly, because it relies on human expertise, values, and mindset. However, questions related to screening, de-risking and other due diligence aspects as well as monitoring, and successful exits are tightly intertwined with measurement criteria, taxonomy, disclosures and other benchmarks because they determine the outcome. They depend on the strategy and its implementation, some of which will be briefly addressed next in order to highlight the growing complexity of the matter (including the mind shift). The intention is to identify how human-centric AI can provide significant support moving forward.

> *"The 17 SDGs are ambitious, transformational goals for the creation of a prosperous humanity on a stable Earth system. However, there are grave contradictory issues within these goals, which increases the risk of one favorite goal being pursued at the expense of the others."*

2. Early Stage Investing and CO_2 Neutrality

We can only achieve what we measure, but it will take time until the new policies on taxonomy, disclosures and benchmarks for the new green deal become available. Early stage investors (and entrepreneurs) are moving fast and need to know now how to contribute toward the implementation of the Paris Agreement. Therefore, it is important to understand the first line of global metrics, namely the 17 Sustainable Development Goals of the UN[*] and how they can be implemented within the Planetary Boundaries, the safe operation system of the planet starting today.

2.1. The UN SDGs Only within Planetary Boundaries?

The 17 SDGs are ambitious, transformational goals for the creation of a prosperous humanity on a stable Earth system. However, there are grave contradictory issues within these goals, which increases the risk of one favorite goal being pursued at the expense of the others. For example, if we pursue goal #8, *Good jobs and economic growth*, by burning fossil fuels such as coal, it will be impossible to achieve goal #14, *Life below water*, or *#13 Climate Action* because we will continue to emit destructive CO_2 into the atmosphere, literally fueling the existing vicious cycle. These contradictions could be the reason why we have made so little progress since their adoption in 2015. However, according to *Transformation is Feasible*,[5] if we act now *and* stay within Planetary Boundaries,[6] we can still address the climate emergency.

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[*] 2030 Agenda for Sustainable Development, 2015, https://sustainabledevelopment.un.org/post2015/transformingourworld

2.2. Transformation is Feasible

Based on a complex System Dynamics Model and data collected over the past decades,[7] we have tested, built, and simulated 4 future scenarios up to 2050 that are shown in Figure 1. On the vertical axis, there are 9 Planetary Boundaries (PB), the 9 factors that regulate the stability of the earth's operating system. They include, for example, biosphere integrity, freshwater use, ocean acidification, ozone depletion, and climate change. The higher the value on the vertical axis, the higher the harmony level between the PBs (the green area) and the lower the PB-value, the less probable human existence would be possible (the red area).

The horizontal axis represents the number of UN SDGs that would be implemented collectively at any one point in time, with the intention being to realize as many of the 17 as possible, moving consistently toward the higher value, the green zone to the right. In order to successfully implement *all* the SDGs within the Planetary Boundaries, humanity must operate within the green areas on both axes; the higher the values, the better.

Figure 1: Transformation is Feasible: Four scenarios for implementing the UN SDGs within Planetary Boundaries[8]
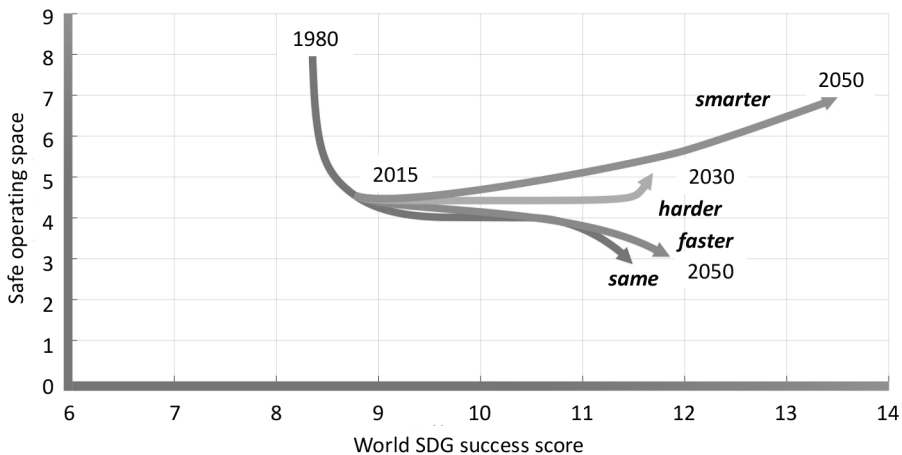
The four scenarios are the following:

1. *Same:* shows how far *business as usual* will take the world to 2050 while creating severe global warming, costly weather events, social instability with increased political insecurity, rising nationalism, and growing inequality as well as social unrest.

2. *Faster:* shows where accelerated economic growth of 2.8% per annum in 2018 to 3.5% per annum would lead. With slightly less than +1% GDP growth per person per year until 2050, we would risk significantly destabilizing the planet.

3. *Harder:* shows what happens if governments and industry try even harder by increasing our ability to deliver on our promises by 30%–50% across all global sectors of society, from climate to trade agreements. But the results would not be significantly different and would not take us back to safe PB.

4. *Smarter:* could solve the problem by 2050 and shows the transformational path.

"Integral (sustainability) Investing contends that all investment activity must be rooted in the essence of all existence, the mind-set (consciousness) aspects including culture, values, ethics and morals as well as exterior reality, the material world ."

However, in order to implement the *Smarter* scenario, a significant mind shift across all players in the society and the following five transformational actions are required. These could help achieve all 17 SDGs while keeping humanity in the green zone of the Planetary Boundaries:[9]

1. *Energy:* Accelerated renewables growth to halve emissions every decade starting with 2030 and create a global energy democracy.

2. *Differentiated Growth:* Rolling out sustainable development models in developing countries.

3. *Food:* Accelerated shift to sustainable food chains and agriculture to decrease the food production footprint.

4. *Active inequality reduction:* Address extreme unfairness, create jobs despite automation and AI, and redistribute total output and wealth.

5. *Investment in girls' and women's education, gender equality, health, family planning:* to stabilize the world's population.

Only the future will show how humanity will make this transformation feasible particularly since a shift in mindset is the premise for change. However, the outlined strategic direction represents an important guiding post for investors, entrepreneurs, and businesspeople alike because it enables smart action and supports current efforts of already awakened market leaders such as the Global Alliance for Banking on Values (GABV),[*] UN PRI[†] signatories and GIIN[‡] as well as a myriad of other leading sustainability investors.[§]

From an early stage investing perspective,[10] Integral Investing (Figure 2),[11] as an integrative framework for sustainable early stage investing using integral theory, is proposed.[12] Its

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[*] Global Alliance for Banking on Values, 2020 available online: http://www.gabv.org
[†] The UN Principles for Responsible Investment https://www.unpri.org/signatories/signatory-directory
[‡] Global Impact Investing Network, https://thegiin.org/
[§] Global Steering Group for Impact Investment driving real impact, https://gsgii.org/

de-risking process has been developed and tested since 1993, is entitled the Theta Model (Figure 3) and will be introduced briefly.

3. An Integrative Model for Scalable & Sustainable Early Stage Investing

The integral investing framework integrates, transcends and includes both traditional investing and impact investing practice with the intention to build integrally sustainable companies from the very beginning. Integral (sustainability) Investing contends that all investment activity must be rooted in the essence of *all* existence, the mind-set (consciousness) aspects including culture, values, ethics and morals as well as exterior reality, the material world (environment, infrastructure, etc.)

Figure 2: Integral Investing[13]
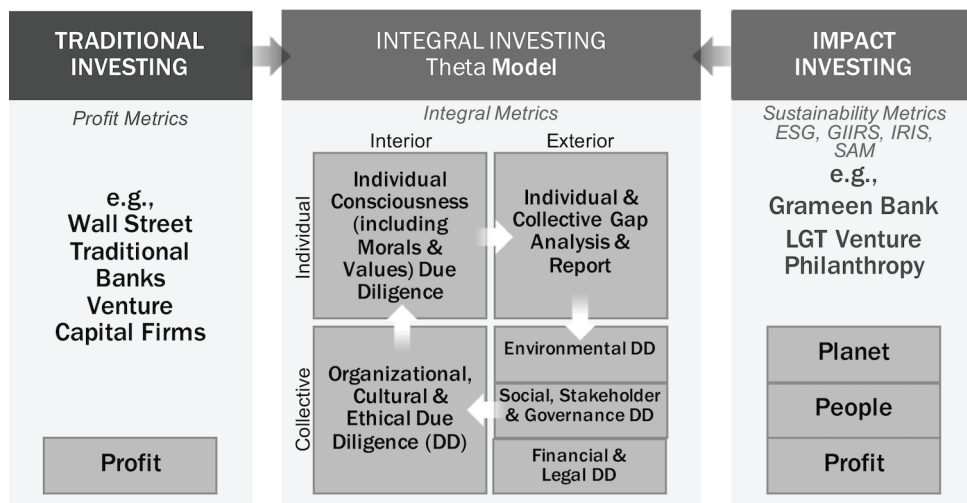
Integral Investing makes it obvious that financial sustainability is inseparable from the environmental, social, cultural, and an ethical impact, as well as individual self-actualization, joy, and personal happiness (in short, the *6Ps: Parity of People Planet and Profit with Passion and Purpose*); and provides an integration framework. However, the increased complexity also begs the question how the entire value chain creation from screening to exit can be implemented within the context of the de-risking process. The answer can be found in the Theta Model (Figure 3).

3.1 De-risking with the Theta Model

Being a seed and/or early stage investor often feels like fishing in a muddy pond that is well stocked. However, only very few fishes are worth catching. The probability that a new startup will develop and eventually provide a large, integrally sustainable exit to its investors is rather minuscule.

Figure 3: The Theta Model for De-Risking Early Stage Investments[14]

STEP 1: Financial/ Legal/ Commercial DD	STEP 2: UN SDG w/ PB ESG Assessment	STEP 3: Individual Assessment	STEP 4: Team Assessment	STEP 5: Gap Analysis & Report
Traditional VC	GIIRS/IRIS/Bcorp	Vertical & Horizontal Development	Cultural & Org. Alignment Test	Theta Model Scoring
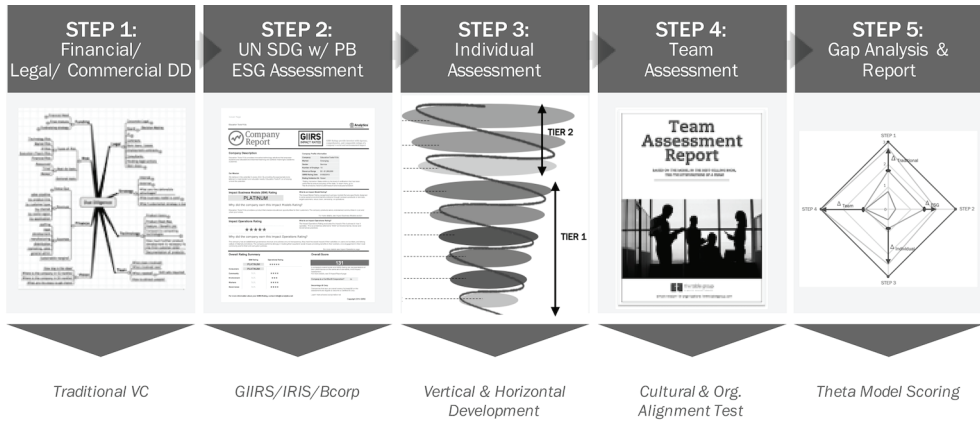
For decades, investors have tried hard to beat this average, but, as a rule of thumb, only 10% of startups in a fund portfolio have a chance to become successful exits. The investor, therefore, uses assessment tools to screen investment opportunities that are presented to them and try to predict the "winners" and "losers." The essence of the Theta Model (Figure 3) is to identify the losers as early as possible by identifying the winners with a high sensitivity and by exposing the losers with a high specificity.

Screening is the process that enables the investment manager to decide either to "invest" or to "pass". This process can be as short as a few days or take a few months. During screening, the evaluators consider many aspects of the opportunity, using diagnostic tools: pitches, personal interviews, investment exposés, pitch decks, market research, customer references, technology expert interviews, psychological assessments for individuals and team culture, legal and financial opinions, to name a few. The choice of tools and the order of using them is different in each case, based on the experience of the evaluator, the cost, the risk, and the potential diagnostic value of the tool. This is very similar to medical diagnosis. For the purpose of this paper, we are looking at the screening process as a statistical test that is predicting the future success or failure of the opportunity. There are "Winners" and "Losers" (Figure 4).

Early stage investing is an art and not a science. This is why there are few performance statistics available. The winners are defined as startup companies that will raise a significantly follow-on round or generate a profitable exit

Figure 4: Investment decision as a statistical test predicting future success

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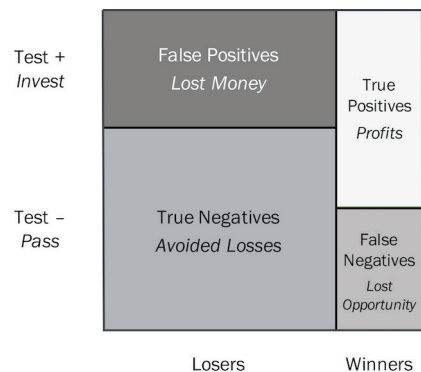
with a positive impact. Experience shows that few VC firms have a long-term positive track record; for at least two reasons: (1) the prevalence of winners in the deal-flow is low, and (2) the industry's average prediction accuracy is rather mediocre. Traditional screening processes are rather volatile, unsystematic, and depend on individuals' "gut feelings." Such tests yield only few successful investments (true positives). Many unsuccessful investments (false positives) lose money and sometimes the winners (false negatives) are missed. In other words, the tests have low sensitivity and low specificity.

The Theta Model creates a "better fishing pond" through the five de-risking steps outlined in Figure 3. In short: STEP 1 deals with the traditional early stage process currently implemented in the VC industry. STEP 2 addresses the UN SDG/ESG and other sustainability factors. STEP 3 deals with individual, consciousness, behavioral, inter-objective, and inter-subjective aspects. STEP 4 deals with collective team assessment, cultural, and leadership development. STEP 5 provides the ultimate decision based on steps 1 to 4. Overall, the process is always addressing *profitability*, *scalability*, and *explainability*.

The overall *profitability* can be increased in the following way (see Figure 5):

1. By focusing on deal-flow with a higher prevalence of winners—"fishing in a better pond" (see 1 in Fig. 5). The Theta Model achieves this by concentrating on opportunities that are driven by exponential technologies *and* address the UN SDGs within Planetary Boundaries.

2. By increasing the test sensitivity to avoid missing the innovative outliers, the "black swans."

3. By increasing the test specificity which leads to screening out more true negatives early. The Theta Model sets the bar higher for founders and teams.

Figure 5: Three Levers to Increase Overall Profitability
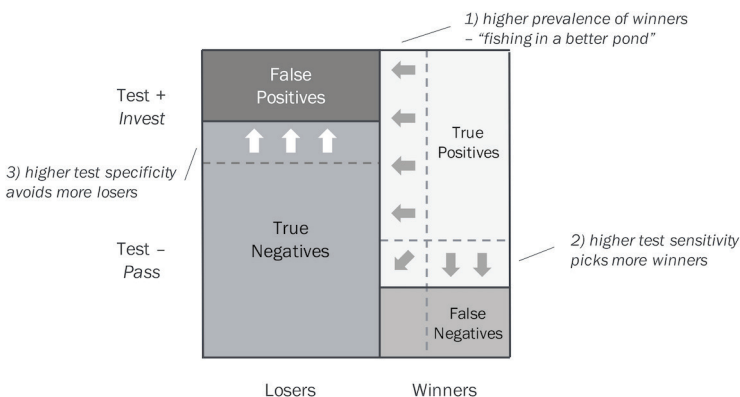
The overall *scalability* of the early stage investment process can be increased by (1) enhancing the screening process with AI, and (2) by making the screening and due diligence process more focused and therefore more efficient.

The overall *explainability* of the investment decision can be increased by elucidating it using concepts that human experts understand. For example, "the founder team is missing industry experience, is not complementing each other, and the market opportunity is too small."

The Theta Model can be significantly enhanced, digitized, and scaled through a human-centric and collective intelligence AI tool that we will introduce next.

4. Human-centered AI

We have developed a specific technical definition for human centered AI that is supported by a technology platform. Symbolic AI systems of the first wave of AI were based on a process of encoding human heuristics into programs based on knowledge representation and reasoning technologies.[15] Using a model of collective intelligence supported by an interactive knowledge acquisition method, we construct a knowledge model that represents the collective prediction of a group of investor/expert contributors. The collective knowledge acquisition system generates as output a Bayesian Belief Network that links propositions and quantitative scores to a predictive score. Given an investable asset (e.g. startup), we create a representation of the collective judgement on whether the asset will create sufficient business results to support future investment and growth.

4.1. Maximizing predictive accuracy through collective intelligence

The collective knowledge acquisition system generates as output a Bayesian Belief Network that links propositions and quantitative scores to a predictive score. Given an investable asset a custom team of investor and expert contributors is constructed based on principles of cognitive diversity. The objective is to optimize collective diversity so that systematic bias is minimized, and perspective views are maximized. The evaluating group is taken through an automated single-blind on-line asynchronous interview process that collects feature scoring information described in the section below. The resulting Bayesian Belief Network is a representation of the collective view of the diverse evaluation group. The model represents the collective judgement of the group as to whether the asset will produce a future positive return for investors. The BBN can infer a distribution of outcomes expected by the group based on the evidence provided.

In parallel, a quantitative model can be constructed from the BBN that is trained with follow-on funding data. The quantitative model is Logistic Regression Binary Classifier that learns from follow-on performance data. The two interoperable modes work in parallel to enable evaluators of investments to learn collectively how to become more accurate in predicting investment outcomes.

4.2. Building Diverse Teams

Teams are initially selected based on declared expertise (e.g. LinkedIn profile). Key

elements are: investment experience, education, gender, ethnicity, and demonstrated expertise. Once on the system behavioral data is used to maximize diversity. The goal is to maximize the prediction diversity term in the following measure:

$$(c - \theta)^2 = \frac{1}{n}\sum_{i=1}^{n}(s_i - \theta)^2 - \frac{1}{n}\sum_{i=1}^{n}(s_i - c)^2$$

$$\begin{pmatrix} Team\ collective \\ prediction\ error \end{pmatrix} = \begin{pmatrix} Average \\ individual \\ error \end{pmatrix} - \begin{pmatrix} Prediction \\ diversity \end{pmatrix}$$

Where: c is the mean score of the team. θ is the true value. s_i is the score of each individual.

4.3. The Knowledge Acquisition Process

Each team member has access to a data room that contains a complete set of diligence materials that include: short video, presentation deck, financials, team bios, etc., the typical items provided to any investor. Step 1 in the process is for the team to see a live Q&A session with the startup team.

The process is single blind. Startup founders do not know the identities of the evaluating team and evaluating team members do not know the identities of their fellow evaluating team members. The first step for an evaluating team member is to provide their inputs of specific questions to the system. The areas of assessment include for example business opportunity, team etc. Each area of assessment is to be scored on a scale of 1 to 10. For each score the team member is asked to give all the reasons for the score.

Once a team member has entered their reasons for a score, they are given a sample. The sample generated is based on a learning process attempting to learn points of alignment among evaluators.

4.4. Learning Areas of Alignment

Given a collection of submitted propositions (reasons for a score), a sample is drawn of size n from the collection. The evaluator is asked to rank in priority order those propositions where they agree with their own views. If they do not see points of agreement, they can request another sample. Sampled propositions are given a score and the collection of propositions is updated. Each sample drawn is dependent only on the current state of the system (the process used is a Markov process). The algorithm convergence characteristics are shown in Figure 6.

As participants submit their reasons and rate others, the system rapidly converges to a ranking of propositions based on relevance with an increasing confidence level in the value of the ranking.

Several items to note about the process. One: the participants are encouraged to submit new comments based on their interactions with others supporting the notion of "idea evolution"

based on brainstorming. Second, the process is open to startup/evaluator interaction. Thus a startup can respond to a high-ranking proposition, in essence responding to a comment that is representative of a group opinion. Third, the system operates on a peer review concept. Comments not relevant to the group discussion effectively go out of circulation.

Figure 6: Algorithm Convergence
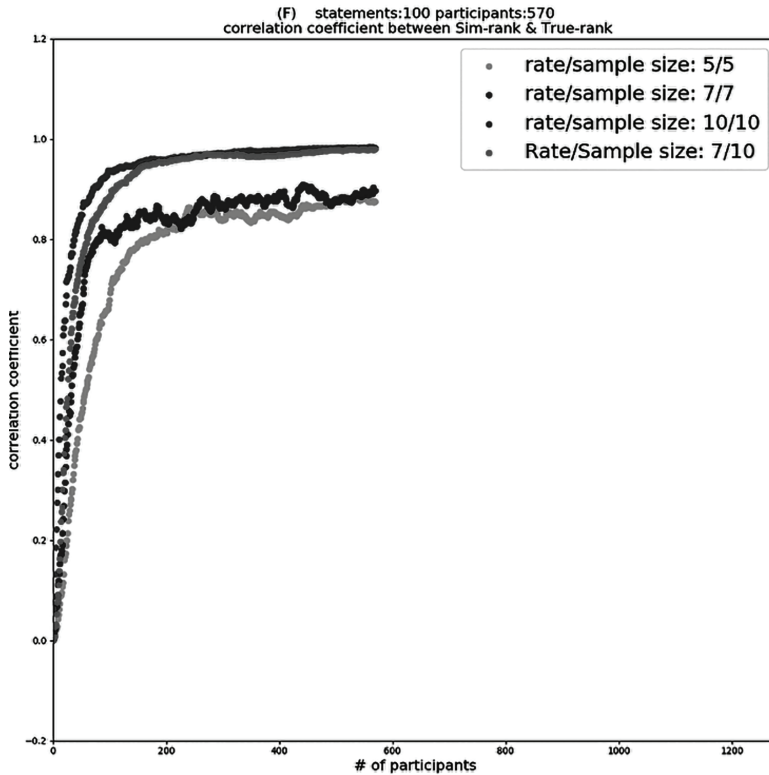
The resulting set of propositions ranked based on relevance is then analyzed into a trained set of themes or topics using an NLP model based on NER and bi-directional LSTM in Keras.

The system allows learning topical areas of relevance to the group of evaluators providing the basis for a Bayesian Belief Network. The BBN links these propositions to topics and quantitative scoring distributions.

4.5 Early Experience Applying Human-centered AI to Seed Investing

Over the period of approximately four years the process described above was used to evaluate seed stage companies that were raising $1 million to $4 million in seed financing. Companies were scored using the methodology above. Companies with scores greater than a given threshold received an investment. All scored companies were tracked for follow-on performance.

Startups' deal sourcing was typically from top ranking accelerators. Each startup had an evaluation team of 20 to 25 evaluators. The evaluation process was conducted over a period of approximately 3 weeks (done asynchronously on-line). Startups and evaluators could exchange information (identity was masked for evaluators). Evaluators were encouraged to rescore and share information as they learned more through interaction with each other and with the startup. Both evaluating team and startup have access to the data as it is evolving.

Each company yielded about 200 to 300 quantitative data points and on the order of 10,000 words of text. The total data set size was ~60 companies with 25 investments. The overall accuracy of the model was >80% in predicting that a company would raise follow-on funding within 12 to 18 months after scoring. This compares very favorably to general results which indicate that around 10% of seed companies transition to follow on growth rounds.

The process is scalable. The process appears to do substantially better at inclusion. Over 40% of the founding teams are led by females for example. This is in stark contrast to traditional methods of venture investing which has very low participation of female founders.

Each startup receives a probability of being in the "invest" class along with an explanation in the form of reports on the natural language data. For example, the following company scored 92% which is well in the invest zone. An example explanation chart is shown in Figure 7.

Figure 7: Explanation Chart
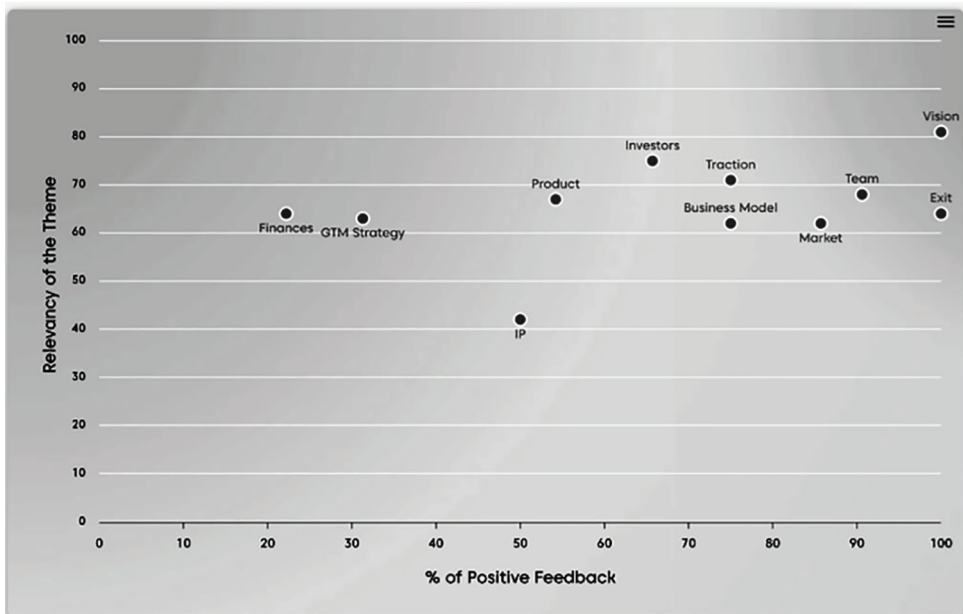
The y axis plots the relevancy score which is a measure of the likelihood of a comment in a theme (e.g. vision which has a high relevance to the review team) to be ranked in top priority by evaluators. With each theme there is an underlying associated quantitative scoring distribution from which we can infer valence. Thus, the upper right-hand corner indicates a highly relevant and highly positive theme. Vision and potential exit were big drivers for investors, and they believed that financial management and go-to market strategies were manageable issues. They turned out to be correct. In the two years that followed the above company raised a Series A and B from top tier VC firms. In addition, it recently won a top innovation award.

5. Digitizing Early Stage Investing with AI 3.0

Early stage investing is characterized by closely held heuristics. Conventional wisdom is that VC investing can only be learned through many years of experience based on pattern matching experience and mentoring. This experience results in heuristics that define investment practices that are tested against reality as measured by portfolio performance.

While best practices have led to high performing portfolios, they are not scalable. In order to scale, the best practices must be turned into a set of evaluation heuristics that create a set of reference frames for knowledge acquisition.

The process used in section 4.3 follows such a pattern. The seed investing process used was based on thousands of interviews.[16] The heuristic derived pointed to four key factors: 1. Market and Business Opportunity, 2. Founding Team, 3. Network Impact of Early Advisors and Investors and 4. Level of Commitment of Investors. The associated heuristic is a startup that scores high on those four factors will be successful. The knowledge acquisition process was defined based on using this heuristic.

The Theta Model for de-risking investments has a 25+ year history of practice and performance and is deeper than traditional VC de-risking processes. It extends the business' focus on a specific problem, i.e. addressing investments that impact sustainability. It focuses on technologies that have an exponential growth rate with the intention to implement for example the UN SDGs within Planetary Boundaries (Step 2).

Moreover, one of the more interesting aspects of the Theta model is the deep attention to the founding team and management leadership (Step 3 and 4). For many investors, team is a highly influential reason for them to invest or not. In most cases, the team's focus is on their external performance only. For example, one simple heuristic often used to evaluate a founding team CEO is their speed and accuracy in answering a question during a Q&A session.

The knowledge acquisition system discussed above discovered attributes like team experience and adaptability as external attributes that are associated with high team scores. Assessment of external characteristics falls short however when it comes to retrospective analysis of startup failures. Under pressure teams can develop destructive behavioral modes. For this reason, the Theta Model looks closely at psychological profiling and pays

close attention to the underlying motives supporting vertical growth and mind shifts. The combination of the Theta Model, the knowledge acquisition system described above and extension of the prediction model to turn for investments specifically aimed at sustainability exemplifies how human-centered AI can be mobilized to address a major global problem.

6. Conclusions

In conclusion, early stage investing is the ideal application for human-centered AI because (1) there is too little historical data available to train a deep learning algorithm, (2) there is too little data per test case, and (3) the know-how is with the human experts and cannot yet be extracted and formalized efficiently. Through its nature, the investment process is looking for innovative solutions, "black swans" that can hardly be predicted by an AI system that would have to have been trained by historical data. Therefore, the evaluators must be a diverse group of industry experts, with "skin in the game" particularly in the face of current existential threats. Therefore, using both *internal* and *external* de-risking aspects when evaluating founders, team culture, and product/services helps implement the "parity of people, planet and profit—with passion and purpose." The deal must address social and ecological needs *and* must grow profitably. There is no "impact first" or "profit first." Both are equally important. "Passion and purpose" reflect the intrinsic motivation of all participants and must come from a world-centric, not an ego-centric, perspective if we want to implement the UN SDGs within Planetary Boundaries, avoid depression and create jobs and prosperity for all of us in a post COVID-19 world.

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The New Economy:
A Financial Climate for Climate Finance

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Abstract

In these past two centuries, capitalism has driven substantial economic growth. However, this growth has not been responsible for the "thrivability" of our planet in terms of society and the environment. This economic model now threatens the continuation of the human species on planet Earth. In 2015, The United Nations created a paradigm shift. All the countries committed to reach 17 Sustainable Development Goals (SDGs) by 2030. Trillions of dollars are going to be invested annually in these goals. But a question remains as to how we can obtain the necessary funds. Long-term pension and insurance funds (including social security) are the perfect candidates: they need long-term investments to back up their commitments. A perfect match! Alas, 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 economic profits, while others (government or the public) get the environmental and social benefits. The SDGs represent more than just economic goals, therefore, a dialogue with the capitalist model cannot happen. It will only work if there is an approximation, or new factors/metrics, incorporated into that model that can translate social and environmental benefits into monetary terms. If the SDGs become the business of governments, then they could facilitate an approximate solution. Governments must do this, as they manage the SDGs, and the regulation. If each country issues a special long-term bond which can cover SDG investments with a high yield, it may suffice to return a pension or a social security to the entire population. The cost of the plan is the difference between the rate of the bond yield and the return to the owner of said bond. National accountants know how to make this happen. This way, we finance the SDGs, and create a pension and jobs for millennials and future generations.

> *"There is no way to solve the environmental and social threats within the capitalist framework."*

1. The New Economy

We are not just living in an era of change, but rather through a change of an era!* Capitalism has been driving substantial economic growth during the last two centuries. But it has caused severe damage to social and environmental frameworks, to a level that now

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* Some of the critical issues that distinguish the new economy from the old one are listed in Appendix A.

threatens the continuation of the human species on Planet Earth.[*] There is no way to solve the environmental and social threats within the capitalist framework.

> *"There is an urgent need to add non-economic dimensions to the dashboard. This is the way to move from an industrial world to a post-industrial world. We must replace the current focus on the "maximization of economic values" with a multidimensional framework that includes consideration of Economic, Societal, Environmental, and Consciousness factors (ESEC)."*

The outbreak of COVID-19 has forced countries to take critical economic steps like the stopping of most of the airlines, tourism, sports events, cultural events, restaurants, etc. This makes the current period the best time to start correcting past mistakes and start off on the right foot in the new economy. But the reason to do it had been there for quite some time, probably for the last 40-50 years, before COVID-19 was discovered.

The basic assumption of capitalism is that all players strive to maximize their wealth. This automatically generates, through what is known as 'the invisible hand', a set of equilibrium prices that lead to the automatic allocation (without the interference of a central planner) of all resources, products and services. The theoretical beauty of capitalism is that the process is not just automatic, but it is predicted to lead to the (Pareto) *optimal* allocation of all resources, products and services.

In practice, various prerequisites are not fulfilled:

- Natural and cultural resources (the "commons") are not represented properly by price-determining mechanisms,
- "Perfect competition" is not real. In the markets there are noticeable concentrations of powers.
- There are many cases where players encounter different prices due to the existence of "externalities."

Such violations of the principles of capitalism have led Joseph Stiglitz (2012), a Nobel Prize laureate, to argue that the invisible hand is invisible because it is not always there! These are especially true with regard to the environmental and social threats. All the above conditions are violated with regard to these areas. Especially, all the prices are unknown—the "commons" are not subject to supply or demand.

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[*] There are other derogatory changes in the environmental and social parameters (that are developing at an exponential rate): The world population was close to 1 billion around 1800. Currently it is 7.8 billion, and the level of per capita consumption now is much higher. The Global Footprint Network shows an over-drawing of global resources. We are losing the limit of climate control (1.5⁰ C), and are moving towards the 2⁰ constraint. A whole different game! The land, air, and water pollution seem to be sky rocketing. The level of sea pollution, and the acidity and opaqueness of the sea are endangering the oxygen in the atmosphere. Storms are stronger, draughts are stronger, flora and fauna are disappearing at an alarming rate. The same case with the effect of dealing with healthcare, unemployment, education, and social security.

2. Multidimensional Metrics

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).

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 to move from an industrial world to a post-industrial world.[*] We must replace the current focus on the "maximization of economic values" with a multidimensional framework that includes consideration of **Economic, Societal, Environmental, and Consciousness factors (ESEC)**.[†]

3. Sustainable Development Goals (SDGs) – Total Change in the Economic Model!

In December 2015, The United Nations achieved a remarkable agreement whereby all its members committed to reaching the 17 Sustainable Development Goals (SDGs) by 2030.[‡] These SDGs include the aforementioned **ESEC** parameters. And since all the countries in the world adopt the SDGs, this should become the rule.

Alignment on targets is difficult in a world where each individual, company, organization, and state use their own private compass. To truly measure and report their non-economic impacts, there needs to be an authority to build guidelines, preferably multinational guidelines. It seems that the social, environmental and the consciousness factors should enter the model at first by approximation (rather than assuming zero price). And later with economic metrics, according to classical capitalist models. This will create a new model. The addition of the social, environmental and consciousness factors would drastically change the economic factors, and the overall result could be quite different!

In a paradigm shift there is a need for a large shift, a transformation, a game changer. So the story of a change, a gradual shift, is irreverent. To create a paradigm shift there needs to be an educational challenge: at this stage we must train leaders, managers, accountants, engineers, designers, planners and strategic departments. To make a rapid global impact we must train the leading consulting firms and large accounting firms and create a "top-down" approach in preparing leaders and executives.[§]

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[*] The OECD countries, for example, have developed what they call "Well-being Indicators," while others such as the Kingdom of Bhutan have suggested a "Gross National Happiness" index. In addition, many corporations around the world have developed and used the GRI rules (Global Reporting Initiative) to try to measure and report their non-economic impacts, in addition to issuing regular financial statements based on traditional accounting.

[†] I believe that adding the component of Consciousness (ethical values, civil consciousness, consumer consciousness, etc.) to the earlier "triple bottom line" approach is essential.

[‡] One obstacle to reaching a practical international consensus about environmental and social issues has been the conflict between developed and developing countries. In moving from poor to rich, a country does not have to go through the "dirty" stage (Von Weizsacker et al., 2005). They can be "rich and clean" by using circular models like the well-known "Cradle-to-Cradle" (Braungart and McDonough 2008) or K.H. Robert's "The Natural Step".

[§] At The YK Center, we have gathered international teams of senior business mentors and experts and developed tools for what we call "Trans-Form-Nation". This is a method of preparing governments and large organizations to deal with these challenges effectively and with urgency.

4. "$B to $T by 2020" Target

Before the signing of the Paris Agreement and a couple of months prior to the announcement of the SDGs, at the Sustainable Brands Conference on Metrics (Boston), we introduced the concept "From $B to $T by 2020". This message of financing the ecosystem towards the SDGs received much traction and we saw that the first part of the slogan had already been absorbed by institutions like the World Bank, UNDP, UNGC and the OECD. But if we do not accomplish interim goals by the end of 2020, there is no chance of reaching the required outcomes by 2030, as they involve big infrastructure projects that typically require long periods of planning, preparing and building. Reaching the defined goals by 2030 is quite ambitious, and any delay will mean having less time to reach them, implying the need for greater effort.

The relevant planning horizon for most leaders and executives is quite short due to regulation that drives short-termism and egocentric forms of motivation (limited terms for positions, elections, etc.). Moreover, the former typically think in terms of hundreds, millions or billions, but seldom in terms of trillions of dollars.

Leaders and executives should learn to operate with the new metrics on a completely unrecognized scale (multiplied by thousands), in order to achieve the SDGs. However, there is a need to meet some interim goals in the near future, to change the scale of thinking from billions of dollars to trillions, and to create the needed managerial skills and tools for stimulating reform.

5. How can we get the Capital that is needed?[*]

The insurance industry could be a world leader by focusing on sustainable wealth in the long run. However, they can do more than that: Insurers and pension funds are the only ones that still have the money to invest and they are interested in the long run. All the environmental projects need long-term investments.

This paradigm shift requires an immense investment: trillions of dollars per annum in impact investments (mainly in infrastructure). The only source of long-term financing is retirement-related money. In the public sector (social security programs) and in the private pension plans (retirement and savings programs and long-term life insurance). All these bodies require the backing of their long-term liabilities towards their savers. The ideal investment for them is the long-term bond of 25-40 years plus a hefty interest rate. High yields are a necessary condition for attracting more savings, and for raising the large amounts of money that are required for impact investment. Interest rates play a key role in creating attractive retirement plans.

The financial institutions of the private sector currently manage for their customers an immense portfolio of approximately 80 trillion dollars (prior to COVID-19)! That seems like enough to achieve a major part of the SDGs, but the entire sum is invested elsewhere. There is little chance to start negotiations between so many countries and so many institutions. Only regulation can do it.

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* See Appendix B.

There are, however, two other things to consider:

First, for quite some time, we have lived in a world of very low (near-zero) interest rates. There is little incentive to save money, and little appetite for financing impact investments. Financial experts turn to short-term profit (by the use of trenches and finance combinations), and it is enabling them to give a positive yield. In a system like this, every few years there must be a crash (that takes the system below zero) and then a climb up again, with a positive yield, during the following years.[*] One can think back to the .com crisis, the mortgage crisis in 2008, and now the COVID-19 crisis of 2020, to see the process. This is essentially the reason for the instability of world financial markets.

Second, social and environmental benefits (such as a reduction in carbon emissions, a positive impact on population health, job creation, etc.) are regarded as "externalities" i.e., others such as the government or the public, but not the investors, get the benefits.

There are ways of revealing the implicit yields on impact investment, or in economic terms, ways of "internalizing" (endogenizing) these externalities so that they can be added to the yield of the investor. Public investors such as governments, and especially funded social security plans, could easily consider these externalities as contributions to the yield on their investments, but they have to adjust their accounting methods to measure and reflect these benefits. Most of the SDGs can be considered as "externalities". Unfortunately, the government lets volunteers and non-profit organizations do their job for them. The SDGs and the endogenizing of externalities must become the job of government.

More sophisticated tools are needed to transmit the benefits of these externalities to private investors. It is possible, for example, to use certain market mechanisms (such as emissions trading), and to include these in investment yields. Other mechanisms (such as tax incentives or other subsidies, public guarantees on minimum yields, etc.) can also be used depending on local circumstances and on ideological differences.

The Israeli example of public financing is especially relevant in this case.[†] Soon after the state of Israel was established, government coffers were empty due to the cost of the War of Independence, and the unusual challenges that stemmed from the need to absorb a large number of Jewish refugees from Europe and Arab countries. The population was very young and there were no jobs. There was an urgent need to invest in infrastructure, factories, housing and job creation, and to deal with "melting pot" educational challenges. The government encouraged the creation of insurance and pension arrangements and also established a social security system to take care of the population that was due to retire several decades later.

The government issued to retirement institutions long-term bonds bearing high yields, and created tax arrangements that enabled these institutions to offer very attractive retirement plans with high yields to savers. This created a very high rate of savings in the country.[‡] In

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[*] One of the things that brought up these phenomena happened some 30-40 years ago. The insurance and the pension industries were worrying about the deficits of their funds (which was basically a defined benefit—DB - program). The risk of the fund had been distributed between the employee, employer, government and the fund. It changed to be a defined contribution – DC. This turns the risk to the shoulders of the employee himself, and the self-employed people with no savings (as is being seen during the current COVID-19 phase).

[†] The system had been used under a different version in Marshall Plan, and as a more recent plan in Estonia, Poland and Sweden.

[‡] In this accumulation of savings, the government saves a lot of money in investment fees.

addition, the government introduced a funded social security plan that invested its funds in quite similar government bonds. The funds raised through these special long-term bonds fed a "development budget" (but it later took the form of the general budget). It was used to activate a number of specialized sectoral-level development banks that undertook impact investments. This was a major tool for financing the country's growth during its first four decades.

6. Importance of Governments in the Process

I do not know who came up with the idea of financing the SDGs with private capital. The SDGs have been adopted by all the 193 Governments. The 17 goals have to focus on social and environmental tasks and lots of externalities. That is the business of the governments! In addition, governments have to do a lot of regulations. Governments must help pay for the achievement of the SDGs.

This can be done through long-term investments in the pension and social security funds. Many countries, especially developing countries, can learn from this example of public-private collaboration and can adapt it to their needs. A government can help achieve the goals through its social security funds. This is also an opportunity for countries with no social security to create such infrastructure. In countries where there are existing pension and social security systems, they may expand their funds for the whole of the labor market, including, the self-employed.

Such ideas may face ideological criticism from people that resist governmental intervention in the economy and prefer privatization at any cost, as well as those that mistrust the willingness and ability of government to honor long-term goals. On top of this, there are whole industries such as oil and gas that may lose their subsidization due to these shifting of funds. Opponents of any government intervention typically emphasize the potential inefficiency and even the corruption of government systems.

Such initiatives were often discovered to be a means of transferring important and valuable public properties at low prices into a few private hands. In the case of Israel, there have also been complaints about problems with capital allocation, inefficiency, and even corruption, despite efforts to run a very "clean" system. A certain degree of disorder seems to exist in both government and private-led systems around the world and can be reduced and mitigated through education, regulation, and efficient controls.

The ability to offer a high yield on impact investment will create a self-perpetuating cycle: higher returns on retirement plan portfolios will increase the attractiveness of retirement schemes. This, in turn, will motivate larger long-term savings and thereby enable financial institutions to finance impact investments more. As long as these investments continue to yield high returns, this cycle of positive feedback will continue.

7. Conclusion

All the countries in the world have agreed towards achieving the SDGs, thereby agreeing to add social, environmental, and consciousness factors to economic considerations. That means a paradigm shift, which belongs to a special education process.

A country can do what an individual cannot: Shift itself off the ground by pulling its own bootstraps! These mechanisms can be established and activated within a short period. We can simultaneously deal with three major and pressing global challenges: The mitigation of major social and environmental threats through appropriate impact investments, the creation of jobs and reduction of job insecurity for millennials, and the re-establishment of retirement security for millennials and future generations.

> *"A capitalistic economy does not know how to deal with things with no price!"*

In this paper we show that there is a relatively simple way to reach the solution for these pressing problems:

1. The inclusion of Social, Environmental and Conscious metrics alongside economic metrics (such as the SDGs).

2. The acceleration of the SDGs by investing in infrastructural change to basic economic activity ("B to T by 2020").

3. Governmental investments should be made through long-term bonds (with a minimum 5% indexed yield) as in the Israeli example.

4. Helping the customer to get reasonable constant yield at retirement (and on through the pension period), and saving a major commission.

5. Investment in social aspects may stop fluctuations in capital markets (Social security, private pensions and insurance).

In short, we have the chance to hit several ambitious and extremely urgent targets with a single arrow!

Appendix A: The "Old" and the "New" Economy

Some of the key differences between the old model and the new economy:

- Traditionally, we have assumed that three major resources are involved in production: land, labor, and capital, each of which is limited. Accordingly, the economy was based on the principle of scarcity. In the modern economy, we have new "unlimited" and fast-growing resources: data, information and knowledge, and sophisticated computers and robots that can do many things more efficiently than human beings.

- Rapid urbanization and significant demographic changes are affecting birth, mortality, longevity, and populations' age structure. The ease of transferring disease.

- The rapid increase in population triggers an "exponential storm": the depletion of minerals, oil, wood, water, animals… and the horrifying degree of polluting air, land, water.

- Climate change. The loss of a variety of animals and flora.

- Many services can be supplied electronically, and this process is rapidly replacing traditional transaction methods (e.g., digital currencies and digital banking, artificial intelligence and blockchain-based contracts and legal services, and intermediation activities, autonomous cars, personalized medicine, etc.).

- There have been rapid and significant scientific and technological discoveries in a variety of areas: space, medicine, biology, agriculture, materials, etc.

- For the first time in human history, people today can live simultaneously in both physical reality and virtual reality.

- The global disparity between ecological means and the demand for food.

- We have sophisticated communication and transportation systems that enable us to move large quantities of products, as well as people and ideas, rapidly and at relatively low cost (rapid trains, ships and aircraft, delivery by drones, autonomous cars, etc.).

- We do not need huge factories to manufacture things in mass quantities. The internet of things already enables us to manufacture many things at practically near-zero marginal cost, in small amounts.

- The ability to obtain the rights to services (rather than ownership of assets) has paved the way to rapid growth in the "sharing economy" (Airbnb rooms, shared bicycles and cars, etc.).

Appendix B: How to Finance the SDGs

All the countries of the world have committed to support the SDGs. Therefore, all training, financing, and administration of achieving the SDGs rely on countries.

The SDGs bring to light some factors that are not incorporated in our capitalist economy: environmental, social, and general budget, consciousness issues, that have no prices on them. A capitalistic economy does not know how to deal with things with no price! If there were price tags, they would be distorted by the very system.

The SDGs, that are fully agreed upon by all countries, give us no possibility to go back to the old capitalist model. We must calculate the price for things such as combatting unemployment, education, clean and safe water, waste management, ocean and air pollution, land use lost to desertification, land degradation and loss due to sea-level rise, forest and agricultural depletion, growing urbanism, etc. Doing it, it will take too much time, something that we are not getting in the time of crises. So it is time to get an approximated approach.

The major idea is like this: the government is going to establish a retirement plan to the entire population. The retirement is going to be financed by a premium, which is going to be invested in the governmental bond. The entire sum is going to be invested in the SDGs. The deficit between the real profit from the SDGs and the real investment yield that has been promised to the bond holders, has to come from the implicit gains from the social,

environmental and consciousness approach (that may take a while to be seen in the national account)*. In principle the deal could be taken by the pension and insurance companies.

Having such approximated metrics will surely be better than doing nothing. This should be done by Governments. Private money will join after the new rules are set and made mandatory. Due to the urgency of the problems, instead of solving them one by one, let us talk about "Saving the World" with all the SDGs. By doing that, I suggest that governments make long-term bond issuings to the public. The yield on these bonds should be high enough in terms of current yield, which is around zero, when we take away purchasing power risk (Say, 5% plus linking to purchasing power or foreign exchange rates). The plan can allow governments to use public retirement programs, according to a set of rules. The terms can be determined by each country.

I think that this is a relatively small price to pay in the long run for the SDGs to save the world. I suggest investing only in projects that are aligned with the SDGs. This can be extended to the current needs such as COVID-19, scientific development, and moving industries to sustainable models such as Cradle-to-Cradle and The Natural Step. We must stop investments in projects that are literally destroying the planet (such as fossil fuels, unsustainable urban planning, etc). This must be a global effort of combined forces.

Some key considerations:

- The plan must not be amended or harmed retroactively.

- The loan can be collected by some governmental agencies: social security, the central bank, the national development bank, general budget, development budget, etc. On the other hand, it is possible to manage it through private funds that will be based on slightly different rules.

- In terms of regulation, there are states that a whole parliament can make a decision, and there are states where a single ministry may make the decision. The regulator must be held responsible for cashing the savings in and out (the accumulation, the pension). The regulator is responsible for a lot of money, and hence a lot of backing in the long term. The regulator must be supervised by professionals (and not by politicians).

- The citizen can deposit money in government bonds with 5% interest rates, index-linked bonds or exchange-rate-linked bonds. This rate has been selected because it allows for a good pension plan, given that there is a good saving period. These must be long-term bonds (highly recommended until death, or alternatively, until the retirement age of 67). I suggest no more than 25% of the average monthly wage. It should be impossible to get the savings out before maturity.

- The fund must be managed locally. That means that there will be no exchange risk, and all the money will be spent locally.

- If a person reaches retirement age, there is a summary of the savings and the yield. At that time the conversion factor comes into the picture. The total amount of the

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* We must take into consideration the ability to stop investments in projects that are literally destroying the planet.

savings divided into the conversion factor should determine the monthly pension. This coefficient can change as actuarial circumstances change. It should be simple to manage, and with no management fees. That is better than all kinds of pension plans today where the interest rate is above what is known currently, and there is no interest risk.

• The terms of the program would be determined by a committee. There should be rules in place: If a person becomes sick, or has an accident (permanently or temporarily), or if a person becomes unemployed (permanently or temporarily), or if a person leaves the state (permanently or temporarily), etc.

• The details of the retirement program may change according to the specific country. The plan must be able to change by nationality or residency. People's moving patterns (from country to country) must be taken into account.

A country can do what an individual cannot: Lift itself off the ground by pulling its own bootstraps! These mechanisms can be established and activated within a short period. We can simultaneously deal with three major and pressing global challenges: The mitigation of major social and environmental threats through appropriate impact investments, the creation of jobs and reduction of job insecurity for millennials, and the re-establishment of retirement security for millennials and future generations.

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Transformation into a New Education Paradigm and the Role of Ecosystemic Leadership

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Abstract

The Education subgroup of the GL-21 project recognizes that education plays a triple role in regard to the new model of leadership. First, we need education to serve leadership, to help educate leaders of the 21st century. In order to do so, education itself needs to be transformed so it can deliver new curricula and new pedagogies and thus it needs new models of leadership to carry it forward. Finally, as the educational sector itself transforms, it can evolve into a space for transformational leadership. In other words, it can lead the change for society, as a venue where new knowledge and skills can be developed or even created, and where the future can be prototyped. Accordingly, education must model the change that society needs. It has to respond to new challenges to become the change we want to see in the world. In this paper, we will focus on the necessary changes to education and its leadership to accomplish such a mission.

1. The Rationale for Change of Educational Systems[†]

The existing "industrial" model of education has been criticized by many forward-looking educators for at least half a century, and the texts of some of its formidable critics such as Paolo Freire or Ivan Illich read astonishingly. However, what is different today is that momentum has accumulated, and many new forces that demand transformation of education for the needs of the 21st century have emerged in a very wide spectrum of global civilization.

On one side of this spectrum are pragmatists: those who suggest that the main task of education is to come to terms with existing demands of the economy and the society. They indicate a significant skill gap exists between what recent graduates know and what employers demand and both graduates[‡] and businesses[§] acknowledge that the education system is not adequately doing its job of preparing students for the real world. Furthermore,

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[*] Substantial parts of this publication use materials from reports by Global Education Futures on the future of learning and leadership in education, and represented texts are coauthored with Joshua Cubista, Alexander Laszlo, Mila Popovich, Jessica Spencer-Keyse, Ivan Ninenko, and Pim van Geest.

[†] This section is excerpted from *Educational Ecosystems for Societal Transformation*, Ch.4.1 (Luksha et. al. 2018)

[‡] https://rda.worldskills.ru/project/voice-of-youth

[§] https://www.hays-index.com/

they indicate that many regions of the world do not even have access to basic education,[*] and that university education, even in its more traditional form, remains in high demand.

More radical demands come from innovative economic sectors, social change agents, and political leaders. They indicate that our society is on the move. It is becoming reshaped by hyperconnectivity and digitalization, increased automation of work, introduction of network-based governance models, the rise of many impactful and potentially disruptive technologies that can shut down many industries and influence our ways of living—nanotechnologies, genetic engineering, flying autonomous drones, and more.[†] Rapid technological change and resultant societal transformation demand new skills and new models of learning that will be fast, flexible, and increasingly personalized. Our civilization, especially the urban one, should be reinvented, and so should our educational system.

Figure 1: Learning and Contributing in Two Different Paradigms
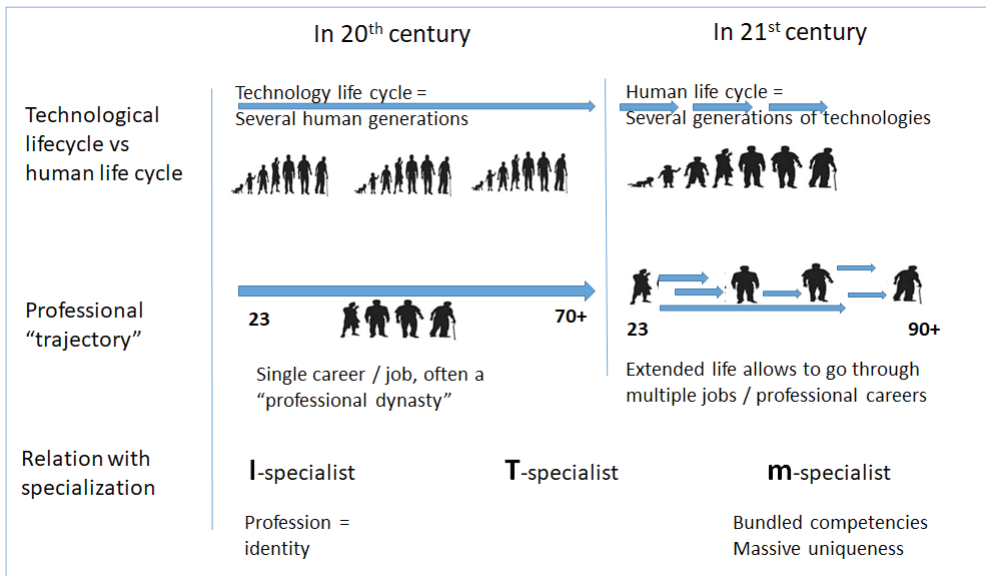
Driven by technological and societal changes, the world of jobs transforms accordingly. One of the key manifestations of this is the transition from a single job career towards multiple careers. Educating for one profession in a lifetime was feasible when knowledge doubling happened in hundreds of years, and now, the doubling is happening in the span of months, or even days. Also, the shortening of the knowledge half-life time has been occurring rapidly. Existing systems cannot accommodate it, and a shift to life-long learning is required. Still

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[*] http://www.unesco.org/new/en/education/themes/education-building-blocks/literacy/resources/statistics

[†] https://rda.worldskills.ru/project/future-skills

another pragmatic reason for a change is the system is open in the sense that the experience gained through our activities is not fed back into the less-experienced generation. Closing the loop is not trivial.

Figure 1 illustrates how a person could develop and contribute in the old industrially-situated system of the 20th century and the emerging new system of the 21st century. These systems are fundamentally different.

Finally, a growingly impactful community of leaders and changemakers sees a totally different role for education. Movements such as Fridays for the Future or Extinction Rebellion highlight the ultimate irrelevance of existing education in the light of existential threats that humanity is facing. Yet it is possible that education can become more than a service to existing elites and their outdated agenda. It is a sector that shapes worldviews, mindsets and skill sets of young people and adults alike, that essentially "programs" the way our society works. It is also a sector of safe experimenting and prototyping, a space of collective learning. And so, rather than reproducing the existing civilizational paradigm, education could embark on producing a paradigm shift for humanity: it could model, test, establish and scale up the practices of the civilization of responsibility, of sustainability, of peace, of open-heartedness and compassion, of mindfulness, of thriving. It can become a cradle, or a sandbox, for the civilization that emerges to evade existential challenges to humanity and fulfil our collective potential.[*]

Figure 2: Three framings of the demand for transformation (from GEF, 2018)

'Civilizational transit': focusing on emerging social practices that help us recognize ourselves as a truly planetary species (e.g. Macy's Great Turning, Eisenstein's More Beautiful World etc.)

Key discussions: how can education help us reinvent our relationship between ourselves, with our ancestors / descendants, and with our planet

'Rebuilding urban civilization': focusing on life quality & social impact (e.g. Sharing Economy, Scharmer's Capitalism 4.0, Florida's 'Reinventing Cities' etc.)

Key discussions: new models of education that should complement existing ones (e.g. urban learning communities)

'More of the same': increasing economic efficiency / productivity / competitiveness in 21 century

Key discussions: education is broken but could be fixed by introducing better pedagogies / ed tech & new curriculum

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[*] https://futuref.org/educationfutures

"A shift towards a new paradigm in education is required. The new paradigm must involve a renaissance of both human values and vision in action, transforming human learning and encouraging leadership that fosters lifelong learning and "right livelihood" for a healthy world. Our greatest challenges may be our greatest inspiration: to learn how to create a thriving future for ourselves and the planet together."

Most notably, these three framings of the need for change are not mutually exclusive, but more likely nested within one another. We need to make education more inclusive, accessible, and relevant to the needs of our current societies. We need to make it more flexible, learner-focused, and increasingly life-long. And we need it to become future-prone, future-fit, and future-shaping, focusing on the learners and social relevance. Consequently, a shift towards a new paradigm is required. The new paradigm must involve a renaissance of both human values and vision in action, transforming human learning and encouraging leadership that fosters lifelong learning and "right livelihood" for a healthy world. Our greatest challenges may be our greatest inspiration to learn how to create a thriving future for ourselves and the planet together.

2. Multiple Avenues of Necessary Changes[*]

Existing educational institutions and systems, more often than not, tend to invest in conventional industrial processes and models that continue to reproduce outdated "ways of knowing". While both digitalization of education and increased connectivity help the transition to a new model of education that may be of greater relevance to the demands of learners and other stakeholders, they cannot be seen as a "magic bullet". Educational technologies are important but not indispensable for the transition needed, as they are the means but not the goals. What is needed is a true human renaissance of values, purposes and ways of being that embody learning for life and with life. The emerging paradigm that is called into being assumes the need for a holistic, rather than fragmentary change to the content of education, its methods, its organization and governance, and more.

2.1. Content & Learning Methodology

- Skills for Adaptation & Mastery: as we are moving towards the age of massive uniqueness in our work and industries, professional competences have become increasingly granulated, calling for personalized ways of developing them. Also, our ability to succeed in different contexts depends on a set of '21st century' skills, including

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[*] This section is excerpted from *Learning Ecosystems: An Emerging Praxis*, Ch.2.2 (Luksha, Spencer-Keyse, Cubista, 2020)

some "soft" skills that help us adapt to various contexts, and "existential" skills that help us live our lives in the best way possible.[*]

• Learning for Complexity & Strategic Uncertainty: as our society becomes more complex, we must learn how to make socio-technical systems "antifragile" and should be able to cope with uncertainty and diversity, and that calls for cultivating system thinking, and applying evolutionary frameworks of system action. Also, recognizing the interconnectedness of systems (ecological, cultural, economic, political and technological) requires a shift in perspective, seeing things through the eyes of others, and engaging in empathic communication that enables system sensing. This approach could lead to systems that are not only evolving, but also resilient; i.e., capable of recovering quickly in the presence of major and unexpected disruptions and attacks.

• Sustainability and Regeneration-Oriented Education: in order to implement sustainability, education needs to move towards action-based learning and model sustainable / regenerative relations, engagements with communities, etc.

• Holistic Education: as each person finds identity, meaning, and purpose in life through connections to the community, to the natural world, and to humanitarian values such as compassion and peace, holistic education aims to call forth an intrinsic reverence for life and a passionate love for learning.

• Self-Guided Lifelong Learning: self-guided learners are able to set goals, define pace and needs, attract and create necessary learning resources, and immerse themselves in a variety of learning experiences.

• Joy and Play: play as both the experience supporting learning and joy as one of the purposes of our being become important facets of education, through different formats of gamification and playfication.

• Diversity and Active Inclusion: cultivating the ability to have conversations that bridge differences and which lead to peaceful negotiations and allow creation of safe spaces and empower people of different race and ethnicity, belief systems and gender identity, as well as people that have been underprivileged in different ways.

2.2. Learning Approaches & Frameworks

• *Knowledge at Our Fingertips*: an ever increasingly distributed model of learning via the Internet, in various forms such as online libraries, games, online newspapers and encyclopedias, webinars and courses, and other structured learning environments. Coupled with more traditional face-to-face ways of learning, it enables all forms of *blended* learning that combine online and physical activity.

• *Project-Based Pathways*: project-based learning prepares students to solve real world problems, encouraging them to gain knowledge and skills by investigating and

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[*] See *Future Skills* report by Global Education Futures & WorldSkills https://futuref.org/futureskills

responding to a question, problem or challenge through learning by doing and authentic experiences.

- *Experiential Learning*: Many professions and trades require physical laboratories related to projects. Laboratory kits must be developed so that they could be delivered to students situated far away from a learning distribution centre. New methodologies must be developed to include virtual reality (VR), augmented reality (AR), mixed reality (MR), and other digital reality (DR) environments to facilitate effective development of the intended experience. Co-laboratories should also be developed to share the delivery burden and increase the diversity of experience gained. Since the rate of developing impactful experience varies from one person to another, personalized teaching and learning must accompany this approach.

- *Collective Learning Processes and Journeys*: enabling people to collectively explore, co-create and co-evolve across disciplines in interesting and stimulating ways allows us to experience "belonging to something bigger." This can generate and maintain meaningful collective purposes, identities, and actions that stimulate co-creation, collaboration and collective learning. Collective processes can engage peer-to-peer learning and generative conversations, among other approaches.

- *New Roles of Teachers*: changing the learning environment and moving towards value-based, trust-based interactions require teachers, leaders and other educational change makers to obtain new skills such as facilitation, moderation, group dynamics management and situational leadership.

- *Digitally enhance pedagogies*. Modelling of learning and cognitive processes must also enter a new era, not in isolation from, but in symbiotic relation with human-compatible machines.[*,†,‡] New ways of measuring learner achievements and learning processes (including biometric measurements) open avenues for a finer, more personalized and timely feedback to learners that can greatly enhance their capacity to learn.

2.3. Organization & Governance of Learning Processes

- *Evolving Assessment*: evaluation and assessment can be given as valuable and encouraging feedback, and in order to do so it needs to take into account social and emotional intelligence, creativity, ability to cooperate and co-create, as well as other critical skills needed for the future. Measurements need to be done in new and dynamic ways, as "creative profiles" describing a range of multi-modal abilities, and assessed

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[*] Yingxu Wang, Sam Kwong, Henry Leung, Jianhua Lu, Michael H. Smith, Ljiljana Trajkovic, Edward Tunstel, Konstantinos N. Plataniotis, Gary Yen, and Witold Kinsner, "Brain-inspired systems: A transdisciplinary exploration on cognitive cybernetics, humanity, and systems science: Towards autonomous AI," IEEE SMC Magazine, vol. 6, no. 1, pp. 6 - 13, Jan 2020

[†] Mason Dambrot, Derrick de Kerchove, Francesco Flammini, Witold Kinsner, Linda MacDonald Glenn, and Roberto Saracco, Symbiotic Autonomous Systems. White Paper II. Piscataway, NJ: IEEE Future Directions, Oct 2018, 227 pages. https://digitalreality.ieee.org/images/files/pdf/SAS-WP-II-2018-Finalv3.2.pdf, https://symbiotic-autonomous-systems.ieee.org/white-paper/white-paper-ii

[‡] Witold Kinsner and Roberto Saracco, "Towards evolving symbiotic cognitive education based on digital twins," in Proc. 18th IEEE International Conference on Cognitive Informatics & Cognitive Computing, ICCI*CC18 (Polytechnic University of Milan, Milan, Italy; July 23-25, 2019) pp. 13-21, Jul 2019.

in ways that do not destroy curiosity, creativity, and cooperation, and allow people to learn by mistakes.

• *Rise of New Providers*: the variety of places and ways to organize education grows due to the development of online technologies, and equally due to expansion of face-to-face formats that form a completely new learning landscape (e.g. education clubs, live libraries, and flying universities). They are based on the diversity and interaction of different approaches and methodologies, making it possible to choose from a range of what suits one's personal learning style and worldview best.

• *Networks & Platforms for Learning*: network-based education weaves learners and providers into a web of interconnected learning spaces and processes, creating flows of information that allow such systems to become increasingly flexible and adaptive, while at the same time becoming increasingly global. In addition, digital platforms and tools such as badging systems help integrate providers and connect learning experiences with larger learning journeys.

• *New Role of Cities & Regions*: learning processes move outside of specialized institutions into distributed networks of learning opportunities that exist at the city or regional level, so that whole territories become "spaces for learning for life".

• *Support-oriented and Shared Governance and Leadership*: national and local governments and other major stakeholders recognize the increasing variety of learner types and needs, and learning models to support them, and engage a wider set of leaders representing grassroots civic governance and teacher / learner driven initiatives.

3. The Awakening Through COVID-19

In January 2020, a new virus started to spread across the planet, quickly reaching out to all continents but Antarctica, sufficiently contagious and deadly to be recognized as the worst pandemic in 100 years. Coronavirus, or COVID-19, was hardly a surprise to epidemiologists and futurists who have been forecasting "the threat of new and reemerging diseases and immune microorganisms,"[*] among the largest risks for years. However, governments and businesses around the globe were largely unprepared to deal with the situation, and a worldwide cascade of lockdowns of cities and regions came as a shock to the economy and society. The lockdown has forced societies to go into self-isolation—and to move all activities online whenever possible.

The educational sector, obviously, was among the first victims of this decision. As a result, it faced perhaps the largest disruption in its whole history: within a month and a half, literally the whole world stopped going to schools and universities. As of April 2020, over 1.7 billion learners of all levels are currently staying at home, 90% of all enrolled learners in the world.[†] The majority of schools and students were forced into different forms of online learning through online learning platforms and specialized apps.

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[*] http://107.22.164.43/millennium/Global_Challenges/chall-08.html
[†] https://en.unesco.org/covid19/educationresponse

Massive online learning was frequently touted as the future of education, and many futurists anticipated that it could possibly replace face-to-face education completely one day. However, the actual transition in the first few weeks demonstrated negative effects[*] such as:

- Mass-scale use of untested methodologies of teaching and student assessment, and also interruption to the normal flow of teaching and assessment that can influence anticipated long-term learning outcomes.

- Decline in the socio-emotional and physical wellbeing of students (due to increased screen time and lack of activities that complement cognitive learning, such as peer-to-peer interaction and physical exercises), and equally of teachers (due to significant changes in the way of teaching and the amount of adaptation it requires).

- Intensified pressure on parents and families who now have to take responsibility for organizing learning processes and rhythms to make sure students are engaged and focused on learning, as well as to support students' acquisition of skills necessary for online learning.

Most importantly, much like governments and businesses, education systems were not prepared for the transition, and hundreds of thousands of schools and millions of teachers were thrown into the deep water and had to learn on the go how to build their online curriculum and use new teaching tools. The ongoing quarantine has caused a massive learning process for the education sector, and after the COVID pandemic schools will face a "new normal". We can suggest some recurrent statements regarding possible future scenarios[†]:

- *Online & EdTech are here to stay.* EdTech has played a critical part in establishing continuity of education systems all over the world, and despite all hurdles, school systems are quickly adapting online teaching methodologies. It also becomes evident that some assumptions around EdTech are faulty: it has to enhance human-to-human interaction rather than replace teachers and students with robots and simulated environments. Online pedagogies will continue to evolve, and further investment in the digital field and the creation of network-based learning models are inevitable. Being online invites teachers to use the tremendous resources of the internet to make knowledge both accessible and facilitate the acquisition of skills, implying a new role for teachers as curators and facilitators of learning journeys.[‡]

- *New curriculum for changing realities.* COVID-19 is anticipated to become a major disruptor for existing models of economy, calling for increasingly "physically disjointed" value chains, digitally enhanced, automated and unmanned solutions[§]. As a result, a transition to "future skills" demand will likely occur very fast, and

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[*] As it is still early to provide a comprehensive assessment of the situation, the evidence is still more anecdotal, e.g. https://voxeu.org/article/impact-covid-19-education or https://blogs.worldbank.org/education/educational-challenges-and-opportunities-covid-19-pandemic

[†] Derived from a number of online conventions on "education after COVID", including WISE & Salzburg Seminar online conference, Mifras & Nomada roundtable, Weaving Lab discussion series, Learning Planet meetings, etc.

[‡] https://www.weforum.org/agenda/2020/03/4-ways-covid-19-education-future-generations/

[§] https://www.project-syndicate.org/commentary/covid19-great-economic-mismatch-by-dennis-j-snower-2020-04

the relevance of traditional curriculum and pedagogies will be challenged at scale. However, what is required from schools is not focus on some kind of new employability skills, but an increase in general adaptability of students by helping them become open-minded, creative, emotionally intelligent, and collaborative. This requires a new set of methodologies for experiential learning, both in schools and at a distance.

- *Nurture the human dimension*. Human connections are essential for the wellbeing of teachers and students, and the efficacy of learning processes. Socio-emotional learning and experiential learning should become the foundation for the curriculum and pedagogies.

- *Rising role of multi-stakeholder partnerships*. The current crisis has highlighted the need for efficient partnerships between teachers, administrations, learners, and families, all of which ought to be supportive of each other and striving towards shared goals. Other important partners that stepped in to support education are technological companies, media, trade unions, local and religious communities, and many other players. The resilience of educational systems will only be established if these partnerships continue to be cultivated, and if hierarchy-based "industrial" education systems give way to decentralized local learning ecosystems.

- *Future anticipation capability*. Even if futures are increasingly uncertain, it does not mean they cannot be anticipated, and as the Corona Crisis shows, with better anticipation capacity, many negative consequences can be reversed.

Education systems, teachers and students **have to become future fit** (Smitsman, Laszlo, Luksha, 2020). For school systems, this implies the need to place mechanisms that would pivot when disasters strike. Many analysts agree that the COVID-19 pandemic is probably an outstanding event, but we can anticipate other "black swan" events of a similar magnitude and impact to happen in the coming decades. Many other risks are brewing in our increasingly complex and strategically unpredictable civilization—climate crisis' impact on the biosphere and human systems, risks of global political, social, and economic turmoil, novel risks of disruptions to vital technological and economic system (Internet, energy, transportation etc.), possibility of a new world war, and more. **The current crisis is an invitation to relearn by ourselves and reimagine education.**

4. Are we facing a New Sputnik Moment?

Education is becoming not only necessary, essential and quintessential, but also existential. It is apparent that with COVID-19 crisis, we have entered another Sputnik moment.

4.1. The Sputnik Moment

Humanity has experienced many paradigm-changing events. Just over 60 years ago, a small satellite, Sputnik 1, was placed in the Earth's orbit by the Soviet Union, and we realized how great an accomplishment that event was. Many teachers use the recorded beep sounds from Sputnik 1 to open their lectures and tell the students what happened on October 4, 1957

(the Sputnik moment) and how we wanted to learn more, and how that inspiration led to dreams about the Moon and more.[*]

4.2. China's Sputnik Moment 2

Almost 60 years later in May 2017, a 19-year old Ke Jie, the best player of the ancient 2.5 thousand-year-old game of Go, lost the game to Google's AlphaGo. Not once, but three times. This was the Sputnik moment for Zhongguancun [jong-guan-soon], the Silicon Valley of China.[†] The event started a fire in the Chinese AI community. Actually, they seemed to be ready for that moment, after 280 million Chinese watched the previous March 2016 five-game Go series with the Korean player Lee Sedol. In July 2017, China announced a plan to become the centre for global innovation in AI theory, technology, and applications by 2030.

When IBM's Deep Blue defeated Garry Kasparov in 1997, the Sputnik moment did not occur. It was not because the chess board had only 8 by 8 squares, while Go had 19 by 19. The core reason was that AlphaGo used AI algorithms that were much superior to the Deep Blue algorithms. These algorithms are becoming very disruptive not only to industries but also to people. Job losses in the range of billions may occur in all types of professions. Profound inequality could also result from the winner-take-all economy[‡]. The advantages of "cheap labour" may also vanish.

China's Sputnik moment has not only altered the course of AI development, but also sparked something very transcendental to human life. When the game progressed and Ke Jie realized around 2 hours and 51 minutes that all his talent, knowledge, diverse strategies and experience could not overcome the machine, he removed his glasses and wiped his tears.

All those who saw this, supported him in the fight. The machine won, but he became a champion to many. Sympathy, Solidarity. Understanding.

4.3. Sputnik Moment 3

We are now experiencing another Sputnik moment due to the COVID-19 pandemic, which has revealed how inadequate our scientific, engineering and technical capabilities and education are.

We must change at the roots of education with the clear objective of reducing the rampant one-dimensional profit-oriented economic paradigm with its consequences of self-serving greed and complacency. We must remind both ourselves and human-compatible machines[§]

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[*] Alex Joffe, "Coronavirus: A Sputnik Moment for Science Education," Begin Sadat (BESA) Venter for Strategic Studies, Paper No. 1,536, April 20, 2020. https://besacenter.org/perspectives-papers/coronavirus-a-sputnik-moment-for-science-education/
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https://www.amazon.ca/AI-Superpowers-China-Silicon-Valley/dp/132854639X/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=&sr=

[‡] Amy Webb, The Big Nine: How the Tech Titans and Their Thinking Machines Could Warp Humanity. PublicAffairs, 2019.
https://www.amazon.ca/Big-Nine-Thinking-Machines-Humanity/dp/1541773756/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=&sr=

[§] Stuart Russell, Human Compatible: Artificial Intelligence and the Problem of Control. 2019.
https://www.amazon.ca/Stuart-Russell/dp/0525558616/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=&sr=

about effective altruism* interwoven with the value of life.[†,‡,§] We must teach that life is much more than a dispensable commodity. We must also realize that to achieve that level of engagement in the process of creating a better world, one has to intertwine Isiah Berlin's fundamental "freedom from" with "freedom to".[¶]

COVID-19 has a considerable chance to accelerate the transition from the old industrially-situated system towards a new paradigm, an ecosystemic-situated system.

5. New Leadership for the Paradigm Shift[**]

The last decade saw a remarkable evolution of paradigms and approaches in governance all over the world, a transition from a centralized, hierarchy-driven governance towards a polycentric, distributed, and network-driven one. As the gathering by Global Education Leaders Partnership & Global Education Futures acknowledged in 2017,[††] new types of governance are currently emerging in education, including:

1. Transition from hierarchy to "networked" governance, implying that development of education occurs not by promoting new "educational reforms" by a centralized top-down approach, but by cultivating suitable approaches bottom-up.

2. Design of new tools that support this bottom-up development: "scanning" and "pulling" educational innovation competitions and acceleration programs, grants provided to schools and teachers, maps and professional networks of innovators, and creating incentives and promotions for innovators.

3. Cultivation of communities of practice for new education paradigm practitioners that can creatively search for opportunities for design and implementation of innovations (having sufficient time and resources to reflect, discuss, and experiment)

4. Taking into consideration the diversity of various regions and schools (economy, resource availability etc.).

5. Using education as a key vehicle for socio-economic development at the regional and national scale.

6. Changing role of governments that become facilitators of "fair-game" opportunities and equity while maintaining growth of diversity.

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* Peter Singer, The Life You Can Save: How to Do Your Part to End World Poverty . Random House, 2009.
https://www.thelifeyoucansave.org/the-book/

† Yuval Noah Harari, 21 Lessons for the 21st Century. New York, NY: Singal, 2018
https://www.amazon.ca/Lessons-21st-Century-Yuval-Harari/dp/0771048858/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=1589176072&sr=1-2

‡ Max Tegmark, Life 3.0: Being Human in the Age of Artificial Intelligence. New York, NY: Random House, Vintage, Knopf, 2017.
https://www.amazon.ca/Life-3-0-Being-Artificial-Intelligence/dp/1101946598/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=&sr=

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https://www.amazon.ca/Enlightenment-Now-Science-Humanism-Progress/dp/0525427570/ref=tmm_hrd_swatch_0?_encoding=UTF8&qid=&sr=

¶ https://en.wikipedia.org/wiki/Two_Concepts_of_Liberty and
http://cactus.dixie.edu/green/B_Readings/I_Berlin%20Two%20Concpets%20of%20Liberty.pdf

** Major part of this chapter is excerpted from *Learning Ecosystems: An Emerging Praxis*, coauthored by Pavel Luksha, Jessica Spencer-Keyse, and Joshua Cubista (2020).

†† https://www.globaledufutures.org/images/people/GEF_GELP2017_TransformingEducationforComplexity_report.pdf

These shifts can be seen as numerous symptoms of a paradigm shift that currently occurs in governance and leadership approaches. There is a potential for cultivating a new way of thinking and action in education and beyond, which is more organic, natural and organism based, closer to how our biological systems seem to operate, rather than machine-based mechanistic premises that the industrial civilization operated upon. This unleashes the power of different ways of organising ourselves, our minds and our relationships that create the potential of moving into a new stage of civilization development. The emerging format of a learning ecosystem is often touted as a new paradigm of education, contrasted with the existing educational system.

The essence of what it means to learn "ecosystemically" is multifaceted. Ecosystemic "ways of being" are interconnected and seek to form patterns and rhythms that synchronize related parts of society. Learning ecosystems are not isolated "responses" to challenges that the educational system faces, rather they support the integration of other sectors towards collective learning, e.g. integrating various types of innovation, entrepreneurial, and innovation ecosystems in hi-tech clusters. Learning across multi-stakeholder groups fosters opportunities for uncommon collaborations and, when partnered with intergenerational and lifelong learning opportunities, set the stage for a radical shift in how education systems are organized. There is no standardized "one-size-fits-all" approach to a new paradigm of learning in our complex times, and learning ecosystems, by their nature, are locally-attuned systems that respond to local learner and stakeholder needs.

A working definition of learning ecosystems suggested in the 2020 GEF report on *Learning Ecosystems: An Emerging Praxis* proposes that:

- Learning ecosystems are webs of interconnected relationships organising lifelong learning.

- They are diverse, dynamic and evolving, connecting learners and community to foster individual and collective capacity.

- They are dedicated to co-creating thriving futures for people, places and our planet.

Around the world we see a wide spectrum of emerging approaches to leadership that share a common ground as it relates to affecting local and global positive change. This kind of leadership reflects the shift that is required to shift from the industrial education system approach towards the ecosystemic approach. Literature in the business field has already begun to explore the requirements of "ecosystem CEOs" who need to learn how to work differently as they are expected to handle multiple, often emerging, elements which require new practices, dynamics, and relationships. The focus then moves to collaboration in this distinctively new approach.[*] Below are the differences we have identified as emerging in leadership for learning ecosystem leaders.

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[*] https://www.russellreynolds.com/en/Insights/thought-leadership/Documents/Beyond%20the%20Corner%20Office%20_Leadership%20in%20a%20Multi-Company%20Ecosystem.pdf

Table 1. Contrasting Industrial and Ecosystemic Leadership Models

Industrial Leadership	Ecosystem Leadership
Hierarchical, top down power structure and flow. Focus on people being a means to an end. People rely on the structure which is linear and logical. Communication is one-way and mainly involves transmitting data.	Horizontal/flat networks and communities structure working in the flow of all directions. People are recognised and valued at the individual and collective level as interdependent, complex beings leaning into ambiguity. Communication is typically active and involves deep listening, enabling vulnerability with questions and storytelling.
Command and control with an authoritative approach to relationships. They might use fear, manipulation of charism as tactics and reward, threat, & demand compliance. The goal is to cultivate a work culture that encourages separation, segregation, & self-centeredness.	In service to others, fluid authority and transparent, authentic relationships. They are collaborative and might use facilitation, enabling, wisdom and humor as tactics. The goal is to cultivate a work culture of integration, empathy, & compassion for others.
Closed and guarded around information using routine processes. You either succeed or fail and should be afraid of the latter with a tendency to focus on short-term goals.	Shared, co-created across boundaries, fostering creative innovation using lifelong learning and regenerative processes. You are encouraged to experiment, take risks and learn with a prioritised long-term view. Feedback loops are used.
Representation of the workplace is often homogeneous.	Representation of the workplace is diverse.
Competitive mission, with an intention to win and drive others out.	A collaborative mission which they align internally and externally, paying attention to the webs of the system to work with others who share their values.

How do ecosystem leaders identify their roles in relation to this new paradigm and how do they see different kinds of roles begin to emerge across the ecosystem? When asked to identify and share, there were five major categories that presented themselves within a spectrum of what we call gardening and weaving in evolving learning ecosystems (Figure 3):

- Connector;
- Storyteller;
- Sensemaker;
- Designer; and
- Changemaker.

Figure 3: The Proposed Model of the Ecosystemic Paradigm Leadership
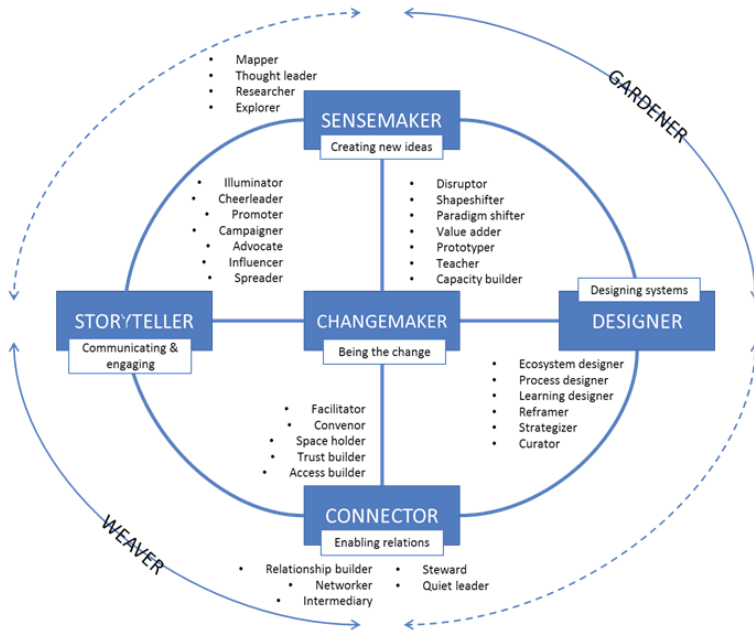
As shown in Figure 3, the **changemaker** is at the heart of transforming learning and education. This is at the centre of their aspiration and aim: to be the change they want to see in the world, as well as to create the change locally, sometimes just for people and/or the planet. This role ranges quite widely and showcases the multifaceted aspect, as well as the multitude of ways we can operate from a space of identifying as a changemaker. Some focus predominantly on the sensemaking aspect as their contribution to the ecosystem, which might be in the form of generating new ideas. This could also look like a social entrepreneur who has a great shapeshifting ability as they are often on the 'frontline' developing relationships and figuring out the best way to add value to the entire ecosystem.

The emerging role of ecosystem **storytellers** is particularly significant at this time, as the myths we tell ourselves play a huge role in how we perceive, act and behave in the world. Joseph Campbell, in *The Power of Myth*, defines the function of a mythology as "the provision of a cultural framework for a society or people to educate their young, and to provide them with a means of coping with their passage through the different stages of life from birth to death."* A myth then is ultimately bound to the society and time in which it occurs, interconnected with culture and its environment. We are living in the myth that science, which connects us together, solves everything, but in the 70s the same idea was brought into organisational studies as a uniting myth. It is a story we tell one another

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* https://www.amazon.co.uk/Power-Myth-Joseph-Campbell/dp/0385247745

to figure out what is meaningful and what is not. Storytellers in the ecosystem now play the role of showing the way of what is possible; this could be at the micro level up to the meshwork level.

These various roles are bound by the two overarching elements of **gardening** and **weaving**:

- *Weaving* is a process of nurturing trust and creating relations between people through curating circles, hosting conversations, and empowering others to step forward and take the lead. It works as "weaving" the tapestry of social relationships within an ecosystem, whereby its many participants align in vision, values, goals, and strategies. Here, an ecosystem leader works with what is *available*, strengthening communities and relations within an ecosystem.

- *Gardening* is the process of creating circumstances for systemic change, and more actively bringing this change forward through the cultivation of new opportunities and the facilitation of the existing ones, and even mitigation or "pruning" of certain opportunities and processes less desired. Here, an ecosystem leader works with what is *possible*, guiding the evolution of an ecosystem towards more desirable outcomes.

Ecosystem leaders do not constitute a special new position, but a new model of leadership that can be exhibited by literally any type of a player or stakeholder within education, such as:

- *Teachers, Educators, and Innovators* can launch and facilitate their own communities of practice to connect learning to local places, opportunities for personalisation and passion, rhythms and rituals, development towards emerging new facilitation styles.

- *Organizational Leaders* can cultivate conversations within their organization and with other leaders in their sector on how to become more ecosystemically oriented, and prototype the development of their own ecosystem by nurturing the capacity of their teams to organize ecosystems.

- *Young Professionals and Women Professionals* can develop entrepreneurial environments to ease their transitions from the learning environments to creative environments, and establish the transfer of experience from themselves and from seasoned professionals.

- *Young People, Parents, and Families* can organize peer-to-peer learning events, and also support transformations of their learning institutions, as well as help to map their local learning ecosystem and its resources.

- *Funders* can develop new models of funding and new metrics of impact that can help cultivate synergies within the project portfolio as well as projects supported by other funders, to help connect them to ecosystems.

- *Policymakers* can engage grassroots leaders and embrace multi-stakeholder-oriented approaches to policymaking, build authentic relationships, and cultivate long-term purpose-oriented communities of practice that can stand behind policies we institutionalize, etc.

The journey of creating learning ecosystems is not an easy one. It requires personal courage and stamina, it asks for a lot from the team members and the community, and it invites work that can span generations. But this may be one of the most meaningful ways to spend the time and the energy of a leader in education and beyond. In this time of transition and upheavals, we need new islands of stability and thrivability to emerge, and leaders that will carry forward the evolutionary transition of our civilization in a peaceful, non-violent, yet powerful and self-evident way of becoming.

6. Our Proposal as a GL-21 Working Group

As a working group, we recognize the need to model "the change we want to see in the world". We, therefore, believe that the group's exploration and initiatives should already manifest some principles of the 21st century leadership in education, including ecosystemic leadership.

The following suggestions from our group will be the focus of our work between May and December 2020 (during the main stages of the project):

1. Use the GL-21 related e-conferences in June 2020, as well as in Geneva & Toronto (October 2020) to hold conversations, panels and workshops on new models in education and of leadership for education. These activities could address issues, opportunities and challenges within the formal system and beyond. The results should be published in the most impactful fora.

2. In partnership with Global Education Futures, WorldSkills, IEEE, ACM Societies, Global Education Leaders Partnership, Learning Planet, Weaving Lab, University for the Planet, and others, conduct a series of global sessions on the future of skills, learning and education leadership in the post-COVID-19 world. The sessions should engage industry experts and educational professionals from the existing & emerging sectors of the global economy.

3. Launch a series of conversations with learners on the future of learning and new models of leadership, beginning with communities in Canada, US, Russia, Western Europe, South Africa, Mexico, Brazil, Colombia, Argentina, and other countries engaged in the development of such new models.

4. Similarly, engage in a series of conversations with groups of female learners, e.g. IEEE Women in Engineering.

5. Develop methods of collecting data related to the new models in education with emphasis on cognitive development of learners.

6. Develop new approaches to identifying and measuring an individual's
   (i) current level of knowledge,
   (ii) gaps in the required knowledge;
   (iii) kind and level of skills,

(iv) gaps in the skills that will be needed in the near and long-term future;

(v) the level and rate of cognitive development; and

(vi) the gaps in cognitive development.

7. Identify best collections of data on educational processes, and finding the best repositories of such data (e.g., the IEEE DataPort has been developed to be much more than a repository of data, and a source to reproduce research results).

8. Formulating possible implementations of the cognitive digital twins and symbions.

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The World Health Crisis:
A Historic Chance for a New Global Political Project

With a special emphasis on the responsibility of the academic milieu[*]

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Abstract

In order to understand "What the world will look like after the pandemic", we must first understand the present we inhabit and learn from the lessons of the recent past. The COVID-19 pandemic is merely the latest—if, unfortunately, greatest—of the various crises that have continuously eroded the foundations of our global representative democratic system since its creation in 1956. Yet unlike its predecessors, it striking athwart the various sectors of society serves to highlight their respective shortcomings and occasions an objective, ruthless and thorough examination of the economic, political, social and moral implications and consequences inherent to their revival. We are thus afforded a historic opportunity to fundamentally recalibrate the essential pillars of global society along fairer, more sustainable, more inclusive and more transparent lines. This Herculean task will require the collaboration of countless specialists, scholars and leaders across all sectors of society, whose sage input – based on collective millennia of accumulated expertise and wisdom in a "society of knowledge"—will prove invaluable to elaborating new societal guiding principles appropriate to the realities of the new millennium. This new cultural model must not only countervail the oncoming societal, cultural and economic shocks of rapid technologization, globalization and worldwide development, but also safeguard a vision of hope and confidence in mankind's chosen path forward—while allowing for ad-hoc recalibrations of its constituent parts when proven ineffectual. The existing global networks of power, capital, knowledge and wealth can thus be reshaped into a new framework within which each of the world's countless citizens can not only be, but also become.

In order to understand "what the world will look like after the pandemic", we must first understand the present we inhabit and learn from the lessons of the recent past.

The past months have highlighted two major positive aspects: the personal responsibility of individuals who, irrespective of particular political regimes, or the quality of administration, or of the varying degrees of economic and social development, have shown a high civic responsibility; and the degree to which advancements in communication technology could prove useful in the event of a pandemic.

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[*] This article is the author's keynote opening speech for the video conference on *How will the world look like after the pandemic?* organized in May 2020 by the Institute for Advanced Studies in Levant Culture and Civilization and the Black Sea Universities Network.

At the same time, the current global situation is highlighting the mediocrity of political leaders, the inefficiency of economic and financial systems based on maximizing profits in solving matters of public health, the limitations of current medical science and of science in general, as well as the risks associated with technology's unbridled progress. Two tales from our childhood, the Emperor's new clothes and the Sorcerer's Apprentice, seem transposed into modern-day reality.

> *"Intellectual solidarity can constitute a foundation for creating a new global political architecture."*

In hindsight, in the first two decades of the 21st century, mankind experienced two crises: the crisis of globalized terrorism, beginning with September 11, 2001 and the financial crisis between 2004-2009. After each of these crises, we were told—as we are again being told in the present crisis—that "the world will not be the same". However, our post-crisis experience has shown that the world did in fact remain the same; and that, in time, things even got worse. The repressive actions that followed 9/11 did not end terrorism; on the contrary, terrorist acts became more frequent, because the solutions were limited to foreign military interventions and intensifying internal security measures, instead of pursuing broad international efforts to create a culture of peace.

The disastrous effects of the economic crisis of 2004-2009, brought on by reckless fiscal policies, were primarily felt neither by the banks, nor by the banking system itself, which played an essential role in its propagation. Neither were ratings agencies blamed or their credibility questioned, so the existing system continued unhindered, laying the groundwork for similar crises in the future. Betrayed by the administration, it was the citizens themselves who had to suffer and pay the price for the crisis.

The military-industrial complex, the political leadership and the banking system proved incapable to deal with these crises back then. We cannot expect them to do so now.

When the Great Depression hit in 1929, Albert Einstein stated that a crisis cannot be solved by those who produced it. This is why I believe that, as long as political leadership is dominated by mediocrity and populism and the economic milieu focuses solely on maximizing profit, the responsibility falls on the academic milieu to elaborate a strategy that can protect mankind, citizens and democracy alike, and to control the ways in which technological progress and biomedical research can ensure the common good and limit their negative effects. Current governments obsessed with adherence to regulations preventing the virus' further spread on the one hand and with budgetary restrictions on the other, may well see the trees, but lose sight of the forest. It is high time that the academic and research community got involved in a debate on the future of the human society. In a globalised world, where the main social actors are only interested in achieving aims concurrent to their own interests, the only critical voice can come from the academic milieu, which can underpin an analysis capable of tackling interconnected economic, social, cultural, educational and moral issues.

Today, we have a responsibility to work together for the common good, owing to our immediate social responsibility to prevent the abuses of power that could occur as a result

of the state of emergency under which most of the world is placed. Let me be clear. I am not referring to a direct involvement in politics. The period of 1989-1990, when the intellectual elite of Eastern Europe successfully mobilised millions of people to end the dictatorial regimes and the Cold War, remained unique in history. In my opinion, the phenomenon of liberated populations who elected university rectors, writers, philosophers and scholars as the first democratic heads of government cannot be replicated in the current century.

"The academic and university establishment must be cleansed of the virus of populism and science's fundamental mission must be reaffirmed: the search for truth."

In the current context of financial interest groups either overtly or covertly manipulating public opinion, coupled with a degradation of our social climate, the top representatives of the current academic milieu cannot engage in, but are called upon to arbitrate and coach the political game.

There can be a positive collaboration between the academic and political spheres. In order to answer the challenges inherent to times of rapid change, politics can draw inspiration from science in order to reorganise itself along shared values: an authentic and balanced dialogue that favours an exchange of ideas, and respect for the truth. The academic milieu can be viewed as a precursor and a model for cooperation without exclusion or liminality. Intellectual solidarity can constitute a foundation for creating a new global political architecture.

Does the academic milieu have anything to learn from politics? Certainly. It can learn from the successes, and moreover from the failures of the political environment in order to become more prudent in crafting economic, political and social projects for which thorough impact assessment surveys have yet to be carried out, and whose implementation is outsourced to third parties. From statesmen's experience, academics and scholars can learn what it means to be responsible for decisions that dictate the lives, freedom and sometimes the death of millions, and which can lead to the collapse, emergence and progress of entire countries. Let us not forget that statesmen can pay for these decisions with their careers, with their liberty, or even with their life.

The academic and university establishment must be cleansed of the virus of populism and science's fundamental mission must be reaffirmed: the search for truth. Academic research does not hinge on political correctness, and scientific truth is not certified by the number of likes, shares or upvotes it receives. Yet in order to restore the academic environment to its previous capacity as an intellectual and moral model, we must rectify the compromises which academic research and higher education have made in pursuit of financing interest or enhanced visibility. To use scientific discoveries for the common good and in respect of universal values is a moral responsibility to society in its entirety, especially so in an age of digital discoveries that threaten to nullify the human component, leading to the automation of society.

In my opinion, this debate must follow two main avenues of inquiry. The first must focus on the responsibility of the academic milieu and scientific researchers to develop a sustainable strategy capable of capitalising upon scientific and technological progress.

"The essential differences between political systems stem from the ways they manage uncertainty."

The second line of inquiry must tackle progress from a moral and ethical perspective. It is in this vein that pressing topics such as artificial intelligence and medical engineering need to be debated. It is my belief that such a debate is of the utmost importance, especially so in times of crises, when the fundamental values of mankind need to be defended.

The current world health crisis must be examined in all its guises: economic, political, social, and moral. The meaning the mass media almost exclusively confer is that of a cataclysm, or a disaster. In ancient Chinese culture, however, the ideogram for "crisis" signified both "danger" and "opportunity" at the same time.

Which opportunity? The opportunity for a change. Whose change? The change of the system. Which system? Of the current economic and political system. How attainable is this? For now, we understand that we cannot do without the current financial system in the absence of a functional alternative concept, but we can nevertheless limit the banks' greed; we cannot dismiss the current internal and international security arrangements, but we can limit their abuse. This does not mean that a change must not be prepared in advance, as the recent health crisis has highlighted something even more profound: the dissonance between the current globalised political and economic system, and the cultural model that served to define it upon its conception.

One major issue lies in the fact that the dissonance between the real and the speculative economy on the one hand, and that between bureaucratic administrations and their citizens on the other, have negatively affected an element essential to both democracy and the market economy: **citizens' trust**. There is the risk that public discontent, put on hold during the crisis, might feed into movements bereft of ideology or leadership, channeled by personas without an identity and mobilised along social networks, which, taking advantage of the anomy created, could then generate a protestocracy that threatens representative democracy and creates the premises for a drift towards authoritarian regimes.

In order to regain the trust of our citizens, merely restarting the social dialogue is not enough. It is necessary to create a new **cultural model**, as no new political project can be successful if not preceded by and founded upon a cultural model, one relying on moral values. These are the only values capable of linking together the positive energies of society.

The 21st century requires a new cultural model, one that is not only able to counteract the economic and social shocks of globalization, but also capable of creating a vision of hope in a future characterized by chaotic developments and uncertainty. We now have a historic opportunity to put forward such a project.

Political and economic solutions imperatively required at present might be expedient în addressing the problem in the short term, but in the long run will not prove efficient unless paired with the use of available intellectual resources to craft a new cultural model for the world to come. To create long-term strategies starting from existing policies, and to later craft a vision of the future based on these long-term strategies—no matter how sustainable they were—are the only means moving towards the future facing backwards. Conversely, should we start from an inspired vision of the future in the present, we can advance facing forward, noticing both forthcoming obstacles and impending dangers at the same time.

The current global health crisis is distracting our attention from one obvious observation, obscured by our obsession with globalisation. We are transitioning from a unipolar world which, by the end of the Cold War, replaced the bipolar world of the East-West divide, to a world of multiple polarities. This multipolar world opens up several new avenues, and today, no model can claim to provide the only solution anymore. Therefore, a critical examination of the globalization project (which cannot now be prevented from coming to pass) is always necessary and welcome, especially now when it appears to have been abandoned by the very states that initiated it, having become uncontrollable; and there is the temptation to use the ongoing pandemic in order to justify this abandonment.

 If we continue to shape projects without taking into account the inevitable anxieties involved in a political construct affecting the lives of over seven billion people, then we leave ourselves few opportunities to develop a robust and democratic world. That is why I believe that the long road towards global solidarity should begin within every nation, local community or even family. Here, we often find manifested many of the contradictions typical to the global North/South or East/West divides; yet here we also find the bonding agent of a common ethos. Thus, we can better understand the world we inhabit.

The ongoing pandemic has occasioned an unprecedented situation in the history of mankind: billions of people communally agreeing to self-isolate for extended periods of time. Such a feat cannot but have psychological consequences. On the other hand, our confrontation with the virus and its economic and social consequences have jarred the feeling of security inoculated by authoritarian regimes and postwar "welfare state" democracies alike. **This sentiment of uncertainty,** which today tends towards becoming a new normal, has older roots.

In the evolution of human society, acclimation crises are nothing new; yet at present, they occur much more rapidly and reach much further, a general process that feeds individual uncertainty throughout the global village. The accelerated development of the relationship between technological advancement and the economy has shaken the final decade of the 20th century, at the same time announcing two major breakthroughs: globalization, twinned with an explosion of knowledge. These have both drastically heightened uncertainty. In my opinion, politics, as conceived and practiced today, is not yet prepared to manage the great challenges we face in the new century and new millennium—and a recourse to scientific experience might aid in this endeavour.

Over the past century, science, as an outpost of knowledge, has faced similar challenges through veritable revolutions in mathematics and physics brought about by the transition from Euclidean to non-Euclidean geometry and from Newtonian to quantum mechanics respectively. Science has continuously and consistently pressed forward, updating and modifying both its logic and its language.

The crisis of scientific language was overcome through the semantic theory of information. The "fuzzy set" theory gave rise to so-called "fuzzy logic", kick-starting the study of incomplete information systems which, with the aid of stochastic models, can also analyze real-world processes, whose evolution takes place according to the random rules of chance.

Its applications extended to biology (population dynamics), to economics (fluid exchange rates), to pedagogy (learning processes and algorithms). Chaos theory allows us to analyze the unstable behavior of non-linear dynamic systems, wherein a minute disturbance of the initial conditions can well lead to completely different trajectories. Science has thus proven that uncertainty itself can be described, represented and thoroughly understood.

Politics—in its noblest sense of serving the public interest—must embrace the uncertainty of the future, overcoming the populist drift that is deteriorating and exhausting the limited resources available for long-term projects and counteracting it through a superior political project. It is not about moving politics onto uncertain ground, but rather about regarding individual freedom as the core element of society. The essential differences between political systems stem from the ways they manage uncertainty. Do they embrace uncertainty, and attempt to reach solutions through dialogue? Or do they try to eliminate uncertainty altogether, through the diktat of ideology, religion or wealth?

The efficient management of uncertainty can only take place in a truly open society. Facing high stakes can give rise to behaviors which answer the challenges of reality through adherence to underlying principles. Where we cannot act motivated by the certainty of success, we can then act out of a consciousness of our duty.

Politics in the society of knowledge, and in the globalized world of tomorrow, must be crafted as a complex vision of the future, based on a new dialogue centred on fundamental human values. The current global health crisis, which has brought not our wealth, but our lives to the fore, forcibly imposes upon us a choice between **to have** or **to be**. It is therefore necessary to create a new system of arbitration between power and knowledge capable of reshaping a framework wherein every individual can not only **be**, but also **become**.

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Leadership, Human Needs, and Values:
The Importance of World Constitutionalism

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Abstract

This article introduces the twin themes of leadership and global constitutionalism. Today, we have a global constitution: the UN Charter. It has evolved into a weak instrument of global governance, and it needs to be strengthened by wise and brave leadership. The article provides a short overview of the historic emergence of constitutionalism, stressing the importance of the Atlantic Charter and the Four Freedoms. The article explores the complexities of leadership in a global social process context, and suggests a few modest changes to the structure and function of the UN system that may boost the power of the UN Charter as a juridical instrument. The article explores the emergence of human needs and values from the global social process and the challenges that these problems pose for global leadership. The article then provides a summary of the keynote precepts and challenges that require vigorous promotion and defense by leadership. It next provides a map of value needs and institutions on a global level and ties these issues in, with essential value needs in the UN Charter and the International Bill of Rights. This is to underscore the importance of these challenges for human survival. The article concludes with a careful analysis of the crisis of global climate change and the importance of this challenge for global leadership. The challenges in the UN Charter, the International Bill of Rights, as well as those arriving from the current pandemic and climate change, will all influence the survival of humanity as a whole. The urgency of brave and courageous leadership is now imperative.

1. Leadership and Global Constitutionalism in the UN

Leadership is an important and necessary part of the growth and development of humanity. Our understanding of leadership, as well as how we distinguish between good and bad leaders, remains nebulous. Leaders emerge from human social processes which involve the complexity of personality orientation, cultural context, class background, and the capacity to handle human crises. The essence of the political personality is still controverted. The nature of the political leader is essentially understood as involving private motives, displaced on public objects, and rationalized in the public interest. Hitler, Stalin, Churchill, and Roosevelt had leadership qualities that included all of these factors, and yet two were autocrats, and the other two were constitutional democrats. The central element to be understood is the essence

of the "private motives" and predicting or anticipating the nature of the inner personality of the leader or potential leader. This is important and difficult. The unconstrained personality may not be limited by the importance of public objects or public interest. These are largely matters, historically, of how governance is managed, and this includes an understanding of the history of political and legal culture. The problem of limiting the height of power has been subject to the idea that in general the powers of governance should be separated. However, this proved historically to be a weak form of constraint and monarchs needed greater limitations. The most famous of these limitations was the imposition of the Magna Carta, with specific written limitations on the king. This set in motion the idea that governance must be limited by a written compact or constitution. In this sense, the idea of governance restraint went from customary understanding to an objective statement of governing limitations. This represented a contestation about leadership as well as restraint or the lack of it. This tension took a significant turn with the American Revolution and the adoption of a written constitution and bill of rights. This development made explicit the importance of the separation of powers and the rights of the individual. The American example inspired the French Revolution and the Declaration of the Rights of Man and of the Citizen. The adoption of the American Constitution did not fully limit the contestation for power, and it barely survived a massive civil war.

The problem of governance and power was not only confined to local power contestations. It also concerned the governing politics of making war between nations without restraint. The problem of governance emerged with the idea that local authority was managed by sovereigns. A powerful theory of sovereignty maintained that it was constitutionally unlimited. Global politics evolved, and the idea of unlimited sovereignty provided no clear sense of leadership restraint at the global level. The world was soon plunged into a global war. The consolidation of sovereignty in governance at the national level unleashed a monumental problem of how to constrain sovereignty at the global level. The American intervention in the Great War produced President Wilson's 14 Point Proposal. These principles included an effort to generate a form of global constitutional governance. This emerged as the Covenant of the League of Nations. Although this was a U.S. initiative, the U.S. did not enter the League of Nations because some leaders saw the Covenant of the League as a restraint on American sovereignty. In fact, the other sovereigns conditioned the League of Nations with a major sovereignty loophole. This was the League's unanimity rule: any sovereign could stop the League from acting to establish any important international objective. This led to, essentially, a sovereignty repudiation of the League of Nations and led to the worst global war in human history.

The success of the totalitarian powers who launched the war was matched by leadership from the constitutional democracy. The war aims of democratic constitutional leaders was publicly stated in the Atlantic Charter. The Charter included the four freedoms. These values were the war aims of the Allies. These freedoms provided a value-based motive for the Allied cause. These freedoms were: freedom of speech and expression, freedom of conscience and belief, freedom from fear, and freedom from want. The Atlantic Charter was, in effect, a multi-national effort to establish a global constitutional basis for the war effort. The power of this initiative was driven by the two constitutional democratic leaders, Roosevelt and

Churchill. This Charter became the founding idea for the concept of a United Nations. After the war, the UN was established. The UN Charter and the global Bill of Rights were the first real constitutional system for global governance. The Charter was founded by a leadership rooted in constitutional democratic values. The UN Charter is the world's constitution. Yet, as the UN system evolves, the power of the Charter as a binding juridical instrument of global governance has become eroded. There is today a great need for leadership to proclaim the vital importance of the juridical character of the UN Charter. This requires some changes in the structure and the organization of the UN itself. The Charter depends on its global constituency: we, the people. However, the delegates are essentially nominated by sovereign states, and thus owe their first loyalty to the sovereigns. For a start, it would be useful for the UN to consider whether half the delegations coming from sovereign states should be nominated, and the other half directly elected by the people and citizens of those states. Such an innovation would provide flexibility on the part of the UN leadership, and by being directly elected, the delegates would involve the people themselves in the fundamental principles of global constitutionalism and the global Bill of rights.

A second important issue that has weakened the UN is the structure and functioning of the UN Security Council. The Security Council provides 5 permanent members with veto power. This means that on important issues affecting the community as a whole, one sovereign can stop the UN in its tracks. This means that the most important issue of global salience—global peace—can be undermined by a single sovereign. It would seem to be necessary that the Security Council's process be revised so that at least two or three members have to be in agreement before the veto can be used. Similarly, the number of permanent members on the Security Council could be increased.

In the next part of this essay, we evaluate in greater specificity the components of the efforts to improve the role of leadership in the context of the UN. This of course includes the centrality of the constitutional system itself, but also requires that we reach a deeper understanding of the social process that comprises the global community. The social process itself generates values and institutions at every level which are critical to responsible functioning of UN leadership. This article seeks to clarify the social process background to constitutionalism and global power, the fundamental values behind the UN system, the fundamentals of the UN charter itself, and concludes with the challenge for leadership against global climate change.

2. Leadership and World Society

The anthropological literature has given us a key to understanding life in a very elementary community. Life revolves around human beings energized to satisfy human needs. Anthropologists also identify the structures that emerge from society which are specialized in whatever degree of efficacy to facilitate securing those needs. When we map needs onto institutions, we emerge with a social process[*] that is based on the interaction of energies directed at securing needs through institutions. These institutions direct human energies, in some degree, to the satisfaction of those needs. We can now begin to

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[*] Winston P. Nagan, Contextual - *Configurative Jurisprudence The Law, Science and Policies of Human Dignity* (vanderplas publishing) 2013

identify basic human needs as the goods, services, honors, and gratifications that people in society desire or need. Moreover, we can classify these desires/needs in terms of the basic values that the individual social participant acts on to secure for himself and those dependent on him. Thus, we may emerge with a model of social process in which human beings pursue values through institutions based on resources. Now, this is a purely descriptive inquiry, but it is possible to observe that the needs/values and the institutions specialized to secure them are, generally speaking, identifiable. What are these values and what are the institutions specialized to secure them in any social process?

> *"It is the human perspective that gives meaning and life to the values and institutions in society."*

3. Human Perspective and Consciousness[*] in the Evolution and Interdetermination of Values in the Human Social Process

Table: Values, Institutions, Situations, and Outcomes of Society

Value	Institution	Situation	Outcome
Power	Government/Political Party	Arena	Decision
Enlightenment	University/WAAS	Forum	Knowledge
Wealth	Corporation	Market	Transaction
Well-being	Hospital/Clinic	Habitat	Vitality
Skill	Labor Union/Professional	Shop	Performance
Affection	Micro-Social Unit (Family)/ Macro-Social Unit (Loyalty)	Circle	Positive Sentiment/Patriotism
Respect	Social Class	Stage	Prestige
Rectitude	Church/Temple	Court	Rightness
Aesthetics	Museum/Monument	Culture	Creative Orientation/ Symbols of Cultural Beauty/ Aspiration

In this representation, values and institutions are represented descriptively in order to describe the system of community order as it is. It should, however, be understood that the social process of the community is a dynamic process, in which there is an energy flow between the participators, the values, the institutions, and the results. Some of the results generate conflict. Other results generate the success of institutions functioning optimally. What is important is that social process is a generator of problems, and these problems are about the acquisition and distribution of values. This means that the dynamism of society requires a decision process[†] that is frequently challenged to produce a solution to the problems

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[*] Philip Perry, *Harvard researchers have found the source of human consciousness,* http://bigthink.com/philip-perry/harvard-researchers-have-found-the-source-of-human-consciousness

[†] McDougal, Myres S., Harold D. Lasswell, and W. Michael Reisman. "The world constitutive process of authoritative decision." *J. Legal Educ.* 19 (1966): 253.

of value conflict, value deprivation, or value over-indulgence. Thus, the community response to the problems that values pose for community order invariably must implicate a normative dimension about the optimal allocation of values in society. Indeed, some political scientists describe political science as concerned with the authoritative allocation of values in society. The intimate link between the politics of power and the political economy of wealth is this: power may serve as a base of power to get more power. It may serve as a base to get more of all the other values extant in social process. Even more importantly, every value may serve as a base of power to get and keep power. Wealth may serve as a base of power to acquire power and keep it. It may serve as a base to get more wealth. It may serve as a base to get a lion's share of all the values extant in social process. Thus, political leaders are in an intimate association influencing the production and distribution of value needs in social process.

In reviewing this map of values and institutions of social process, it is important to keep in mind that it is the human perspective that gives meaning and life to the values and institutions in society. The human leadership perspective comes with the perspective of identity, ego-demands, and the value ideals of expectation. These perspectives are driven by deep drives for self-actualization, self-realization, and psycho-social fulfillment. In this sense, the private motives of leadership personality, even when displaced on public objects and rationalized in the public interests, still represent an underlying force that moves the personality and leadership in all social relations. This underlying force may be the force of self-affirmation for self-determination and is the most foundational energizer of the demand for human rights and dignity. The relationship between personality and value achievement may itself generate a sense of inner-fulfillment, which, in turn, becomes the driver of still greater levels of value creation and achievement.

4. Leadership in the Identification and Allocation of Values in Society

The problem of the allocation of values implicates the idea that there may be different standards which justify one form of allocation over another. Historically, at least in law, there has been an assumption that legal interventions are meant to discriminate between the claims for values that are just and those that are unjust. It is this challenge that has given rise to the great traditions of jurisprudence and, most importantly, the jurisprudence of natural law.[*] Natural law, however, could only generate procedures, not substantive rules, to facilitate the use of right reason in the resolution of value conflicts. Two of the most enduring of these natural law-based rules have survived and are essentially matters of procedural justice: *audi lteram partem*[†] [the obligation to hear both sides] and *nemo iudex in causa sua*[‡] [no one should be a judge in his own cause]. However, we had to await the aftermath of the tragedy of the Second World War before we got a kind of official code of natural law in the form of the Universal Declaration of Human Rights.[§] Although couched in the form of rights, the Declaration may be reduced to nine fundamental value-needs categories. The adoption of a

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[*] Winston P. Nagan, Contextual – *Configurative Jurisprudence The Law, Science and Policies of Human Dignity* (vanderplas publishing) 2013

[†] "audi altered partem" James Edelman, *Why Do We Have Rules of Procedural Fairness?* http://www.fedcourt.gov.au/digital-law-library/judges-speeches/speeches-former-judges/justice-edelman/edelman-j-20150904

[‡] "nemo index in causa sua", James Edelman, *Why Do We Have Rules of Procedural Fairness?* http://www.fedcourt.gov.au/digital-law-library/judges-speeches/speeches-former-judges/justice-edelman/edelman-j-20150904

[§] UN General Assembly. *Declaration of Human Rights* http://www.un.org/en/universal-declaration-human-rights/

code of moral priority, intended to bind all participants in the international system limited the speculation about the role of values in the social process. Although most intellectual and scholastic speculation stresses the notion that values are somewhat opaque, difficult to distill, and even more difficult to clarify, the adoption of the United Nations Charter has served as a political impetus for the development and clarification of human values. As a starting point, therefore, we may reduce the Charter [a legally binding instrument of global salience[*]] into several comprehensible and clearly articulated keynote precepts. We list them as follows:

Global Values, the UN Charter:[†] the Normative Value Guidance for Leadership in Science and Society

1. The Charter's authority is rooted in the perspectives of all members of the global community, i.e. the peoples. This is indicated by the words, '[w]e, the peoples of the United Nations.' Thus, the authority for the international rule of law, and its power to review and supervise important global matters, is an authority not rooted in abstractions like 'sovereignty,' 'elite,' or 'ruling class' but in the actual perspectives of the people of the world community. This means that the peoples' goals, expressed through appropriate forum (including the United Nations, governments and public opinion), are critical indicators of the principle of international authority and the dictates of public conscience.

2. The Charter embraces the high purpose of saving succeeding generations from the scourge of war. When this precept is seen in the light of organized crime syndicates' involvement in the illicit shipment of arms, the possibility that they might have access to nuclear weapons technologies, and chemical and biological weapons, the reference to 'war' in this precept must be construed to enhance the principle of international security for all in the broadest sense.

3. The Charter references the 'dignity and worth of the human person.' The eradication of millions of human beings with a single nuclear weapon, policies or practices of ethnic cleansing, genocide and mass murder hardly values the dignity or worth of the human person. What is of cardinal legal, political, and moral import is the idea that international law based on the law of the charter be interpreted to enhance the dignity and worth of all peoples and individuals, rather than be complicit in the destruction of the core values of human dignity.

4. The Preamble is emphatically anti-imperialist. It holds that the equal rights of all nations must be respected. Principles such as non-intervention, respect for sovereignty, including political independence and territorial integrity are also issues that remain under constant threat of penetration by alienated terrorists or organized crime cartels.

5. The Preamble refers to the obligation to respect international law (this effectually means the rule of law) based not only on treaty commitments but also on 'other sources of international law'. These other sources of law include values, which complement

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[*] Winston P. Nagan, Contextual – *Configurative Jurisprudence The Law, Science and Policies of Human Dignity* (vanderplas publishing) 2013, 262

[†] UN General Assembly, *the UN Charter*, http://www.un.org/en/charter-united-nations/

efforts to promote ethical precepts built into expectations of the universal ideals of morality.

6. The Preamble contains a deeply rooted expectation of progress, improved standards of living, and enhanced domains of freedom and equality for all human beings on the planet.

Based on the keynote precepts in the UN Charter, the world community also adopted an International Bill of Rights. The central challenge to a scholastic understanding of the International Bill of Rights is the need to clarify and distill its basic, underlying values. It may now be with confidence stated that we can distill at least nine functional values that underlie the entire international bill of rights. In a general sense, these rights, when considered collectively, represent the integrated, supreme universal value of human dignity. The central challenge then, is that those charged with decision-making responsibility must prescribe and apply a multitude of values in concrete instances and hope that their choices contribute to the enhancement of human dignity and do not, in fact, disparage it. At an abstract philosophical level, distinguished philosophers such as Sir Isaiah Berlin have maintained that it is futile to attempt to integrate these values with the abstract principle of human dignity because fundamentally, these values are incommensurable.[*] Not everyone agrees with this. Specialists in decision- and policymaking acknowledge that human dignity based on universal respect represents a cluster of complex values and value-processes.[†] Therefore, the challenge requires that ostensibly conflicting values be subject to a deeper level of contextualized social insight and a complete sensitivity to interdisciplinary knowledge, procedures, and insights. Thus, decisions in these contexts are challenged with the task of broader methods of cognition and a better understanding of abstract formulations of value judgments. Disciplined intellectual procedures have been developed to provide better guidance: in particular, instances of choice to approximate the application and integration of values in terms of the human dignity postulate. Does the ethic of universal respect and human dignity demand absolute, universal compliance at the expense of other universally accepted values? Ensuring that the values of respect, democratic entitlement, and humanitarian law standards are honored requires fine-tuned analysis and great subtlety in the structure and process of decisional interventions. Rules of construction and 'interpretation' are painfully worked out, which hold, for example, that even if a peremptory principle (*ins cogens*[‡]) of international law embodies an obligation *erga omnes*.[§] It should be evaluated, appraised, and construed to enhance rather than disparage similar rights, which may also have to be accommodated. The currency behind the universal ethic of essential dignity and respect is that it provides practical decision-makers with goals, objectives, and working standards that permit the transformation of law and practice into a greater and more explicit approximation of the basic goals and standards built into the UN Charter system itself. This prescribes a public order committed to universal peace and dignity for the people of the entire earth-space community.

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[*] Winston P. Nagan, Samantha R. Manausa,*The Context and Values Inherent in Human Capital as Core Principles for New Economic Theory*, *Cadmus*, 2018

[†] Winston P. Nagan, Garry Jacobs, *New Paradigm for Global Rule of Law*, Cadmus Vol. 1 No.4 ,April 2012

[‡] "Jus cogen" Bassiouni, M. Cherif, ed. *International Criminal Law, Volume 2: Multilateral and Bilateral Enforcement Mechanisms*. Brill, 2008.

[§] "erga omnes" Bassiouni, M. Cherif, ed. *International Criminal Law, Volume 2: Multilateral and Bilateral Enforcement Mechanisms*. Brill, 2008.

The most important thing to keep in mind here is that from a global perspective, politics and economics are intimately connected to the critical questions of the nature of global governance. In short, they are critical to an understanding of the allocation of basic value needs in the planetary social process as it is and the challenges concerning the allocation of values for an improvement of the human prospect. This requires a challenge to scientific consciousness as well as a challenge to the consciousness of political leadership.

5. Leadership, Values and Public Order

It is useful to approach the questions of value in terms of the nature of the public order that the rule of law system seeks to promote and defend. The system of public order secures the complex values that it is committed to defend by making an essential distinction between the minimum-order aspects and the optimum-order aspects of the system of public order.

6. Leadership, Values and the Minimum Order

The problem of scientific responsibility, values and the prospect of at least realizing a system of minimum order in the global governance of humanity now represents a critical challenge for scientific consciousness. We may understand the relationship between community, minimum order, and values by imagining a society without an expectation that agreements and exchanges made in good faith and according to law will be honored; that wrongs (delicts) inflicted upon innocent parties will be compensated; that basic interests and expectations of entitlement [as in fundamental norms of right and wrong] shall be sanctioned by a collective community response; or that basic structures of governance and administration will respect the rules of natural justice such as *nemo judex in sua causa* or *audi alteram partem*, and will in general constrain the abuse of power and thus the prospect of caprice and arbitrariness in governance. The necessity of minimum order in a comparative, cross-cultural, historic reality is that human beings interact within and without community lines. In doing so, they commit wrongs intentionally or unintentionally, they require some security over their possessions and entitlements, and their systems of governance aspire invariably to constrain the impulse for abusing power. These are the minimum values of social coexistence. It is in this sense that law as minimum order confronts the idea of justice and potentiality. It is commonly thought that minimum order is a critical, but not absolute condition of a more just, more decent, more optimistic human prospect. The rule of law precept is uncontroversial in the sense of minimum order and its 'boundaries'. Peace, security, and minimal standards of human rights are reflections of these values in international, constitutional, and municipal law. Fundamentally, the quest for the maintenance of a minimum order in society would appear to be an essential condition for the individual or aggregate of individuals to evolve toward a social process that maximizes value production and distribution. It is possible to see in this an evolutionary idea of progressive change relating to the production and distribution, optimally for all social participants. It is imperative that in the education of scientists and technology innovators, their sense of social responsibility is at least minimally influenced by the global values of a minimum sustainable system of world order.

7. Leadership, Values and the Optimum Order

This challenge to the public order raises the question of the production and the distribution of values beyond the minimum for social coexistence. This is an insight that is more challenging to the question of scientific responsibility and the values that ought to guide it. Clearly, a great deal of science will have an imprint that goes beyond minimum order and will be let loose in the domain of optimal possibilities and prospects. Here, it is critically important that value clarification be a component of the definition of scientific social responsibility. This is the challenge of the unequal distribution of opportunities or results. Human beings exist not only spatially, but also in terms of the duration of time and events. There is hopefully a tomorrow, a next week, next month, next year, and next century. Human beings, such as scientists, are also transformative agents who make things happen, and in doing so underline the question embedded in the nature of law and community that we can change things for better or worse, for the common good or the special interests, for the sense of expanding human dignity or the prospect of a negative utopia, the rule of human indignity. This is a critical challenge for scientific consciousness.[*] The central challenge for values posed by the optimum order precept is the problem of the procedures and methods for producing values as well as the procedures, methods and normative ideas about the fair distribution of the values that are produced in society. At the back of the concern for human values is the belief in human capacity for the essential, energized generation of value at every level of the social process and the human resource as a producer of ideas, insights, and values of exponential salience. At the back of the human dignity idea is the belief that widespread human dignity flourishes when the dignity of the individual flourishes and reproduces values of exponential importance for the common interest of all.

Fellows of the World Academy of Art and Science have suggested that the nine values embedded in the International Bill of Rights [power, wealth, respect, rectitude, enlightenment, skill, affection, health and well-being, and aesthetics] are the key to the notion of a public order of human dignity.[†] They postulate that the maximal production and distribution of these values on a universal basis is the key to improving the human prospect and approximating a public order of human dignity. This means that the prescription, application, and enforcement[‡] of the fundamental values behind human rights remain a major professional challenge to leadership and its focus on the importance of global governance remains a threat for the global processes of governance charged with the defense of global public order. We may conclude that value needs are a condition and a consequence of focusing and directing the energy of the human perspective into concrete operations that establish institutions concentrated and specialized to value realization.

In this sense, values and needs are incentives that generate a self-directed force, which ultimately evolves into institutions of effective power crucial to the allocation of values. It is possible to see these generalizations in the evolution of the sovereign authority of the

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[*] Winston P. Nagan and Megan Weeren, *Homoeconomico-politicus, Scientific Consciousness, and the Defense of Fundamental Values in the Context of the Climate Change Crisis: The Challenge of Scientific Responsibility for the Future of Economic and Political Science*, Cadmus Vol. 2, May 2016

[†] Winston P. Nagan, Contextual – *Configurative Jurisprudence The Law, Science and Policies of Human Dignity* (vanderplas publishing) 2013, 553

[‡] Harold D. Lasswell,*The Decision Process: Seven Categories of Functional Analysis* (College Park, Maryland: University of Maryland Press, 1956)

nation-state and its own evolution from state absolutism to sovereignty rooted in people's expectations. Another insight of this model is found in the notion that the power process[*] itself is energized by human expectations, especially expectations of demand. Without demanding or claiming an aspect of social power, society would be static. Thus, we see in the power process, the social activist. In the United States, Rosa Parks resented segregation in public transportation, so she staked a claim to repudiate racial discrimination in public transportation. Gandhi was thrown off a train in South Africa because he was not white. He initiated a claim to challenge the power of the state to impose unjust discriminatory laws. His challenges to the power process[†] brought him to India as a leader of the Indian Independence Movement. Nelson Mandela challenged apartheid and indicated in open court that he was committed to human dignity and democracy and that these ideals were ones that he was prepared to die for. Therefore, it is important that we have a clear understanding of the process of effective power, and what the limits and strategies are of mobilizing bases of power, to effect meaningful social change. It is quite obvious that scientific consciousness, driven by a commitment to scientific social responsibility, will have to carry a significant level of commitment in utilizing social power so that the results of technology serve human purposes that are constructive and avoid those that are destructive. As Einstein suggested, the development of science and technology should be a blessing and not a curse on human kind.

"The problem with regulating science is the problem that it will be regulated by a politically ignorant constituency, who may seek to appropriate technology with selfish special interests. Leadership has a critical role to play in the transmission of shared enlightenment."

From the perspective of an enlightened leader concerned with science, consciousness, and values, the following framework is provided as value-conditioned guidance for the technological innovators of our time and the immediate future.

Value Frameworks to Guide Leadership Scientific Consciousness and The Social Responsibility of Dynamic Leaders

1. The value of life: This is a centrally valued human subjectivity. It is referred to not in the "pro-life" sense (that a pregnant woman must bear a child), but in the Bill of Rights sense (that a person has right to personhood and autonomy). The value of life, therefore, includes the respect and deference given to the individual in the global community.

2. The status of the value of power and security: Should it be narrowly or widely shared? Is the common interest of all honored in a system that seeks to secure the widest

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[*] Winston P. Nagan, Contextual – *Configurative Jurisprudence The Law, Science and Policies of Human Dignity* (vanderplas publishing) 2013, 93

[†] Lasswell, Harold D. *Power and personality.* Routledge, 2017.

possible participation in all key areas of the power process? One of the central values identified in the Atlantic Charter was the freedom from fear. This concern for freedom has evolved so that today no one denies that there is a critical interdependence between the concept of peace as a human right and all the other values in the UDHR. Peace and security might well be included under the functional category of power. However, peace is recognized as a complex peremptory component of the human rights value system. It is of value to again recognize that there are complex ways in which all human rights values have an influence on peace and security, recognizing as well that peace and security at all levels are critical conditions for the effective mobilization of human rights values. A central aspect of the values of peace and security relates to the connection between the mobilizing force of strategy for the realization of human rights goals and the realization of these goals themselves. For example, is it appropriate to deploy violent strategies of action to achieve human rights objectives? Is it appropriate to disengage the value discourse involving strategy and struggle on the one hand and idealistic value objectives on the other hand? Gandhi, for one, insisted that the morality of struggle was even more important than the morality of distant idealistic objectives.[*] Indeed, he also insisted that a disconnect between struggle, strategy, and goals was morally indefensible.

3. The status and value of economic and wealth processes: Is the common interest of all better secured by optimizing the capacity to produce and distribute wealth or the opposite?

4. The status and value of respect and equalitarian values: Should invidious discrimination be fully prohibited (covering all areas of race, gender, alienage, etc.)? Can equality be meaningful if it is only a formal, juridical idea without regard to the legacy of exploitation, repression, and discrimination? The repression of equal opportunity is also an invidious denial of liberty.

5. The status and value of educational and enlightened values: Should these values be widely produced and distributed or narrowly experienced? In the context of science, the critical value that secures scientific innovation and the liberation of scientific consciousness is the freedom of inquiry. The challenge posed by dramatic technological innovation is that further scientific consciousness will generate an internal process focused on scientific responsibility and a deeper sense of the value implications and consequences of technological innovation. The problem with regulating science is the problem that it will be regulated by a politically ignorant constituency, who may seek to appropriate technology with selfish special interests. Leadership has a critical role to play in the transmission of shared enlightenment.

6. The status and value of skill and labor values: The centrality of labor and skills values to the human condition indicates that these are central and fundamental values implicated in the rights and expectations of those who seek to create and sustain these rights

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[*] Nagan, Winston P., John AC Cartner, and Robert J. Munro. *Human rights and dynamic humanism*. Brill, 2016. 140

and labor values. Should these rights and expectations be widely shaped or narrowly shared? The global crisis of massive unemployment would seem to impose a special responsibility for leadership.

7. The status and value of health and well-being values: The delivery of reasonably formulated and accessible healthcare and social services to all is now widely regarded as a crucial entitlement, if the most basic standards of decency in politics and society are valued. Today, unemployment aid, social security, Medicare, and other social services are considered crucial to a society that cares for its people.

8. The status and value of the family and other affective values: Because the family is the basis of collective existence and is central to the human rights of children, the public policies of a society that destroys family (and other affective ties) pose a problem for a wide generation of affective values including the loyalty values of patriotic deference.

9. The status and value of moral experience and rectitude: A system that endorses the centrality of moral experience to the legal and political culture and seeks to maximize the spiritual freedom of all is yet another central theme of human rights. Rectitude should never be a foundation for sectarian and ethnic conflict.

10. The status and value of cultural and aesthetic experience: The term cultural includes the concept of the aesthetic. In fact, the word "cultural" could encompass all the value preferences that we might extract from the UDHR. There is, however, a narrower meaning that the term 'culture' might carry. That meaning ties in with the notion of human rights as also emblematic of the diversity of human experience, experience that reflects the cultural richness of humanity as a global community. There is great controversy about the issue of culture and tradition, culture and creativity of the present, culture and the elaboration of the aesthetic, which may capture and nurture the cultural narrative of creativity and beauty which may in fact be the critical psychological view of how the glue of social solidarity promotes creativity. The boundaries of this discourse are controversial. Sensitive matters of sexual regulation which may differ widely may be justified by culture and yet here the culture of tradition may not be compatible with the culture and creativity of the present or the future in human rights terms. For example, female genital mutilation justified by cultural tradition is not justified by either religion or by the science of human sexuality. Human rights thus provide a process by which these boundaries may be appropriately protected and expanded according to the normative challenges of human dignity. The current discourse often suggests that universality trumps cultural relativity or vice versa. This is not necessarily helpful unless one sees these ideas as only the starting point for value clarification and application from a human rights perspective. Aesthetics should never be a foundation for demonizing vast sectors of humanity.[*]

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[*] Haddad, Aitza M., and Nagan, Winston P. "Aesthetics and Human Rights". *Montenegrin Academy of Sciences and Arts, Proceedings: International Conference on Humanities and the Contemporary World* (2012).

11. The status and value of the ecosystem: Today, we recognize a complex right to a viable ecosystem on what theorists have seen as Spaceship Earth.* The values embedded in the protection and promotion of a healthy ecosystem, are, like many other values, issues of complex interdependence and interdetermination. However, implicit at least, in the concern for the integrity of the ecosystem, is clearly the notion that there are no human rights if there is no environment in which human beings can survive and possibly even improve the human prospect. But this insight suggests an even higher level of moral consciousness in the sense that the ecosystem (with its plant life and animals, wild and domesticated) is part of a complex cycle, in which human beings are both custodians and also utterly dependent as individuals and as society. This means that we now see in nature not something irresponsibly exploited and destroyed but central to our identity as a sentient species. To take a simple example, for all the vaunted technology of human progress and human egotism, no one has seen a dog or a cat or a rat or indeed the most elemental of recognizable life forms outside of this lonely and unremarkable planet called Earth. Thus, as humanity, we now look at life even in its most humble forms as not only indispensable to the interconnected chain of life on this planet but we see in it something new and utterly connected to the very consciousness of being human and being alive. In short, we know that our dogs identify with us. We may now know those ordinary pets in terms of how they and all other living forms have shaped our identity both psychologically and physiologically. The integrity of the ecosystem requires a form of identification from Homoeconomico-politicus that is sufficiently comprehensive to cover the entire Earth Space System.

8. Leadership and Climate Change: Governance and the Challenge of a Green Economy as a Critical Ecosystem Value

Climate Change is a good tool to better understand the idea of leadership, consciousness and social responsibility for values. Climate change floundered at the Copenhagen conference because of the determined efforts of the climate change deniers lobby. Among the former spokesmen of that lobby were right-wing Republican senators, fanatically moved by the idea that climate change would require the mandatory regulation of corporate polluters. It is a maxim of modern Republican politics to oppose governmental regulation and in particular, the governmental regulation of environmental matters. The most vocal voice in the United States was the Republican senator from Oklahoma, Senator Jim Inhofe. The senator came with a record challenging the integrity of the entire climate-science community; this community, he felt, was a self-interested one and uncommitted to genuine science. The senator himself is an ignoramus on science, any science. According to Oil Change International, Inhofe has received over $1.3 million dollars in contributions from the oil and gas industries.† His attacks on climate change were sheer political opportunism. He remains unrepentant and continues to lead the charge in the American congress to undo the environmental regulations of the Obama administration.

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* Boulding, Kenneth E. "The economics of the coming spaceship earth." *Environmental Quality Issues in a Growing Economy* (1966).

† Matt Maiorana, *Hypocrite Alert: Senator Inhofe Complains about Money in Politics*, http://priceofoil.org/2014/06/03/hypocrite-alert-senator-inhofe-complains-big-money/, June 3, 2014

"With all of the hysteria, all of the fear, all of the phony science, could it be that man-made global warming is the greatest hoax ever perpetrated on the American people? It sure sounds like it." – **Senator Jim Inhofe**

Indeed, he has demanded that the climate change agreement be brought before the Republican-controlled congress in order for the congress to kill it. Inhofe is unduly influenced by the fossil fuel industry. This industry is in effect responsible for the overwhelming contribution of greenhouse gases to the looming crisis of climate change. Inhofe is an excellent example of the political-power oriented personality type. His private motivations driving his antagonism to climate change are rooted in the financial support he receives from the fossil fuel industry to secure his position in the Senate of the United States. Of these industries, ExxonMobil remains the world's largest Oil and Gas Company. According to Forbes, Exxon is the most profitable publicly traded company in world history.[*] The company generated revenue of over \$1.6 trillion dollars in 2009-2012 alone. Exxon is a notorious climate change denier, so notorious in its actions that Greenpeace has created a website detailing the company. Other republican senators are also beholden to the plutocratic establishment and its infusion of money into American politics.

Apart from the right-wing lobby, the concern for the development of a global mandate on climate change through the good offices of the UN had to confront a longstanding global problem: the division of the world community of states between the rich and the impoverished. Since a lion's share of the carbon emissions in the atmosphere was generated by the rich industrialized countries, there was a lingering concern about the price and distribution of the price for reducing carbon emissions in the world community. Since the poor states made a negligible contribution to greenhouse gases in the atmosphere, a question of justice and fairness seemed to emerge. Why should they share in the cost of the reduction of greenhouse gases when they are not responsible for the crisis? More than that, the predictions of the crisis could spell catastrophe for poor states.

Perhaps these states should be the beneficiaries of financial assistance from large states to convert themselves to green economies, and to compensate for the damages they suffer. Clearly, in attempting to move forward there needed to be some formula for allocating responsibility as fairly and as universally as possible. Perhaps the most important outcome of the Paris accord[†] is that every country is a stakeholder in the problem and every country must commit itself to a constructive role in reducing greenhouse gases in the future. Most countries were persuaded to come up with plans as to how the economy would respond to cutting carbon emissions through 2025-2030.[‡] In this context, every state is required to come up with a plan without a specification of the extent to which individual countries would cut emissions.

The agreement is not in the form of a treaty. It will only become technically and legally binding as an international treaty when at least 55 states which together represent 55 percent

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[*] Corinne Jurney, *America's Top Public Companies In 2017: A Buffett Buy List*, https://www.forbes.com/sites/corinnejurney/2017/05/02/americas-top-public-companies-in-2017/#7852b0204ad2, May 2nd, 2017

[†] United Nations General Assembly, *The Paris Agreement*, https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

[‡] IEA. World Energy Outlook 2017. Organisation for Economic Co-operation and Development, OECD, 2017.

of global greenhouse emissions adopt the agreement within their own legal systems as a form of treaty ratification.* Even assuming that this happens, the question would still remain of what the legal responsibilities are of the other approximately 100 states. We would contend that the agreement as it now exists is not without an element of a juridical imprimatur. In effect, the agreement contains in terms of its background, the core elements of the creation of a form of international soft law, which would appear to have an approximation to the development of a form of customary international law. The reasoning is as follows:

This agreement depends upon the good faith obligation that international law imposes on states, which establish public declarations of the nature and scope of their duties. The good faith obligation implies that these will be legally binding on the states. Thus, the binding effect of the agreement is not in the agreement itself but a matter of the customary international law dealing with the rights and duties of states. The agreement contains a legal expectation that states are required to reconvene in good faith every five years starting in 2020 indicating in good faith their updated plans to strengthen their emissions cuts. States were also required to reconvene every five years starting in 2023 to publicly report how they are achieving their emissions cuts, compared with their stated plans. Moreover, the agreement requires states in good faith to monitor and report the state of their emissions levels and reductions using a universally accepted counting system. This approach was achieved largely because the Obama administration did not want an agreement specifying specific levels of emissions reductions. Of course, such an agreement would in effect resemble the form of a treaty and the U.S. administration would have to submit it to the senate for its advice and consent. There are at least thirty nativistic and ideologically driven right-wing Republican nutcases in the senate of the Unites States. That is all that is needed to kill the treaty if its jurisdiction was submitted to them. The Obama Administration would therefore want to avoid the Senate at all costs.

In short, the standard of emissions set in good faith by states is voluntary but there is a legal requirement that they publically monitor, verify, and report on their progress. This model seems to work on the principle of transparency as a foundation for global peer pressure on states. States therefore will not want to be embarrassed by falling short of their own commitments. It is by no means clear that these steps are both necessary and sufficient to avert continued disasters triggered by the climate change process. In the Unites States itself, various states have experienced massive floods, including the states of major climate change deniers. To get the poorest countries onboard, the preamble of the agreement indicates that $100 billion dollars is promised to help the poor countries adapt to a desirable green economy and to mitigate some of the damages of climate change.†

The principal feature of the climate change agreement is the target of holding the average global temperature to a figure below 2 degrees centigrade above pre-industrial levels.‡ In

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* Alex Gray, *What is the Paris Agreement on Climate Change?*, https://www.weforum.org/agenda/2016/09/what-is-the-paris-agreement-on-climate-change/, September 7th, 2016

† John Upton, *The $100 Billion Climate Question*, http://www.climatecentral.org/news/the-100-billion-climate-question-19726, November 25th, 2016

‡ Rajamani, Lavanya, and Jacob Werksman. "The legal character and operational relevance of the Paris Agreement's temperature goal." *Phil. Trans. R. Soc.* A 376.2119 (2018): 20160458.

practical terms this means that, the temperature increase on the planet should not increase above 1.5 degrees centigrade above pre-industrial levels. The idea of limiting the global temperature to 1.5 degrees above preindustrial levels means that there is a concrete goal to stay well below 2 degrees. Scientists believe that this would likely ward off the worst effects of climate change. No one is exactly sure what the triggering point is that would melt the entire Greenland ice sheet as well as the West Antarctic ice sheet. It is possible that staying below 2 degrees centigrade would trigger such catastrophe. However, the odds are much better if we stay at 1.5 degrees centigrade. It is not necessarily clear that the 1.5 target will be achieved by purely relying on voluntary state action. Even if it is achieved, it is only a scientific guess that this will be sufficient to overt the worst consequences of climate change. The position of this economic forum is that the target of 1.5 is a bare minimum to be attained and if it could be improved upon, it would secure a greater safety net for humanity. Additionally, the fact that the agreement is not a treaty of hard law does not mean that it has no juridical effect whatsoever.

In this regard, the target temperature aspiration is not mandated as a matter of international treaty law. It therefore does not have the status of hard international law, which would require advocacy from the XII International Colloquium and its allies that the agreement is still binding as a matter of law. However, it does have important juridical characteristics, sometimes defined as international soft law. The idea of soft law means that the binding character of the agreement is a matter reinforced by indirect methods designed to give the agreement the force of international obligation. First, the agreement comes with a consensus of 150+ states. The agreement comes with strong support from the international scientific community as well as important scepters of learned societies of the international social process. The agreement comes with a strong support of a multitude of organizations constituting the civil society of the planet committed to environmental integrity. The agreement is supported not only by states, but also by civil society, learned societies in the arts and sciences, specialist communities in the sciences, and those committed to environmental integrity.

Additionally, the agreement comes with the institutional support of the foundations of authority of the United Nations system itself as well as other organizations of nation-states at different levels of global society. Specialist aspects of civil society concerned with human rights and humanitarian values are also lined up in support of this agreement. This adds up to considerable strength in the foundations of the authority component, which is a critical part of the dynamics of international law-making. The other important component of international law-making is the component loosely described as the controlling intention designed to give prescriptive force to the obligation. Here the controlling intention is reflected in part in the good faith expression of intent to abide by the agreement of at least 190 sovereign states. In general, the good faith expression by a sovereign state that it intends to respect a prescription that it has openly supported of advocation is enough to secure the notion that the agreement has sufficient controlling intention, which along with the authority signal gives it the force of law. Additionally, the agreement requires a public commitment to the scope of the obligation with regard to emissions reductions that the states openly subscribe to. This public commitment includes a threshold publication of the state's plan of action in the future,

and a reporting of the results of its action, which requires global transparency. This provides an additional lever to support the seriousness of the controlling intention of the sovereign states' commitment to emissions reductions. The active monitoring of the process by the United Nations itself, as well as a vast constituency of members of civil society including specialists in local politics, environmental advocacy, scientific expert knowledge, human rights organizations, and highly respected learned societies, reinforces the controlling intention of states.

> *"Green growth can be achieved by the recognition of human capital's basic resource, human creativity."*

Finally, international law-making does require clarity in the expression of the specific prescriptive expectations that the agreement entails. Since the states have stated what the prescriptive expectations are, this provides a degree of clarity in terms of the prescriptive expectations that a state is obliged to honor. Thus it would seem that at least in the context of the specific objectives of state action in reducing carbon emissions there is without a doubt a binding obligation on the part of states and their subjects to respect their agreements that the states have agreed to as having the force of binding international soft law.

The most important aspect of giving the human efficacy is the recognition that within states major corporate and industrial enterprises are largely responsible for greenhouse gases. This puts the controlling intention of the state against the self-interest of the corporate and industrial sector within a state. This is a challenge that has to be confronted. The most significant cause of pollution lies with the fossil fuel industry. Modern society owes progress to energy. To change this confronts not only corporate interests, but also the interest of workers dependent on the fossil fuel industry. There has to be an alternative and that alternative would depend in part upon radical new thinking, envision a new economic thinking of this economic forum, as well as the economic thinking behind the policy and progress of the global sustainability movement. The fundamental challenge lies in the shift on a global basis from the total dependence on the fossil fuel process to an alternative approach to meeting global energy needs as well as producing energy that eliminates the flow of greenhouse gases into the atmosphere. Experts maintain that the fundamental challenge of stabilizing the global climate via green economic growth is a matter of fundamental policy choices. Those policy choices have to be made on the basis of new economic thinking which makes as its fundamental postulate the vital importance of human capital. Green growth can be achieved by the recognition of human capital's basic resource, human creativity. We must therefore creatively take stock of how to make buildings, transportation systems, and industrial processes, energy efficient. This would have to extend to offices, homes, residences, cooking equipment, automobiles and public transportation.

The recognition of human creativity must be sustained by a commitment to major investments in clean and renewable energy. This includes solar, wind, geo-thermal, and various scales of hydroelectric power. If we are willing to recognize the genius of human creativity in creating a carbon neutral environment, experts estimate that an investment of 1.5 percent of the global GDP will generate effective and alternative energy policies for all

countries at any level of development. Such large-scale investment in clean energy would help raise efficiency standards in buildings, expand public transportation, and replace fossil fuels with clean and renewable energy. It is further estimated that such investments will pay for themselves in 3-5 years. These investments will have to come from both the public and private sector. The attractiveness of green energy would mean that energy costs would be reduced for all. If a carbon tax is placed on fossil fuels, then the price of fossil fuels will be far more expensive than green energy.[*] A policy commitment to green energy would enormously expand job opportunities. It is estimated that if the U.S. spent 200 billion a year on the green energy economy, it would drop U.S. emissions by 40 percent in 20 years and create a net increase of 2.7 million jobs. If India spent 1.5 percent of GDP on the economy, a 20-year program with these investments would create more than 10 million jobs a year. Other illustrations are equally impressive.

The real losers will be the fossil fuel industry and the mega-corporate giants that own it. It is estimated that they stand to lose 3 trillion in values over the next 20 years. Clearly, the petroleum industry will not take this lying down. Hence, the real problem is with green energy and greed energy. The losses of the fossil fuel sector may be somewhat tolerable if the losses are averaged out over 20 years coming to about 150 billion a year. One major issue that the mega giants of the fossil fuel industry must consider is that the holdings of the largest 200 corporations in the fossil fuel sector hold assets, which indicate that 60 percent of those assets, are unburnable. This is an important issue for investors and already some 456 institutions investing some 2.6 trillion dollars have committed themselves to this investment, or to reinvestment in clean energy. Others have already looked at diversification of their investments. For example, Warren Buffet, a famous corporate investor, doubled his holdings in solar and green energy companies in the amount of some 50 billion dollars.[†] It is important that this economic forum use its good offices to illustrate to the major players in the fossil fuel industry, the importance of diversifying their energy enterprise in the direction of green clean energy. The XII International Colloquium should emerge with a declaration in support of universal clean green energy.[‡]

9. Conclusion

This paper has sought to clarify the salience of the difficult relationship of scientific consciousness, its implications for world leadership, and the importance of cultivating that consciousness not only in creative ways but in ways that are morally and ethically compelling. This means that consciousness should be alert to the dynamics of positive and negative sentiment in the shaping of the technological paradigm of the future. Even more importantly, it is crucial for scientific consciousness to self-regulate itself by being better informed about the values it seeks to promote and defend. Successful self-regulation of science avoids the

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[*] Machiba, Tomoo. "Eco-innovation for enabling resource efficiency and green growth: development of an analytical framework and preliminary analysis of industry and policy practices." *International Economics and Economic Policy* 7.2-3 (2010): 357-370.

[†] Zacks Equity Research, Invest Like Buffett with These Top Ranked Solar Stocks- Stocks in the News, https://www.nasdaq.com/article/invest-like-buffett-with-these-top-ranked-solar-stocks-stocks-in-the-news-cm360536, June 10th, 2014

[‡] Winston P. Nagan and Megan Weeren, *Homoeconomico-politicus, Scientific Consciousness, and the Defense of Fundamental Values in the Context of the Climate Change Crisis: The Challenge of Scientific Responsibility for the Future of Economic and Political Science*, *Cadmus* Vol. 2, May 2016

danger of control and regulation by forces completely ignorant of the implications of science and technology. This means that scientific leadership must be more articulate in the defense of the values that sustain a creative, dynamic, and responsible scientific, economic and political culture as an indispensable foundation for an improved world order based on human rights and human dignity. This issue is made practically relevant by the challenges demanded for an economics and politics equal to the challenge of climate change for the earth-space community.

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From Limits to Growth to Unlimited Wellbeing:
A Revolutionary's Vision of Wealth and Welfare

Editors' Note: In remembrance of Orio Giarini, founding Editor-in-Chief of Cadmus, we reproduce key ideas from an article by Garry Jacobs and Ivo Šlaus about his seminal contribution to economic thought which was originally published in the April 2012 issue of Cadmus under a slightly different title, "From Limits to Growth to Limitless Growth". This provocative title was intentionally chosen by the authors to highlight the confusion between endless material expansion and the continuous development of human consciousness, capacity, welfare and wellbeing which lay at the heart of Orio Giarini's contribution to economics.

1. Equilibrium vs. Evolution

Giarini argued that the well-known economic principle that the supply equals demand is not a law at all, but only a tautology. Economic systems very rarely and only transiently reach anything close to equilibrium. He argued that the very nature of economy is evolving and that the rules and formulas applicable to the old industrial economy which is receding are decreasingly relevant to the knowledge-based service economy which is emerging.

Indeed he contested the widespread viewpoint of many both within and outside the Club of Rome that the report conclusively establishes finite limits to growth. Rather, *he argued that the report proved the inherent limitations of the existing industrial model of economic growth, not any inherent limits to growth itself.*

2. Breaking the Limits

Giarini's four reports to the Club of Rome pinpointed limitations in prevailing theory when confronted with a rapidly evolving social reality. Saved from cynicism by a keen sense of history and a deep faith in human values, his books presented an analysis of these limited conceptions and a plethora of fresh perspectives struggling desperately to be grasped, formulated and communicated.

In *Dialogue on Wealth and Welfare* (1980) he examined underlying premises regarding contemporary economic theory and its relationship with human welfare. Drawing on insights from Smith's *Wealth of Nations*, he traced back the roots of modern economic theory to the crucial point where theory became divorced from social reality.

In his first report to the Club, Giarini argued that the central question regarding growth is not 'How much?' but 'What kind?' The simple, self-evident conclusion he arrived at was that the value of economic growth depended solely on its contribution to human welfare.

In *Dialogue on Wealth and Welfare*, he analyzed the fundamental flaws in the prevailing notion of value and how it is measured. Although many of his insights have now been widely recognized, his arguments still carry the force of his original perception and theoretical clarity.

Long before the consequences of climate change threatened to undermine all conventional notions of economic value, he argued that the real future cleanup costs of pollution from industrialization and fossil fuel consumption were not reflected in measures of GDP and when later they came to be included, the expenditure to address pollution would be recorded as a further positive contribution to growth.

One of the reasons Giarini's writings have not gained wider recognition is because his vision was all-encompassing and, therefore, foreign to the thinking of traditional academic economists.

Discovering the full significance of the transition to services was the main theme of his second report to the Club of Rome, *The Limits to Certainty* (1993), co-authored with Walter R. Stahel. The report set forth the need for a new general theoretical framework for economics to reflect fundamental changes in the nature of economic activity.

3. Managing Uncertainty

The subject that most deeply occupied Giarini and constitutes his most original and potentially important contribution is one which by its very nature defies clear delineation and measurement—the problem of uncertainty.

His years operating the world's largest insurance industry think tank taught him the difficulty of costing and pricing future events. This led him to the perception that uncertainty was central to all economic activity, indeed to life itself.

But he also perceived that eliminating uncertainty represented only one side of the coin. For at the same time, insecurity and uncertainty are sources of human creativity and unbounded potential for wealth creation.

4. Future of Work

Never content with pure abstract theoretical reflections, Giarini always returned to the concrete practical problems of humanity and none today is more pressing than the future of employment. What purpose, he asks, does an economic system serve if it does not provide the most basic of all economic functions, access to the means of obtaining the essential necessities and non-essential components of a modern civilized life?

Mindful of the utter failure of unregulated markets and unsocialized systems to address this most basic need, in 1996 he authored his third report to the Club of Rome, *The Employment Dilemma and The Future of Work* in collaboration with Patrick Liedtke. The report traces the evolution and transformation of the nature of work from the agrarian age through the industrial revolution to the modern service economy. In this report the authors

discard both market and socialist philosophies in favor of a pragmatic, comprehensive, four layered solution designed to provide basic economic security to all, while optimizing the incentives for those who have the capacity and will to work and earn more. Their objective is nothing less than full employment and economic security for all.

Recognizing the essential role of higher education and life-long learning in any permanent solution to the employment challenge, this led naturally to the last of the four reports on the subject of university education and continuous training, *The Double Helix of Learning* (UNESCO, 2003) written in collaboration with Mircea Malitza. There they examined the mismatch between the human life cycle and education, the fragmentation of specialized disciplines, and the lack of integration between education and real life challenges. The report calls for a reorganization of education into multi-disciplinary, integrated modules that combine all the knowledge required to address real work issues.

Then in 2005, Giarini turned his attention to the lengthening of the life cycle and the problem of economic security and productive security for a progressively aging but ever more healthy and active elderly population, by establishing and editing the journal *European Papers on The New Welfare: the counter-aging society*.

5. Concluding Thoughts

Giarini had never been a prophet of doom. On the contrary, a close reading of his reports reveals an unparalleled potential for future prosperity. Where others see the insecurity of uncertainty, he sensed unrealized opportunities. His study of both economic theory and the real economy convinced him that the theory was deficient, not humanity's collective capacity to generate wealth for all. He had the insight and courage to look beyond the traditional boundaries and 'scientific' respectability of accepted concepts and econometric formulas to the vague hinterlands where economy merges in identity with the society of which it is a part and society engages in a creative interaction with the unformed potentialities of its own future.

Global System Change:
A Whole System Approach to Addressing COVID-19 and Achieving the SDGs

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Abstract

COVID-19 is a tragedy and opportunity for humanity. Reductionistic thinking and resulting flawed systems put human society in conflict with nature. They are the root causes of every major challenge facing humanity. To survive and prosper, we must align our economic, political and social systems with the laws of nature. COVID-19 provides an opportunity to do so. As we emerge from isolation, new whole system strategies are needed to transform society. If we continue business as usual, nature inevitably will provide more traumatic adjustments. This article summarizes a whole system approach for aligning human systems and society with the laws of nature. It concludes with the most powerful short-term strategy for driving system change—System Change Investing. The article is based on the book Global System Change: A Whole System Approach to Achieving Sustainability and Real Prosperity.*

1. Executive Summary

The new coronavirus (COVID-19) is a wake up call for humanity. For millennia, many humans believed and acted as if we were in charge on Earth. Of course we are not. Nature always has been and always will be. COVID-19 is reminding us of this reality.

Over the past century, exponential growth of the human population, economy and environmental impacts created many problems. We have been walking along a cliff edge. COVID-19 sadly will cause many deaths and disrupt society for months or more. But we almost certainly will recover.

We face far greater risks, including climate change and an H5N1-type influenza pandemic. During COVID-19, utilities, food, transportation, healthcare and other essential services probably will remain largely available. During an H5N1 pandemic (60 percent lethality), billions (instead of tens of thousands) might die. Nearly all services would be shut down. Society would be devastated for years.

With COVID-19, we are getting a second chance. When the messenger knocks, if people do not listen, it knocks louder the next time. We must make sure we get the message this time.

We might not get a third chance. The message is that we must align our systems and ways of life with the laws of nature, before nature aligns them for us.

"COVID-19 is compelling humanity to pause. It provides an opportunity to step back and see the big picture."

Pain is a great teacher. COVID-19 is compelling humanity to pause. It provides an opportunity to step back and see the big picture. It helps us to see that there are foundational, systemic problems that cannot be resolved through incremental, business as usual approaches. The most fundamental problem is that we are violating the laws of nature. COVID-19 shows the fragility of the human economy and society. It illustrates how quickly nature can and will compel us to comply with its laws.

COVID-19 provides an opportunity to reflect on the laws of nature and better understand how to quickly align society with them. The suffering of COVID-19 is tragic. Let us not waste it. There was extensive poverty and suffering before COVID-19. Let this crisis inspire us to improve ourselves and society.

This article explains how we can be nearly infinitely more prosperous than we are now. We control our destiny. It is whatever we choose to make it. If we continue to violate the laws of nature, suffering will grow exponentially. If we choose to align ourselves with the laws of this planet, we can reach unprecedented levels of widespread prosperity. Let us make this our destiny.

Increasing democracy and refocusing the measurement and management of society are essential for aligning humanity with the laws of nature. Under true democracy, citizens, through their servant government, focus society on maximizing long-term individual and collective well-being. But democracy does not exist in many countries. To illustrate, in the US over the past 40 years, campaign finance laws largely were dismantled and many environmental and social regulations were weakened. This lack of democracy and societal protection enabled a small group of citizens to substantially control government and concentrate public wealth.

Small business owners receive upside benefits and are required to cover downside risks. Large companies and their shareholders also receive upside benefits. But through limited liability, bailouts and other mechanisms, citizens/taxpayers cover much of the downside. Not holding companies responsible for the risks and problems they create substantially reduces the incentive to protect society. This harmful and unfair system is socialism on the downside and capitalism on the upside.

Over the past 40 years, trillions of dollars of public wealth were concentrated at the top of society through many forms of corporate welfare, while inflation-adjusted wages remained nearly flat. This concentration of wealth leaves society ill prepared to deal with COVID-19 and more severe problems.

The proposed COVID-19 stimulus program in the US reflects business control of government. Average citizens receive small payments that often do cover monthly living expenses, while companies that made large campaign contributions receive billions of dollars.

"To protect people during COVID-19, it is essential that we end one of the largest forms of corporate welfare—private sector money creation."

Vested interests frequently criticize the idea of wealth redistribution from the top of society down to the middle and bottom. This position is highly deceptive. The solution is not to initiate downward wealth redistribution. It is to end the current massive upward redistribution of public wealth from low and middle-income citizens to the top of society.

To protect people during COVID-19, it is essential that we end one of the largest forms of corporate welfare—private sector money creation. In the US and many other countries, we allow the private sector to create and control the money supply through fractional reserve lending. This costs US taxpayers about $500 billion per year (nearly half of federal individual income taxes).

When government runs a deficit, for example to fund COVID-19 stimulus efforts, the private sector creates money, loans it to government and citizens pay interest on it. If we the people created and controlled the money supply, we often would pay no interest. In addition, we could ensure that the public wealth was used for beneficial purposes, such as supporting people during COVID-19. Supporting average citizens is by far the most effective way to stimulate the economy and protect society. It maintains consumption and protects jobs far more than any other stimulus activity.

As discussed below, lack of democracy and inequitable resource distribution violate the laws of nature. These systems absolutely will change, probably soon. Flawed systems compel companies to operate in ways that place society at grave risk. For example, industrial food animal operations strongly promote the development of highly pathogenic viruses, such as H5N1, and facilitate their evolution into pandemic (easily transmissible) form. Improving these systems is essential for protecting society.

COVID-19 shows the vulnerability of the human economy and society to nature. Nearly all of the major challenges facing humanity are human creations. They mainly result from violating the laws of nature. They are not natural phenomena. For example, COVID-19 probably did not move directly from bats to humans. Human actions, such as live animal markets, almost certainly played a role in the pandemic. The fact that most human problems are caused by humans means we have the power to resolve them, if we develop the will to do so.

During COVID-19, many companies, financial institutions and other organizations are hunkering down. As they emerge from isolation, they often will seek new approaches. This article provides a reality-based framework for understanding and addressing major problems

and solutions. It summarizes the high-level systemic changes needed in major areas, including government, general public, media, education and corporate/financial.

A reality-based, whole system overview is essential for developing effective action plans. The UN Sustainable Development Goals (SDGs) provide many benefits to humanity. But they are based on a human-centric view of sustainability. In this sense, the SDGs are not reality-based. Humans are not the central focus of life on Earth. Nature in total is. Abiding by the laws of nature is the reality-based framework for humanity, as it is for every other species. As discussed below, it also is the most effective way to achieve the SDGs.

2. Whole System Thinking

Companies usually have a bias for action. They often want to move quickly beyond theory into action and get results. But failing to consider the big picture and moving too quickly can produce limited or counterproductive results. Experts have been researching and addressing systems theory and system change since at least the 1970s. Most system change efforts focused on one issue or area, such as community or economic reform. These efforts often produced benefits at the local level, but failed to substantially change overarching systems. Whole system approaches are the best and probably the only way to achieve the scale and pace of change required to protect humanity.

In nature, many actions combine to form effective whole system solutions. The same approach is needed to achieve sustainable society. Uncoordinated efforts that do not adequately consider the whole system, and thereby ignore relevant factors, often fail to achieve the desired results. Whole system approaches identify systemic constraints and system changes needed to abide by them. They illuminate societal interconnections, root causes, systemic barriers, key leverage points and optimal solutions. A whole system vision and strategy guide and coordinate actions in all major areas of society.

Focusing first on the endpoint and big picture is the most effective way to resolve the major challenges facing humanity. If the destination is not clear, we almost certainly will not get there. Clarifying the aspects of sustainable society illuminates the many actions needed to achieve it. Focusing first on the endpoint can seem impractical, as if present reality is being ignored. Starting from the present can produce short-term benefits and unintended consequences. This incremental, reductionistic approach to sustainability has produced many benefits over the past 40 years, but failed to reverse environmental and social degradation. Focusing first on the end point and big picture facilitates the development of the most effective short, mid and long-term sustainability and system change strategies.

Regarding the endpoint (sustainable society), humanity can be vastly more prosperous than we are now. Nature displays nearly infinite levels of sophistication, coordination, advanced technology, sustainability and widespread prosperity. We are parts of nature. As a result, we have the innate ability to achieve the same high levels. Nature implicitly operates from a whole system perspective. All aspects are balanced and taken into account. *Global System Change* provides a whole system approach for achieving our fullest potential.

Human society reflects human thinking. The root cause of every major environmental, social and economic challenge facing humanity is our reductionistic, myopic thinking. The human mind did not evolve to consider the whole Earth system and its sub-element human society at once. As result, we broke society into parts and addressed them without adequate reference to the whole system that contains them. This reductionism caused us to develop economic and other solutions that ignore relevant factors. This in turn produced unintended consequences, such as widespread environmental and social degradation.

As Einstein implied, solving our most complex challenges requires higher-level, whole system thinking. *Global System Change* uses this type of thinking to develop systemic solutions to complex environmental, social and economic challenges. *Global System Change* principles include putting the What before the How, non-judgment and practicality.

Putting the What before the How involves identifying what we want before discussing how to achieve it. It also involves stepping back and seeing the big picture or whole system, and then keeping it in mind when deciding how to address specific challenges.

Human society lives within the whole Earth system and nature. There are absolute laws of nature by which all life must abide. Humanity cannot live outside these laws for more than relatively short periods. Currently, we are grossly violating the laws of nature. We either will voluntarily align society with these laws or reality will force compliance through involuntary means, such as pandemics.

Evolving human society and our economic, political and other systems into alignment with the laws of nature can seem overwhelmingly complex. Putting the What before the How is essential for managing this complexity and making societal transformation comprehensible.

To illustrate, 200 years ago in the Southern US, many people made apparently logical and compelling arguments about why it would be difficult or impossible to end slavery. Had they looked at the whole system of nature and its inviolate laws, they would have seen that slavery inevitably would end because it grossly violates the natural law of equality. Understanding the big picture would have compelled people in the Southern US to do whatever it took to eliminate slavery, before reality ended it through highly traumatic and disruptive means.

The exact same situation exists today. Many experts, leaders and average citizens make compelling, apparently logical arguments about why it would be difficult or impossible to change economic and political systems and broader society. Stepping back and looking at the big picture shows the extent to which we are grossly violating the laws of nature and causing massive environmental and social degradation. From this perspective, it becomes clear that systemic and societal change are inevitable, probably soon given the scale and pace of degradation we are causing.

Putting the What before the How means that we first describe a human society that lives within the laws and limits of nature. Once this is clear, we can begin the conversation about how to achieve it. This principle facilitates and accelerates transformation. As people argue

that change is impossible, whole system, reality-based thinking shows the flaws of these arguments, as it would have shown the flaws of arguments against ending slavery.

To illustrate the application and importance of putting the What before the How, whole system analysis shows that our economic and political systems unintentionally put business in conflict with society and humanity in conflict with nature. These systems cause many environmental and social problems that harm and sometimes kill current and future children. Putting the What first means that we define what we want. One of the most important aspects of this is protecting our children—all children, not just our biological children. Virtually everyone would agree that we must do whatever it takes to protect children and future generations.

Once this is established, we can begin to discuss how to make necessary systemic and other changes. Vested interests might argue that it is too difficult, expensive or disruptive to change current economic and political systems. Having established the What before the How, it becomes clear that these vested interests essentially are arguing that we must continue to harm and kill children because it would be too difficult to stop doing so.

Putting the What before the How shows the unacceptability and irrationality of these arguments against system change. We established the position that we will overcome any difficulty and pay any price to protect children and future generations. Once vested interests realize that system change is inevitable, they will use their huge creative potential and resources to drive it in a cost-effective and timely manner.

Non-judgment is essential for voluntary system change. No business or political leader intends to degrade the environment or society. Failure to look at the big picture (reductionism) caused humans to develop economic and political systems that seem logical and beneficial from a narrow perspective, but produce unintended consequences. These flawed, myopic systems compel good, well-intentioned leaders to take actions that harm the environment and society.

The enemy is not these leaders. It is the flawed thinking and systems that compel their harmful behavior. Voluntary, non-disruptive system change requires engaging current leaders and the mainstream. This is greatly facilitated by non-judgment.

Practicality also is essential for voluntary systemic and societal change. It often is defined as that which can be reasonably achieved under current systems. By this standard, substantial changes to current systems frequently are considered to be impractical. This is an irrational, reality-ignoring definition of practicality.

True practicality is based on reality. Living outside the laws of nature, as we largely are doing now, might seem easy and practical. But a whole system perspective shows it to be grossly irresponsible and impractical. It inevitably will cause increasingly severe, possibly catastrophic consequences. True practicality is that which works in the real world, regardless of how difficult it might be. It recognizes that doing whatever it takes to align human society with the laws of nature is the only practical option.

Clarifying the What (living within the laws of nature) facilitates the development of practical strategies for achieving it. Big picture practicality illuminates the upside. It shows that humanity can be nearly infinitely more prosperous than we are now. The benefits of sustainability and system change (survival, true prosperity) vastly outweigh whatever costs or difficulties might be involved in achieving it.

The *Global System Change* process involves clarifying the major aspects of sustainable society, systemic changes needed to achieve it, and actions required in different areas to bring about these changes. This article summarizes these three areas and concludes with a fourth—the most powerful short-term driver of system change—engaging the corporate and financial sectors through System Change Investing.

3. Sustainable Society

Nature operates according to physical and nonphysical laws. It does not care about human ideas, philosophies or systems. Humans are the only creatures that care about human ideas. Nature will operate according to its inviolate laws regardless of what humans think, say or do. Our only options are alignment with the laws of nature or adjustment. If we attempt to perpetuate our reductionistic ideas and systems, they will be adjusted, probably soon.

To the extent that human perceptions of reality differ from reality (the laws of nature), reality and nature will correct them. Before discussing any philosophy or strategy for society, we must understand the constraints within which humanity exists. This provides the reality-based framework for evolving human society into a form that abides by the laws of nature. This in turn enables us to truly prosper over the very long term and achieve our fullest potential, individually and collectively.

The laws of nature can be deduced through objective, whole system observations of nature and natural systems. Natural laws are qualities that are essential for system survival and prosperity. Healthy, stable natural systems ultimately cannot exist without them. Imbalances (violations of the laws of nature) only can exist for relatively short periods. Nature and reality correct imbalances to ensure long-term survival and prosperity. (Natural law in this article refers to the actual, observed laws of nature. It does not refer to religious dogma, which sometimes is deceptively labeled natural law.)

Physical laws of nature include cooperation, seeking balance not growth, equitable resource distribution, equally valuing current and future generations, equally valuing species, living on renewable resources, producing no waste, maintaining clean and stable life support systems, enabling individuals to reach their fullest potential, and decentralizing production and governance (except in limited cases where broader or global governance is most effective). The nonphysical laws of nature include equality, self-government and freedom of expression.

All life forms, except humans, abide by these laws through DNA, instinct, intuition and other mechanisms that we do not fully understand. The implied coordinating mechanism, intelligence or wisdom of nature produces nearly infinite coordination, symmetry and

technological sophistication. We sometimes make the mistake of thinking that we are the most intelligent creatures on Earth. But judging by results, the objectively most important standard in reality, we are near the least intelligent. This recognition promotes humility, which in turn opens our minds to new ways of thinking and being on this planet.

The natural laws of equitable resource distribution and cooperation can be used to illustrate myopic, unintentionally destructive current thinking and higher-level, reality-based, whole system thinking. Many people probably would say that inequitable resource distribution is a natural state among humanity because it has existed in different forms since the First Agricultural Revolution about 12,000 years ago. This reflects myopic thinking.

In nature, creatures take only what they need. One animal does not take 1,000 times more than it requires, thereby causing other animals to go hungry. In the human body, cells also only take what they need. As a result, resources are equitably distributed throughout the body, as occurs in all other healthy natural systems. If the inequality in human society existed in the human body, people would quickly die. Modern humans have existed for about 200,000 years. For nearly all of this time, resources were distributed about equally among people in hunter-gatherer societies. Over the past 12,000 years, no society with significant resource inequality survived for more than relatively short periods.

To modern humans, inequitable resource distribution might seem like a natural condition of humanity or a fact of life. But it is the opposite. It grossly violates the natural, inviolate law of equitable resource distribution. As a result, any society or human system with significant inequality inevitably will end or change. Equitable resource distribution is not a utopian philosophy. It is an inviolate law of nature. This clarity helps to overcome barriers to system change.

As vested interests argue that ending resource inequality would be difficult or impossible, whole system thinking shows that it not only is possible. It absolutely will occur in human society, as it already occurs in nature and our own bodies. Equitable resource distribution will be achieved through voluntary or involuntary means, possibly including the great reduction or elimination of humanity. Throughout history, all human systems that violated the laws of nature changed, usually by collapsing. If we do not voluntarily implement equitable economic, political and social systems, nature and reality will impose them on us in a highly traumatic manner. Understanding this will help us to do whatever it takes to make it happen, rather than fight to maintain current inequitable systems.

Many people also would say that competition is a natural state in human society and nature. This once again reflects myopic thinking. One might observe an animal eating another and conclude that nature is competitive. Limited competition occurs at the individual level. But stepping back and observing the whole system shows that the overwhelming force in nature and healthy natural systems is cooperation. When the overwhelming force is competition, as in a body with terminal cancer, the system is out of balance or dying.

We are all interconnected parts of one system, like cells in the body. None of us can survive in outer space. Each human is as much a part of the whole Earth system as the hand is of the body. Myopic thinking and our five senses often trick us into thinking that we are

separate from each other and nature, as they once tricked us into thinking that the Earth was flat. Thinking that we are separate produces fear and belief in the need to compete for scarce resources. This myopic thinking has driven extensive, inefficient, destructive competition over the past 12,000 years.

Greater cooperation within human society also is not a utopian ideal or philosophy. Cooperation is an inviolate law of nature. The only way that humanity can survive and truly prosper over the long term is to greatly increase cooperation in society, achieving nearly the same overwhelming levels that already exist in nature and our own bodies.

The absolute, inviolate laws of nature are constraints for human society. But they also are liberating. Abiding by them is the pathway to unprecedented, long-term prosperity and happiness among humanity.

It also is the most efficient and effective way to achieve the SDGs. As noted, the goals provide a human-centric view of sustainability. But the reality-based view is nature-centric. Abiding by the laws of nature will substantially achieve the SDGs. For example, abiding by the natural law of equitable resource distribution will largely achieve the SDGs related to poverty, hunger, healthcare, education, gender equality, energy, water, sanitation, economic opportunity, good jobs, safety and justice.

4. Necessary System Changes

Aligning human society with the laws of nature requires many system changes in all major areas. These changes can be framed up with three *Global System Change* principles— emulate nature, establish democracy and abide by the rule of law.

Emulating nature is essential for achieving long-term survival and prosperity. We are surrounded by nearly infinitely greater implied intelligence and wisdom. As part of nature, we have access to this intelligence, largely through the intuitive. But current education systems generally do not adequately teach people how to access it.

Nature provides a nearly perfect model for sustainable human economic, political and social systems. Imagining how we could abide by the laws of nature enables us to envision a sustainable society. This illuminates the flaws of current systems and necessary system changes.

To illustrate, nature implicitly values current and future generations equally because it provides about equal resources to them. Time value of money violates natural law by saying that future generations are worth less than current ones. Obviously this must be changed.

In nature, there are no externalities. All aspects implicitly are balanced and taken into account. But we allow businesses to externalize vast costs onto society. As nature implicitly does, we must use full cost, whole system accounting to take all relevant tangible and intangible factors into account.

Nature implicitly seeks balance and resilience. We myopically seek infinite growth in a finite system. Nature implicitly seeks to maximize individual and collective well-being. Our

financial and economic systems seek to maximize the financial well-being of shareholders, and irrationally assume that this will maximize the well-being of all stakeholders.

Nature produces no waste. But our grossly inefficient production and other processes produce massive amounts of waste. We churn through pristine nature and turn much of it into garbage. Nature equitably distributes resources. But our unjust, undemocratic systems concentrate massive amounts of wealth at the top of society.

Democracy is another essential aspect of sustainable society. It is an implied law of nature. In nature, individuals are free to do what they want and reach their fullest potential. Democracy in principle is the only sustainable form of government. It is based on innate rights of equality and self-government. However in practice, as the US Founders well knew, democracy is an unworkable form of government for more than small groups. Citizens usually do not have enough time to study and make well-informed decisions about all issues. Therefore, democracy must be implemented through republican forms of government. Under this approach, expert politicians make well-informed decisions that maximize the long-term well-being of society. Obviously this requires that politicians equally serve those who elect them.

High inequality indicates low democracy. Countries with low poverty and high standards of living, like Scandinavian countries, implicitly have strong democratic governments that use the public wealth to equally and fairly benefit all citizens. Countries with high inequality, like the US and China, implicitly have low democracy. Citizens vote in these countries. But it has limited impacts on government. Both countries largely are controlled by small groups of powerful people—wealthy campaign donors in the US and the Communist Party in China.

As noted, over the past 40 years, the US substantially dismantled its campaign finance laws. As a result, wealthy citizens are allowed to anonymously spend unlimited amounts of money on election campaigns. Several studies have shown that politicians from both major political parties focus almost completely on meeting the needs and requests of wealthy campaign donors. As a result, wealth has been concentrated at the top of society for the past 40 years through many forms of corporate welfare. At the same time, inflation-adjusted wages have been nearly flat.

About 43 percent of US citizens cannot afford to meet basic needs. The US uses a deceptive 1960s era definition of poverty that actually measures extreme poverty, not poverty in general. A more honest and accurate definition is inability to meet basic needs. By this standard, nearly half the people in this supposedly prosperous country are living in poverty. Obviously this injustice will not last. It violates natural law. Voluntarily abiding by the natural law of equitable resource distribution requires true democracy implemented through republican government.

One of the most important democracy related systemic changes involves the money supply. Money can be created by the private or public sector. With private money creation, banks create money, loan it to government and citizens pay interest on it. With public money creation, government creates money, loans it to banks, and citizens earn interest.

Creating money can generate substantial income. In a democracy, this revenue belongs to the people, not banks. But We the People have given away our right to create, control and profit from the money supply. This nearly doubles federal individual income taxes and severely restricts our ability to maximize the long-term well-being of society. Private sector money creation costs US citizens about $500 billion per year (interest on the national debt – $400 billion; lost interest income – over $100 billion).

As discussed in *Global System Change*, switching from private sector to public sector money creation is fairly simple. In the US, it involves making the privately owned and controlled Federal Reserve part of the US Treasury and requiring 100 percent bank reserves (i.e. ending fractional reserve lending). Under current systems, banks only are required to hold a small percentage of deposits. When they loan out the remainder, they create new money (in the form of debt).

To illustrate, if someone deposits $1,000, at a ten percent reserve requirement, a bank can loan out $900. This creates $900 of new money. When that is deposited, the bank can loan out $810. Under this approach, the banking system can grow a $1,000 deposit to $10,000, and thereby create $9,000 of new money out of thin air. About 90 percent of the US money supply is created this way. Much of the interest on this newly created money belongs to citizens. But we allow banks to keep all of it.

With public sector money creation, banks are required to hold 100 percent of demand deposits. Instead of allowing banks to create money through fractional reserve lending, We the People create money and loan it to banks at a low interest rate. This interest income is used to lower taxes and fund socially beneficial activities. Banks loan out government-created money at a higher rate and profit from the spread.

The benefits of transitioning from private to public money creation are overwhelming. It will substantially reduce taxes and improve society as the money supply is used for beneficial purposes, instead of maximizing the wealth of bank owners. It will vastly simplify management of the money supply as one entity (democratic government) creates money, instead of thousands of financial institutions. It also will increase credit availability and produce a far more stable money supply, especially during recessions, because money will not be constantly appearing and disappearing as loans are made and repaid. In addition, reclaiming our constitutional right to create and control the money supply will substantially reduce or eliminate the national debt and deficit spending.

The rule of law is one of the most effective ways to frame up and simplify system change, especially in the corporate and financial sectors. Nearly all economic and political system flaws could be rolled up into one overarching system flaw—the failure to hold companies fully responsible for negative environmental and social impacts. This is the general mechanism that puts businesses in conflict with society. In competitive markets, not holding companies fully responsible makes it impossible for them to act in a fully responsible manner (by eliminating all negative impacts) and remain in business.

Very generally speaking, companies can voluntarily eliminate about 20 percent of short-term and long-term, tangible and intangible, negative environmental and social impacts in a profit-neutral or profit-enhancing manner. Beyond this point, costs usually go up. If companies continue impact reduction, they will put themselves out of business long before reaching full impact mitigation.

Many specific economic and political systems flaws fail to hold companies fully responsible. These include limited liability, time value of money, externalities, over-emphasizing economic growth and shareholder returns, inadequate measurement of social well-being, and inappropriate business influence of government.

Not holding companies responsible violates the rule of law. This principle says that individuals and companies should be free to do what they want, provided that they do not harm others. Current systems not only allow, but compel companies to cause massive environmental and social harm. People in the future will look back on our gross rule of law violations in the same way that we look back on slavery and witch burning. But like those in the time of slavery, it often is difficult for people today to see the extremely destructive nature of systems that they depend on and have lived their whole lives under.

The rule of law is a good system change framing device because it boils virtually all economic and political system flaws down to one simple, easily understood, non-debatable (within the realm of logic) overarching system change. Businesses and their allies cannot credibly argue that they should be allowed to violate the rule of law (i.e. harm the environment and society). And yet they violate it extensively. This contradiction cannot withstand enlightened public scrutiny.

Vested interests often attempt to perpetuate profits and destructive systems by misleading citizens into opposing regulations. This deception distracts them from the most important issue—not causing harm. Opposing business regulation is worse than opposing murder, assault and robbery laws. Individuals can and usually would voluntarily act responsibly if these laws were removed. But businesses cannot act in a fully responsible manner and remain in business. As a result, business regulations are essential. Holding companies fully responsible makes acting in a fully responsible manner the profit-maximizing strategy.

Vested interest-controlled governments frequently implement inefficient regulations that, for example, make it difficult for small companies to compete with larger companies that gave more money to politicians through campaign finance (legalized bribery). The solution to inefficient regulations is not to generally eliminate them, as vested interests often imply. The priority is figuring out how to hold companies fully responsible (i.e. fully apply the rule of law) in the most efficient and effective manner possible.

COVID-19 illustrates one of the most important rule of law violations. It is unclear what role industrial food animal operations played in the COVID-19 pandemic, if any. However, as discussed in *Global System Change*, these operations severely threaten humanity. H5N1, for example, almost certainly evolved in industrial chicken operations in China. These operations in the US, China and many other countries intensively confine immuno-compromised,

unnaturally-bred animals in their own waste, in high stress environments with little access to sunlight and fresh air. This creates a nearly perfect environment for the evolution of highly pathogenic viruses. Frequent human contact with industrial animal facilities creates many opportunities for high path viruses to jump to humans and evolve into pandemic form.

Industrial animal operations place humanity at great risk of a pandemic that in orders of magnitude worse than COVID-19. Under sustainable, rule of law-based economic and political systems, companies would be held fully responsible for the burdens and risks they impose on society. This would make harmful or risky activities, like concentrated animal production, too expensive. It would compel companies to produce food and other products in a safe and responsible manner.

Sustainable Development Goals. System change is the most important action needed to achieve the SDGs. Flawed systems compel all companies to cause environmental, social and economic problems. These systems, and the reductionistic thinking that created them, are the root causes of the major challenges addressed by the goals. Nearly all SDG efforts are focused on symptoms (environmental, social, economic problems), instead of root causes (flawed systems that create the need for the goals in the first place).

System change is a highly efficient and effective way to achieve the SDGs. Rather than focusing on the 17 goals and 169 targets, one system change strategy (*Global System Change*) can substantially achieve the goals. Many voluntary SDG-specific efforts would become unnecessary under rule of law-based economic and political systems. Companies automatically would minimize or eliminate negative impacts because this would be the profit-maximizing approach.

5. Societal Actions

Many actions are needed in all areas of society to achieve the systemic changes summarized above. Whole system approaches are essential for framing up, coordinating and guiding societal actions. Reality (the laws of nature) is the foundational framework for guiding human society and sustainability strategies at all levels. This framework can be used to coordinate the following actions, minimize unintended consequences and maximize the likelihood of goal attainment (sustainable society). Major action areas include government, the general public and corporate/financial.

Government. Extensive government changes are needed to align human society with the laws of nature. Government largely (and necessarily) controls the economic and financial systems. For example, efficient, beneficial markets cannot exist without rules that protect buyers and sellers. Only government can enforce the rule of law, require responsible business behavior, and thereby make acting responsibly the profit-maximizing strategy. Only government can implement the many specific system changes needed to enforce the rule of law, such as reforming limited liability, time value of money and externalities.

Government largely controls the flow of funds in society. Only government can ensure that the public wealth is used to equally and fairly benefit all citizens, for example, by

reforming tax and other corporate welfare programs (i.e. abide by the natural law of equitable resource distribution). Government also largely controls the measurement, management and focus of society's success. Only government can shift the focus from economic growth and shareholder returns to maximizing the long-term well-being of society.

Government also substantially influences the levels of economic and governance centralization and decentralization. Government can strongly drive decentralization, for example, by implementing programs that strengthen communities and local economies. This facilitates abiding by the natural law of decentralized production and governance.

Only truly democratic governments can make the above changes. In a democracy, government is the agent of the people. Its job, as the US Founders intended, is to equally and fairly serve all current and future citizens in an efficient and effective manner. James Madison said that the people are the only legitimate source of power in government. The people exercise their collective power to maximize their individual and collective well-being through governments that they control (democracy).

But democracy does not exist in the US, China and many other countries. The US is a plutocracy (control of government and society by the wealthy), not a democracy. The US government has done an excellent job over the past 40 years of effectively serving those who control it, as shown by rapidly rising wealth and income inequality.

Vested interest-controlled governments are unlikely to change on their own, unless there is a major collapse. But then it will be too late to avoid widespread suffering and disruption. Pressure to make the essential changes noted above largely will come from outside government, mainly from the general public and corporate and financial sectors.

General Public. The people collectively are the most powerful force in society. They could quickly change any business or government, if they understood and acted upon their many common interests. Unfortunately, as the US Founders well knew, citizens are vulnerable to deception and disempowerment. The Founders often spoke of the evils of democracy. They knew it was the only sustainable form of government, but it has this major weakness.

The primary means of deceiving and disempowering the people is to take advantage of tribalistic tendencies and divide them into debating fractions. The main Founders, except Hamilton, were greatly alarmed by the establishment of political parties. They did not want the newly united states to be divided into debating factions. They knew that vested interests could use political parties to divide and disempower the people. This enables them to take control of government and unfairly concentrate public wealth. For nearly all of US history, political parties have enabled vested interests to largely control government.

Political parties divide the people into acrimonious, often hateful factions, such as conservatives and liberals. Citizens agree on nearly all major issues. Nearly everyone wants a strong economy, good jobs, low crime, good education and healthcare, a clean environment, good international relations, and efficient, effective government. Some people argue that citizens agree on higher goals, but not on the means to achieve them. But if people set aside philosophies and other subjective or myopic thinking, and instead look at the big picture and

objectively consider options for achieving goals, they would realize that they also largely agree on how to achieve them.

The path to widespread prosperity is clearly defined in nature. Nature does an excellent job of maximizing individual and collective well-being, far better than we are doing. If the people had full, accurate information, they would understand their collective best interests and work together to achieve them. But political parties divide the people and make them unable to work together.

"COVID-19 is compelling government to do its constitutional duty of protecting the general public. This shows how quickly government can act when necessary."

The conservative-liberal war is the most destructive influence in the US and many other countries. Vested interests use political parties and dishonest media to turn the people against each other. As citizens are busy fighting false enemies (each other), vested interests are free to essentially steal the people's wealth and power to rule themselves.

It will be impossible to establish democracy and sustainable society unless we end the many conservative-liberal civil wars that are raging around the world. Uniting and empowering the people is one of the most important actions needed to abide by the laws of nature and protect the common long-term well-being of humanity.

Many specific actions are needed to achieve this. These include weakening political parties, requiring honest media, raising public awareness about root causes and optimal solutions, and implementing empowering, freedom-based education.

Political parties are not mentioned in the US constitution. Politicians are supposed to equally and fairly serve those who elect them. But political parties often sit above politicians and compel party-line voting. Political parties largely are controlled by wealthy campaign donors, not citizens in the party. As a result, regardless of which party wins, the wealthy benefit, while average citizens usually suffer. Every party-line vote violates the Constitution because the people are not controlling government. Political parties must be weakened so that citizens can directly and equally control the politicians they elect.

Honest media is essential for democracy. The people cannot effectively rule themselves if they do not have honest, accurate information. From 1949 to 1987, the Fairness Doctrine required large US media organizations to provide both sides of controversial issues. But this requirement for honesty inhibited the ability of vested interests to mislead, divide and disempower citizens. As a result, vested interest-controlled government removed it. Now media essentially is allowed to lie to or mislead the public.

For example, conservative media often promotes the views of energy company-funded scientists who say that humans are not causing climate change. They are not required to disclose that the vast majority of climate scientists say we are substantially contributing to

climate change and urgent action is needed to protect humanity. This misleads conservative citizens into taking actions that protect shareholder returns, but harm their children and themselves.

To maximize the long-term well-being of humanity, citizens must be made aware of the root causes of major challenges (reductionistic thinking and resulting flawed systems) and optimal solutions (system change implemented through whole system approaches). To achieve this, the people must demand honest media. US citizens have a constitutional right to freedom of speech. This does not give media the right to lie or mislead the public. Citizens' need for honest, accurate information takes huge priority over media's (nonexistent) right to say whatever it wants (lie).

To illustrate the power of the people when we act collectively, democratic government is a servant. Inappropriate business influence makes the US government a servant of large companies and their wealthy owners, as shown by the vast concentration of public wealth over the past 40 years. The people allow this theft of their wealth and power to rule themselves because they have been deceived, divided and disempowered.

Under the COVID-19 crisis, government quickly reasserted its power. COVID-19 is compelling government to do its constitutional duty of protecting the general public. This shows how quickly government can act when necessary. The ability to act quickly is important because substantial government action is needed to transform and protect society.

When businesses largely control government, they essentially are regulating themselves. This situation is like the children in the Lord of the Flies. They destroy themselves because they are unregulated. Good parents constrain their children, who then grow up to be the most successful adults. In the same way, businesses also must be constrained and compelled to abide by the rule of law (not harm the environment and society). This makes acting responsibly the profit-maximizing strategy and produces the most successful, socially-beneficial companies.

The only way this can occur is if We the People stop fighting each other and begin to work together on our many common interests. When united, we can take charge of government and compel it to serve us (i.e. do its constitutional duty), instead of primarily serving wealthy campaign donors.

Freedom-Based Education also is essential for empowering citizens to rule themselves and protect their common interests. The current forced education system is a legacy of the Protestant Reformation and Industrial Revolution. The goals largely are indoctrination and obedience training. Young people are forced to sit in sterile classrooms for about 35 hours per week listening to adults talk to them. They are constantly ranked against each other and made to feel inadequate if they fail to achieve superior grades. They are forced to study subjects in which they often have no interest and quickly forget. Students are constantly monitored and controlled by authorities. They are taught to blindly believe dominant societal ideas. Young people frequently learn that fun occurs outside of school.

This coercive, compulsive education system teaches young people to obey authorities and endure boring jobs for the rest of their lives. It creates a cowering, compliant population

that can be abused by vested interests and will not question unjust economic and political systems. Education reflects society. Our society is focused on maximizing economic growth and shareholder returns. It is no surprise that young people are trained to serve this end, even if it does not meet their needs.

Freedom-based education approaches, such as Self-Directed Learning, have proven themselves over decades in the US and other countries. The approaches do a vastly better job than forced education of developing the most important skills needed for life success, including high self-esteem, strong social and emotional skills, independent thinking, and empowerment to guide one's own life. Young people are not ranked against each other or forced to study subjects in which they have no interest. Compared to forced education, they perform as well or better in higher education and careers.

Humans did not evolve to learn by force. Coercion causes poor knowledge retention and weak social skills. People often spend the rest of their lives trying to prove that they are not as stupid as they were made to feel in school. As we shift society from plutocracy to democracy, we will implement truly empowering education. Freedom-based education maximizes the well-being of society by best preparing young people to have fulfilling and successful lives.

6. System Change Investing

Extensive actions are needed in the corporate/financial area to abide by the laws of nature and achieve sustainable society. When the people are divided and disempowered, the corporate and financial sectors often are the most powerful forces in society. They strongly control governments in the US and many other countries. Companies and large investors usually use this influence to block system changes that threaten short-term profits and investment returns.

But these efforts to perpetuate unintentionally destructive systems are increasingly counterproductive. Flawed systems compel all companies to degrade the environment and society. As the human population and economy expand in the finite Earth system, negative corporate impacts return more quickly to harm companies, often in the form of market rejection, lawsuits and reputation damage. Companies have increasingly strong financial incentives to change the systems that cause growing problems for business and society.

Investing is the most powerful short-term mechanism for driving system change. The corporate and financial sectors largely are controlled by investors. Over the past 20 years, the global Sustainable/Responsible Investing (SRI) market has grown to over $30 trillion. SRI compelled nearly all large companies to implement sustainability strategies. The same mechanism can be used to encourage companies to implement collaborative system change strategies.

System Change Investing (SCI) provides a practical and profitable way to do this. Like SRI, the process involves developing strong business cases for system change, rating companies on system change performance, and developing system change-based investment funds. The business case for system change is strong and clear. If we do not adequately address the root

causes (flawed systems) of major environmental, social and economic problems, they will cause increasingly severe consequences for business and society.

"Developing effective system change rating models requires first understanding the main characteristics of sustainable society and the major system changes needed to achieve it."

Current systems often make it impossible for companies to earn profits without degrading the environment and society. Sophisticated investors and business leaders understand that this situation is increasingly untenable. Environmental and social degradation is widespread and accelerating. We do not have decades to avoid major societal disruptions. COVID-19 shows how quickly the human economy and society can be shut down. Substantial system change is needed in the short-term. Corporations, institutional investors and other large corporate/financial sector parties have great power to promote it. SCI is the most effective way to engage these sectors in driving system change.

Substantial financial, sustainability and reputational benefits are a main component of the SCI business case. SCI ratings identify systemic risks and opportunities and provide strong indicators of management quality and stock market potential. They can be used as overlays to enhance the financial returns of value, growth, index and many other types of investment funds.

System change is the most important sustainability issue. As a result, SCI funds can provide greater sustainability benefits than any other SRI fund type. Financial institutions launching SCI funds will be seen as the new sustainability and SRI leaders.

Rating corporate system change performance is more complex than traditional ESG (environmental, social, governance) analysis. The frame of reference is much larger. ESG research mainly assesses unilateral corporate efforts to reduce negative impacts, for example, by lowering pollution and selling low impact products. The frame of reference for corporate system change analysis ultimately is the whole Earth system and its sub-element human society. This larger context must be understood before accurate corporate system change rating can be done.

Developing effective system change rating models requires first understanding the main characteristics of sustainable society and the major system changes needed to achieve it. Once this is clear, the optimal corporate role in bringing about these changes can be identified. Aspects of this role become metrics in system change rating models.

The first SCI model (Total Corporate Responsibility – TCR®) was developed in 2003. The model is segregated into three broad metric categories—traditional ESG, mid-level system change (sector, stakeholder, environmental/social issue-level) and high-level system change (economic, political, social system-level). Examples of SCI metrics include system change strategy, public awareness and media campaigns, system change collaboration, government

influence activities, addressing specific system flaws, and supporting NGOs, academia and other groups that promote system change.

Nearly the entire SRI market is focused on changing companies and addressing symptoms (environmental, social, economic problems). SCI shifts the focus to system change and root causes. It is the most significant SRI transformation since positive screening was introduced in the 1990s. SCI is a new paradigm, whole system approach. It represents the higher-level thinking and action needed to resolve major challenges and align humanity with the laws of nature.

SRI rating models provided sustainability roadmaps. They showed which sustainability actions were important to corporate owner/investors. In the same way, SCI models provide system change roadmaps for companies. They illuminate the many actions needed to implement the most advanced corporate system change strategies. Corporate sustainability is mainstream. SCI creates a large opportunity for sustainability advisers. As investors shift investments based on corporate system change performance, many companies will seek guidance on how to expand their sustainability strategies to include system change.

It often is difficult to look forward and imagine a sustainable society that abides by the laws of nature, in the same way that it was difficult for people in the Southern US 200 years ago to imagine a society without slavery. From our current perspective, equitable resource distribution and widespread cooperation among humanity can seem idealistic and unattainable. A whole system perspective shows that these factors are inviolate laws of nature and absolute requirements for long-term human survival and prosperity.

Putting the What before the How helps to overcome resistance to system change. It facilitates doing whatever is necessary to abide by the laws of nature. It shows that the cost and difficulty of voluntary system change is nothing compared to that of involuntary system change.

COVID-19 will be one of the most disruptive events in modern history. But it will not shut us down. It is a wake-up call. Let it motivate us to change our systems and ways of life before nature changes them for us. A whole system perspective shows that we have the innate ability to be nearly infinitely more prosperous and successful than we are now. Pain is a great teacher. Let the pain of COVID-19 teach and help us to reach our fullest potential.

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Economics as a Science – or viewed from the perspective of scientists in other fields

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Abstract

The aim of this article is to underline that the core paradigm of mainstream economics, economics' standard model (ESM), rests upon an explanatory theory that draws on deductive assumptions which are not supported by what observations of the reality of market economies show us; either in the present day or historically. A theoretical setting, therefore, fails to provide a proper explanation of how our economic system—a market economy based on private firms, or capitalist—operates in reality. Or that it does not explain it well for the vast majority of cases, goods, sectors or markets. I am far from being the first one to highlight this. This 'deficiency' of the ESM has relevant implications. It is something more than a pure theoretical issue. The fact that this explanatory model (much dominated by microeconomics) postulates that the 'free-play market' leads spontaneously to an optimum of social utility (a general equilibrium of efficient markets), has nevertheless implications beyond the economic discipline. In the political arena neoliberalism draws on this theoretical postulate to defend its principles of no (or minimum) intervention by governments in the economy, of no (or minimum) regulation of markets. i. e., to defend what lies behind the well-known expression 'the less State the better': minimum public expenditure, minimum taxes. And, furthermore, this general equilibrium model that supports such a postulate dominates the way economics is customarily taught, i.e., how the workings of a market economy is explained in textbooks and in university classrooms.

1. Economics and the Scientific Method

As a discipline or field of knowledge, *Economics* is clearly not an experimental science. The possibilities in this respect are extremely limited.[1] When practised with scientific rigour it is in essence an *observational* science: we economists are confined to observing and analysing the workings of the economic system—of such and such a market economy—and thereby endeavouring to build a formal description of that in a conceptual and schematic way. A description in which a significant part refers, if not properly to 'laws', to *patterns* observed in the behaviour of individuals as 'economic agents'—citizens, enterprises, governments, etc.,—as well as in the key magnitudes resulting from their activities and interrelations—the production of goods, employment, prices, salaries, tax collection, etc. Ideally, in addition to specifying these socially significant magnitudes and patterns in the system, this necessarily schematic description should encompass a conceptual formulation of the most relevant causal relationships between them; such as, for example, between *interest rate* and level of *total demand of goods*; or between *statutory severance pay* and *employment level*.

As in any field of knowledge, or of study, the first step in an explanatory theory of the functioning of a market economy is (or was) a previous conceptual, *deductive* formulation of its basic elements, and of the mentioned patterns of behaviour and interrelations. In other words, a certain general *theoretical framework*; a *previous* interpretative model based on *deductive hypotheses* i.e., a conceptual outline that pre-describes,—through making logical simplifications and abstractions—which are currently considered to be the essential elements of the reality under analysis: the workings of the market's or the capitalist economic system: An initial, provisional theoretical description which allows the formulation of verifiable hypotheses and predictions about the dynamic behaviour and interrelations of these essential elements concerning the functioning of the system.

But, of course, this is, or should be, only the first step. From this stage, it is expected that this explanatory theory based on deductive assumptions be progressively revised as a result of being put to the test, confronted with the empirical observations to be gathered. Checking whether these confirm or refute—in what regard and to what extent both the general theoretical framework, axioms and hypotheses on which it is based, and the predictions derived from it.[2] However, there are elements to affirm—as it is subsequently argued here that the *standard model* of the conventional, orthodox economics currently dominant is still largely stuck at that first step: that of purely deductive hypotheses, in the sense that they are kept unrelated to comparisons with the overwhelming empirical evidences available.

From this perspective, the essential part of the scientific method—dealing with a discipline such as Economics (or *economic analysis*)[3]—is that any given explanatory theory is good or not insofar as it succeeds in providing a satisfactory explanation of the reality in question. If reiterated observations of that reality show that such theory does not explain it well, or does not explain it in a significant number of cases, that explanatory theory must be revised or replaced by another that better fits the reality observed, the empirical evidence gathered.

The central paradigm of the orthodox or conventional economics, that is, the mainstream economics' *standard model* (hereinafter ESM) can be summarised as follows: "(a) if unconstrained by interventions from public authorities, the market for each good (product or service) will *spontaneously* end up being a competitive and in-equilibrium market (with numerous enterprises, none of which holding market power; all selling at a price equal to their marginal cost which in turn will be equal to their average cost). This stands as a general principle (for any good in the economy), with only a few exceptions (situations of 'natural monopoly'). And (b) if for Labour and other factors there also exist free-play markets, then the overall result of this free operation of market forces in the whole economy constitutes a social optimum of economic well-being (in terms of full use of resources, resulting basket of goods and services, and income distribution)".

With this background, the aim of this article is to underline that this ESM paradigm rests upon an explanatory theory that draws on deductive assumptions which are not supported by what observations of the reality of market economies show us; either in the present day or historically. It is, indeed, an explanatory theory that fails to provide a proper explanation of how a market or capitalist economic system operates in reality. It does not explain the system

well for the vast majority of cases, goods, sectors or markets. I am far from being the first one to highlight this.

> "Modern economics is not very successful as an explanatory endeavour. This much is accepted by most serious commentators on the discipline, including many of its most prominent (See, for example, Rubinstein 1995:12; Lipsey 2001: 173; Friedman 1999: 137; Coase 1999:2; Leontief 1982:104. (...)"

> (Tony Lawson, "Modern Economics: the Problem and a Solution", in Fullbrook 2004: 21)

(Note that, probably not by chance, the last three authors cited by Lawson in the paragraph above are Nobel Prize laureates in Economics).

That deficiency of the ESM has relevant implications. It is something more than a pure theoretical issue. The fact that this explanatory model of the academically mainstream economics (much dominated by *microeconomics)*[4] postulates that the 'free-play market' leads spontaneously to an *optimum of social utility* (a general equilibrium of efficient markets),[5] has nevertheless implications beyond the economic discipline. In the political arena neoliberalism draws on this postulate to defend its principles of no (or minimum) intervention by governments in the economy, of no (or minimum) regulation of markets, i.e., to defend what lies behind the well-known expression 'the less State the better': minimum public expenditure, minimum taxes.

And, of course, the *general equilibrium* model that supports such a postulate dominates the way economics is taught, how the workings of a market economy is explained in textbooks and in university classrooms: Conveying to readers and students a theoretical description, a set of explanatory axioms, which do not actually fit in, regarding fundamental elements, with the economic reality of our societies; a theoretical model which rather refers to an imagined market economy. In this regard, the use of certain typical concepts, such as '*imperfect* information', 'economics of *imperfect* competition', or 'market *imperfections*,' by mainstream neoclassical economists, to refer to features which in fact are normal and central to our market economies is quite significant. Scientific colleagues in other fields—including other fields of social sciences—often find it *funny* that we economists consider the economic reality to be *imperfect* because it is bent on disagreeing with the description that the standard theoretical model in economics postulates.

But in any case, this is the theoretical paradigm that in general the economists who advise, recommend or decide on economic policy measures (of governments as well as international organisations) have learned—and often also taught. And to the extent that such paradigm does not match the reality of how our economies function (regarding fundamental matters, not in-detail aspects), the economic policy measures that these professional economists design or apply taking such a paradigm as reference framework have a high risk of being wrong, useless or counterproductive for the collective wellbeing. In the same sense that an anatomy & physiology that would not describe well the functioning of a particular organism could lead to incorrect predictions or wrong diagnoses, and consequently to useless or counterproductive treatments or recommendations.

Thus, insofar as the ESM is a theoretical framework that does not describe/explain well the reality of the workings of our market economies—starting with the behaviour patterns of the different economic agents (enterprises, consumers, investors, banks, employees, executives, etc.) or explains it in a distorted manner, it easily leads to wrong deductions or diagnoses, or to a lack of realistic predictions. As dramatically highlighted by the global financial crisis that started in 2008 in the US when the finance/real estate bubble 'burst'. Something that the most influential economists had not considered possible at the time, simply because—according to the assumptions of the models on which they were based ('markets self-regulate'; 'investors assess risks perfectly, in their own self-interest')—such a thing could not happen.[6]

In order to confront the assumptions, axioms and propositions of the ESM with the respective empirical evidences, it is appropriate to begin by highlighting a core issue: The basis of the ESM is apparently aseptically 'technical'. It is specifically a deductive theory as to how companies work and behave, how their costs for a good vary with respect to its level of production, the way its sale price comes determined, and, as a result, affects the structure of the corresponding market. This is a deductive theory (the 'neoclassical theory of production') which, I will argue, is clearly unrealistic. Among other things, but as a core piece, this theory assumes that in the production of any good (by any undertaking), economies of scale become exhausted for very small volumes of production compared to the size of the total demand to be covered for the referred good; and that this general appearance of *decreasing returns to scale* prevents companies from growing 'too much', and thus from achieving market power; and therefore that 'without the need for any regulation from public authorities, the market of any good tends to be perfectly competitive, efficient, and in equilibrium'.

With a view on that, what follows focuses on highlighting that such mainstream deductive paradigm regarding how the economic world of production, enterprises and markets works does not come supported by the overwhelming empirical evidences provided by observing the workings of our real market economies. And it does not respond to these observational evidences from real life, not in terms of detail but in terms of fundamental and key issues.

2. Implicit Deductive Assumptions of *ESM*

The aforementioned postulate on *decreasing returns* as a sort of general *law* in the economic world rests in fact upon assumptions that however are usually left implicit. If we make them explicit, the summary could be as follows:

1. The *deductive assumption* – since it is not presented in textbooks as deriving from the systematic observation of real cases, rather it is simply assumed implicitly, like an axiom—that "for the production of any good, in the long run a comparatively small firm gets a lower average cost as it grows in size, and so producing larger quantities (=increasing returns to scale). But this is only the case up to a specific dimension. From this point (volume of units) on, there appears *decreasing returns to scale*: the unit cost begins to increase. That is, there exists, for the firm, a given dimension, size, structure (associated to produce 'x' units of the good) at which the unit cost is the minimum possible one. Consequently, all firms engaged in the production of that good tend to adopt this

dimension: The one associated with the *optimal scale of production,* 'x' units of product*, because it allows each of them to operate with the (same) minimum average cost."

2. the *auxiliary hypothesis*—also usually implicit—that the market demand for the good in question—for a price close to the firms' unit cost—Q units, is—with rare exceptions (natural monopolies)—many times greater than the optimal sale of production for a firm ('x' units).

*Figure 1: Assumed Optimum Size for a Producer/Provider Firm
and Assumed Value of Market Demand*
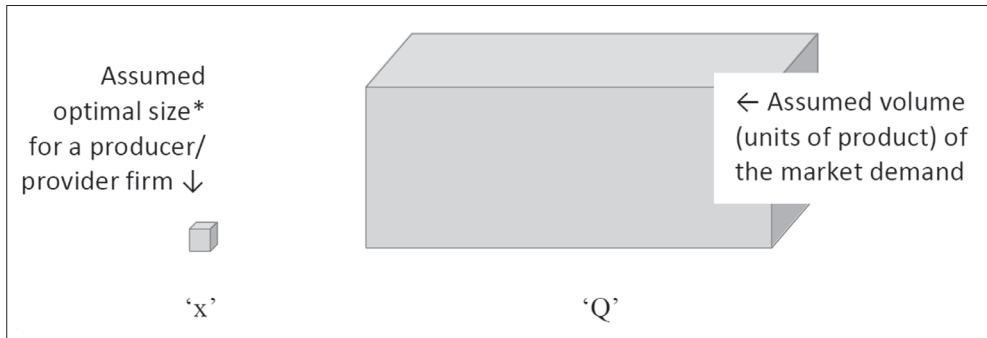
Certainly, from this deductive assumption (I) on the world of costs and firms, and this auxiliary hypothesis (II) on the relative size of market demand for each good—along with other assumptions, like that any (private) undertaking operates with full productive efficiency—the theoretical proposition follows that "without any public intervention, the market for any good (product or service) will end up having 'a great number' of firms supplying it; (as many as Q/x). All of them being as clones: the same technology, size (that associated with producing 'x' units) and efficiency; and, therefore, the same unit cost. All of this automatically giving way to full competition in this market (a perfectly competitive market). And so for any good, with some exceptions (situations of natural monopoly).

This is in fact the core postulate of the neoclassical 'theory of production'—which in turn constitutes the nucleus of the core model of mainstream economics: the *General equilibrium of Competitive Markets*. A model that can also be considered as an elegant way of formally expressing Adam Smith's metaphor of the *invisible hand*—by means of adding more assumptions to it and expressing it in mathematical terms. In the words of Philip Klein:

> "A consensus presentation today of the central thrust of microeconomic theory, all derived from a vast elaboration of Smith's invisible hand, might run as follows. If we assume pure competition (that is, we consider many buyers and sellers, each too small to affect market price) of homogeneous products and assume as well that competition is perfect (resources are mobile, all agents have perfect knowledge of all alternatives available to them) then we can consider fairly completely the normative implications (of the standard model)." (Klein 2006: 20).

In addition to the aforementioned nucleus—assumptions (I) and (II)—the ESM also rests on other assumptions that are presented as mere simplifications. Two of these are key in the whole picture: first, that "there is no inequality in income and wealth distribution in society"; second, "the labour market is free (unregulated); and (therefore) there is full employment". Though, indeed, these[7] may be regarded rather as oversimplifications, since they inevitably condition the realism of the model's deductions. To these assumptions/oversimplifications there must be added other simplifications; such as "there are no externalities (those non-monetary *costs* and *benefits*, generated by economic activities without being reflected by markets)"; that "a firm produces only one product/service"; that "these are homogenous, not-differentiable in the eyes of potential buyers (in terms of quality, variants, performances, etc.)"; and that "there is no foreign trade".

> *"David Ricardo completely ignores the presence of increasing returns, and it is Ricardo more than any other single individual who has set the tone of modern economics." – Kenneth Arrow*

Any non-economist with some experience in the business world will probably be surprised by this mainstream theory describing the workings of our market economies based on private or, if preferred, capitalist enterprises. To start with, the aforementioned deductive assumption (I) that there is a 'natural' economic ceiling to the size of any firm, 'beyond which it is not interested in growing because its unit cost would soar'. To a non-economist it will be obvious that this assumption does not generally correspond to the business and market realities that can easily be observed. In fact, the dominant picture we can see in the real business world is quite the opposite: companies having a tendency to sell as much as possible, to increase their level of activity (structure, production, sales), and to grow as much as they can, precisely as a way of increasing their competitiveness (lower unit costs) and/or market share (i.e. market power)—in order so to increase or maintain their profits.

3. The Unrealism of the *decreasing-returns-to-scale* Assumption

In any case, the extensive generic evidences provided by the observation of the economic and business world shows us, in addition to the aforementioned tendency of firms to grow—that the most general pattern of the relationship between *unit cost* and a *firm's scale of operation (size)* is that: the average cost of a good tends to be indefinitely constant (or somewhat decreasing) from a certain volume of production/size (optimal *minimum* scale). This scale or firm size depends on the good in question and on the technological possibilities and factors' prices at the time.

In other words, what it shows to be more common in reality is a situation of *constant* (or *increasing) returns to scale* for ever-increasing volumes of production, rather than *decreasing returns to scale*. And, consequently, there is a tendency for producer companies to grow in size—and so in market share.

It will not be too surprising that this unrealism of the traditional 'decreasing returns' assumption (i.e., rising average cost) had been repeatedly 'denounced' by some leading economists; who also pointed to the obvious, and predominant, real cases that show quite the opposite: companies producing a good under *increasing* returns conditions: with a lower unit-cost as the volume of units increases. Although he was not the first to do so, Piero Sraffa already highlighted the unrealism of the deductive assumption on the emergence of decreasing returns beyond a certain (comparative small) volume of production/size of a company:

> "Everyday experience shows that a very large number of undertakings and the majority of those which produce manufactured consumers' goods work under conditions of individual *diminishing costs*. Almost any producer of such goods, if he could rely upon the market in which he sells his products being prepared to take any quantity of them from him at the current price, without any trouble on his part except that of producing them, would extend his business enormously. (Sraffa, 1926: 543)."

And some paragraphs later, (when he refers to the neoclassical theory's assumption of a 'U'-shaped behaviour for the long-run average cost function),

> "Business men, (…) would consider absurd the assertion that the limit to their production is to be found in the internal conditions of production in their firm"

In the same vein we can cite, for example, Blaug (1968: 465-6; 1985; 456-7). As well as Lancaster (1981:200), when he points to the obvious fact of the possibility, for any firm producing a given good, to decide double, triple,…, *replicate* the corresponding *optimal-efficient plant-size*. That is, the pure logic of (at least) *constant returns*, rather than decreasing returns, given the obvious possibility of the replicability-within-a-firm. In other words, it is a matter of not confusing "production unit or plant" with "firm". Something that had already been pointed out by Bekestein (1975) in his more specific work on the matter: the factual evidence on the *replicability*, within a firm, of the corresponding, *optimal* (cost-efficient) *production unit*. An evidence he illustrated with the concept of "multi-plant firm".

Cohen is another academic who continued Sraffa's *claim*, by insisting on the overwhelming evidence on the matter; and in particular by asking why such evidence was still not considered by leading academics in mainstream economic theory. His answer: Because admitting such evidence invalidates the model of *perfect competition* and *general equilibrium* held by that economic theory:

> "These *auxiliary assumptions* (of *diminishing marginal returns in the short run and decreasing returns to scale in the long run*) provide (to the neoclassical theory) a basis for questioning and discounting empirical evidence of non-increasing costs and thereby retaining the theory.' (…) *The theory of the cost conditions of the firms was derived from the conditions necessary for equilibrium in a perfectly competitive industry rather than being derived from historical observation of firms*. It is this procedure that accounts for both the empirical inconsistency of the theory and why

it cannot be sacrificed without sacrificing the more general theoretical framework of equilibrium economics." (Cohen, 1983: 218); (italics mine).

"The reason the Ricardian assumption of decreasing returns remains valid is probably because this assumption is needed in ESM to postulate an automatism toward competitive markets."

Mansfield, on the other hand, sums up the inconsistency of the ESM regarding empirical evidences as follows:

> "(an) interesting conclusion of the empirical studies is that (...) (in*) the long-run* average cost function in most industries seems to be L-shaped… not U-shaped. That is, there is *no evidence* that it turns upward, rather than remaining horizontal, at high output levels (in the range of observed data)' (1994: 242)"

Furthermore, the authors of the popular textbook on industrial economics, *Economics of Industrial Organisation*, Williams Shepherd and Joanna Shepherd, note in their text—when analyzing the empirical observations available—the non-evidence of decreasing returns to scale for firms. And they also underline what they consider to be the surprising, repeated and old ignorance of this reality in the ESM field, in economics in general and in most microeconomics texts in particular (Shepherd & Shepherd, 2004, 5th Ed.; 162-6). Philip Klein has also argued himself in the same vein in his 2006 work (Klein, 2006: 27-9).

And in some way so did even Arrow himself—who along with Debreu (also a Nobel laureate, in 1983) brought the mathematical rigor of the *general equilibrium* model, and the assumptions required by that, to its highest level—when he asserted,

> " .. (to) deplore the failure of David Ricardo and his mainline successors to grasp this important aspect of Smith's thought. (..). *David Ricardo completely ignores the presence of increasing returns*, and it is Ricardo more than any other single individual who has set the tone of modern economics." (..)

> "It was Cournot (1838) who first explicitly classified the laws of returns. He was primarily interested in the effects of returns on pricing and output, the theory of value as we may say. One hundred and sixty years later, not a great deal has been added to Cournot's work, which, along with Mill's, was the main source for Alfred Marshall's synthesis. There are many individual observations of great importance in Marshall's work, many more than in Cournot or Mill, but *the increasing returns passages remain isolated from Marshall's central core of competitive equilibrium theory*." (Arrow, 2000: 172) ; (italics mine).

Nonetheless, it is the traditional 'ricardian' assumption of *decreasing returns to scale* in the long run (i.e., increasing unit cost) that continues to dominate the academic/professional landscape in economics. In spite of it being an untenable assumption given the overwhelming

empirical evidence about. The reason it remains valid despite everything is probably because (as Cohen points out in the paragraph cited above) this assumption is needed in the ESM in order to postulate an automatism toward competitive markets. Certainly, the theoretical assumption of *decreasing returns* (in the production of any good, from a comparatively small volume-of-units/size-of-firm, relative to the size of the demand for the good) is a key piece to then postulate the general equilibrium of competitive markets. By way of example:

> ".. in the case of decreasing cost industries, no long run competitive equilibrium can exist …", (Mas-Colell et al., 1995: 336);

> ".. if the efficient scale of operation is large relative to the size of market demand, it could well turn out that the equilibrium number of active firms is small. In these cases, we may reasonably question the appropriateness of the price taking assumption .." (ibid.: 338).

To which we might add that those cases the above quotation refers to are not (as implicitly suggests) a kind of particular, minority situation in the real economic world but rather the general pattern in it.

4. Conclusions

The unrealism of the traditional deductive assumptions implied in the ESM—to underpin its thesis that business growth will be constrained by the inevitable emergence of decreasing returns to scale—is obvious. However, such a theory, the so-called "U-shaped" hypothesis (referring to the diagram used in textbooks to represent the long-run average cost in relation to the volume of units—for any good), remains the dominant element in academic texts and most reference textbooks. Or, as noted above, it is the hypothesis that is adopted in standard economic theory (basically, microeconomics) to formalize mathematically the "general equilibrium of competitive markets" and the thesis and postulates derived from it.

What is the likely explanation for this? In spite of its unrealism, this "decreasing returns" hypothesis and its mathematical formulation is necessary to sustain the equations-system model of the 'general equilibrium of competitive markets'; and thus to give way to postulates such as "a free-market economy will necessarily lead to the overall situation of many firms competing for each product or service; thereby achieving a general equilibrium, which is socially optimal in terms of economic welfare."

In the same way ESM also requires the auxiliary hypothesis (usually implicit, like an axiom) that "the normal case is that the volume of units (x) that allows any enterprise to produce a given good at the lowest possible average cost, is many times lower than the volume of units (Q) that the market demands for that good". Without both these unrealistic assumptions, the deduction on automatism toward competitive markets and the mathematical model of the *general equilibrium* of mainstream economics cannot be sustained. No one can sustain the normative economic policy message all of that conveys: that "it is better not to regulate markets, since they self-regulate, thanks to the strong ('perfect') competition that

the free-play market automatically generates; and that this also makes the price for a product equal to its marginal cost, which in turn—given that private firms are perfectly cost-efficient—matches the respective average cost. So that, in equilibrium, firms' profits are null (sic); etc."

"Key assumptions underpinning ESM should be rejected on the grounds of the overwhelming empirical observations, and therefore we should proceed by revising or rejecting the model accordingly."

To look at the matter from another angle, ESM—considered as a theory to explain the essential elements and overall workings of the economic system, our market economies–, does not actually explain the system or does not explain it well. And not just regarding technical specificities or secondary details but regarding fundamental issues of the real economic world.

Following the scientific method, it is the accumulation of observations about economic reality—the patterns of behaviour of people and groups as economic agents, as well as of the relevant quantitative variables—which allow us to refine, reformulate or change the initial hypotheses. Empirical observations are fundamental to draw inferences or inductive propositions on the regularities that define the reality under analysis. And thus allows to revise and improve the previous theory; so giving way to a better, useful explanatory scheme, or theoretical model, of that part of the reality: the workings of a market economy based on private firms.

From this overview, key assumptions underpinning ESM should be rejected on the grounds of the overwhelming empirical observations, and therefore we should proceed by revising or rejecting the model accordingly.

There is no doubt that, in terms of the scientific method, a formal explanatory scheme on how market economies work will never be perfect. Among other things because we are dealing with a reality where the patterns, ingredients and structures of which may change over time. However, there is a broad spectrum between imperfection and misrepresentation. And, certainly distorted ideas of a given social reality—whether as a result of insufficient knowledge, the misapplication of knowledge, or some other cause—can easily lead to flawed, if not counterproductive, collective decisions, policies and practices. And if such distorted ideas are imparted as *the* standard academic description, in textbooks, classrooms and texts by the respective professionals, the problem grows, with implications. Something that is particularly relevant in the social sciences fields today.

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Notes

1. Basically, *laboratory* experiments, with small groups of individuals who are presented with designed decisions that involve receiving more or less money.

2. We might draw a parallel between the application of the scientific method to explain the workings of market or capitalist economies—the ideal foundation of *Economics* as an academic discipline— and the disciplines of Anatomy and Physiology; of the human species, for example. Though with a significant difference: while in physiology we can observe certain stable regularities or 'laws' (for instance, how a particular type of fat is metabolised), economies are dynamic systems, where regularities or patterns are liable to change over time. This is partially because these patterns are in fact made up of (or determined by) socio-political decisions regarding what is collectively deemed appropriate or not (laws, regulations, etc.). And partly due to 'autonomous' dynamics, such as technological or demographic changes, changes in the average level of knowledge, in tastes/ & preferences, and in the level of collective wealth (level of development).

3. '*Economic Analysis*' is a term used increasingly by contemporary theoretical economists to refer to their academic activity.

4. For most academic mainstream theorists, microeconomics is in fact the basic component of modern, neoclassical, mathematical, orthodox economics (*microfoundations of economics* is the standard expression to refer to that)

5. *Optimum* which, in short, is defined in the *theory of general equilibrium of competitive efficient markets* (GE) as a situation in which the resources available in the considered economy (a country) are fully and efficiently used to produce what is demanded by the citizens, who then pay a price equal to the respective unit-cost for every product and service. i.e., it is assumed that the private companies of a market or capitalist economy do not earn any profit (sic).

6. Let us take into account that these models are based on premises or assumptions that every market (the real estate market, the financial market, etc.) is 'by nature' efficient, it self-regulates, and spontaneously tends towards an equilibrium. In turn, this draws on the assumption that those who make the decisions in all markets are 'agents' who act with pure economic rationality, seeking to maximise their profits or utility in the medium and long term; and therefore they have incentives to be 'perfectly' informed, to assess the current and future financial risks—of any operation, investment, etc.—'perfectly' before deciding on them; and so on.

7. Together with others; like 'perfect information', 'no-entry-barriers' for anybody producing any good, and 'homo-economicus behaviour'.

Quest for Peace & Social Mechanisms for Safeguarding it

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Abstract

The world has yet to evolve a coherent theory of peace. As health is commonly understood as the absence of disease, peace is broadly conceived as the absence of war. This is a negative ideal that merely eschews physical violence rather than replacing the urge for aggression with a positive and self-existent sense of security. It addresses the visible symptoms but neglects the essential reality that constitutes the foundations for lasting peace, social stability and security. So too, insufficient attention is given to the essential role played by war and violence in the evolution of the human community from small, isolated units into larger national and regional entities now in the process of converging into a single global community. The emergence of the modern nation-state over the past few centuries has largely pushed violence and war from the domestic domain into the sphere of international relations. This shift reached a peak during the Cold War when every nation sought protection from external security threats. We are now in the midst of a further stage in social evolution to forge a single global community in which violence is no longer regarded as a legitimate means for exercise of power, either domestically or internationally. But the essential conditions for peace and security still elude us at all levels. Security remains under threat from sources at all levels—excluded, disadvantaged, oppressed individuals; insecure nation-states; and the absence of an inclusive global cooperative security system. But the most pressing sources of threat now beset humanity as a whole in the form of COVID-19, the climate emergency, the resurgence of competitive nationalism and the nuclear arms race, rising inequality and aggravated cultural tensions. This article examines the relationship between peace, violence, warfare and the evolution of the human community in its age-old quest to safeguard the peace and security of all human beings.

The quest for peace and ways to safeguard society is one of humanity's oldest and deepest aspirations. Our greatest successes and persistent failures are reflections of contradictory elements in human personality and society that both support and frustrate its realization. We normally understand peace as a safeguard against war with foreign powers. But this is a narrowly limited conception. Historically, domestic social violence and oppression have often proved a thing to be feared as much or more than external aggression. Until the evolution and maturation of the nation-state over the last few centuries, internal conflict has been a persistent threat and powerful impetus for the consolidation of centralized power and national identity. Today internal threat persists in the widening inequalities and disparities between classes and communities. A historical perspective of the threats to peace compels us

to view with skepticism short-term solutions that fail to address the essential conditions for permanent stability, security and progressive social evolution.

"The suddenness and magnitude of the radical changes that took place in 1989 and the following two years offer profound insight into the wide discrepancy between human intentions and the compelling forces of social evolution."

Society has long been divided into rich and poor sections. Until recent times, those divisions were often accepted as inevitable or even necessary expressions of the inherent differences between people and accepted without question or protest. Caste inequalities in India were accepted as a natural part of social organization until social reformers such as Mahatma Gandhi started questioning such an arrangement and awakened among the depressed castes a feeling of injustice and oppression. Once awakened the depressed population started clamoring for social equality and lifting of social restrictions. After achieving independence in 1947, the Government of India outlawed untouchability and lifted restrictions on lower caste people, such as prohibitions against visiting temples, taking water from village wells and taking up residence within towns, etc. These timely initiatives helped prevent an explosion of uncontrollable rioting throughout the country which would have had catastrophic consequences for the nascent Indian polity.

Absolutist monarchy and a feudal regime divided into nobles and serfs attached to the lord and his manor may have played a salutary role in supporting a stable society of local fiefdoms in Europe after the collapse of the Roman Empire, but they contained inherently destabilizing factors which prevented peace from enduring for a long time. As Europe developed, local kingdoms merged from more centralized absolutist monarchies and feudal regimes that prevailed until the end of the 18th century when the French Revolution broke out protesting against the royalist and aristocratic injustices. The clamor for democracy spread gradually from then onwards undermining royalist regimes through much of Europe. One of the last to go was the Russian Czar who failed to read the changing social attitudes of the people and as a result was forcibly removed from power and physically liquidated.

Revolutionary thinkers such as Karl Marx gave a new economic dimension to class war by showing that the working class was being exploited by the capitalist class and was doomed to be overthrown by the former in the long run. European capitalist countries did not heed his warning much and instead adopted coercive measures to control the spread of Communism. But the threat of class war became very real after the Bolsheviks managed to overthrow the Russian emperor and install their own Communist regime in Russia. Fearing that the scourge would soon spread to other vulnerable countries, many European countries adopted socialist measures and extended concessions to the working class such as 8 hours of work per day, freedom to form labor unions, right to pension and right to strike, etc. The US, which was the acme of capitalism, also awoke to the danger of the spreading menace due to rising

unemployment during the Great Depression and took efforts to humanize capitalism through institution of the New Deal social welfare programs. After WWII, all of Western Europe adopted social democratic policies to quell the spread of communism more and succeeded in offering more attractive benefits to the working class than the Soviet model.

Equally disruptive to peace has been the notion of racial pride which became a force and justification for extreme violence in Germany during the Nazi era. Writers such as Arthur de Gobineau promoted the theory of Aryan Master race which captivated the imagination of Nazi leaders. Hitler advanced the concept to include the right to subjugate and dominate people, using his demagogic power to galvanize large sections of the German population into believing that they were a master race destined to rule over inferior populations. His overconfidence emboldened him to even attack the Soviet Union, believing that the Russian Slavs were subhuman beings and it was the right of Aryan Germans to push them beyond the Ural Mountains to the frozen wastes of Siberia so that the Germans could settle in the vast expanses of Southern Russia. His alleged 1000-year rule of the Reich collapsed within 6 years due to the combined onslaught of the USSR, the USA and other allied countries, who occupied the country, declared Nazi party a criminal organization and effectively banned it. It is noteworthy that racial pride only served as justification for Germany to institute a more violent form of the sense of cultural and civilizational superiority that had been used by other European powers to justify the establishment of overseas imperial rule over about a third of humanity. Once again, expedient short-term policies were ultimately defeated by deeper evolutionary forces.

There were subsequent efforts to build a permanent peace and economic cooperation in Western Europe. This too proved a partial expedient for it failed to address the security concerns of the communist bloc, ushering in a 40-year Cold War and unprecedented threat to human security posed by the nuclear arms race between communist and capitalist nations, epitomized by the 1962 Cuban missile crisis. For 13 days the world remained on the brink of nuclear war, until the Soviets withdrew their missiles from Cuba under pressure after intense negotiations.

After the end of the Cold War and the collapse of communism, the boundaries of democratic capitalism were extended by the founding and expansion of the European Union to encompass 28 nations and the expansion of NATO to include USA and 29 European nations. But cooperative security even between a larger group of nations is proving to be a partial and unstable solution. For it fails to address the legitimate security concerns of nations left outside the system which feel intimidated by its growing dominance. In the absence of a truly cooperative global security system, instead of a lasting, stable, durable peace, tensions have once again begun to rise and new alliances began to replace the old.

The Cold War military and political alliances provided no lasting solution to end the threat of hostilities between European powers. They only served to extend the sphere of competition from Europe to the rest of the world, where proxy battles were fought in Korea, Vietnam, Nicaragua and countless other fields in Asia, Africa and Latin America.

This stalemate ended with the demise of Soviet Communism and the collapse of the Eastern Bloc when both sides finally realized that the nuclear arms race was truly a MAD

endeavor which posed a growing threat to all humanity and could never be a viable path to enduring peace. The suddenness and magnitude of the radical changes that took place in 1989 and the following two years offer profound insight into the wide discrepancy between human intentions and the compelling forces of social evolution. When German Chancellor Kohl and Soviet President Gorbachev conferred privately in June 1989, they agreed that the reunification of Germany was inevitable. They both also agreed that it would probably take place after 30 years or more. In less than 12 months, East and West Germany were united. Within 24 months, the USSR broke up and communist regimes throughout the East Bloc were replaced by elected governments.

Events unraveled much faster than either of these leaders or anyone else conceived possible. Gorbachev's initiative to liberalize Soviet Communism by introducing his policies of *glasnost* and *perestroika* (openness and restructuring) acquired a momentum of their own and led to a widespread clamor for freedom that ultimately dissolved the entire edifice of communist rule. When the first protests broke out, Gorbachev rejected the option of using military force to control the resistance. His decision not to use armed force led first to the breakaway of the Baltic republics followed by other former Soviet republics and allies. When Russian President Boris Yeltsin declared independence from the Soviet Union along with Ukraine and Belarus, the Soviet Union ceased to exist. The unravelling of the Soviet Union was reflected in similar demands from East European satellite countries which toppled their Communist rulers one after the other. The peak of this unravelling came when the Berlin Wall fell down in 1989 and the two Germanys became one. When the East German Communist government appealed to the Soviet Union for military intervention, Gorbachev ruled out the possibility saying no Soviet intervention was possible and that they must manage their own problem.

With the total collapse of Communism in Soviet Union and Eastern Europe, the long-standing Cold War confrontation at the UN came to a peaceful end. This was followed rapidly by efforts to nuclear arms negotiations to control, limit and reduce the nuclear arsenals on both sides, leading to the end of the Cold War and a drastic reduction in the threat of nuclear attack that had been threatening world peace for 45 years. For this magnanimous accomplishment Gorbachev was awarded the Nobel Peace Prize in 1990.

The social mechanisms Society used to dismantle Communism and the associated Cold War tension are many and complicated. As news about western prosperity gradually found its way into the Soviet Union, it created a yearning aspiration among its citizens for such prosperity and comfort. As for Gorbachev he only wanted to humanize Communism and turn it into a people-friendly movement instead of the autocratic and authoritarian entity it had become. But he misjudged the depth of people's thirst for freedom and so when he gave a little it soon swelled to momentous proportions and awakened the clamor for total freedom.

The Russians have long been exposed to authoritarian and autocratic rule. But Communism promised something very different. It even visualized the total disappearance of the State machinery after a brief period of proletarian dictatorship. It is possible that the Russians initially supported the Communist takeover of their country believing that the promised freedom will soon come. But Lenin's death and Stalin's takeover dramatically altered the

possibilities. Stalin suffered from the paranoia of seeing external and internal enemies everywhere. Therefore, to protect himself he instituted an elaborate surveillance system by which just about every family was watched. Under Stalin, internal persecution alone cost the lives of some 30 million Soviet citizens according to some critics. Suffering for long under such regimentation, it is possible that the Soviet people simply grabbed Gorbachev's offer of loosening the controls and rejected the whole oppressive regime. So even during the Cold War internal threats to peace and security were a prominent issue.

The role of terrorism as a spoiler of Peace remains to be answered. It is particularly an acute problem between India and Pakistan, between Israel and Palestine and finally between Islamic countries and the Western World. Terrorism is a recent phenomenon occurring mostly from the 20th century onwards.

The lack of job opportunities for educated Kashmiri youths is another major factor tempting them to join terrorist groups which offer good pay. The Indian government has woken up to this reality and is currently designing schemes for generation of jobs that would prevent Kashmiri youth from joining terrorist camps.

As for the problem between Israelis and Palestinians an enduring peace is proving to be elusive.

Militants from the Gaza Strip are constantly firing rockets into Israeli territory and Israel is fighting back, which is leading to a constant state of warfare. Again it may be a case of unemployment embittering Palestinians residing in refugee camps. There is the Jojoba plant which thrives in arid climates and its oil is highly prized for its lubricant value. If the refugees can be persuaded to cultivate this Jojoba plant on arid soil and find gainful employment, they will be diverted towards work and much of their resentment will disappear. There is the bigger problem of Western Support for Israel which has invited Islamic terrorism to be inflicted on European and American soil. Among the Western Countries the US stands as the single most vocal supporter of Israeli rights, this may have been one of the reasons it suffered the WTC plane attacks in the year 2001. That country has made it plain that it will not stop supporting Israel simply because of terrorist threats.

Terrorists are not simply madmen throwing around bombs and shooting people. Though there may be a lunatic fringe among them, the bulk of terrorist population is nursing genuine grievances against the Western world or for that matter against anybody they choose to target.

For those dwelling in the Gaza Strip, life is simply a hellish experience with so many constraints Israel has imposed on their movements. Western diplomats who have promised to deliver justice and peace to the Palestinians have not been honest and many of them have been deceitful and giving false promises. It is falsehood that invites such brutal terrorism. The Indian governments have routinely rigged elections held in Kashmir so that the party in power can keep its hold on that state. Martial law is in force in that state under cover of which the army is committing many atrocities like midnight raids on families said to be harboring terrorists and violating women in that process. Such false and violent methods no doubt beget the same kind of response from the aggrieved population. The Sri Lankan

government is resisting enquiries into complaints about genocide of innocent Tamils and this very reluctance is strengthening doubts about what happened there. If governments stop such persecution and allow the minorities to live in peace and comfort, much of the resentment harbored by terrorist groups will disappear and there is a good possibility that they will give up violence and come to the negotiating table.

"Diplomacy is the first step in humanity's evolution from violent conflict to peaceful co-existence."

The Irish Republican Army carried on a violent campaign for annexation of Northern Ireland with the Republic of Ireland for many decades. But a sudden burst of Prosperity between the years 1995 and 2007 brought about by the IT industries made the country so prosperous that people simply forgot the IRA and the terrorist organization itself volunteered to give up arms and violence.

One last enemy of enduring peace is the accumulation of nuclear weapons by nuclear powers. There is said to be a total of nearly 14,000 nuclear weapons in ready-to-use condition the bulk of which are owned by the US and Russia. As of now there are nine nuclear powers and the most provocative of them all is North Korea. Human beings are supposed to be intelligent beings capable of doing what is best to safeguard themselves. But this accumulation of weapons of mass destruction is questioning the very sanity of human beings insofar as they seem to be keen on their own destruction. The US sponsored Non-Proliferation Treaty has succeeded in preventing many nations from becoming nuclear powers. Furthermore, the policy of 'No first use' is also a good guarantee that nuclear war will not break out in the near future. But we cannot rule out the possibility of nuclear weapons falling into the hands of terrorist groups, thus allowing them to threaten the world. It was the US that first used these bombs against Japan in an effort to save American soldiers' lives and to hasten the surrender of Japan. No doubt it achieved that goal. But no nation is more nervous about a nuclear threat than the US right now.

The UN appears to lack the strength to declare the production, possession and use of nuclear weapons as illegal, enforce that prohibition and punish erring nations. Under such a helpless circumstance, the only effective remedy seems to be the formation of a World Government with enough strength to enforce such a prohibition. Post-1950 events in world history are moving in that direction. Formation of the EU is a very good step in that direction. To the extent nations willingly give up their sovereignty to that extent, the collective authority of the world government will grow. The world has become vastly interdependent in economic and other social, military and political matters that nations can no longer afford to take unilateral decisions. A collective decision is very much called for. Climate change is compelling nations to take coordinated decisions. Problems like unemployment, pollution and sharing of waters, fighting new epidemic diseases are all demanding collective decisions. It is only wise and reasonable to take this trend a step further and pave the way for world government. Should a third World War break out, irreparable damage may be caused to the world. It is the responsibility of all globally conscious citizens to rise to the occasion and give birth to a new world order.

Diplomacy is the first step in humanity's evolution from violent conflict to peaceful co-existence. The development of larger, heterogeneous nation-states is an essential further step. Education which enlightens our understanding, tolerance, respect and identity with others and the emergence of a richly diverse, shared universal human culture is another essential step along the way. The final step is global social security and lasting peace founded on a positive conception of peace based on a comprehensive sense of individual security which derives from political freedom, social equality, human dignity, a culture of goodwill and, at the spiritual level, a Self-existent inner life of human security, self-discovery and delight. Humanity's evolution toward a peaceful world is a movement from physical animality to rational human mentality.

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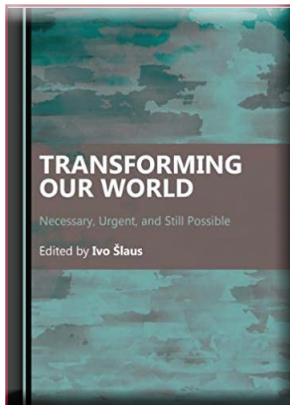
University Education in Crisis?
Transdisciplinary Approaches in the Arts, Humanities & Sciences

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Abstract

The modern approach to University education and research cuts across traditional boundaries. In order to obtain maximum benefit from research effort globally, universities need to adapt their approaches to the management and organization of research and teaching, to foster transdisciplinary working and promote global mobility for the next generation of students.

1. Introduction

This millennium will see revolutions in a range of technologies, from medicine to transport, that will have transformational effects on society. With new tools, new insights and understanding, and a developing convergence of the disciplines of physics, chemistry, materials science, biology and computing, we will realize novel and superior products and systems that were, until the 21st Century, the stuff of science fiction. This will not be possible without collaborative working between disciplines.

Up to now, academia has been strongly oriented towards specific academic disciplines. However, most of the problems that research and education are supposed to solve are not defined in terms of disciplines, yet these problems are precisely the ones that are urgent: *viz* the environment, energy, and health. There is a disconnect between the development of problems and the development of disciplines, and this disconnect is growing to the extent that discipline development is increasingly determined by hyper-specialisation.

As an example, *Cognitive Information Processing* and *Cognitive Computing* will be important technologies of the 21st Century and will require the input of researchers across solid state and organic chemistry, biology and medicine, physics and mathematics, information and computing sciences, and engineering if their potential is to be fully realized. Such a transdisciplinary approach is indispensable to accommodate complex industrial and societal needs. There is a challenge for Universities in addressing this, in formulating degree programmes without losing intellectual depth in delivering the "broad band" of materials required, and/or do not simply lead to multiple pathways to final qualification confusing for both students and teachers alike. That said, the growing fields such as nanotechnology, bio-intelligent materials, biomimetics, cognitive informatics and cognitive computing etc., will not prosper without intensive crossover and interaction between disciplines.

The University has to change: because its environment (social as well as institutional and regulatory) is changing. Many conventional jobs will disappear in the near future, certainly

by the time pupils currently in primary education graduate. The transformed job market also means that many new jobs will be created; premium will be on candidates with flexibility and an open mindset.

Governments now realise that new scientific knowledge holds the key to our future wealth and health: many new medical drugs and industrial products are based on discoveries made in universities. The industrial hub shifts in the USA from the traditional steel in Pittsburgh and car making in Detroit to high-technology companies based around MIT and Silicon Valley companies based around Stanford university and the university of California are a foretaste of change. If Europe is to compete successfully with the USA and now China, it has to focus on high-technology products and the ideas and materials from our universities. Hence governments around the world are now intensively interested in their universities, so the advancement of a trans-disciplinary agenda is timely.

A key feature of the university-of-the-future must be flexibility: we must make it easy for an engineer to learn Chinese or an Indian language, history and culture without this being an additional burden. Concerning research, we must acknowledge that much of the most exciting and useful research is occurring at the boundaries between traditional disciplines. Many biologists who design new medical drugs were trained as physicists. Many new materials for next generation mobile phones, computers, cars and planes are designed and developed by materials scientists working with chemists, physicists and engineers. A university departmental structures is not geared to preparation for this New World, and may be the barrier to, rather than a catalyst for, multidisciplinary research.

A major concern is the increased administrative burden being placed on universities by government regulation and reporting. There is often a disconnect between the administrative functions of a university and the primary activity of research and teaching.

2. Enhancing the Education, Research, and Innovation Base

Societal challenges are becoming more complex and tangled.

University education is integral to the welfare and well-being of global society, and it is recognized that good education systems underpin prosperity and stability. The challenges are to now provide trans-disciplinary education that can be a model for use around the world.

A. Multi- Inter- and Transdisciplinary Education

A *Discipline* is a sub-field of science, engineering, humanities, etc. with a specific approach, fundamental concepts, language, methods and tools, that aims to analyse, understand and describe parts of Nature.

Multi-disciplinarity is where several disciplines come together in parallel to tackle one subject.

Interdisciplinarity is where the concepts and methods of one discipline are used in the work of another discipline.

Transdisciplinarity is a holistic approach that sees all aspects of the world interrelated through patterns of interdependent systems. These include natural, social, economic and political systems. Transdisciplinary integrates knowledge and methods from any source that can be of value in addressing a particular problem or research question. Essential requirements for any transdisciplinary work are an innate curiosity and patience; and understanding of other disciplines and their languages takes time and commitment. Transdisciplinary research and teaching cannot be restricted to traditional boundaries.

"A concerted effort needs to be made to create the very conditions that engineer trans-disciplinarity. There is a need to start early—at secondary school stage—where the balkanisation of topics create an undesirable specialisation."

B. *Challenges for Inter- and Trans-disciplinary Activities*

- *Language*: Each discipline creates its own jargon. I/T-disciplinarity requires the appropriation and accommodation of different languages, meaning communication of I/T-disciplinary research and teaching can be difficult since it requires the use of technical terms borrowed from one discipline but that are not well understood by the specialists from other disciplines.

- *Methods*: Disciplines are often devoted to their own methods of investigation. This may lead to misunderstanding and opposition.

- *Institutional constraints*: Institutions are mostly disciplinarily organised, creating barriers for I/T- disciplinarity; though strong, well-defined disciplines are necessary as any interdisciplinary activity starts with a deep understanding of single disciplines.

- *Cognitive constraints*: It is very difficult for an individual to become expert in two or more disciplines. An in-depth knowledge of different disciplines is however the requirement for genuine I/T-disciplinary research. This raises the question of the impact of these difficulties on education and on the institutionalisation of interdisciplinary training programs.

- *Assessment*: Experts (reviewers) for evaluating the results of M/I-disciplinary research and education are lacking. Standardised bibliometric information is scarce and not representative. New ways of quality assessment need to be developed.

- I/T-disciplinarity requires mastering of more than one discipline in depth. Superficial learning of several disciplines does not lead to meaningful I/T-disciplinary research and corresponding solutions of complex problems.

- Experience has shown that learning the essentials of several disciplines has to be done consecutively, not in parallel: for example, doctoral studies in one discipline and post-doctoral work in another.

These challenges are the very reason that a concerted effort needs to be made to create the very conditions that engineer trans-disciplinarity. There is a need to start early—at secondary school stage—where the balkanisation of topics create an undesirable specialisation. A wider choice of learned subjects will prepare the student to accept trans-discipliarity as a valued norm and not as an inferior generalism. This is the mindset of the 19th century; no longer suited to these times. The guiding principle would be an alloying of physical, biological and arts subjects. Excellence can be equated therefore with versatility and not with narrowness, often masquerading as depth. The formula of a specific discipline mix is not the critical factor but its existence, and it would contain ~6 examinable subjects. Motivation for this needs to come from the Universities and industries jointly to demonstrate the added value for careers of flexibility and a future ability to move careers in a world where the job for life concept is disappearing. Without leaders presenting a convincing case the status quo will remain; such a case would embody intellectual, economic and prestige benefits. If not made at the highest level then a student will not seek the adventure of transdisciplinarity.

Multi-domain education to a high level poses greater learning challenges for the individual and it cannot be that all can grasp the demanding agenda. So a degree of selection is inevitable; this can be based on the 6 subject performance—a key entry requirement. This also benefits society by specifically identifying research 'translators' as well as non-discipline specialists —both will be needed. Selecting out the different aptitudes is surely as important as selecting out an excellent candidate for a single subject degree.

With and intellectual openness a university student can take the new education in their stride, feeling enriched by the added dimensions. To achieve this there cannot be a token move to transdisciplinarity, otherwise failure is inevitable. The optimum way to avoid this is to embed precious, valued disciplines in entirely new environments—physics into biology, chemistry into medicine, robotics into bioengineering, etc. Precise choice is not critical; it is the juxtapositions alone that will fire up the new culture, but a desirable mix would combine biological and physical/engineering sciences with numeracy skills as an integral. Instead of the medicine paradigm, other delivery disciplines may thus be reinvented: environmental science, materials/manufacture, energy, human geography. Operationally beyond the taught elements, a research project would be a transdisciplinary one. The output is both a graduate able to accommodate other disciplines and a teacher able to absorb concepts from another domain. Ultimately such an intellectual convergence will bring down the above barriers, and in short, a re-invention of 'The Department' is envisaged.

At postgraduate stage, hyphenated MScs of equal prestige to PhD could be developed where a sequence of 3 years exposed students to different topics, with a sequence of biology, physical/computation science and core engineering. At the end of this would be an appreciation of the universality of fundamental concepts. Such a graduate direction could have to be accommodated within the current ecosystem that prioritises the PhD focus and its value in the generation of publications.

C.   *Importance of Inter-Trans disciplinarily for Universities*

Inter/Trans-disciplinarity matters because, in the real world, most scientific, technological

and social problems do span different disciplines: so in the future, graduates have to operate in a multi-disciplinary environment, very different from what has existed in the past. The present generation of students must be convinced that they will have good careers if they take a research route in their early years, and that University research leads to careers other than in academia. Whilst today, someone with inter/trans-disciplinary expertise might be viewed as a generalist, in the future this could be regarded as a specialism. For example, a graduate with three Master's degrees in biology, informatics, and engineering, may, in the future, be better off than with one PhD in biology, etc. Interdisciplinary degrees need to be defined in a sensible way that does not simply double the workload and content. It should be possible to opt for a full MSc inter-disciplinary degree enveloping various Faculty disciplines. University courses must be broader and open to related disciplines thus giving to the students the predisposition to interdisciplinary work after Graduation. Industry will be keen to hire these graduates who have mastered the challenge of studying different fields with success and who will also be able to perform trans-disciplinary work and research.

The real need is for the next generation of scientists to know how to move forward when faced with a real-world problem on a technical topic they have never met before, on a realistic time-scale, and with a realistic budget. Future research is aimed to solve problems where an interdisciplinary approach is essential.

The structure of our universities has changed little in the past fifty years. Inter-departmental barriers are often very high, particularly in "traditional" institutions based on small Departments of 10-20 academics focused on a single narrow area. A modern approach, that has been shown to be more useful, flexible, and efficient, is to have teaching activity based in larger Schools, of up to 100 academics, that can be broadly based and which allows for a more comprehensive range of discipline specialists. Research can then be focused either within the School around particular themes, to further linked to cross-cutting University Research Centres that can span Schools and even Faculties to further exploit the opportunities that already exist but which remain latent in current structures.

The primary functions of universities are to educate students, perform innovative and horizon-broadening research, and transfer new knowledge for the benefit of society. Universities need to be flexible enough in their structures, management and culture to constantly establish new interdisciplinary models for the scientific fields of tomorrow.

D.   The roadmap for the Inter-Trans disciplinary Universities of the Future

There is a need for a change in approach, and a revisitation of recent trends, in fully enabling Universities to become incubators of successful inter/trans-disciplinary research.

For University Leaders, there needs to be:

- Recognition that teaching is primarily for students who will not become future academics, and who will be pursuing careers that do not exist yet;

- Recognition that research and teaching must be closely linked, so that students will benefit from the new ideas of knowledge that research will provide;

- Recognition that research changes very rapidly. It is therefore good practice to develop teaching within large Departments with strong vision for curriculum and continuity, and have research institutes into which it is easy to bring people from various departments for the span of a project. But this does not imply a separation of the people who will be delivering the teaching and conducting the research.

"To facilitate collaboration between universities worldwide, it is important that the curriculum and degrees of the various universities are unified."

For Funding Agencies, there needs to be:

- A diversity in approach to funding at all levels, since the challenges of interdisciplinary science are so diverse.

- Better integration between funders and those who conduct the research, so that funding decisions are informed by current challenges.

- Successful models that reward and encourage success, and have a low management burden.

- Active encouragement of interdisciplinary approaches in the solution of research challenges.

E. Global University Mobility

In ensuring the move towards globalisation is meaningful and successful, University education plays a vital role. To facilitate collaboration between universities worldwide, it is important that the curriculum and degrees of the various universities are unified. Europe, with its 30 countries and multiple University systems with different curricula, succeeded in realising a uniform University education system called the "BOLOGNA Ministers' declaration". The United States has a system quite similar to Europe, and other continents as South America and Asia should move towards a global unified system in the future.

An intercontinental University education system demands great efforts from Universities and governments. A global, uniform education system which facilitates contact between students and academics from universities and nations on a global scale will result in multiple benefits in education quality, mobility, and cultural understanding. The mobility of young students and scientists demands knowledge of foreign languages and cultures and this should also form part of the curriculum.

F. Mobility of Students and Scientists

It is important to encourage greater exchange of students and scientists between disciplines and countries. This would be aided by standardised qualification recognition procedures, world-wide training courses, and official exchange programmes. An interdisciplinary

culture must be implanted through educational and funding initiatives. As an example, in the European Union the ERASMUS programme was developed in which possibilities were offered to students and scientists from all countries throughout Europe to study at the faculties of universities of their choice with recognition of their obtained degrees all over Europe.

"It is not enough to value the links between experiences, disciplines, creativity and ideas. One has to develop methods, strategies and practices that will transform those links into real connections."

G. Global University Curricula

The criteria for a high-level education could be formulated as follows:

- Multi-disciplinary skills
- Literacy in complementary fields
- Exposure to advanced research projects
- Literacy in key technological aspects: exposure to real technological problems
- Basic knowledge in social science, management, ethics, foreign languages
- Literacy in neighbouring disciplines: international business, law, etc.
- Interlinkages between education, research and industrial innovation
- Sharing of post-docs, Master's and PhD students to foster the mobility of permanent researchers and academics between different institutions to create extended, global teams.

3. Technology Transfer: Academia to Industry based on Inter-Trans/Disciplinary Principles

Technology transfer has become a new buzzword in the academic world. Everywhere in the world, research institutions within universities look at their American counterparts with envy and respect. The goals of research are to explore new frontiers, and creators of industrial innovations that lead to globally successful initiatives rank alongside Nobel Prize winners in their universities. The academic entrepreneur is, however, a very rare species and likely to remain so. It is, therefore, essential to promote collaborative research between universities and industry.

The inter/trans-disciplinarity aspects, together with the exchange of ideas and inspiration to innovate, will form the building blocks for the successes of the university-industry research. The synergy between university-based and industry-based research teams has been an important factor in the success of US research, exemplified by the excellent "Industry-University" laboratories established by DuPont, IBM, AT&T, and Corning. These laboratories have in themselves produced several Nobel Prize winners.

The conflict of curiosity-driven science and the current needs of society are as old as science itself. One needs only recall the famous encounter between Faraday and King William IV, who once asked the celebrated scientist what his "electricity" was actual good for. Faraday answered, "One day you will tax it."*

This is not to say that University research should be an extension of industrial development programmes. Allowing scientists at universities to pursue curiosity-driven research free, from commercial constraints is the only way to ensure a truly innovative research environment. In the long term, private industry and the economy will benefit from the new ideas and discoveries that will be made.

4. Conclusions

Universities have historically focussed their education and research towards specific academic disciplines. Most of today's problems that research and education are needed to help us solve are not defined in terms of disciplines, and these problems are precisely the ones that are particularly urgent: examples are the environment, energy and health.

It is not enough to *value* the links between experiences, disciplines, creativity and ideas. One has to develop methods, strategies and practices that will transform those links into real connections. We have to recognize the need for interdependence in order to actualise it, and we have to know how to act once we have developed that recognition.

In ensuring a broad-based education that is globally-recognised and allows for global mobility of students, there is a need to develop a World University System that promotes networks of universities with shared qualifications and close research collaborations.

Governments, Ministries for Education, Research and Innovation together with Presidencies of universities, all over Europe, should take action to reform our university systems for the future welfare of the economy and society.

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* Faraday was right.

Reflections on Future Education:
Ideas for a Model*

Fadwa El Guindi

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Abstract

A rapid change in technology is creating pressure on education to meet employment needs. Two overarching points are discussed in this article: first, rather than fearing the robotization of humans we should humanize technology to serve humanity and second, any educational reform must be contextualized: in particular social and cultural traditions, values and worldviews, considering the population size, demographics and special developmental challenges, instead of introducing "one size-fits-all" models. It concludes with thoughts about the current Coronavirus crisis and what it tells us about current global leadership, modes of governance, and the nature of education. The question is raised whether emphasis should be on activism or science. Are we better off with building minds or building skills in response to technological advances? The current crisis levels the global field of political and military dominance since the virus crosses borders and transcends dominance. The people are emerging as a force demanding science instead of diluted glib rhetoric. This emergency suggests the path Future Education has to take.

Reflecting on the global future of education one is immediately faced with a big challenge facing modern education which is how to prepare the youth of this generation for today's job market. It has become a common complaint among young people in the United States, for example, that the degree they worked so hard to obtain does not prepare them for the job market, nor for dealing with today's world. The key is the rapid change in technology at educational institutions while the educational system either remains the same or changes too slowly in the face of rapid technological advancement. There is also a growing fear that technology is replacing human labor. There is a 'new normal' which education is not prepared for, nor is it preparing the working population for the future. This paper reflects on the aspects that need to be considered to provide fresh perspectives as we propose new ideas in this era of digital transformation.

Two overarching points are discussed in this article: first, rather than fearing the robotization of humans we should humanize technology to serve humanity and second, any educational reform must be contextualized: in particular social and cultural traditions, values and worldviews, taking into consideration population size, demographics and special developmental challenges, instead of introducing "one size-fits-all" models.

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1. Does One Size Fit All?

In both identifying the challenges and seeking models for a more appropriate education we must take into consideration the sociocultural context. One size does not fit all. In exploring different countries, we find significant differences that must be taken into consideration. To name a few factors: 1) level of development 2) population size 3) cultural tradition 4) cultural values 5) demographic patterns, 6) gender balance in education and in the workforce, 7) the nature of any barriers, 8) the demographic character: is it an aging or a youth dominated population? and 9) work environments (bullying, discrimination, racism). These and more must be considered when looking at the path education reform takes in order to deal with local conditions. How rapid is technological change?

"As a model for Finland and perhaps some other similar Nordic countries it is evaluated as a success, but can such a model be exported to other settings? I would argue that most likely it will not work. Education must reflect the demographic, social, cultural and political setting in which it aims to be applied."

To name a few concrete examples for the purpose of clarification let us look at Finland, Qatar and Egypt. Finland is universally praised for an education system "that worked." But if we look at Finland as a country we are dealing with a relatively low population size and an almost homogeneous liberal Nordic culture. Experimentation in liberal education is possible and is effective. But would it be successful if carried out in a country whose population size is very large, and which is undergoing transitional development, while holding traditional values and a deep civilizational identity? Here I am thinking of the example of Egypt which is undergoing comprehensive reform at every level, both top down and bottom up as it marches onto a global economic landscape in big strides. All this is taking place since the revolution. I have described the two-phase Egyptian Revolution (2011-2013) in earlier publications (El Guindi 2018; El Guindi 2019).

In these publications I described the challenge Egypt was facing taking into consideration the unique social and historical character and the civilizational worldview of harmony and integration cultivated in the country over millennia. Recent confrontations with extremist forces from the inside and orchestrated from the outside forced priorities of defense and militarism, but not at the expense of national and local projects of development. Emphasis on defense is linked to Egypt's geopolitical position and its valuable population and natural resources, elements which attract threats to its security and must be considered in any realistic analysis. Nevertheless, reform is evaluated as successful by some measures. Since 2013, according to *Business Insider* of France, Egypt ranks 8th after Germany, Turkey and Japan; according to IMF, though a small country Egypt "will be driving global growth in the next five years." (Kreppmeier 30 Oct 2019, 15:54)

2. The Finnish Model of Education

The model formulated in Finland for Education is internationally praised as a good model. It was highly praised in Qatar when I was invited (2006-2015) as part of its own Reform Initiative to oversee a 'modernizing' of Social Science at the National University of Qatar. The basis of the praise for the Finnish model is Education Outcomes. Outcomes worked well for the Finnish people and within Nordic culture and is hence praised as a success. The question I bring to the discussion here is can we determine outcomes quantitatively outside cultural context? Is it determined by a universal set of criteria, without consideration of a country's level of development, a society's set of standards for education, cultural values and worldview? Finland is a relatively homogenous society, with a small population and holding a very liberal set of western Nordic values. As a model for Finland and perhaps some other similar Nordic countries it is evaluated as a success, but can such a model be exported to other settings? I would argue that most likely it will not work. Education must reflect the demographic, social, cultural and political setting in which it aims to be applied.

3. The Failed Qatar Case

In order to fully understand the significance of sociocultural context I bring up the case of Qatar. An enlightened strong Qatari woman was President of Qatar University. She headed a group of colleagues who together embarked on a dramatic path of reform. This involved teaching standards, teaching style, faculty obligations, language of teaching, curricula, prerequisites, accreditation standards, teaching outcomes, research activity, research outcomes, modernizing programs with a special focus to bring the Social Sciences onto the 21ˢᵗ century with the goal of meeting an international standard. Discipline, which was totally lacking in many faculty members and most students, was prioritized. But simultaneously there was a move away from rote memory learning toward an interactive creative learning experience.

This is where I come in. I was invited (2006-2015) as part of the Qatar University Educational Reform Initiative to bring about reform of the Social Sciences at Qatar University. Without delving into too much detail, I would say that despite the good intentions and the very hard work put into this Reform movement, it failed. The question is, why? Students complained to their parents, parents protested, the regime feared a wider political protest at a time when Arab populations were undergoing uprisings protesting against political abuses, corruption and economic inequalities throughout the region. The Reform Project was abruptly stopped, faculty salaries were exponentially raised, and the whole reform project was reversed to what it was before the Reform began. In a future publication I will discuss how I carved my own reform path, labeling it as sustainable reform which has proved to be a success.

Why has the Qatar model failed despite the enormous amount of expenses invested in it and the distinguished level of expertise which was brought from abroad and put into it? Overall the model of education for reform was totally imported from the United States, lock, stock and barrel, as it were. In terms of the Social Sciences the Qatari faculty were not ready for such reform nor could they understand it. Resistance to it was strong. Qatar is a tribal society, and Qataris are pretty much all relatives operating within tribal boundaries. This is in

and of itself not the problem. But it limits dissent. Consent is determined by tribal loyalties. Tribal loyalty is primarily given to their group and to their cultural tradition which is shared by the Arabian region deeply rooted in poetry and surrounded by the civilizational traditions of the Arab region. Why should they simply adopt an American model of education which is in the English language, when traditional literacy and a long tradition of global trade were invented in their region? They were masters of global trade without an MBA. There was also the factor of readiness for a major change.

"There is a need for taking a broad and deep view of the development of humankind in order to appreciate the value of perspective."

The faculty were not ready for such a sudden and rapid change and the resistance to it which was communicated to the students. Why should reform models be comprehensively imported? It is interesting that there was no similar resistance to technological change in other areas. Students had the latest smartphone, the latest computer models, the latest cars, and anything that wealth can buy. Qatar is a very affluent country with a low population. Labor is imported. Any needed skills are purchased. There is no direct connection between the educational system and the labor force. Most Qataris have guaranteed jobs which eliminates the need to seek jobs or connect education to employment. There is no need for jobs. In general, affluent Qataris are employed on a family basis and education has to meet other needs. The assumption that education of the future has to be relevant to employment is not valid in this case. The challenge is different but must be addressed. Should we look at education reform by breaking up the elements of change to determine what can and cannot be absorbed by people and at what pace? Insights are needed to cover such situations even if they are anomalies. Some insights can be drawn from the past, not out of nostalgia but for the effectiveness of the ideas.

4. Is Technological Change the 'New' Normal?

There is a need for taking a broad and deep view of the development of humankind in order to appreciate the value of perspective. Perspective can help us understand better the character of change that we encounter. It is worth recognizing that neither change nor technology is new to humankind. We need to be reminded that since our human beginnings, each era and every age since our human beginning, we have been experiencing new normalities, and that new normalities are always resisted, and present new challenges. That is, normalities are not new to the human species. Cultures and societies, even the most traditional, have always been changing. There is no static society nor an unchanging culture. Change is usually slow and hardly noticeable by the people. It is when change is forced internally, imposed externally, or takes place too suddenly or too rapidly, or when it is extremely incompatible with cultural tradition and worldview (and we do have some unusual anthropological case studies showing a culture totally falling apart upon the sudden introduction of an innovation), that societies

encounter instability and people respond with resistance. It is difficult for people to adjust to rapid or sudden change which disturbs their comfort zone. Gradual and particularly compatible change is more easily absorbed. But there is another crucial factor.

"It is such a dynamic interconnectedness grounded in culture that we seek in a paradigm for future education with insights drawn from history."

Less known perhaps is the fact that technology is not new either. We tend to think of technology in terms of our present day advances—mobiles, tablets, electronic services, and robots. But the fact is there are studies that have shown that technology is not a mark of modern humans, since rudimentary manipulation of tools was shown to be a characteristic of anthropoids (humans and pre-human apes). But there was a qualitative shift with the development of humans, a shift linked to the unique human cognitive capacity. Significantly, from the moment humans shaped a stone tool they did so to manipulate it and employ it as a means for a purpose of livelihood, in other words they invented technology for serving them. From that moment there was technology and it kept progressively advancing in complexity through the ages. While non-human primates used tools that appear to some as being similar to the way humans did, they actually did so at a very crude and limited level.

Creative inventions and imaginative uses of technology mark the development of humankind as a species. In terms of our present-day concerns and fears about the take-over by technology of our lives and livelihoods, it should be mentioned that every step in technological advancement had a similar impact on humankind. They were considered new normalities and humans had to face these novel challenges by both resisting them and gradually adjusting to them while advancing technology further. In other words, nothing stopped the advancement of technology until today.

Such advancement is a function of the plastic capacity of an imaginative human mind, which, whether given to us by God or by Evolution, is an enabling capacity to deal with the progressively changing conditions whether by organizing socially, by building institutions of action or ideas, and at the same time manipulating the environment by using tools humans themselves imagined, designed and created (for a current and full development of this point on cognitive capacity and social organizing see El Guindi 2020). There is serious discussion in scientific circles today on how a complex[1] notion of society and culture is unique to humans (Gazzaniga 2008).

5. Humanizing Technology, NOT Robotizing Humans

Considering the human capacity to create, and the challenge today posed by technology which is rapidly robotizing the human world, the affirmative response becomes: humans created this technology and should be able to control it. What is needed is to humanize technology to serve humans rather than robotize humans or live in fear of being replaced by robots. This

fear comes from an over-romanticized illusion about technology and an over-rated sense of technological advances, perhaps for reasons of profit rather than the service of humanity.

"We as humans invented technology and should be able to creatively humanize it in such a way as to meet our needs in the emerging global world, instead of robotizing humans to fit technology."

No matter how advanced technology becomes, it will remain robotic and can never acquire human cognitive capacity. Robots can be successfully employed for a better life for humans and humans should drive forward striving for more humanly creative tasks enabled by their unique minds and aided by robotic inventions. Robots, if intelligently manipulated, can make human lives better in quality. Humans need not be robotized; they need to become more creative. Education can be reformed with these premises as a guide.

6. Global Concerns for Future Education

One of the themes posed for presentation at the Final Plenary of the Conference on Future Education held in Belgrade in 2019 was the premise of multi-culturalism versus inter-culturalism with regard to the role they play in the future of education. At the onset, this paper challenges the polarity by which this duality tends to be framed, namely multi-culturalism versus inter-culturalism.

The question to raise is whether our understanding is served by looking at these two phenomena as reified polar opposites between which a choice needs to be made in order to characterize the path education should follow in its future development. It is contended in this paper that the factor of cultural diversity need not be dichotomous, and an alternative framing is presented using historical examples from the beginnings of academies which were present in the Middle East since ancient times through the Golden Age of Islam.

We can journey back all the way to 3rd century BC in Alexandria to focus on the Great Library of Alexandria (Bibliotheca Alexandrina), or the 8th century to the Great Library of Cordoba built by the Umayyad Dynasty in Andalusia, a dynasty that lasted from 756 to 1031, or to 9th century Baghdad during the Abbasids, all the way to 11th century Cairo. While these academies and many more spanned centuries, I focus here on two special ones; Bayt al-Hikma of Baghdad, or House of Wisdom, in the early 9th century and Dar Al-'ilm of Cairo, House of Knowledge, Egypt 1005 CE.

7. What is 'Ilm and What is Hikma?

Both Bayt al-Hikma of Baghdad and Dar al-'Ilm of Cairo are houses of learning and teaching and research. Bayt and Dar in Arabic mean house/home. Hikma is an Arabic term meaning both wisdom and knowledge and 'Ilm means both science and knowledge. These

notions merging wisdom, science and knowledge reveal a unitary conceptualization of what is here being proposed for education, namely to universally embrace this integrated whole as its core character.

The two academies like many of the classic academies during that period shared common elements. They were gathering places of teaching, learning, knowledge exchange, research sharing, translating, printing, reading, documentation. They merged academy and university, library and archive. They served as magnets to curious scholars across ethnicities, faiths, cultural traditions: Arabs, Persians, Indians, Central Asians, Muslims, Christians, Jews—all faiths, sects, men and women. They had music, art, poetry, philosophy. They combined discovery, invention and translation of existing knowledge. An observatory was essential. Thousands and thousands of books, documents and, pamphlets were on shelves and in cabinets. There was regaled public access. Teaching, learning, discover and production of knowledge as well as sharing and communicating knowledge merged. There was writing and debating.

This is a picture of integration and dynamic interconnectedness and interactive interdependence of parts that we seek in a paradigm of education. In this context, while the space was multi-cultural, its character was that of inter-culturalism. The latter goes beyond form and becomes a process of interaction and integration. This way there is no polarity since one is form and the other is a process, one is a static condition, the other a dynamic integrated interactive process. It is such a dynamic interconnectedness grounded in culture that we seek in a paradigm for future education with insights drawn from history and from present challenges to reform. Perhaps, instead of asking how to change education so that the public can acquire skills to prepare for the new technology, we ought to be saying that we as humans invented technology and should be able to creatively humanize it in such a way as to meet our needs in the emerging global world, rather than robotizing humans to fit technology.

8. Epilogue: What the Coronavirus Crisis Tells Us

I conclude this article with my thoughts about the current crisis which is caused by the appearance of the Coronavirus (COVID-19) and its rapid worldwide transmission and fatality threat across borders turning it within months of its appearance into a pandemic, despite the fact that, as far as we currently know, it is not airborne and only transmits by touch. I like to reflect on what the crisis tells us about our current human condition, the efficacy of governance by nation-states, the effectiveness and inevitability of global institutions, the paradigms developed by think tanks, including the World Academy of Art and Science, and significantly the implication of all this for Education, the main subject of this article.

In previous publications (2018; 2019) I had stressed the need for taking a 'whole system' or integrated approach of balance and harmony whether through worldviews or actual governance, situated in cultural context to meet today's needs, moving away from abstract dichotomous polarities in our thinking and analyses. What the coronavirus crisis tells us today is that we live in a global world, interconnected and interdependent through governance by nation-states (some tribal-based), and in critical need of world organizations (such as WHO), and should be informed by a scientific education aiming at building minds. The very notion

of leadership is being tested. Capital is posed against human welfare. Governance cannot continue with business as usual prioritizing the global economy over human welfare. People want to be sure knowledge of the disease is scientific. They want their governments to take measures to protect them, not capital. Is this possible when the two are now so interconnected by globalization processes? Global chaos is setting in. Going back to the issue of whether we should prepare youth to meet changes in the job market (that is focus on teaching trades), it is now resolved. During grave global crises of the kind that the spread of Coronavirus is producing, people are demanding protection based on scientific knowledge. There are of course inevitable reactions taking us to theories of doomsday and the end of the world. But there are also sober calls for leadership mastering scientific knowledge to inform the regular folk about the nature of this medical calamity and how to intelligently deal with it. Will governance protect capital over human survival or can we protect both? In terms of education, this crisis shows the need for providing populations with a good science-based education. Negative rhetoric about "silos" and ideological leanings toward feel-good hocus pocus over science is not what is needed today. Worldwide, people fearing the threat of the virus have been clearly asking for 'science-based' data, facts, and medically sound treatments.

People are not interested in a political whitewash or an ideological feel-good approach. They appreciate science-based information coming out of the World Health Organization. They are scrutinizing the effectiveness of their governments in dealing with this crisis, taking a whole government approach which brings together all aspects of governance and the regular and social media together. This crisis shows no leaning toward 'feel-good' approaches or glib rhetoric, but rather a loud call for scientific research about the infection and a cool-headed whole-government response to protect the people. The direction that some educational institutions are taking, such as the University of California in Los Angeles through its Department of Physical Sciences building a new specialization in Climate Science, and the newly configured Data Sciences, is where Education should be moving. Undergraduates are flocking in large numbers to such a major. The website identifies the following as their learning outcomes.[*] They stress "demonstrated mastery of the basic principles and tools of science, demonstrated analytical and mathematical skills through the application of learned concepts and tools in solving relevant theoretical, computational, and empirical problems, ability to apply knowledge gained to independently identify, analyze, and understand real-world problems and issues, demonstrated effective oral and written communication of results and conclusions, and understanding of the societal and policy context of climate science."

The current global health crisis demonstrates how we need a science of health and climate change, not activism based on emotional opinions and glib rhetoric borrowed from science and used in diluted form without a full understanding. The model of dominance and power has shifted, as the infection is not limited by borders, frontiers or military dominance. The global field is level. Instead, the current coronavirus crisis has uncovered a real need in our world today whether in governance, health, climate, education or heritage for scientific knowledge, integrated with society and culture, linking elements of governance—global, nation-state, regular media and social media, local groups and communities, and an education

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* https://catalog.registrar.ucla.edu/ucla-catalog19-20-404.html

based on data and analytic rigor, integrating rigor and the different elements of life as well demonstrated in the academies (Bayt al-Hikma, Dar al-'Ilm) in earlier history discussed in this article as well as what is learned from the response to the current crisis about COVID-19.

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Notes

1. Complex is used here in terms of its scientific, rather than literary, usage.
2. The **Umayyads** were the first Muslim **dynasty**, established in 661 in Damascus

Future Education and Its Challenges:
A Millennial's Perspective

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Abstract

In a rapidly changing world, school systems need to adapt themselves rapidly in order to be able to prepare their students for the upcoming challenges that are threatening the world today. If many steps have been taken by humanity towards progress, the multiple efforts needed to not stop this trend can be achieved only if human beings are taught differently from the past: soft skills must enter school programs more significantly, since only by nurturing empathetic and environmentally aware citizens who are able to think critically, will we be able to preserve democracy, improve social justice and international cooperation and save the world (and ourselves) from the threat of climate change.

1. Introduction

For a long time, education has been a unique tool through which human beings have been able to access all the knowledge and information they needed in order to interpret the world, reach awareness regarding themselves and their social environment and eventually achieve self-realization and well-being. School systems have always been institutions capable of setting the individual free (both internally and externally) by raising his capacities of acting according to his reflections—rather than on the dictates of others—and by helping him develop those skills and capabilities needed to confront the world and its challenges.

But confronting the world and its challenges is not enough anymore: school systems should work more on the students' capacity for imagining new, unexplored alternatives rather than teach them how to merely "survive" in a system that is constantly getting more complex and complicated. In this sense, education has a central role: students of today will be the leaders of tomorrow. School systems should then raise a **new kind of leader**, one that is able to inspire people and boost their individual and collective power to achieve their personal goals and build a more just society. Leaders are catalysts of change at all levels and in all dimensions; but the quality of leadership must improve so that the world can be led to a better future through mutual understanding, recognition and cooperation.

Education has also represented the propelling engine of progress in all fields, from communication to transportation to medical health care. But this progress has brought about many consequences—both good and bad—that are not always understood or taken under control by school systems, students and people in general. Rather, the consequences control

them and this is not acceptable anymore. Good consequences should be understood and reinforced; bad consequences should be understood as well and strongly limited. This can happen through education itself: humans can be taught to think critically about the world that surrounds them. We can teach them to correctly use the tools made available by human progress, maximizing their potential whilst avoiding unwanted and harmful consequences (i.e. social media and fake news).

"Education should become the driving force of a major shift in the way humans think of themselves and perceive others."

Living in a globalized world, global challenges are increasingly intensifying. Interdependence among states, international organizations and humans in general is a matter of fact. The ghosts of global threats to humanity's survival are becoming more concrete and dangerous. In the context of globalization, interactions between all actors (from individuals to states and international organizations) have grown quantitatively, but not always qualitatively: people coming from very different countries and cultural environments encounter—and often collide—on a daily basis. An example above all: immigration. Immigration raises political debates which can lead to racist political decisions that can lead to hundreds of people dying. Hatred gets spread everyday everywhere in the world by political forces whose leaders take advantage of people's weaknesses and fears. Education is the best antidote against these kinds of threats to human intelligence.

Many people are losing their capacities of understanding the world and its phenomena. Not because they are unintelligent, rather because they are uneducated. Populist and far right forces are rising and distorting people's comprehension of social, political and economic problems by serving them extremely simplified visions of reality. Since these simplified and distorted visions see—at least most of the times—different cultures as incompatible realms, communication between different countries and cultural systems is then badly affected, which leads to the incapacity of the system to construct a stable base for a needed international cooperation.

Reality is what we think of it. Ideas shape the world. War is not an improbable event, if we think of it as a solution to problems. Anything can happen based on our ideas and actions. If we start to think of those who are different as enemies, they will eventually become our enemies and violence will occur.

Through education we shape the way humans think. That is why we need it in order to raise our chances to survive. But education needs to change. To be precise, education should become the driving force of a major shift in the way humans think of themselves and perceive others. By changing humans through education, we will give a great contribution to the efforts made to save the world and make it a better place for everyone. Education can boost the capacity of individuals to cooperate at all levels, causing positive effects both at the national and international level. Through education we can imagine and build more just societies and a more rightful and cooperative international system.

Through education, we can really change the world.

But we are running out of time. We need to change now.

2. Higher Education and the Individual: Needed Efforts Towards Self-understanding and Cooperation

Modern, liberal societies are mainly based on "negative freedom": individual rights create a sphere that protects the individual from external impediments by detaching him from other human beings. Besides this, individual rights do not entail the capacity of individuals to actually be able to exercise them. Even social rights (thought and created in order to give people the actual tools to enjoy their individual rights) can fail in their attempt of setting the individual free. The mere application of negative freedom has led to atomized societies in which individualism has spread.

Often times, we do not understand that people coming from different social and cultural backgrounds may find it more difficult to enjoy the rights they are normally recognized for. A student coming from a low-income family and who needs to work full time in order to take care of himself will be more troubled in enjoying his right to study than a student who can rely on the financial support of his family. A girl who comes from a patriarchal family will find it more difficult to enjoy her right to study if her family members think she should marry a man and embrace her reproductive role rather than focus on her education.

School systems should recognize and counterbalance privilege, making it easier for troubled students to study so that they can twist their lives for the better. All students should be taught about privilege: understanding its consequences can reinforce the **empathetic system** of privileged people and attenuate the self-accusing behaviors of those students who do not make it not because of a lack of intelligence or effort, but because of the difficulties they experience in their social and cultural environment. Our accomplishments will never depend solely on our personal efforts: many other variables will contribute to our capacity of reaching our goals. Through education humans can be taught to take all these elements into consideration and to build a more just system that takes privilege into account and helps people towards self-realization.

Moreover, liberal societies and school systems often force individuals into standardized models of success: you are told that you can be happy only if your life satisfies certain standards. And you are taught to compete with your peers: either you succeed or they will. Either they fail or you will.[*] Basically, many times your success seems to depend on others' failure. This way, humans tend to become some sort of almost identical robots competing against each other on who is more efficient. Productivity is the key word: the more productive you are, the more your chances of winning the game against the others increase. Life should never be a "all against all game", but it becomes thus if we think of it this way. If we keep valuing the culture of individualism, no room for cooperation will be left. And without cooperation, everyone will lose the game in the end. It is just a matter of time.

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[*] On this topic, check this interview with Tiziano Terzani, an Italian writer and journalist (with English subtitles): https://www.youtube.com/watch?v=GRHJm8byaLg

Regarding how schools and universities work, students are usually taught and assessed the same way. Since the elementary school they are taught that their grades will define who they are and who they will become in life. Standardized tests are at the base of the assessment: but they should only be used as a diagnostic tool. They should support learning, not obstruct it (which is something they often do). When students believe they are defined by their grades, getting bad grades will affect their **self-esteem**, **self-respect** and **self-trust**. And someone who is affected in these areas of his self-understanding cannot be understood as an autonomous individual (Honneth and Anderson, 2005). He who is limited in his relations to the self cannot be considered a free person, no matter how many individual and social rights he is identified for. Those students who get bad grades because of troubled life conditions may eventually drop out thinking they are not intelligent enough though that is not the case. They may end up accepting a life that will not make them happy. They will stop using their imagination to think of potentially better alternatives for themselves and the people who surround them.

"Rather than teaching students to fit into certain social models and preparing them for jobs that may even disappear in a few years, universities and schools in general should learn to recognize individuality."

It is clear that this kind of socio-cultural system not only leads to the spread of individualism (which affects solidarity and cooperation) but also to a huge waste of human capital (just think of all those brilliant people who were not able to find their place in universities due to their incapacity for finding and developing their real, latent capacities).

How to change this disheartening picture then?

School systems should start focusing on the individual person more: every human has a different background and needs to be understood rather than just assessed. By working on the individual, school systems would have more chances of strengthening—or restoring—one's self-respect, self-esteem and self-trust sentiments, reinforcing one's autonomy and contributing to the construction of a more just society in which everyone can actually enjoy their rights thanks to their good relations to the self.

But building a fair society lies also in the capacity of its people to show solidarity and grant equal opportunities to everybody. School systems can educate students in this sense, raising their capacities to cooperate and achieve social freedom, in two ways:

1. Students should be taught to stop trying to grade themselves according to standardized, stereotyped and socially constructed models that will not necessarily make them happy with what they do or have become. Trying to fit into social models that we do not feel as something we would actually aim to can cause stress and unhappiness. In the worst cases, we can even talk of completely wasted lives. Rather than teaching students to

fit into certain social models and preparing them for jobs that may even disappear in a few years, universities and schools in general should learn to recognize individuality—the distinct, unique characteristics of a person—and help students develop their personal skills in the best ways possible. Students have to be shown evidence about their uniqueness and must be encouraged to think independently, creatively and innovatively. Never

"Individualism will never change the world for the better: cooperation will."

will you find a human being that is identical to another one. Diversity is a value that is being jeopardized by schools. The capacity of enhancing the personal skills and qualities of students—together with the stimulation of their critical and creative thinking—will result in a more just society in which every individual can contribute with their unique value to the enrichment of the world with a wide range of different ideas and solutions.

2. Human beings have never been lonely universes. We do not just live with other people: we strongly need them. Recognizing each other as humans—as people living very similar experiences that go beyond all the differences—is very important if we want to make the world a better place for everyone. A person should be taught that she can realize her desires by cooperating with other human beings: by helping each other, we can all reach our goals and create a fairer society, one that is built on solidarity and cooperation rather than individualism and competition. Universities should then teach the importance of social freedom, which is realized through mutual understanding, recognition and cooperation practices (Honneth, 2015). Individualism will never change the world for the better: cooperation will. Both negative and social freedom should be realized within society.

In the light of the above, we understand how school systems can become a driver for strong cultural shift, from individualism to cooperation. A shift that could lead to a society in which human potential can be released in all dimensions and fields and never wasted. A society founded on **equity** rather than equality: equality is treating everyone the same. Equity is about recognizing the individual differences (and weaknesses) and giving everyone what they need to be successful.

To build this kind of society it is crucial to focus on **soft skills**. Hard skills have always been the backbone of education systems. Knowledge is something we should never give up: the study of the globalization processes, economy, history, philosophy, physics etc.… is what gives the history of human progress in all fields and it is also what grants us the possibility to keep progress going on.

But what about soft skills then?

Some of the main soft skills students should be encouraged to develop are:

1. Communication Skills and Critical thinking
2. Creativity
3. Environmental awareness

3. Communication Skills and Critical Thinking

Communication is at the basis of the socialization process. But not always are we able to properly communicate with other individuals: cultural barriers, prejudices, political discord are some of the reasons that can lead us to misunderstandings that may unnecessarily complicate collaboration practices and even drive us to harmful, unnecessary conflicts.

If diversity is one of human beings' main characteristics, only by embracing it will we be able to get to a deeper understanding of humankind. Even within the same culture individuals can have completely different ways of seeing life and the world. Since they first enter the school system, students should be taught to listen actively to what others have to say and to establish a constructive dialogue towards mutual understanding and shared ideas and solutions.

On this point, I think it is necessary for students to have access to **cultural anthropology** courses: anthropology is probably one of the best subjects that show us the importance of **cultural relativism**. There is no hierarchy among cultures: only when we have given up all claims to cultural superiority we will be actually able to set a good base for valid, constructive cooperation both at the national and international levels.

Critical thinking is the ability to create logical connections between different arguments and to be able to develop an independent stream of ideas (N. G. Holmes, Carl E. Wieman and D. A. Bonn, 2015). This is one of the most needed skills humans must develop; to understand why a very modern example will be helpful: **social media and fake news**.

Social media networks (from Facebook to Twitter and Instagram) represent a double edged sword: they are both the most powerful communication tool of all times and a dangerous place in which we most of the times share our sensitive personal information. Our information can be collected and used for misleading intentions: everyday **fake news** is spread in the digital world with the clear intention of affecting our capacity to make decisions according to real information proved by clear evidence. Everyday hundreds of web pages are created and shared on social media accounts with the main intent of spreading unreal stories and news in order to manipulate public opinion and affect crucial political decisions that have huge consequences for everyone (i.e. Brexit).

But this must not be a reason to criticize social media: they can also be an unprecedented tool to share information and gather collective energies to address problems in a more effective way. When used correctly, Instagram can even become an educational tool as well. Through her Instagram profile Greta Thunberg has **educated** millions of people of all ages about climate change and channeled their energies into effective action. But Greta is only one of many examples. Many people using social media to educate are **culturally different**, just as many Instragram profiles through which minorities of all kinds concentrate their struggle for recognition fighting prejudice on a daily basis (as in the case of LGBTQI+ communities).

What we need to understand is that social media networks are not intrinsically evil or good: they just represent an amazing platform that can be used for evil or good intentions.

It should be our duty to understand their functioning more and help students develop all the right capacities to approach the digital realm in the most secure and useful way possible. Someone who has been educated to think critically will always be able to tell fake news from real ones. If more people in the UK knew how to think critically, maybe they would have not believed in fake news and Brexit would have not occurred. If more Italian people knew how to think critically, figures such as Salvini would probably not get that much political support.

The **transdisciplinary approach,** thought to unify knowledge, can also contribute in giving students the necessary tools to comprehend the complexity of the world and think critically in order to find creative solutions.

Education has then once again a very central role in shaping the future of humanity: through education we can neutralize disruptive, negative political forces, understand the world and its complex phenomena and change it for the better.

4. Creativity

Schools are preparing students to live in a world that does not exist anymore. Society, economy, politics, the international system, everything has drastically changed and will keep changing at an incredible speed. The more we keep teaching students like we have been doing during the last few decades, the more humanity will not be prepared for the challenges of the future: our own existence as humankind is at risk.

Most of the school systems in the world make the same mistake: they treat students like they were all the same person. They expect every student to go through the same activities, leaving little (or no) space for the development of their individuality. As we have already addressed above in this paper, the result is a homologated world where people struggle to find their voice.

I shall stress this concept one more time: diversity can be one of humanity's strongest tools. If we try to delete such a quality—creating standardized "robots"—we will not help ourselves. Every student should be free to know themselves, their qualities, what they really want to be and to do in life. This of course does not mean that we should let every student free to do whatever they want: school systems should find a way to look in depth at a student's personality and help him make the right choice.

A great way to help students develop their individuality is by letting them be creative: creativity (especially in Italy, the country I come from) does not have much space in schools. Subjects like **art**, **music**, **sports** and **painting** are considered not as worthy or fruitful as history, philosophy, mathematics etc. This is a big mistake: through creativity, students are let free to express themselves and to get in touch with their real self. And all of us know that finding our real self is what can truly help us in the pursuit of happiness (Donna L. Miller, 2015). Creativity not only helps students (and individuals in general) to find their real self: it also helps them to be confident about themselves and their diversity. By getting to know their unique qualities and their limits, they will learn not to judge other people (or themselves) just for being different. Creativity has positive effects not only on the well-being of a person who

becomes capable of getting in touch with their real self. Creativity gets people used to thinking **innovative**, **mind blowing ideas** that can actually change the world for the better (Irina Surkova, 2012).

Nowadays the world needs creative humans, especially **creative leaders** who are able to find innovative solutions and even predict future problems and build cooperative platforms with other leaders based on mutual understanding and recognition.

"Real progress should happen inside the human being, inside his mind."

5. Environmental Awareness

Humans' activities—especially during the last few centuries—have badly affected our planet and its natural equilibrium. As demonstrated by the scientific community at large, climate change is a real threat to our survival and to that of all the species living on the planet.

Raising students' environmental awareness will eventually lead to a point in the future where leaders will be able to actually cooperate in finding solutions to this problem that is threatening us all with no absolute distinction.

But raising environmental awareness can have also an immediate result. The capitalistic market is one of the main causes of climate change. Everyday multinational firms work tirelessly to create needs for things that are not really essential to us. Our culture is mainly based on possessions: many times a human being is valued more on the basis of what he owns than for who he is. Money has become an end in itself, is not a tool anymore. The whole economic and financial system is mainly based on profit and many still believe in the narrative of continuous (economic) growth, ignoring (consciously or unconsciously) the fact that if we keep going this way we will end up blowing up together with our planet. But economy should be founded on humans' actual needs rather than mere profit. The *Homo economicus* is a "species" that will condemn us all by seeking his personal profit no matter the social and environmental consequences of his actions. Do we really need SUVs? Is owning something as a mere status symbol a behavior we can consider acceptable, especially when it has bad consequences for the environment and all of us? (Honneth, 2015).

I do not want to answer this question now. What I want to underline here is that students should be taught to give importance to the essence of a person and not to their possessions. They should become aware of the direct and indirect social and environmental consequences of their actions—as consumers, for instance. Every individual is responsible and every individual makes a much bigger difference than one may think. Educating students to respect the environment means, once again, increasing our chances to survive and to imagine and build a better world.

6. Conclusions

School systems have always been—and should remain—one of the main drivers of change. Students do not need to learn how to adapt to the system: they need to learn how to look at it with a critical mind and how to imagine better alternatives.

Education systems must guide students towards a major cultural shift, from individualism to cooperation, from consumerism to environmentalism, from egoism to solidarity.

Our reality is multidimensional and easy answers have never existed. In the future, human beings will have to be able to dive into this complexity with no fear, always keeping a positive mind that is projected towards cooperation and new possibilities.

Finding the answers and the solutions to problems has never been easy and humankind has always done its best to make the most out of its understanding of reality.

But today, we must understand reality better. It is a matter of survival. It is a matter of creating a more just world, one in which every human being is granted access to happiness. Progress must not stop, but we must change our understanding of it: not only economical, not only technological. Real progress should happen inside the human being, inside his mind: that is where we create our own world. That is the very starting point from which we can achieve all these results.

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Steering Our Powers of Persuasion Toward Our Human Future

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Abstract

Traces human societies' organizing and leadership modalities, from early nomadic tribes to settled agricultural villages, towns, companies and today's mega-cities, multi-national alliances and the United Nations (UN). Scaling these human organizational processes involved leadership, persuasion, coercion and violence. Initially these processes were steered by warlords, conquerors, religious authorities, secular autocrats, monarchs and emperors. Leadership styles evolved from these earlier often violent means toward loyalty, ideologies, myth-making, communication skills harnessing technological innovation: from printing to today's radio, television, social media, advertising, marketing, computers, big data, algorithmic decision-making and the rise of surveillance in both public spheres and monetizing personal information by private, for-profit corporations. Economic theories see money and prices as behavioral incentives, assuming their social benefits expanding into unpaid, voluntary social communities, as in Arrow-Debreu's model of "market completion", with progress measured in money-based macro-statistics, such as GDP. These market models are too narrow, leading to ecosystem and societal destruction. Expanding economic models and metrics include scientific understanding of dependence of all life on Earth on the sun. New chaos theories and mathematical models expanding our awareness map how human organizations are evolving through global interconnectedness. Diagrams of "Three Zones of Transition" and "Two Major Types of Cybernetic Systems" expand human cognition to help navigate the existential threats to our future survival, based on new ethics, beliefs and behavior, including the UN's Sustainable Development Goals (SDGs) and the traditional Golden Rule..

The 18th century enclosure of our planet's common natural resources that fueled the rise of capitalism began in Britain and was described by Karl Polanyi in the *Great Transformation* (1946). I explored in depth all the issues of human development and our positive opportunities for more sustainable, equitable, cooperative development in *Building A Win-Win-World: Life Beyond Global Economic Warfare* (1996, now an e-book). Proliferating global crises have brought human societies to accept the necessities of transitioning to new forms of culture and behavior if we are to survive, envisioned as Three Zones of Transition. (See Fig.1). A group of international experts report in *Science Daily* that "Pervasive human-driven decline of life on Earth points to the need for transformative change".*

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* See https://www.sciencedaily.com/releases/2019/12/191212142628.htm

Human societies have always involved the power games of various groups and individuals able to capture resources formerly used freely in common by all, as further documented in many books I cited, as well as Acemoglu and Robinson in "Why Nations Fail." (2013)[*] Historically, such power and domination have involved violence, conquering of land and subjugation of others by invading hoards, capture, enslavement, torture and murder. Such early power-wielding patriarchal domination has engendered eventual backlashes against tyrants and dominant elites have been overthrown in revolutions.

Fig 1: Three Zones of Transition
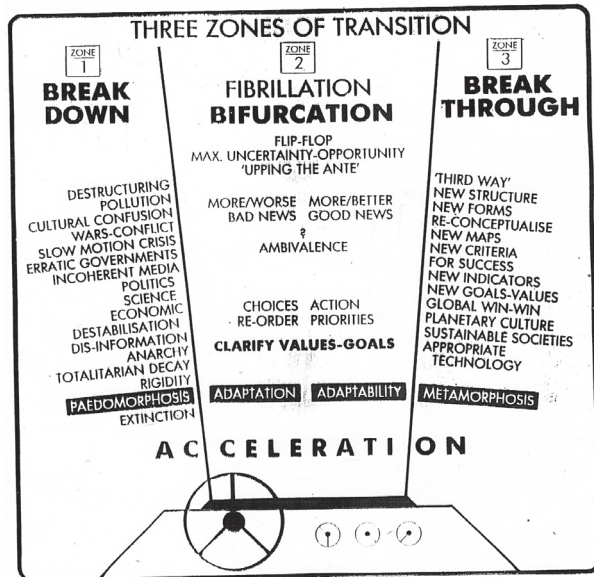
> *"Powers of persuasion evolved with the invention of printing and ever wider reaches of communications technologies, from books, pamphlets, newspapers to radio, television, advertising, the internet, satellites, Wi-Fi and today's social media."*

As humanity's technological prowess evolved along with the physically destructive power of weapons, ever more sophisticated psychological means of subterfuge emerged beyond instilling fear and terror. Powers of persuasion evolved with the invention of printing and ever wider reaches of communications technologies, from books, pamphlets, newspapers to radio, television, advertising, the internet, satellites, Wi-Fi and today's social media. Control spread via attention economies, mass media and influence industries based on psychological methods of behavior modification, as described in "Mediocracies And Their Attention Economies".[†] I began opining in the 1990s about the need for global governance in the emerging Information Age. I became worried that the infant internet was already being overtaken by commercial values and Silicon Valley's focus on Wall Street's short-term interest in greed, making money out of money and maximizing shareholders' returns. All this consumerism catering to advertising-stoked demand for ever more material

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* See http://www.ethicalmarkets.com/book-review-why-nations-fail/

† See http://www.ethicalmarkets.com/mediocracies-and-their-attention-economism/

goods and desires, was leading to a dystopian "Social Cost Market" of companies trying to clean up the mess. (See Fig. 2). As markets continually evolved, they became dominant. Economic textbooks taught the Arrow-Debreu model assuming progress via "market completion" (i.e. expanding markets and prices taking over traditional social norms of reciprocity, barter, unpaid mutual aid and volunteerism I describe as the "love economy"). In the USA markets spread, and exacerbated hyper-individualism where families and communities began to dissolve. Economic textbooks see markets as steered by individuals with money used to intermediate ever more individual, personal and community relationships. This focus on money-mediated individualism helped create today's craving for community and clans. This in turn, potentiated the effects of social media in

> *"All currencies are physical or virtual tokens of trust, social protocols on various platforms with network effects, where their prices reflect their users' trust."*

fostering networks of "likes" and false communities based on shared beliefs and competing conspiracy theories. Historian Yuval Harari in "Homo deus" also describes human skills in creating large organizations, religions and nations as based on story-telling and myth-creation.*

Fig 2: Social Cost Markets
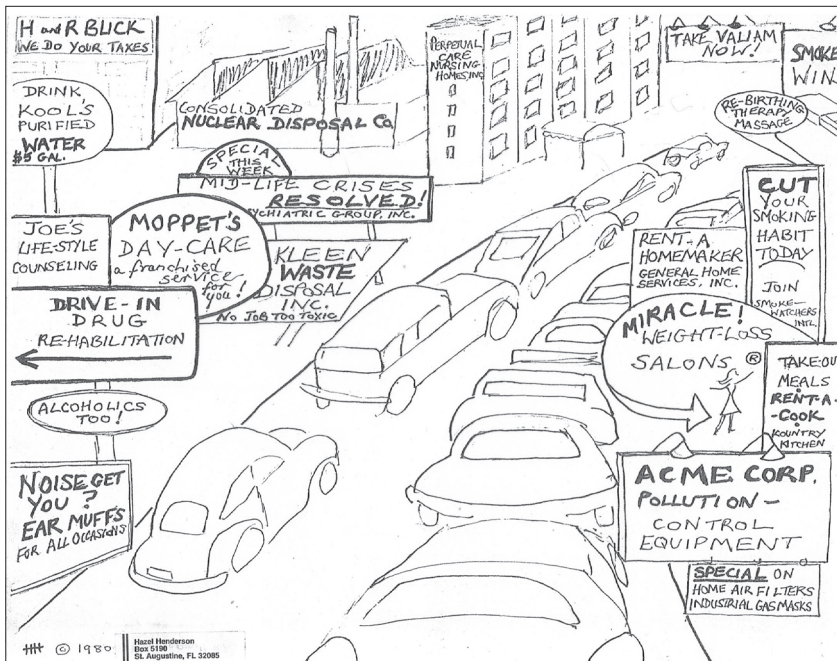
Power games shifted from realms of physical domination to propaganda, ideologies, censorship, mind-bending and control of human cognitive functions. The rise of totalitarianism was chillingly described by George Orwell in "1984", (1949) and "Animal Farm", (1945), and by Hannah Arendt in "The Banality of Evil", (1963) and others. I documented how markets expanded from mutual aid, reciprocity and barter in village squares to token and money transactions and ever-larger companies, while financial capital accumulated. Money is not wealth. All currencies are physical or virtual tokens of trust, social protocols on various platforms with network effects, where their prices reflect their users' trust. Surplus finance capitalism exploded national boundaries and grew by enclosing commonly-used planetary resources for mining, manufacturing and energy. Trading expanded into global stock markets and daily electronic currency trading I termed "the global casino" which reformers in the European Union and even the USA advocate curbing with a 1% or smaller financial transactions tax (FTT). Meanwhile, psychology and its weaponizing of persuasion tactics spread to international diplomacy, as described by Turkish scientists in "Political Psychology: Contributions to the Discipline of International Relations", World Affairs, Vol. 23, Number 3, July-Sept 2019, Delhi, India. Similar examples of how domestic populations are surveilled and persuaded are documented by political scientists in "The Digital Dictators", Foreign Affairs, March-April 2020.

"Marketing courses in business schools and colleges are now forced to teach courses on "Reputation Risk" to include how bad corporate behavior can rapidly destroy brands on social media."

Today's monetized GDP-driven economic globalization grew based largely on unacknowledged national taxpayers' investments in undersea communications cables, satellites, transport for goods and people in shipping, airlines—all trading on the internet. GDP lacks an asset account valuing taxpayer investments in infrastructure—recording these only as debt. While current debt burdens in many countries are unsustainable, much is leveraged finance, corporate and consumer debt, while public debt continues to be overstated.

Meanwhile, advertising and brands proliferated, using many forms of mind-bending for selling of products, as described by Vance Packard in "The Hidden Persuaders" (1957), and contemporary critics within this marketing industry, including Phillip Kotler and Christian Sarkar in "Brand Activism" (2019).* Marketing courses in business schools and colleges are now forced to teach courses on "Reputation Risk" to include how bad corporate behavior can rapidly destroy brands on social media. Social and regulatory pressures can effectively change corporate behavior, provided they experience sustained efforts by protest movements. (See Fig. 3).

Today's forms of persuasion go beyond propaganda, brain-washing and widened social monetization. They are again being extended back into the physical world. No violence is

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* See http://www.ethicalmarkets.com/book-review-by-hazel-henderson-brand-activism-new-critics-of-finance/

needed. Persuasion is now concealed in millions of devices, sensors, wearable paraphernalia: iPhones, watches, fitness monitors, implanted chips, often installed in jewelry, clothing, as I describe in the "Idiocy of Things" (2016). Prosthetic devices and sensors are often usefully prescribed and installed. Others are surreptitiously operating as well, in our bodies, in our digital assistants, "smart" homes, appliances and vehicles in the so-called Internet of Things. All these digitally powered forms of human behavior-control are advertised and sold, even as gifts to unsuspecting children. Silicon Valley executives withhold from their own children these devices they sell to others, and many, including Twitter CEO Jack Dorsey, practice fasting from social media, devices and even food.[*] The devices are offered "free" or "for your greater convenience" by the new generation of profitable, monopolistic social media companies displacing earlier industries. Often such apps and devices to "assist" us cause de-skilling, as has occurred in automated airplane cockpits. Investigations found that pilots were unable to over-ride malfunctions of sensors or in computer code—leading to several well-documented crashes. The promotion of faster 5G data transmission so viewers can download video faster, also opens new opportunities for hackers to invade homes, cars and control even more aspects of our lives. The recent laws in Europe and the USA to protect personal data and privacy need to be based securely on centuries of legal doctrine and precedent, buttressed by for example, The Magna Carta since 1215, and its rule of habeas corpus—updated to include ownership of our minds and information: an information habeas corpus.[†]

Fig 3: Typical Curve of Corporate Response to Global Issues
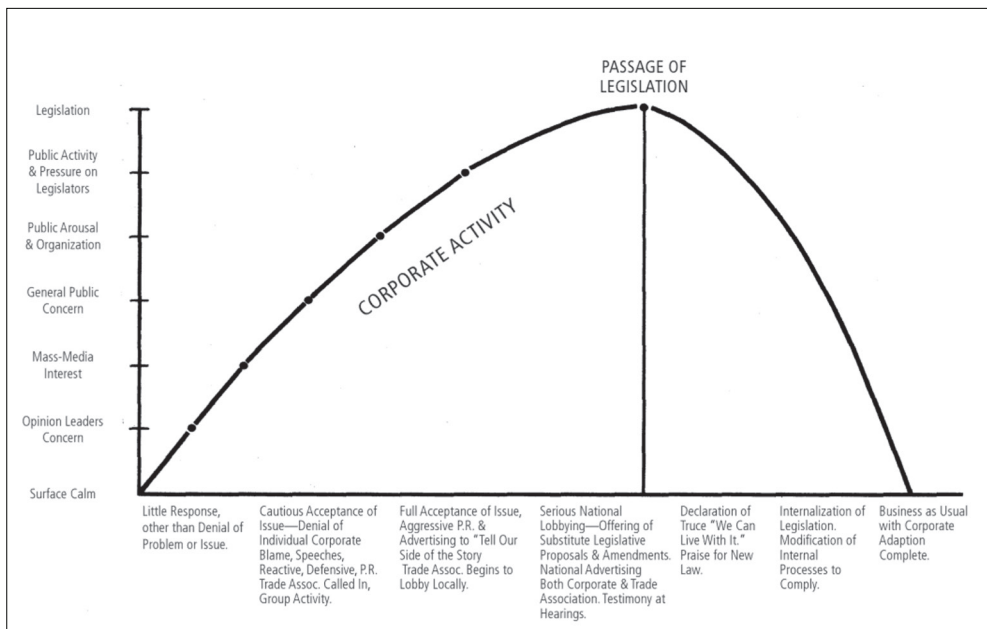
Clearly, it is more important to train humans before we train machines, since there is nothing artificial about so-called "artificial intelligence" which is more accurately described as "human-trained machine-learning".[*] These trained computer programs encode whatever the biases and misinformation of their trainers, into the algorithms now controlling decisions that affect our lives, health and finances, as mathematician Cathy O'Neal describes in "Weapons of Math Destruction" (2018).[†] Britain's data watchdog, the Information Commissioner's Office (ICO) now has rules to require unpacking algorithms and explaining the assumptions they use to make decisions and to justify these results. Failure to be accountable results in large fines.[‡] We might remember the sensible advice of a 1965 NASA report: "Man is the lowest-cost, 150 pound, non-linear, all-purpose computer system which can be mass-produced with unskilled labor." [§]

Today's Information Age is informally governed by computer code, 24/7 electronic monitoring, with algorithms engineering our consent by attraction. These psychological methods are taught at Stanford University's Persuasive Technology Lab, MIT, Harvard, the University of Chicago and other colleges, including nudging and psychological steering of our engagement and cognitive biases as well as in today's so-called "behavioral economics", as described by Shoshana Zuboff in, "The Age of Surveillance Capitalism", (2019) and Rana Foroohar in "Don't Be Evil, How Big Tech Betrayed Its Founding Principles-And All of Us." (2019)[¶] Our personal information is treated as an economic commodity to be monetized and traded, rather than essential in mediating our social relationships and trust, as discussed in "Privacy, People and Markets" (Volume 33, Issue 4, Winter 2019, p. 499-509).[**] Efforts by computer scientists are belatedly trying to redesign all these socially-harmful decision-making algorithms: described in "The Ethical Algorithm" by Michael Kearns and Aaron Roth (2020) and "Human Compatible" by Stuart Russell (2019).

Clearly, those practicing psychology also need to demand higher ethical codes of conduct for this profession. For example, a 2019 study in *Nature* questions the thousands of experiments on people to ascertain their suggestibility to various words and other cues in a field so-called "social behavior priming".[††] Results are now suspect and rarely replicated. All this apparent waste of psychologists' time appears to be merely for the purposes of selling and marketing.[‡‡] Psychologists can learn from marketing guru, Philip Kotler in his "Advancing the Common Good" (2019). Similarly, economists and financiers can join the many signers of our 2010 statement, "Transforming Finance".[§§]

Today's new enclosures, of our minds and personal autonomy are the new business models, following the pattern of the industrial revolution's colonization of every part of

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* See Let's Train Humans Before We Train Machines, 2018 http://www.ethicalmarkets.com/lets-train-humans-first-before-we-train-machines-2/

† See http://www.ethicalmarkets.com/book-review-weapons-of-math-destruction-by-cathy-oneil/

‡ See New Scientist, Dec. 7, 2019

§ See Foreign Affairs, July-August, 2016.

¶ See http://www.ethicalmarkets.com/mapping-the-global-digital-revolution-book-review-by-hazel-henderson/ and http://www.ethicalmarkets.com/mapping-the-global-digital-revolution-book-review-by-hazel-henderson/

** See https://www.cambridge.org/core/journals/ethics-and-international-affairs/article/privacy-people-and-markets/E9A907AF7D18775A3AE339DDB4120C89

†† See https://www.nature.com/articles/d41586-019-03755-2

‡‡ See www.nature.com "What's next for Psychology's embattled field of social priming"

§§ See http://www.ethicalmarkets.com/transforming-finance-groups-call-recognizes-finance-as-a-global-commons/

planet Earth's land and oceans. Giant electronic platform-based companies are now enclosing human choices and democratic freedoms of agency and volition in ever more subtle means of persuasion, influence and control. For example, London-based Privacy International looked at 136 websites offering information on mental health conditions and found that 76% of them contained 3rd party marketing trackers.[*] Many researchers, including NYU Stern School professor Jonathan Haidt examine how social media—driven by advertising and selling users' personal data—have created polarization by design as "outrage machines".[†]

Law professors Anne Toomey McKenna, Amy C. Gaudion and Jenni L Evans at Penn State Dickinson Law, address the problems of lawless use of fitness apps and how the information they gather, using satellite-based GPS threatened national security by creating a global "heatmap" on the social media site Strava. Their landmark paper, "The Role of Satellites and Smart Devices: Data Surprises and Security, Privacy and Regulatory Challenges" (2019) covers many recommendations on the urgent need to legislate such uses of commercial devices and regulate cyberspace with international security treaties. The Atlantic Council's Cyber Statecraft Initiative explores the issues.[‡] A new battle in orbit is over global positioning, between the US GPS system, now outflanked by Russia's GLONASS, the EU's Galileo and China's BeiDou.[§] Growing fears of warfare in space are leading to a new kind of arms race between the USA and China, now competing to launch the soonest and largest number of satellites, as reported in The Economist, Dec. 7, 2019, pp. 75. Efforts to curb additional multiple launches by SpaceX, OneWeb and other companies are now arising, especially by astronomical scientists.[¶]

In the 1960s, the advertising industry demonstrated to reporters in New York City the power of subliminal advertising and persuasion. In a cinema setting, the gathered journalists were shown a film, the contents of which appeared as an entertaining story. Hidden interspersed sequences beneath cognitive detection were ads for a familiar soft drink. At the end of the film, as the journalist filed out, they encountered racks of bottles of this soft drink offered freely. Even journalists who disliked this soft drink reported that they were shocked to find themselves drinking anyway! This demonstration of the power of subliminal advertising led to it being banned. Today, children are put through magnetic resonance (MRI) machines by marketers to see which candy products light up which parts of their brains. The EthicMark® Awards for advertising and communications uplifting the human spirit and society raises an ethical bar, rejecting such uses and other kinds of psychological manipulation. The decades of annual winners, mostly from non-OECD countries, demonstrate how advertising can be used to inform people of wiser choices and the global environmental concerns over careless consumerism.[**]

The new enclosures are not only of our minds, imagination, and willpower but of cyberspace—alongside the conquest of Earth's outer space by satellites and the resulting

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[*] See New Scientist, Dec, 7, 2019
[†] The Coddling of the American Mind, G. Lukinoff and J. Haidt, 2019
[‡] See www.atlanticcouncil.org
[§] See New Scientist, Feb. 15,2020.
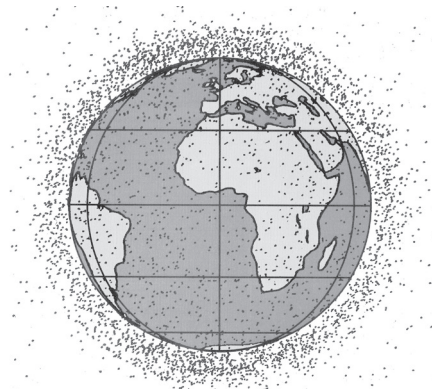[¶] See New Scientist, Feb. 22, 2020
[**] See www.ethicmark.org

"prison" of increasing space-junk, (Henderson, 1991,1995). (See Fig. 4). By what kind of fanciful illusion of human mental abstraction is it deemed possible to capture and enclose the limitlessness of cyberspace? The lawless developments of cybercrime and info wars described in "The Darkening Web" (Klimburg, 2018), attest to the need for ethical norms and treaties.[*] Proliferating malware, such as Stuxnet and the new

Fig 4: Satellites, Boosters and Debris

digital weapons described in "Sandworm" (Greenberg, 2019) can now destroy physical equipment and infrastructure, as in Russia's second take down of the Ukrainian electricity grid in 2016, threating millions of civilians. Ransomware and spyware that snoops on any smartphone are sold by several companies in booming new businesses, as reported in The Economist, on Dec. 14, 2019. The emerging global data economy, its promises and pitfalls, governance and structures in the public sectors and private monopolies are reviewed in a special report: "Mirror Worlds", of the data economy, The Economist, Feb. 22, 2020.[†]

The internet, developed by the US military agency DARPA, created the first "real estate" boom designed in cyberspace, with the apportioning of imaginary code domains. These code domains were actualized legislatively by the US Congress through empowering of the early volunteer coders who created ICANN, the Internet Company for Assigning Names and Numbers. Today, ICANN has ballooned into a powerful bureaucracy, spawning millions of profitable companies, powerful government agencies and charitable organizations. In typical amplification allowed by lack of oversight, ICANN itself now needs watchdogs, such as Jacob Malthouse, who is exposing power grabs and the recent privatization allowed by ICANN of the .org domain, used by non-profits and charities, to be sold to a private equity firm, "The Nonprofit Community is about to lose $90+ Million Dollars a Year", (2019).[‡] Today, large corporations overseeing registration and sale of domain names are cornering the internet market for top-level .com domain names, driving up prices to multi-million dollar levels.

The history of how human processes in societies evolve and diverge into clans, movements, factions and competing markets has been a subject of study, for centuries, as described in Politics of Connectivity, 2019.[§] The founders of the USA and its Constitution focused on these tendencies for evolving competing clans and warned that "factions" could divide and polarize citizens within various political parties. Systems theorists describe such

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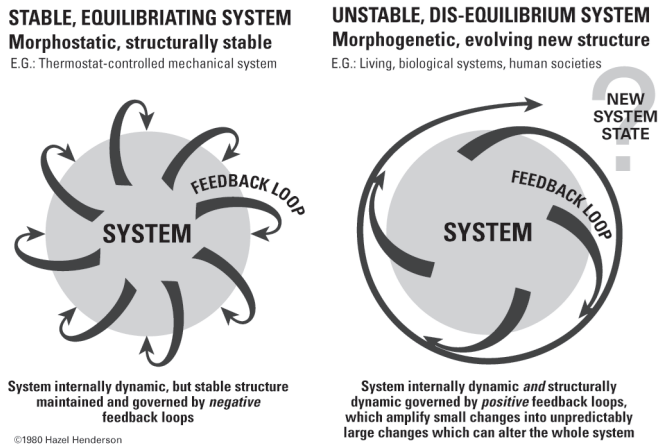* See http://www.ethicalmarkets.com/book-reviews-the-darkening-web-the-war-for-cyberspace-and-the-plot-to-hack-america/
† See https://www.economist.com/special-report/2020/02/20/a-deluge-of-data-is-giving-rise-to-a-new-economy
‡ See https://medium.com/savedotorg/the-progressive-movement-just-waved-goodbye-to-180-million-dollars-a-year-b497b4153c07
§ See http://www.ethicalmarkets.com/the-politics-of-connectivity-by-hazel-henderson/

social, cultural and material dynamics, as non-linear change processes in chaos theory models of deviation-amplifying systems (as described in "Mapping the Global Transition to the Solar Age: From Economism to Earth Systems Science", 2014).[*] These computer models show how small initial conditions can amplify unexpectedly, bifurcating and spilling into new domains through feedback and the power of negative and positive "attractors". (See Fig. 5).

Fig 5: Two Major Types of Cybernetic Systems

STABLE, EQUILIBRIATING SYSTEM
Morphostatic, structurally stable
E.G.: Thermostat-controlled mechanical system

UNSTABLE, DIS-EQUILIBRIUM SYSTEM
Morphogenetic, evolving new structure
E.G.: Living, biological systems, human societies

NEW SYSTEM STATE ?

FEEDBACK LOOP

SYSTEM

FEEDBACK LOOP

SYSTEM

System internally dynamic, but stable structure maintained and governed by *negative* feedback loops

©1980 Hazel Henderson

System internally dynamic *and* structurally dynamic governed by *positive* feedback loops, which amplify small changes into unpredictably large changes which can alter the whole system

Today we see these system-level uncertainty dynamics operating in politics, social media, cyber domains, global markets and in the feedback effects now observed by the latest IPCC Report at COP 25 in Madrid, 2019, as accelerating global climate change.[†] Chaos models also clearly describe the unexpectedly rapid shifts to renewably-based energy, materials and the circular economy, as tracked annually in Ethical Markets' Green Transition Scoreboard (GTS)® reports from 2009-2020 and forthcoming textbook.[‡]

Traditional models of slower, orderly linear-change rates are based on stable equilibrium systems of earlier times. Today, our evolving technologies and markets have created interlinked connections, transportation, accelerating global connectivity now driving disequilibriating changes, which are now disrupting all older industries, societies and ecosystems. These processes were described by Alvin and Heidi Toffler in "Future Shock" (1970) and its 50th anniversary "AfterShock" (2020).[§] These chaos models also show how most human social groups, policies and goals tend to "over-shoot" into runaway systems, such as today's enormous growth of Silicon Valley's social media monopolies, which even their young founders admit they cannot understand or control. We see similar massive

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[*] See http://4a5qvh23tbek30e0mg42uq87.wpengine.netdna-cdn.com/wp-content/uploads/2017/02/mapping-global-transition-to-Solar-Age-we-download.docx.pdf

[†] See https://www.ipcc.ch/sr15/

[‡] See http://www.ethicalmarkets.com/gts-reports-and-press-releases/

[§] See https://www.amazon.com/gp/product/0999736442/ref=dbs_a_def_rwt_bibl_vppi_i1

burgeoning of the human population, through medical achievements in life-extension along with continued domination of women and lack of family-planning services. The 21st century is now recognized as the Anthropocene Age, as the human species now dominates—colonizing all regions of planet Earth, changing the climate with emissions of CO_2 and other pollutants into the atmosphere.

As humans, we face the biggest challenge ever to our own survival, and our best hope is our demonstrated ability to expand our own cognition into full planetary awareness. Today, we are forced to realistically learn how our planet functions in relation to our mother star, the Sun. This deeper scientific knowledge may enable us to map our options as we accept our fundamental interdependence on each other and all species in Earth's fragile biosphere. This deeply existential, moral crisis can and must lead us to redesign all our technologies, infrastructure, politics, culture and societies toward mutual survival and our shared common future. These epochal changes are beginning for example, as we gradually learn to shift beyond steering our societies using such flawed, money-based metrics as GDP (incentivizing our 7 deadly sins) to the 17 Sustainable Development Goals (SDGs), ratified by all members of the United Nations in 2015, which systemically embrace our broader values and traditional human ethics of the Golden Rule.

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Global Leadership in the 21ˢᵗ Century:
A "Micro" Perspective

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Abstract

The main goal of the present paper is to make a suggestion about global leadership in the 21ˢᵗ century from a perspective somewhat removed from the most (and justly) dominant one. Great powers, international institutions, and grand strategies appropriately get the most attention. It is to them that we look to create the peace, prosperity and justice with which we are all concerned. There is another perspective that is important, however, a "micro" perspective, one that concentrates on small things—like grains of sand that can freeze the gears of the great engines of progress.

"The whole of what human beings do with and to one another and to the world around them everyday—is visibly the primary agency of sustainability. And a review of the Agenda and the Goals quickly makes clear that such agency and such a culture cannot arise fundamentally from coercion, for the spirit of both the Agenda and the Goals is one of empowerment."

The suggestion is this: the UN Agenda 2030 and its Sustainable Development Goals, both expressions of a decidedly "macro" perspective outlining central challenges of the 21ˢᵗ century, are ultimately dependent on what is commonly called *the grassroots.* Global sustainability will require a global culture of sustainability because the great ensemble of regular human activity—the whole of what human beings do with and to one another and to the world around them everyday—is visibly the primary agency of sustainability. And a review of the Agenda and the Goals quickly makes clear that such agency and such a culture cannot arise fundamentally from coercion, for the spirit of both the Agenda and the Goals is one of empowerment. Sustainability without grassroots "buy-in" and engagement is an absurdity.

It should be quickly added that the empowerment sought is *for* something: responsibility. The Agenda and Goals aim to empower global humanity to act responsibly, and responsibility implies both objectives and discipline. The discipline envisioned, however, is ultimately *self-discipline.* The Agenda's architects were wise in that design, if only because little in our

experience suggests that seven, or soon ten, billion people can be coerced into consistently doing something they do not want to do. But everyone who takes the Agenda and Goals seriously knows it was wise, as well, because they are each the expression of a deeply humane spirit and project a deeply humane future. Genuine humanity cannot be coerced.

Humane aspirations and all too human observations both suggest the need for *self*-discipline, which in practice amounts to *active engagement*. So it is necessary to ask how that engagement could be brought into being.

The idea of "grassroots" is preliminarily instructive. The *grass* is anchored and nourished by the *root* of which it is an integral extension, and they both emerge from a *seed*, which blooms into a healthy plant under the right conditions. We are first asking, then, *What is the seed*? and *What are the conditions?* of the healthy integrated whole, *grassroots*—with *healthy* meaning active engagement in sustainability, or more fully, sustainable *development*.

Juxtaposing the integrated metaphorical integrity of both seed and plant with the duality of sustainable development raises an old and large question. Commonly, *sustainability* is understood as a standard to be applied to *development*: development must be *made* sustainable. That formula is weighted, however, with the troubling implication that the source or foundation of the standard is distinct from the force to which it is applied. If so, a *culture of sustainability* in the sense meaningful in the modern world (a world committed to *development*) will be essentially a dyad, and to that extent unstable and at risk of collapsing into a unity defined by the stronger of the two forces. In textbooks, enlightened self-interest might be theorized to be sufficient to stabilize the whole. In real life, people more often vote for their passions than their interests, and certainly more often than their enlightened interests. The meaning of *health* within our sought-after conception of *grassroots* (and by implication *leadership*) evidently requires a mode of activity or being in which *development* and *sustainability* are so integral to one another as to be indistinguishable. They are one.

There are likely many seeds and many effective conditions. Here we are concerned with just a few of each as they are illustrated by some brief but relevant histories, and with conclusions that can be stated briefly by highlighting some links between those histories and what lies ahead in the 21st century.

Some facts and events related to the American civil rights movement are pertinent. The United States harbored the enslavement of Africans and their descendants for over 200 years, as is generally known. Slavery was brought to a formal end by the American Civil War, but after the assasination of President Lincoln and a relatively brief period of "reconstruction," a system of apartheid was established to return African Americans effectively to subjugation, exploitation and abuse. Estimates vary, but as a mark of the spirit of that system, 4000 to 5000 African Americans were "lynched" between the 1880s and the 1950s, and many uncounted more were murdered, maimed, or "disappeared" (to borrow a term from another period).

One reason to mention these things is to highlight how far people can go, and might think they need to go, to coerce a culture into being and attempt to sustain it. Another is to prepare the ground for a second observation: while the rise of the civil rights movement and much

else in African American history demonstrates the ultimate futility of such a strategy, it also demonstrates that a terrorist-agrarian society can be very effective at breaking or suppressing the active engagement of people in their own development. It would need to be considered how far a technological-industrial society can do the same. In any event, African Americans had much to overcome, both in the larger society and within.

The word *within* is used advisedly because one of the greatest (if not so widely known) figures of the American civil rights movement was an African American woman named Septima Clark, and Ms. Clark entitled her second autobiography *Ready from Within.* Ms. Clark identified a great challenge of leadership, including I think leadership of global society in the 21ˢᵗ century: how to cultivate that *readiness from within* without which African American voting rights then, and grassroots-dependent sustainable development now, are wistful aspirations. And she discovered that challenge, that great question, when looking out at the future and fate of people who by her time had experienced despotism and inhumanity for the better part of over three centuries, and of whom few expected much.

Septima Clark was first a teacher in Charleston, South Carolina, public schools. She lost her job for participating in civil rights activities. In about 1954 she took a position with the Highlander Folk School in Tennessee (more later) and her work took her to Johns Island, South Carolina, one of the Sea Islands not far from Charleston, working with another extraordinary person, an African American man named Esau Jenkins.

The Sea Islands at that time were still pocked with and surrounded by swamps, alligators, mosquitoes, disease and the like, making them inhospitable to the land and slave owners. So the owners tended to live further inland—in Charleston, for instance, which was the biggest slave market in the United States—and leave the slaves to tend to the crops on the islands. The Africans and their descendants interacted less with the whites and developed a distinctive culture, creole language, music and the like, which was much closer to the African original than in many other locations in America. To some degree, that culture continues to this day.

The former slaves and their descendants on Johns Island and the other Sea Islands were poor and knew little of the outer world. Esau Jenkins, who was from Johns Island, was industrious in finding ways to help others on the island advance. And one of his projects involved teaming up with Septima Clark of the Highlander Folk School to create what were soon called "citizenship schools" in which illiterate African Americans learned to read in preparation for taking voter registration literacy tests that were designed specifically to keep African Americans from voting.

Many of those who would become participants in the Johns Island citizenship school were understandably frightened at the idea. They could only expect abuse and worse if the white community learned what they were doing. So they built a cinder block building in the front room of which there was a little country store, and they held night classes in the somewhat concealed back room.

Participants' success at the Johns Island citizenship school became the seed and model for a voter literacy program across the American south. That citizenship school program was

run by Andrew Young, supported by Septima Clark, beginning in 1961, under the auspices of the Southern Christian Leadership Conference. The same Andrew Young who worked closely with Martin Luther King, Jr., was later elected mayor of Atlanta, Georgia, and was appointed US Ambassador to the United Nations by President Carter. The schools played a leading role in creating the grassroots foundation for the voting rights movement, the active engagement of African Americans from Johns Island to the Mississippi Delta in the effort to secure African Americans the right to vote, requiring committed engagement over a protracted period and at substantial risk.

"Rosa Parks set in motion events that culminated in a year-long bus boycott by the Montgomery African American community, a seminal event in the civil rights movement that would transform American life."

It is important to highlight several aspects of Ms. Clark's approach to teaching in the Johns Island citizenship school. Although she was herself a teacher, she found someone else to do the teaching of adults—her niece, Bernice Robinson. Ms. Robinson was a beautician, and as such had something of a special standing in the community. She also disclaimed being a teacher. Her primary qualifications, it was said, were that she knew how to listen and respected adults who wanted to vote. Bernice Robinson began her first adult education class by saying "I am not a teacher, we are here to learn together. You are going to teach me as much as I'm going to teach you." Her reading materials were the United Nations Declaration of Human Rights and the South Carolina state constitution. She discarded children's reading material as too juvenile for the adult students. Together they developed the curriculum day by day—writing letters, filling out money orders, making up stories about the vegetables they grew, and the like. And her students learned how to read well enough to pass the voter registration tests.

In brief, Ms. Clark set in motion an educational experience that took her students seriously and facilitated their becoming active learners—mainly to teach themselves—something that they wanted to learn for their own reasons and for which they decided to attend the class once intelligent material and security provisions had been provided. She and Esau Jenkins created the conditions amidst the people she wished to serve that would facilitate their activation in a manner that did not simply deliver information, but engaged their spirit, interests, judgment, and agency in a cause she held in common with them.

The full story of the spread of the program across the American South is more complicated than can be outlined here, but the decisive feature for present purposes is that she and her Highlander colleagues relocated the program (and herself) to an organization better capable of facilitating its spread. She was not building, sustaining, serving or captured by an institution. She was not building a resume, LinkedIn page, career or public profile. She was working for a purpose of immense importance and the institutional and occupational context and her

choice of associates were instrumental to that work. Like those whom she served, she was *ready from within*.

The Highlander Folk School was established in 1932 and developed by a white man named Myles Horton who was from a very poor family that lived in the southern Appalachian Mountains. Mr. Horton knew poverty and knew the poverty of others. He was angry about it and the system that allowed, created and enforced that poverty. He developed the conviction that education of a certain sort could be an important instrument in upending that system[*] and spent quite some time exploring what others had done and what kind of education might work.

Mr. Horton eventually wrangled a location, a farmhouse in the Tennessee countryside and, together with colleagues Don West and James Dombrowski,[†] established Highlander— essentially by hanging out its shingle and living off of the most modest of material provisions.

In its early days Highlander was especially concerned with the union movement in the American South. In the course of his work, Mr. Horton occasionally got involved directly in organizing within the union movement. He found he had a special gift for giving speeches, which at one point he had to do regularly. Eventually, however, Horton stepped back from that role, judging that while his words set people in motion, they did not facilitate self-motion. His impact was really limited to the immediate situation and better served his self-regard than the cause for which he was working. Someone might need to give speeches, but he knew how to do more. He returned to education.

The education that he eventually developed at Highlander (which was shut down by the authorities for a time and had to be reopened at another location and with a modified name) involved mainly assembling groups of activists and aspiring activists to discuss their challenges in advancing their causes. Highlander provided a place for collective study and exploration and ran it in a manner consistent with their overall convictions. In an age of apartheid and "Jim Crow," African Americans and whites ate together, met together, and learned together and from one another in the segregated state of Tennessee. Highlander also organized expertise as requested by the activist-participants or as seemed useful given the challenges they were discussing. But Highlander did not instruct, was not a think tank, and did not stand on its expertise. Horton tended to shy away from requests for advice, in part because what he wanted the participants to learn was how to solve problems for themselves.

Horton also included music and other performing arts in the activities of the school. His wife directed the music program until her accidental death. Afterward, it was directed by another individual of immense historical significance whose name, like that of so many at Highlander, seems known only within some small, scattered circles, Guy Carawan. The song

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[*] Highlander was a controversial organization for many years, in part for its alleged affiliation with the communist movement in the United States. The philosophical orientation of Horton and others associated with Highlander is an important question but does not bear very directly on the question of its strategy for cultivating grassroots movements. There are indications that key people at the School differed in various ways on fundamentals but largely agreed on grassroots strategy, which is our sole concern.

[†] Don West left Highlander for personal reasons and amid some uncertainty about where it would be located after the first year. He established a school in Georgia, and in 1967 established the Appalachian South Folklife Center in Pipestem, West Virginia. James A. Dobrowski stayed at Highlander as Executive Secretary for several years before taking a position at the Southern Conference for Human Welfare in 1938 and in 1948 as Executive Director of the Southern Conference Education Fund.

We Shall Overcome became, one could fairly say, the anthem of the American civil rights movement. It was sung at the March on Washington and in jail cells in small towns from the Atlantic Coast to the Mississippi River and was a galvanizing force. Horton's wife, Zilphia, first found the song at some labor movement events in Charleston in 1945. She brought it back to Highlander where it was polished up over the years into the song we now know. Martin Luther King, Jr. attended some sessions at Highlander in 1957, where he heard the song, and driving to his next event he commented, "*We Shall Overcome*—that song really sticks with you, doesn't it." Pete Seeger helped polish the song a bit and took it to a wider audience. Guy Carawan, as Highlander's music director, polished as well and spread it (and countless others) through the civil rights movement.

At the end of Highlander sessions, Horton often asked participants what they intended to do at home with what they had learned. One participant responded she did not know—she needed to think more about that. Not long after, she refused to give up her seat and move to the back of a bus in Montgomery, Alabama. By that action in 1955, which got her arrested and could have gotten her killed, Rosa Parks set in motion events that culminated in a year-long bus boycott by the Montgomery African American community, a seminal event in the civil rights movement that would transform American life.

To summarize, *conditions* for cultivating *grassroots* in the view here outlined include:

- Having a place—a base-camp—but mainly for creating ideas and practices to be taken into the field and among the people ultimately being served.

- Providing as much safety as possible, which may involve a certain amount of stealth.

- Earnest respect for participants—their experience, knowledge, desire to learn, capacity to discover collaboratively, and ultimately for their cause, their goals.

- Appropriate materials and specialized expertise, *as needed* .

- Modest teachers who do not "teach" so much as facilitate learning and learn themselves.

- Teachers who are flexible, creative, and can keep "their eyes on the prize."

- Low "overhead".

- The wise use of music and other performing arts.

The *seeds* of such a grassroots are the individuals who, if given the right conditions, will bloom. They are angry, impassioned, alert to dangers, courageous, thoughtful, strategic, practical and determined. Given even limited opportunity, they act. They do not need the limelight and even see its risks and pitfalls. They mean to get something done. One of the best accounts of Highlander was written by an individual who was at one or another time "a newspaperman, truck driver, one-time college drop-out, cobbler, and farm laborer." He entitled his book *Unearthing Seeds of Fire.*

The world is today facing multiple crises simultaneously, including crises of both sustainability and development. Many causes of those crises are well known but not of immediate concern here. What is of concern is the question of the leadership required to overcome them.

A *micro* answer to that question, we have suggested, might lie in cultivation of those capable of being an actively, creatively engaged grassroots, served by teachers of a certain sort and capable of driving action at ground level. For *a* grassroots to be *that* grassroots, they would need to have understood in their minds and in their hearts—to have fully absorbed—the transformational insight behind the observation that *development which is not sustainable is not development,* which implies that important elements of technological-industrial modernity have been an illusion. They must also have become impassioned by what they have understood. In today's context, the enormity of the grassroots activation challenge might well seem daunting and deflating. But at least two questions would nevertheless remain: *What is the alternative*? And, *How daunting did the voting rights challenge look to a middle-aged African American woman sitting in the back of a cinder block building on a South Carolina Sea Island surrounded by swamps amidst the ascendency of Jim Crow apartheid?*

"What conditions or education might be required to render the professions ready from within is an important question."

The coronavirus pandemic that has enveloped the world should not go unmentioned. It surely poses important risks and challenges to work on behalf of sustainable development. But anyone committed to addressing the sustainable development crisis should be braced by the awareness that the coronavirus crisis is in its own way a preview of what lies ahead for humankind if the rise of atmospheric temperature is not stopped. Humanity depends on a weave of conditions that can be pierced, as the current pandemic has made manifest. Such rare events that rend that fabric only highlight its vulnerabilities, however—they do not exhaust them. And it requires optimism unmoored from judgment to suppose that deep changes in atmospheric conditions that have prevailed since the last glacial age will not activate disasters comparable to or overshadowing today's.

The worldwide economic crisis the virus is precipitating will require a great deal of public investment. It will take some time for that project to mature, if it matures, but the *grassroots* should not be without influence over how that investment is targeted. It is worth saying a word in the present context about the sources of *grassroots*. For, though most of them are well known, an important addition could be made to the usual list: the *professions*—engineers, architects and other designers, managers, lawyers, physicians and others who by virtue of their knowledge, skills and employment play pivotal roles in creating the world in which we live, but who render the idea of a *profession* hollow if their action is guided by no more than technical and market considerations bereft of principles of informed leadership. What conditions or education might be required to render the professions ready from within is an important question.

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Urbanization, Innovation and Governance:
The Quest for Sustainable Development

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Abstract

The article discusses the interrelated issues of urbanisation, innovation and governance in the quest for sustainable development. Given present trends in urbanisation, cities are playing an ever more important role in the world's development and globalisation process. Cities must innovate to achieve sustainability. The technologies of the Fourth Industrial Revolution enable cities to innovate in multiple ways. Innovation turns ideas into value and generates new products, services and processes, driven by multiple stakeholders. Likewise, there is a focus on innovative means for governance. Given divergences between cities, regions and countries, strategies for urban and regional development tend to differ, affecting the quality of life of residents and the prospects for attaining the SDGs. Cities invest increasingly in new technologies to improve infrastructure delivery, thereby increasing GDP growth. Economic values must however be balanced with societal values. The use of emerging and disruptive technologies based on digitalisation will create new opportunities and generate services and employment, driven by Artificial Intelligence (AI), 5G technologies, Internet of Things, big data, blockchain and robots. These new technologies have stimulated the growth of smart and innovative cities, accompanied by the transformation of urban public services responding to citizens' needs. AI can be a driving force to help advance SDGs. Improved connectivity and broadband access are key to the development of a digital economy. Urban governance is affected by many factors influencing sustainable development. Urbanisation and its traffic congestion and environmental degradation must be tackled through investment in efficient and novel systems. There is also the goal of abandoning fossil-fuel power plants through renewable energy sources. China has focused on strengthening its innovation capacity and can offer examples for other countries, in particular Africa. Beyond city infrastructure, technological innovation is also transforming education delivery and the distribution of educational content: building future-ready education systems, including recourse to virtual reality and machine learning. Demands on governments are diversifying, deepening and quickening, and hence governments must harness new tools to govern better and create and enforce new norms, rules and policies. The G-20 has established the Global Smart Cities Alliance as a new partnership to advance the responsible and ethical use of smart city technology. It will seek to minimize the risks and maximize the benefits of rapid urbanization. The Alliance is complemented by a Centre for the Fourth Industrial Revolution, which shall serve as a focal point for multi-stakeholder dialogue and concrete cooperation on governance challenges and opportunities presented by advanced technologies.

[*] Article based on a talk delivered on 19 October 2019 at the Tianjin Forum 2019 – Nankai University, Tianjin, People's Republic of China

Urbanization continues to spread all over the world, with more than 70% of the global population expected to live in cities by 2050. Today, already more than half of the world's population lives in cities, and one in eight urbanites resides in one of 33 "megacities"—that is cities with over 10 million inhabitants.

According to the United Nations, the number of megacities has risen from 14 in 1995 to 29 in 2016. And it is growing. Delhi is predicted to be the largest city on the planet in 2050 with 40 million inhabitants.

In many urban centers there is already a shortage of space and expanding outwards is not always an option. As a result, like never before, cities are going vertical. The concept of the 'vertical city' initially received wide attention with the construction of the Burj Khalifa in Dubai. It was one of the first to be conceived as a mixed-use skyscraper. Not surprisingly, China has taken a page out of Dubai's book as part of its rapid urban growth which saw almost 500 million people move from rural areas into cities in the last 35 years. Five of the ten tallest buildings in the world can be found in 'megalopolises' such as Shanghai, Guangzhou, Shenzhen and Hong Kong.

With so many people crammed into our cities, individually owned cars are likely to become a relative rarity: the future of transport is likely to belong to mass rapid transit systems or recourse to innovative means of transportation, like shared motorcycle or bicycles or scooters/*trottinettes*. But here is the challenge: many of the world's fastest growing cities are countries in Asia and Africa, where little or no metro rail infrastructure currently exists. While more developed countries will need to upgrade and expand their existing systems, newer cities will often be starting from scratch.

In the age of globalization, cities are playing a more and more important role in both their countries' and the world's development. Urbanisation is changing countries, and intercity connections and cross-country relationships have become new dynamic features of geopolitics. In order to solve the burgeoning problems of urban development and governance, the quest for sustainable development and inclusive growth has become a new paramount objective.

The cities stand at a crossroads. Rapid urbanization—if not effectively managed—threatens to paralyze local economies and undermine recent advances in the quality of life. Cities must innovate, in order to achieve sustainability, advance social well-being, and boost economic competitiveness. Innovation of city construction and governance is of great significance to transform the mode of economic development and to promote sound and rapid development of a regional economy.

The technologies fueling the Fourth Industrial Revolution can multiply the ways in which cities can innovate. Yet, while the possibilities have multiplied, so have the perils. Technologies can be misused to disrupt economies and splinter societies. Jobs can be eliminated, and socio-economic differences can be amplified.

Innovation is the process of turning new ideas into value, in the form of new products, services, or ways of doing things. Innovation is a deceptively complex activity that goes beyond creativity and invention to include the practical steps necessary for adoption. New

innovations tend to build on earlier versions and, in turn, lay a foundation for others to be built on top of them. It is now widely accepted that innovation fuels the majority of the world's long-term productivity and economic growth, and that innovative firms significantly outperform non-innovators, in terms of both revenue and employment growth.

"DeepMind, the artificial intelligence company acquired by Google, formed an Ethics and Society unit in 2017, to help insert ethics in the work of scientists in the field of Artificial Intelligence (AI)."

Innovation tends to involve a lot of players. Innovation systems are composed of all public and private institutions engaged in the production, diffusion, and use of new ideas. The density of cities enables innovation, readily providing testbeds to gauge the effectiveness of solutions. Through the collective efforts of governments, the private sector, non-governmental organizations, and the public, and through the harnessing of transformative technologies and enlightened urban policies, the true potential of the cities of the future can be demonstrated. This entails also the focus on innovative means for governance, drawing on new digital tools.

Clearly, different countries have different stages and paths in their urbanization development—and so strategies or plans for urban or regional development are bound to differ as well. In the process of large-scale urbanization, the formation of smart communities shapes the social and spatial structure of the city and affects the living experience and quality of life of residents. Driving social change and sustainable growth is the core of smart city development. Above all, smart cities are crucial to building a future-proof and people-centric society.

The development of cities has demonstrably a major impact on the overall development of regions and countries. National governments alone cannot achieve the ambitious goals of the UN Agenda 2030 and its 17 Sustainable Development Goals (SDGs). Here, cities have a crucial role to play.

In many countries, cities and regions have core competencies for policy areas underlying the SDGs such as water, housing, transport, infrastructure, land use or climate change. They have begun investing in technology to improve infrastructure delivery. Sensors, data analytics, and internet of things software are turning dumb infrastructure smart and improving water sanitation and conservation along the way. With respect to SDG 11 which focuses on cities and communities, an estimated 65% of the 169 targets behind the 17 SDGs will not be reached without engagement of local and regional governments. OECD data suggest that subnational governments were responsible for almost 60% of total public investment in 2016 in the OECD area, and for almost 40% worldwide.

According to the global consultants PwC, annual global spending on infrastructure is set to reach $9 trillion by 2025, a figure more than double the $4 trillion annual investment

recorded in 2012. Asia, led by China, will absorb at least 60% of this investment, spending heavily on sectors like transport and energy.

"Artificial intelligence (AI) is a general purpose technology that has the potential to promote inclusive economic growth, increase innovation and productivity, in the process bringing benefits to society and empowering individuals. It is deployed in many sectors ranging from production, finance and transport."

The IMF estimates a 1% increase in infrastructure spending will produce a 1.4% increase in GDP within 4 years. Successful growth depends on developing economies creating a balance of economic, social and environmental factors to create an "enabling environment".

To manage inherent risks, cities are experimenting with regulatory sandboxes, participatory design, innovation ecosystems, and public-private-people partnerships. To support governments in localizing the SDGs, the OECD for example launched a dedicated programme called "A Territorial Approach to the SDGs". The European Commission introduced its own Digital Cities Challenge. China's Xiongan New Area aspires to transform a barren landscape into a digital city powered by blockchain and artificial intelligence. Global Digital Seoul 2020 aims at developing e-government in South Korea's capital, while India's Smart Cities Mission is at the forefront of promoting the country's urban transformation and is committed to ensuring that cities develop in a way that is smart and sustainable. The advancement of smart cities and communities is critical to realizing Japan's vision for Society 5.0. For its part, the "Be Smart KOBE" programme seeks to establish standards for data utilization with a view to stimulating the growth of Kobe city.

But cities must also reckon with a potential clash between economic value and societal values. The ability to forward technological advancements and smart city solutions is directly related to the responsible and ethical use of data and technology. DeepMind, the artificial intelligence company acquired by Google, formed an Ethics and Society unit in 2017, to help insert ethics in the work of scientists in the field of Artificial Intelligence (AI). Singapore has established an Advisory Council on the Ethical Use of AI and Data. Japan's "Society 5.0" envisions a "human-centric" society.

Industrialization has promoted the pace of urban construction, but also brought some damage to the liveable environment of cities. It is imperative to promote scientific and technological progress, implement the strategy of independent innovation, build a modern urban ecological system, and enable the construction and development of innovative cities with a science and technology base.

The Fourth Industrial Revolution represents a fundamental change in the way we will live, work, and relate to one another. It is a new chapter in human development, enabled by technology advances that are commensurate with those of the first, second and third

industrial revolutions, and which are merging the physical, digital, and biological worlds in ways that create both promise and peril. Digitalization has tremendous potential to deliver benefits for economies and societies as a whole. The benefits brought by increased productivity through the use of emerging technologies such as artificial intelligence (AI), fifth-generation mobile telecommunication technologies (5G), the Internet of Things (IoT), Distributed Ledger Technologies (e.g. block chain) will empower all individuals and firms by creating new opportunities, and generate new services and employment.

Robots and artificial intelligence were once used only for dull and difficult work on factory floors. Today, automation is everywhere—powering drones, cars, surprisingly realistic humanoids and also agricultural production and yields.

The speed, breadth and depth of this revolution are forcing us to rethink how countries should develop, how organizations create value, and even what it means to be human; it is an opportunity to help everyone—leaders, policy-makers and people from all income groups and nations—harness technologies in order to create an inclusive, human-centered future.

Emerging technologies have promoted the systematic integration of a smart and innovative city, healthy city, safe city and ecological city into the urban and regional framework. They are stimulating the innovation and transformation of urban public service.

Information technology is at the core of innovation, and advances in the industry are having an impact on all continents and in every business. Shifts in digital policy and governance must be closely observed.

Faster 5G networks are making digital communication more ubiquitous, while increasing processing power and storage capacity are boosting the scope of knowledge immediately available to any computer user. This has the potential to fundamentally reshape public services so that they can respond more directly to citizen needs.

But there is also a dark side to be managed. According to Cisco's 2018 Annual Cybersecurity Report, cyber attackers targeting governments have developed increasingly sophisticated and threatening malware. They can cover their tracks with encryption while exploiting new vulnerabilities in cloud computing, the Internet of Things and even political elections. Rules such as the European Union's General Data Protection Regulation, which came into effect in 2018, are critical for managing the consequences of such threats, but will also introduce new complexity to governance arrangements.

The internet can continue to broadly aid social progress and businesses, drive innovation, and help governments address policy concerns. Responsible governance of the internet, however, is no simple task. Oversight of a key internet framework has shifted in 2016 from the US Department of Commerce to an international group, the global, multi-stakeholder community made up of the non-profit Internet Corporation for Assigned Names and Numbers (ICANN) and international organizations. ICANN's job has become more complicated in recent years, as there were 332.4 million domain name registrations across all top-level domains as of the end of 2017.

Innovation is pushing the boundaries of information technology as we know it. Digital disruptions are rapidly changing the socioeconomic landscape. Many innovations will generate disruptive technologies which will bring fundamental change to business, work and society as a whole.

Artificial intelligence (AI) is a general purpose technology that has the potential to promote inclusive economic growth, increase innovation and productivity, in the process bringing benefits to society and empowering individuals. It is deployed in many sectors ranging from production, finance and transport to healthcare, education and security.

The development and use of AI can be a driving force to help advance the SDGs and to realize a sustainable and inclusive society. A responsible stewardship of AI includes improving the welfare of people, augmenting human capabilities and enhancing creativity, advancing inclusion of underrepresented populations, reducing economic, social, gender and other inequalities, and protecting natural environments, thereby invigorating inclusive growth and attaining sustainable development.

When it comes to the Internet of Things (IoT), exciting breakthroughs have been made that enable communication between devices, like a phone talking to a washing machine. As these devices process larger amounts of data in order to maximize their performance, it will in turn require greater data processing capabilities. The use of big data analytics will enable businesses and governments to provide efficient, real-time support for everything from customer service to filing taxes.

The integrated application of IoT, cloud computing and artificial intelligence technology at the city level generates a "digital city" that can respond intelligently to specific needs like environmental protection, public safety, urban services and industrial and commercial activities. Digital cities also promote the development of a low-carbon economy by using resources efficiently, saving costs and improving the quality of life. Digital industrialization, industrial digitalization and urban digitalization constitute the basis and conditions for the development of digital cities.

Improved connectivity and broadband access are necessary for the development of the digital economy. They are also a powerful enabler of inclusive growth and sustainable development. This necessitates the promotion of investment in domestic and international digital connectivity infrastructure, including fiber optic cables, 5G networks and other ultra-high-speed connectivity technologies, scaling-up the fiber optics infrastructure in order to provide connectivity to a greater number of individuals as well as increasing overall processing power and storage capacity. The G-20 has stipulated that there ought to be universal and affordable access to the Internet to all people by 2025, including in rural areas with a particular focus on poverty eradication and distance learning. This has the potential to fundamentally reshape public services so that they can respond more directly to citizen needs.

It is important to bridge the present digital divide and in particular the digital gender divide. This should also help enhance women and girls' participation in STEM (Science, Technology, Engineering and Mathematics), support women's entrepreneurship in digital

business and work within existing partnerships and frameworks. As a principle, the new technologies should be accessible for all.

Urban governance is affected by many uncertain factors, which pose great challenges to the sustainable development of cities. As urban populations grow, smart city technologies become more and more essential not only to improve the quality of life of citizens but also to keep cities livable.

Data and technology can radically transform how cities design and deliver services to their populations. They help identify the most pressing needs that residents have and provide tailored solutions to address them. By upgrading hardware and software, massive data across regions can be integrated to build an urban brain similar to the human brain ultimately facilitating intelligent urban governance. The combination of big data and small data can effectively identify and forecast residents' demands and provide needs for public services.

The concentration of growing populations in urban areas stemming from economic development and migration is leading to serious traffic congestion and environmental degradation. As a means for resolving these issues, large cities are extending subway lines and expanding other public transportation systems, including free public transportation, which was just introduced in Luxembourg. The increased economic burden involved in the construction and operation of these systems, however, has heightened the need for a transport network in megacities that can be built and operated at lower costs—or for free. As an alternative to conventional trains and buses, monorail and tram systems have emerged as new urban transportation systems.

The Automated Guideway Transit (AGT) which runs on rubber tires on elevated tracks constructed over existing roads offers a variable passenger carrying capacity, ranging from a small number of people per day to mass transport exceeding 100,000 people per day. The system boasts superior environmental performance as no exhaust gases are emitted and electrical power consumption is low, while use of rubber tires reduces noise and vibration. Moreover, the small size of the fully automated cars will allow freedom in route planning and economic operations, enabling the system to be both scalable and extendable.

Investment in efficient public transport systems allows people to travel around a city in an easier manner. Asia has some of the most densely populated cities in the world and some governments have invested heavily in transport systems to accommodate both current and future passenger levels. For example, the Singapore government has commissioned Mitsubishi Heavy Industries (MHI) Group to supply a driverless train system as well as the light rail network that transports people to, from and around the island state's suburban neighborhoods.

More sophisticated intelligent transportation systems (ITS) use sensors along roadsides to communicate traffic conditions to a central command center for more effective road management. Cities in China, South Korea and Japan are using sophisticated big data and AI to make sense of all sensor data in real time. These data have real potential with respect to reducing pollution, congestion and carbon emissions.

Another tool is congestion charging or electronic road pricing (ERP). New York is planning the ERP for 2021. In 1975, Singapore became the first city to charge drivers a flat fee. In 1998, it was the first to install an ERP system, containing traffic volumes. In the next few years, Singapore will upgrade again, this time to a satellite-based ERP system. There is also the option of a daily congestion charge, applied in central London since 2003. An additional "toxicity charge" has been slapped on older, more-polluting vehicles in many countries, like Spain or France.

One solution may lie in self-driving cars. Though still a long way off, the technology will allow much higher capacity on existing roadways with such vehicles able to go faster and drive more closely together, all while reducing accidents. Autonomous vehicles may be the futuristic face of congestion's most viable solution: shared transportation. Studies from Lisbon and Helsinki show that all of today's car trips could be done with less than 10% of the current number of private cars through a combination of on-demand shared taxis with door-to-door service and taxi-buses that, rather than follow a schedule and route, are booked half an hour ahead.

Whether it is ITS, self-driving cars or some combination of other systems, next-generation traffic technology is pushing ahead, in hot pursuit of a transport solution to effectively tackle congestion and get people to their destinations, quickly and efficiently.

While the ultimate goal is a world powered entirely by renewable energy, power generation in the near future will require stable fuel sources which are versatile and able to operate in a way that respects the environment. Currently, fossil-fueled power plants are a leading source of global CO_2 emissions. Many countries have taken the decision to reduce the number of fossil-driven plants in the spirit of the 2015 Paris Agreement, but sadly some countries like China, Japan or the United States are receding their commitment.

Transport infrastructure also continues to play a central role in China's development. Heavy spending on new roads, railways, airports and communications networks has boosted rural economies, expanding trade by connecting them to domestic and international markets. Such investment has played a pivotal role throughout China's development, building capacity for future growth.

Of late, the coronavirus epidemic has paradoxically introduced a new, unanticipated feature to the pollution picture in Northern China. The closure of factories and manufacturing plants and the massively reduced traffic have reduced the extent of emissions and their impact. Are we facing here a trade-off between a health crisis and ecological deterioration?

African countries can learn some valuable lessons from China's experience. At the current expansion rate, the continent's population is set to double by 2050, creating an urgent need for private and public infrastructure investment. Managed properly, the emerging and developing economies of Africa and Asia have a unique opportunity to use inward investments so as to drive their economies towards sustainable development.

In 2015, China launched the Belt and Road Initiative, a globally ambitious infrastructure investment project that touches more than 60 different countries and economies. Cities are

an important node in this initiative, where more and more of them will integrate into the regional connectivity cooperation network. In the era of intelligent economy, high-quality connectivity will promote the establishment of a new pattern of interconnected and mutually beneficial cooperation.

The demand for interconnection between cities has been strengthened. Cities innovate in order to compete with one other, but they innovate better when they connect and cooperate in an organized way. The most successful cities will not be those that solely focus on innovation at the expense of other needs; they will be those that manage to recognize and adapt to specific local challenges, while pushing innovation forward.

The connectivity of cities can help build an open economic system that includes policy communication, connectivity of facilities, smooth trade and people-to-people exchanges. Regional economic integration, especially in the increasingly prosperous Asia-Pacific region, needs the support of a network of international cities. Inter-regional and intra-regional cooperation among cities inspired by emerging technologies has become particularly important. The application of artificial intelligence technology and big data will bring about an intelligent economy driven by data and computing, which is providing a new engine for the construction of urban networks.

Realizing the full benefit of the Fourth Industrial Revolution may take time and require new organizational forms, skills and mindsets. It is also possible that the impact of the Revolution on productivity has not yet become fully apparent because it is increasing efficiency in ways that cannot be accurately measured by traditional means. Beyond that, the Revolution has not yet reached many of the two billion people still disconnected from the global economy, who ultimately ought to benefit the most from it.

To shape a digital future that will deliver positive outcomes for all stakeholders in line with the 17 SDGs, numerous challenges must be addressed. In future, investment, innovation and technological advancement are hoped to empower citizens to lead better lives.

After four decades of reform and opening up, China has been deeply involved in the process of globalization in all its aspects. The national innovation capacity has become a strategic core capability to enhance international competitiveness, adjust the development model and maintain sustainable economic development. Building an innovation-originated city has become an important part of implementing the innovation-driven strategy and building an innovation-originated nation. China's "new normal" growth model is consumption-led, rather than investment-driven. Rising wages and competitive pressures are changing the world's second-largest economy from a low-cost manufacturer to a value-added developer of cutting-edge products and services. Re-balancing China's economy, improving its services and manufacturing, and promoting its companies on the international stage are all goals included in the government's 13th Five-Year Plan, as are the ambitious "Belt and Road" and "Made in China 2025" initiatives focused on revamping and expanding infrastructure and industry.

Furthermore, technological innovation is fundamentally transforming education delivery. Technology presents opportunities to deliver learning in new, gamified, and personalized ways, which could change the traditional role of teachers and facilitate a blended learning

experience. Technological innovation is changing the way educational materials are generated, the manner in which educational content is distributed, the way learners engage with materials, and the processes used to evaluate educational outcomes. Companies such as Coursera, edX, and Khan Academy are revolutionizing education delivery through the so-called Massive Open Online Courses (MOOCs). Unfortunately, some education systems, especially at the primary and secondary level, have been slow to incorporate even the most basic, widely available learning technologies.

Building future-ready education systems requires designing curricula fit for the 21st century, coupled with the consistent delivery of a basic education for everyone that builds a solid foundation for a lifetime of adapting and developing new abilities. Technological innovation also helps updating the skills required for the contemporary workplace.

Virtual reality was dreamed up in science fiction and began to emerge in concrete form via an immersive film-viewing cabinet created in the 1950s. Now, commercial applications for virtual and augmented reality (VR and AR) are fundamentally altering the way individuals interact with each other and their environments. While technological barriers and a lack of content have prevented mass adoption, VR may soon become the next generation platform for communication, displacing our need for physical travel and impacting related energy consumption. VR and AR are poised to make a global impact with applications in education, health, business, retail, social media and communication. It will still take years until technologies for scalable content creation will become accessible for end consumers, but recent advances in computer graphics and machine learning are promising.

Machine learning involves creating algorithms that can recognize patterns in large, evolving data sets, and drawing conclusions from past experience. When people refer to "artificial intelligence," they often really mean machine learning. Examples of technologies that make use of it include internet search engines, spam filters, and self-driving cars. Recently, an aspect of machine learning dubbed "deep learning algorithms" has received a lot of attention. That is because advances in computing power and masses of large-scale data, referred to as big data, have led to deep learning-based algorithms that are faster and more accurate than the human eye.

The demands being made on governments for cities are diversifying, deepening, and quickening. Traditional governance structures and policy-making models have to become agile and responsive. Governments may have to reinvent themselves in order to keep pace with technology. Powerful digital tools like artificial intelligence are swiftly disintermediating entire markets. Governments are being challenged to move beyond simply understanding major technological advances, to harnessing them in order to govern better. Soon, governments will be forced to entirely change their approaches towards creating and enforcing regulation, to better stimulate rather than stymie innovation. Digital governance is an essential leverage of prosperity, social inclusion and environmental sustainability with measurable results.

Governance in the digital era needs to be not only innovation-friendly but also innovative. Interoperable standards, frameworks and regulatory cooperation can help in this regard.

International as well as national policy formulation with the involvement of all relevant stakeholders in their respective roles is instrumental to address a wide range of societal challenges and to facilitate discussion on how technology can be better and more accountably incorporated into policy tools. Establishing new norms of ethical behavior regarding digital technology, and attaining higher levels of customer trust, will be critical for a successful digital future. There is a need for innovative approaches that recognize the complexity of these challenges by joining computational sciences, social sciences and the humanities.

To contribute to sustainable and inclusive growth in urban areas, networking and experience-sharing among cities for the development of smart cities will be an attractive solution. Implementations of smart cities shall take into account transparency, resiliency, privacy, security, efficiency, and interoperability. Interested cities and networks of cities joined a Global Smart City Coalition which was discussed at the "Super City/Smart City Forum" held on the margin of the G-20 summit in Osaka on 29 June 2019. This then led in October 2019 to the formation of the Global Smart Cities Alliance (www.globalsmartcitiesalliance. org). The Alliance is a new partnership to advance the responsible and ethical use of smart city technology and will seek to create and pilot global norms and policy standards related to access and inclusion linked to the use of connected devices in public spaces. The Alliance will be critical to minimize the risks and maximize the benefits of rapid urbanization.

It is the largest and most ambitious undertaking to advance the responsible and ethical use of smart city technologies on a global level. Smart city technologies can help decrease traffic congestion, combat crime, improve resilience during natural disasters and reduce greenhouse emissions. Without proper governance, however, these technologies pose significant risks, notably to privacy, security and democracy.

The Alliance comprises fifteen of the world's leading city networks and technology governance organizations. The institutional partners consist of municipal, regional and national governments, private-sector partners and city residents. They include the presidents and host nations of the Group of 20 (G20) in 2019 and 2020 (Japan and the Kingdom of Saudi Arabia); the Smart City Mission of India; Cities for All; Cities Today Institute; the Commonwealth Local Government Forum; the Commonwealth Sustainable Cities Network; Connected Places Catapult; the Digital Future Society; ICLEI—Local Governments for Sustainability; the International Telecommunication Union (ITU); Open and Agile Smart Cities; Smart City Expo World Congress, Barcelona; United Cities and Local Governments (UCLG); What Works Cities; the World Economic Forum; and World Enabled. They are committed to co-design and roll out a first-of-its-kind global policy framework on smart city technologies in advance of the 2020 G20 Summit in Riyadh, Saudi Arabia.

All partners together represent more than 200,000 cities and local governments, leading companies, start-ups, research institutions, and civil society organizations. The World Economic Forum serves as the secretariat.

Building an inclusive society is a vital mission. The new Alliance seeks to become an innovative platform for communities through cross-border, open collaboration of people and

cities focused on SDGs and social value creation in support of safety, security, efficiency and equality, as well as globally accepted technology governance.

In the wake of the Alliance's creation, the World Economic Forum has established the Centre for the Fourth Industrial Revolution. It is designed to serve as a focal point within the international community for multi-stakeholder dialogue and concrete cooperation on governance challenges and opportunities presented by advanced technologies. The Centre and its Network have brought together more than 100 governments, businesses, start-ups, international organizations, members of civil society and world experts to design and pilot innovative approaches for the policy and governance of technology.

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Sovereign Nation-States and Global Leadership

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Abstract

A novel global governance and leadership paradigm is proposed.

Survival of humanity demands paradigmatic changes. Saving natural and human capital requires new economic and new political paradigms. We focus here on political paradigm change. The world today **can be** destroyed in less than a day by error, terror and stupidity. We know that the world and its natural and human capital **will be** destroyed in about ten years, unless we change our economic, political and social paradigms. Humankind is entering a phase of continuous paradigmatic changes—some beneficial but some disruptive and destructive and we have to change our mindset, notably our political paradigm. We have at most about ten years, and pandemics, such as COVID-19, can make it even shorter. It is necessary that the paradigm change is accomplished within that time interval. This is almost an oxymoron: profound change simultaneously carried out within a short time interval. The last two decades were the best time ever, but our world is vulnerable and unsustainable and self-destructive. The next decade has a 20% chance to be the worst time ever.

Present international political structure is based on sovereign nation states (SNS): UN and all its affiliated organizations, as well as G20 and G8 fall under this category. The EU depends on SNS. There are about 300 inter-governmental organizations like these. Even those that appear to be focused on well specified topics, such as OPCW, CTBTO, IAEA, ILO, WMO and WHO, as well as the Bretton Woods structure, strongly depend on SNS. All treaties depend on SNS sometimes requiring agreement on some 'more equal than others'. The UN Security Council is composed of unequal SNS—only a few having veto power. This structure was developed at the time of the Westphalia treaty which marked the end of the Thirty-years war in 1648, and received its present form after WWII. The 17th century world and even the world in the mid-20th century was profoundly different from today and tomorrow will be even more different and this will keep changing.

Humankind is faced with a multitude of challenges—global and local and these challenges keep changing. Naturally, all available resources are required. Consequently, governance and politics cannot be reduced to an 'elite' as it was reduced in Ancient Greece and even during the founding of the USA: women were not involved in politics and nor were slaves. It is curious that in old Greek, the word 'idiot' (ΙΔΙΩΤΕΣ) describes a selfish person, one not interested in politics and having no social involvement (ΙΔΙΟΣ). Governance and politics today have to be participatory. Many challenges and participants require communications

and closeness between individuals and 'decision-makers'. This task is more complex as one forms international, global associations particularly if they depend on the pyramidal structure, e.g. if global governance is formed from 'continents' and 'continents' from SNS. Contemporary world is fast changing and interdependent. This demands governance to be flexible and anticipatory. It is desirable, almost necessary, that decision-makers and all citizens understand fast changes and even participate in them. Complexity of challenges makes this requirement impossible. An elite group of 'decision-makers' is formed and its members are not usually the best the society can offer.

"In old Greek, the word 'idiot' (ΙΔΙΩΤΕΣ) describes a selfish person, one not interested in politics and having no social involvement (ΙΔΙΟΣ)."

Most real problems are global: pollution, climate change, infectious diseases, sixth global extinction, unemployment and staggering inequality. The present world is global, while the system based on SNS is not global. Does it have the capacity to generate necessary global leadership? If so, how? As I stressed earlier, the structure based on SNS was developed for the world that was not global and we would be very lucky if it is adequate for a global world. However, how is the structure of SNS coping with issues that are not predominantly global—peace and stability, efficiency of government, and leading their countries in the right direction? (see Table 1).

Table 1: Government Efficiency

Country	Government is efficient	Government respects the will of the people	Government leads in the right direction
Austria	19%	28%	23%
Croatia	10%	7%	11%
Germany	29%	29%	34%
UK	25%	30%	27%
USA	20%	21%	19%

Data in Table 1 is based on recent polls, but similar results have been obtained for the last four decades. Table 1 shows that the governance based on SNS is not adequate even for addressing the tasks it was designed to address and solve. This is not surprising since the current world is so different from what it was even 50 years ago. Let us emphasize just three major differences.

• **First**, the wealth of extremely rich individuals and multinational companies is comparable to the GDP of medium size countries. They act in the political arena by significantly

modifying actions of SNS and act without accountability except in some cases to their shareholders.

- ***Second***, salient features of our current world are generated and will continue to be generated mainly by science and technology. Though scientists and engineers occasionally have prominent political roles, and rarely are some outstanding politicians very creative and knowledgeable, most scientists and engineers are only employees in the service of their national government or of companies. When President Kennedy entertained several Nobel laureates, he said, "This is the highest concentration of brain in the White House, except when Thomas Jefferson had dinner alone." Albert Einstein was politically very active: he refused to sign the Memorandum asking German scientists to support the Kaiser during the WWI; he wrote a famous letter to President Roosevelt to initiate the nuclear bomb development and was the coauthor of the Russell-Einstein Manifesto. Nevertheless, Ben Gurion was relieved when Einstein refused to become President of Israel. Is it necessary to improve the SNS governance on the level of SNS before proceeding to address global problems? Again, we just do not have the time.

- ***Third***, in April 2020 commenting about our R&D and social actions concerning COVID-19, Jürgen Habermas claimed that "never before have so much been known about what we do not know." During the last few decades, many studies on uncertainty have been published [Slaus, 2020]. We have been accustomed to expect that knowledge production reduces uncertainty. As Latour [Latour, 1998] and Drosten emphasized, science does not enter a chaotic society to create order. It enters to add new uncertain ingredients. The recent history of COVID-19 displays the complexity of interconnection between research and society [Leonhardt et al., 2020].

It is often stressed that free and fair elections are the pillars of democracy, though the founding fathers of the US, especially Madison, warned against majoritarianism. They underlined the importance of checks and balances. Free and fair elections can be realized and led to at least four rather different forms [Pew Research Center, 2017] as shown in Table 2:

Table 2: Free and Fair elections can be realized and can produce
[Pew Research Center, 2017]

Country	Representative	Direct Democ.	Rules by experts	Rule by strong leaders
USA	86%	67%	40%	22%
Germany	90%	74%	44%	6%
India	75%	76%	65%	55%
Japan	77%	65%	49%	31%
Russian F.	68%	74%	68%	48%
World	**78%**	**68%**	**44%**	**26%**

Besides being free and fair, elections have to address important and urgent issues and should offer choices: different programs and persons that are competent and honest. Aristotle claimed that politics is the master science, implying that it is most important and most difficult. Any profession requires extensive studies and often additional studies and re-examinations to keep abreast of development of the field. For decision-makers and rulers it seems that it is enough to be elected. Donald Michaels, member of the Club of Rome, wrote a paper titled 'Can leaders tell the truth and still remain leaders?' on this. A YouGov opinion poll of British voters in 2012 found that 62% of those that responded think politicians tell lies all the time and a recent NY Times article claims that presidents lie, some of them 50 times more than average [Leonhardt et al., 2017]. Rapid development of science and technology makes education of ruling groups sub-mediocre, worse than ever in history. A usual correction is to introduce excellent advisors. However, would you board a bus driven by a person who only knows how to drive a cart but is advised by a knowledgeable driver? The role of advisors is often to form a screen to cover wrong and biased decisions by rulers. The broad range of science and technology demands experts in many different areas. Rulers are often led by parochial needs and interests. Even when they and everybody else know what actually the overwhelming majority of people want and what is good for their country, rulers do the opposite if that increases their prospects in the elections or in strengthening their parties.

"COVID-19 is not a punishment, nor an indicator that some systems are better than the others (though there are such trends), but it is an essential warning."

These analyses demonstrate that the current type of governance has to be modified. Not a great revelation. The Declaration of Independence states: "Whenever any form of government becomes destructive, it is the right of the people to alter it or to abolish it." The founding fathers of the EU and of the Pugwash Movement are even more critical of the SNS. We are now faced with a deadly pandemic. The number of deaths in the first half-year of 2020 have been over 500,000 due to COVID-19, 300,000 due to suicide, 500,000 due to road accidents and 2.5 million due to stroke. It is necessary to be very careful in interpreting these numbers. First, data shows that COVID-19 is more deadly than SARS, H1N1, MERS and Ebola combined. COVID-19 spreads quickly and these numbers could turn out to be 2-3 times incorrect, which increases COVID-19's effects. Nevertheless, it will still be much lower than deaths caused by heart attack, stroke and cancer, and so we could be complacent. However, in an interdependent global world, everything is connected, some more non-linearly and with higher speed. COVID-19 causes dramatic economic crises and it could even trigger WWIII. [Walt, 2020] COVID-19 has generated an enormous psychological effect. COVID-19 has highlighted many of the worst features of the SNS system: selfishness, propaganda and display of characteristics typical of 'the old tools' as if it were another enemy that can be destroyed.

The present structure based on SNS has many shortcomings, but they had and have to be credited for stability and development of culture, notably science. Eliminating SNS' structure is neither desirable nor possible since it is the true basis of power. Likely the new political, economic and social paradigm will significantly modify the SNS structure, but now we do not have even the elementary idea of what that new paradigm is and should be. We only know it has to be human-based and humanity-based: it is our survival. We claim that sooner or later science will overcome COVID-19, as it did many other infectious diseases. Unfortunately, more than a few months, possibly years, are involved. More threateningly, COVID-19 can have successors, some even deadlier. We turn to numbers: The WWI had about 20 million casualties, WWII about 60 million, the Spanish (actually Kansas) flu about 80 million and the 20th century democide between 100 and 200 million. During 1992-2013, 423 million died due to hunger. COVID-19 will produce about 10-20% decrease in national GDPs. We estimate the second COVID-19 wave in the Fall. We have no idea of its strength. We hope we are better prepared. Interdependent consequences of COVID-19 will appear, notably as economic crises. Our experience of the 1929 and 2008 crises indicates that we have about a year. Dominant tenor of SNS rulers is: "return to normal", possibly 'new normal'. So far we have seen only increasing destructions of natural and human capital. COVID-19 is not a punishment, nor an indicator that some systems are better than the others (though there are such trends), but it is an essential warning. The world we lived in the first and second decades of the 21st century was the best ever, but self-destructing and unsustainable. Therefore, it is crucial that we do not return to the 'old normal' and we have about a year to accomplish this task. We do not have role-models, but have experience. We know that the SNS structure has to be modified. We have many successful international treaties and many fairly good international/intergovernmental organizations. We realize that concentration of power is neither good, nor do citizens want it (see Table 2). Experts are not significantly better assessed (Table 2) and we know the reasons. Based on all these experiences we propose to modify the SNS structure in the following way:

The decision-making in domains strongly influenced by science and technology has to rest on experts not influenced by SNS, i.e. not nominated by their countries but by independent organizations such as: Inter-Academy Panel, International Association of Universities, TWAS, WAAS, SAPEA, GYA, Latin American amd African academies, representatives of trade unions and businesses (as ILO). For example, nuclear issues—civilian and military (e.g. Iran nuclear deal) should be under the control and decision of IAEA, OCTBT, Pugwash, concerned scientists, and many other associations that received Nobel Prize for their peace efforts. Similarly, for health issues the decision group should include health care experts, WHO, UNESCO, ECOSOC and also economists. None of the decision-making bodies should be official representatives of SNS. Such bodies are by design specialty-narrow, while the world is interdependent and it is necessary to include holistic and trans-disciplinary aspects. The role and the duty of SNS representatives—and these include elected 'politicians' and diplomats—are to be advisors to each and all of these expert bodies, always through arguments, never by force or veto. Now we will look into the advantages and shortcomings of this approach.

Advantages: the structure of SNS remains as it is, but their global role (which anyway does not exist except by rude force) has been replaced by competent bodies. These bodies resemble science and health care, and these two activities have been assessed by the public to be the best we have, much better than parliaments, executive branch, judiciary and media. The SNS will gradually learn what their true role is not just globally but also locally within their countries. For instance, decisions of the body dealing with R&D should require that each SNS allocate at least 3% if their GDP to R&D. Decision of the body dealing with nuclear civilian and military aspects to maintain the Iran nuclear deal should be obligatory even for SNS that—because of various reasons—would like to withdraw from the deal. We already have organizations that can act as the nuclei of such expert bodies, e.g. ILO, UNESCO, WHO etc. This novel structure can be implemented quite fast, and step by step. I listed above three cases: nuclear, R&D and health. It would be prudent to add something like the Environmental Security Council, a proposal made 30 years ago, and recently repeated. Since elected representatives of SNS do not have absolute power, as they have today, the very process of election can be conducted with legitimacy. Each domain can and will develop independently. It is obvious that this model is in formation, and it can be designed as a flexible and self-learning model.

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