PROMOTING LEADERSHIP IN THOUGHT
THAT LEADS TO ACTION

THE WEALTH OF NATIONS REVISITED

CADMUS

NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

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The 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The COVID-19 pandemic calls for global solutions to address global problems, not partial, sectoral approaches based on outdated attitudes, concepts, institutions and policies.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.

This issue of *Cadmus* presents work in progress 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 will be discussed at a UNOG-WAAS e-conference on Catalytic Transformative Strategies on June 15-19, 2020. This event is 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. This issue is a call and challenge to think freshly and an invitation to contribute.

Editors

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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

* 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

* 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

* 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.

"Development is a process, not a program."

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 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

* 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.

* 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.

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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

* 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***

* 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

* 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.§

* 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

* 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.

* 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/TheEmperorsNewClothes_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.

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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

* 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?‡

* 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:

* 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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