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11 Essays on Societal Transformation:
The Most Important Challenge Facing Humanity

In February 2021, the World Academy of Art and Science hosted an expert panel on societal transformation as part of its 60th anniversary conference. From this, a working group was formed for the purpose of identifying, developing, promoting and implementing practical, catalytic strategies for addressing major challenges and evolving human society into sustainable form. The societal transformation project was proposed and initiated by WAAS Associate Fellow Julene Siddique, a System Change and Arts expert. She is co-moderating the working group with WAAS Fellows Frank Dixon and Barry Gills.

Societal transformation has been a foundational theme of the Academy for many years. This project builds on WAAS' substantial body of work in the field. This paper provides a collection of short essays from group members about societal transformation concepts and strategies.

Evolving human society into sustainable form (societal transformation) is the meta challenge. All other issues are sub-elements of it. Many experts have addressed different aspects of societal transformation over the past 50 plus years. It is widely recognized that reductionism is a, if not the, foundational cause of humanity's unsustainability and major challenges. As WAAS founder Albert Einstein famously said, we must think at a higher level to solve our most complex challenges.

That higher level is whole systems thinking. It is based on the reality of humanity's interconnectedness with nature and each other. This higher level thinking illuminates societal interconnections, root causes, systemic barriers, key leverage points and optimal systemic solutions. The following essays emphasize interconnectedness and provide societal transformation theories and strategies based on it.

Humanity is facing a multifaceted planetary crisis. This has fueled incredible potential momentum for change. The human species has so greatly impacted the natural world that we are crossing possibly six of the nine planetary boundaries identified by Rockström (Rockström et. al. 2009; Steffen and Morgan 2021). The recent IPCC Sixth Assessment report alerts us to the profound need for wide ranging societal transformation at a global scale. The COVID-19 pandemic has highlighted long entrenched systemic flaws in national and global systems and brought social and economic inequalities into a sharper focus.

Societal transformation has occurred numerous times throughout global history. But the depth, breadth and rapidity of transformation we face today are unprecedented. To address this heightened challenge, the Societal Transformation Working Group brings together a diverse group of thinkers. They discuss the deep systemic change and societal transformation needed to protect humanity and all life on Earth.

The following collection of essays provides several perspectives from differing fields and expertise areas. A number of common themes emerge. These can be summarized as follows:

a. Top-down approaches are not enough. National and international economic and governance strategies are not resolving major challenges in a timely manner. Climate change and many other problems are getting worse. Reductionistic economic and political systems are the root causes of major challenges. Improving them through top-down and bottom-up approaches is essential. Many of the authors discuss the need for fundamental structural and systemic change.

b. Several authors discuss the essential role of arts and culture in societal transformation. Suggested approaches include: critically addressing destructive social narratives that perpetuate flawed systems and harmful consumerism; using arts and cultural action to mobilize social movements; developing culture and arts-based approaches for driving widespread consciousness and behavioral change; and employing dialogic processes and localized action.

c. Fundamental change to economic and financial system is essential for genuine social transformation. To resolve socio-economic inequality and ecological decline, the authors discuss different aspects of system change in economics, redistribution of resources and new financial mechanisms.

d. Deep systemic change of educational systems is essential. Long-term solutions seek to achieve a sustainable and truly prosperous society, for example, by 're-architecting knowledge' and fostering new values and behaviors.

In line with the above themes, new 'literacies', skills and capacities are emerging that will facilitate a coherent and coordinated global movement for systemic change. These include 'transformation literacy', 'structural literacy', 'collaboration literacy' and 'integral capacities'. The authors discuss these literacies and other tools needed to facilitate effective societal transformation.

In summary, the interconnected nature of global crises demands a new kind of thinking and action. To provide this, the authors discuss many aspects of whole system thinking and holistic worldviews, including aligning human systems and society with the laws of nature.

References

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Essays

The essays address many societal transformation issues, ranging from higher-level, whole system concepts and approaches to more specific transformation themes and strategies.

Essay 1: **Frank Dixon** – Global System Change: A Whole System Approach to Societal Transformation

Essay 2: **Garry Jacobs** – Process of Social Transformation

Essay 3: **Mariana Bozesan** – An Integral Approach to Social Transformation

Essay 4: **Petra Kuenkel** – Transformation Literacy as a Collective Stewardship Task

Essay 5: **Piero Dominici** – From Below: Roots and Grassroots of Societal Transformation, The Social Construction of Change

Essay 6: **Thomas Reuter** – Transformations to Sustainability: Why integrated social change requires a political process based on inclusive communication

Essay 7: **Barry Gills** and **Hamed Hosseini** – Transversalism and transformative praxes: Globalization from below

Essay 8: **Alberto Zucconi** – Effective tools for promoting change in complex and interrelated realities

Essay 9: **Janani Ramanathan** – Systemic Change through a new Paradigm in Global Education

Essay 10: **Benno Werlen** – What Constitutes Societal Transformation?

Essay 11: **Jay Bragdon** – The Emerging Economic Renaissance

Global System Change:
A Whole System Approach to Societal Transformation

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Human society is rapidly transforming. Rising climate change, pollution, inequality, and many other environmental and social problems show that we are grossly violating the laws of nature. For 3.5 billion years, any species that violated these laws changed or disappeared. Throughout human history, economic and political systems that violated natural laws often collapsed quickly and traumatically (i.e. American and French revolutions, end of US slavery, and USSR communism).

The transformation of human society is inevitable. But the means of transformation are not. Time is limited. If we quickly align with the laws of nature, humanity can reach unprecedented levels of prosperity. If we do not, nature and reality will drive traumatic change and probably collapse. COVID-19 is just the beginning. Failure to align with the laws of nature will bring more disruptive transformation.

The time is right for a change. The energy to drive it exists in abundance. Pain is a great teacher. Billions of people on Earth are suffering, unable to meet basic needs. We are rapidly destroying life and life support systems. Now is the time to take charge of our destiny, protect future generations and establish a sustainable society.

Societal transformation can be framed up by starting from the present and moving forward or going to the endpoint and looking back. Incremental improvements to fundamentally flawed human systems will not work, especially in our limited time frame. This article uses a whole system approach to clarify the endpoint (sustainable society) and practical means to achieve it. Widespread public demand is essential for voluntary systemic change. Illuminating how humanity can practically achieve an immensely more prosperous future builds hope and demand for societal transformation.

1. Current Transformation Approaches

Many academics and other experts have been researching, developing, and implementing successful transformation and system change approaches for decades. Studying past successes, numerous experts assert that bottom-up approaches are essential. Systems theory experts suggest that while complex, adaptive systems cannot be predicted or controlled, it is possible to learn from and guide them to positive outcomes. Many process experts have developed effective collaborative transformation approaches, frequently using the arts to engage people's hearts and minds.

Other experts suggest that lessons can be learned from successful past societal transformations. Still, others assert that human goals and the means to achieve them are clear, necessary transformation resources are abundant, but effective whole system change theories and processes still are needed.

These ideas and approaches are wise and effective. Whole system thinking shows that they often can be accelerated with supporting strategies. For example, regarding bottom-up or top-down approaches, vested interests often block systemic change. Trying to impose it on them through bottom-up or grassroots strategies frequently yields revolutionary or traumatic change. Effective top-down approaches are not dictatorial. Instead, they often help vested interests to understand that system change is inevitable. Therefore, they are far better off driving voluntary change rather than waiting for the involuntary collapse. Top-down and bottom-up approaches working together can greatly accelerate positive transformation.

Regarding systems theory, there may be an infinite number of ways that complex living systems could evolve. But they are bounded by natural laws. These constraints illuminate the most important aspects of sustainable systems. This in turn greatly facilitates the development of sustainable transition strategies. Regarding collaborative system change and transformation processes, these can be accelerated and made more effective by clarifying system change content. This includes natural law qualities of sustainable systems and the systemic changes needed to achieve them.

Past successes can guide the development of societal transformation theories and processes. But past voluntary, peaceful transformations often were focused on one issue, such as agriculture, the environment, or global governance. There are few if any, examples involving the scale, scope, and pace of transformation facing humanity now. The imminent transformation (voluntary or involuntary) foundationally is one of consciousness, substantially impacting many areas of society and lifestyles.

One of the most important requirements for societal transformation is widespread public energy, desire, and demand for positive change. Clarifying goals and the means to achieve them is essential for manifesting this demand. There is growing unanimity around societal goals, in particular the UN Sustainable Development Goals (SDGs). There also is growing consensus about necessary action for achieving them, such as switching from fossil fuels to renewable energy. However, the goals and actions usually are not communicated in a whole system, nature/reality-based context. In addition, proposed solutions usually are focused on addressing symptoms instead of root causes (i.e. reducing fossil fuel use instead of changing the economic and political systems that compel its use).

The numerous, sometimes conflicting nature of societal goals and the many opinions or philosophies about transformation strategies often produce confusion. Combining this with vested interest deceptions intended to block systemic change greatly suppresses public enthusiasm and demand for transformation. Effective whole system approaches catalyze transformative energy and demand by providing clear, simple, compelling visions of a sustainable society and the means to achieve it.

2. Whole System Framing

There are two basic ways to frame up societal transformation—start from the present and move forward or go to the endpoint and look back. This article asserts that the latter is more effective. Humans usually are wedded to current ideas and systems. They learn them in

school and live their whole lives under them. It is frequently difficult to look into the future and imagine substantially different human systems and ways of living. Stepping back and viewing the trajectory of life on Earth helps people to let go of current ideas and systems and see their transitory nature.

Considering the evolution of consciousness on Earth probably is the most effective way to understand human evolution. The whole system book series *Global System Change* introduced a new model of individual and collective human consciousness development. It describes three levels of consciousness—unconscious unity, conscious separation, and conscious unity.

The whole system of nature implicitly operates on unconscious unity. All aspects are balanced and taken into account. Individual plants and animals do not think or reflect about what they do. They are guided by instinct, intuition, and other mechanisms in ways that produce essentially infinite coordination, technological sophistication, and widespread prosperity. The unified results of nature strongly indicate the presence of some type of transcendent unity consciousness. It is extremely unlikely that this resulted from a random activity.

For 3.5 billion years, life on Earth has been constrained by natural laws and operating principles. These are objective, observable requirements for living system success at all levels. Violation of these laws only can exist for relatively short periods. Nature restores balance by compelling compliance with its laws. When these qualities are absent, systems change or die.

Observable laws of nature include seeking balance, not growth, producing no waste, living on renewable resources, equitable resource distribution, widespread cooperation (with limited competition at the individual level), equally valuing generations and species, decentralizing production and governance, and enabling individuals to reach their fullest potential. Implied operating principles of nature include democracy/self-government, equality, full cost accounting, no externalities, and full employment.

Humanity could be thought of as nature's experiment in self-reflection. Apparently, to consciously understand the reality of our unity with each other and nature, we had to first venture through the illusion of separation. When we first began to reflect upon our existence, we apparently perceived ourselves to be separate individuals.

But this is not black and white. It occurred to varying degrees. For example, original people often at least partly retained conscious awareness of unity with nature. However, as the intellect ascended above the intuitive in Western and other societies, the perception or illusion of separation became more firmly established. This phase of collective human development could be called conscious separation. This false perception of reality is the genesis or root cause of essentially all problems facing humanity.

One of the most destructive results of conscious separation is the overvaluing of power and men and undervaluing of wisdom and women. The illusion of separation produced fear that needs would not be met and belief in the need for competition. In this environment, those

with greater physical strength, aggressiveness, and competitiveness (men) often were more highly valued. When power is defined this way, men innately have more power. Women innately have more wisdom when wisdom is defined as empathy, cooperation, whole system thinking, multitasking, relationship skills, and intuitive wisdom. (These generalizations are irrelevant at the individual level because everyone is different. All men and women have power and wisdom.)

Suppressing wisdom and women is a foundational quality of conscious separation. Honoring and teaching wisdom is essential for achieving conscious unity. It will elevate women to a position of true equality with men. Wisdom and power, women and men are different, but equal and essential. Power without wisdom is destructive, as we see in the world today. Wisdom can do nothing without power. Power can do nothing right without wisdom.

The dominant qualities of women are exactly what is needed to reach our next level of development (conscious unity), establish a sustainable society, and live in harmony with each other, all life and nature. If we achieve this state, nature will have become conscious of itself. If we do not emerge from conscious separation, we will disappear and nature will return to unconscious unity.

Unconscious unity refers to the parts of nature. They apparently do not self-reflect. However, as noted, the unified results of nature indicate the presence of some type of transcendent consciousness. The human body models this. Cells in the body apparently do not self-reflect. But the human mind reflects on the whole system of the body.

At our current level of development, we probably cannot prove to others that transcendent consciousness exists. However, people can prove it to themselves through meditation, intuition, and their own inner experience. Many people have tangibly experienced conscious unity. It is possible for humanity to live in this state. When this occurs, we will each be nature reflecting upon its unified self from different points of view (like the human mind reflecting on the unified human body).

Regardless of consciousness, the laws of nature are objective, observable, and easily proven. Abiding by them will completely determine the extent to which humanity survives and prospers on Earth. Short-term, myopic self-interest drives the tragedy of the commons. Destruction of life support systems and the growing pain it causes can compel people to look at the big picture. The rational human mind could understand and act upon the laws of nature, prior to attaining unity consciousness. The survival instinct of conscious separation can initially compel us to abide by these laws. However, over the longer term, achieving conscious unity will be necessary for attaining the level of sustainability and widespread prosperity seen in nature for 3.5 billion years.

Considering the inviolate laws of nature shows the temporary, transitory state of human systems. For example, there are no national borders in nature. Human borders are arbitrary, arising from our illusory, destructive, competitive mindsets. There also is no money in nature. The use of money results from fear and a lack of trust and mutually supportive action. The

dominant monetary system (private sector creation of fiat currency) unfairly concentrates wealth, economically enslaves people, and often prevents them from freely achieving their fullest potential.

From the current perspective, imagining a human society with no borders or money could seem utopian or impossible. This reflects the unsophisticated nature of conscious separation. We often think that our ways are more sophisticated and advanced than those of nature. We frequently are enthralled with our governance structures, financial systems, computers, and blockchains, failing to realize that the technology and sophistication of nature are essentially infinitely greater.

Many people believe that humans are more sophisticated than other creatures because we have self-reflective consciousness. But consciousness and sophistication are two different things. Comparing the technological sophistication and coordination of nature to that of humanity shows that self-reflection made us far less sophisticated than nature. The misperception of superiority results from the illusory individual perspective. It is not logical to compare a freely acting human to an individual nonhuman. As discussed above, there are no independently acting creatures in nature, except for humans. The individual human must be compared to the whole of nature because the individual parts of nature implicitly operate as one interconnected entity. Once we understand and act upon the reality of unity, we have the potential to match the sophistication and coordination of nature.

From the limited human perspective, nature can seem brutal. One creature eats another. But creatures do not take far more than they need (as humans often do), and thereby cause many other individuals to lack resources and go hungry. As a result, nature achieves vastly higher levels of individual and collective prosperity than humanity. Self-reflection, freedom of choice, and independent action do not necessarily produce less sophisticated outcomes. This occurs among humanity due to the illusion of separation. Self-reflection based on the awareness of unity could produce the essentially infinite sophistication and prosperity seen in nature.

Perhaps someday self-reflective consciousness will enable humans to advance beyond nature. But our life-destroying results show that we are not remotely close to this point. Until now, self-reflection has been more of a curse than a blessing. We used the power in an illusory way that brought us close to extinction. But self-reflection gives us the power of choice. We can choose our destiny. We can choose to exit the illusion of separation and enter the reality of unity.

The preceding is not said as a criticism of humanity. We are like children on the path to full development. Judgment does not exist in nature. It is a creation of our limited, fearful consciousness. In nature, there is only abide or not abide by the laws of nature. Not abiding causes death. Abide produces essentially infinite prosperity.

Effective societal transformation strategies must be based on the reality of unity. We do not need to mention that there almost certainly will be no borders or money in sustainable society (except perhaps for vestigial purposes). This goes so far beyond conventional ideas

that it might not inspire action. However, younger generations often seem to be progressing more rapidly to conscious unity. This is indicated by their broader embrace of unity concepts, such as racial equality, environmental sustainability, economic justice, and freedom to follow one's heart.

> *"The illusion of separation produced reductionistic thinking and systems. Flawed economic and political systems compel companies to degrade the environment and society. These systems, and the reductionistic thinking that created them, are the root causes of major challenges."*

Original people also generally better understand the transformation facing humanity. Their culture and worldviews frequently are based on the reality of unity with nature. They watched as Western civilizations living in the illusion of separation ignorantly claimed to be more advanced and unintentionally marched us towards destruction.

Modern ideas frequently suggest that we must protect the environment, implying that we could harm it. This reflects a misunderstanding of our relationship to nature. The environment will adapt, regardless of what we do. It will survive. But we probably will not if we continue to drastically change it. In this sense, we are not the caretakers of the environment. It takes care of us. It is the source of life. It provides our air, water, and food. We are not above nature, as our myopic, unintentionally suicidal religious, economic, and political ideas often imply. We are subordinate to it. We will not survive on this planet unless we recognize our appropriate role in nature and ascend to conscious unity.

From the current perspective, the future of humanity can seem bleak. We have created immense environmental, social, and economic problems. But that is the key. We created them. That means we can uncreate them. Comparing ourselves to nature, we only have reached the tiniest fraction of our potential. We can be nearly infinitely more prosperous than we are now.

Societal transformation does not mean changing everything. The best things will remain the same or improve—fulfilling relationships, love for children and animals, living in strong communities, being in nature, creating and enjoying all forms of art, and doing what one loves.

Attaining conscious unity is returning to reality. At a deep, often unconscious level, we yearn for a connection to and harmony with other people, all life and nature. Why? Because they actually are part of us. We literally are parts of one interconnected system, like cells in the body. The five senses and limited mind create the illusion of separation. This phase of human development is quickly coming to an end.

3. Practical Implementation

Humanity almost certainly has entered the phase of rapid transformation. We might only have five to ten years to resolve major challenges before nature and reality resolve them for us. The illusion of separation produced reductionistic thinking and systems. Flawed economic and political systems compel companies to degrade the environment and society. These systems, and the reductionistic thinking that created them, are the root causes of major challenges. As noted, incremental improvements to fundamentally flawed systems will not work, especially within our limited time frame.

An inspiring new vision of human society and systems is needed to achieve voluntary societal transformation. The SDGs discuss many aspects of a sustainable society. But the goals are human-centric. They are not grounded in the reality of nature. The laws of nature provide a simple, clear vision of a sustainable society. They go beyond human ideas and biases to objective reality. They show what absolutely will occur on Earth, regardless of what humans think, say, or do. For example, we know that equitable resource distribution, extensive cooperation, balance, and widespread prosperity will occur on Earth, as they have for 3.5 billion years. A main question is, will humans be here to experience it?

Global System Change uses the laws of nature to provide a clear, reality-based system change roadmap for humanity. It describes three components—sustainable society, systemic changes, and necessary actions. The laws of nature clarify the most important aspects of a sustainable society. This clear vision illuminates the major systemic changes needed to get there. This in turn clarifies the actions required to bring about these changes.

Three principles can guide systemic changes—emulate nature, implement democracy and abide by the rule of law. The answers to nearly all questions about establishing sustainable economic, political and social systems are shown or implied in nature. Democracy is the only sustainable form of government. It is based on the innate rights to equality and self-government.

The rule of law can be used to frame up economic and political reform, especially in the corporate and financial areas. The principle says that individuals and companies should be free to do what they want, provided that they do not harm others. The primary overarching flaw of economic and political systems is the failure to hold companies fully responsible for negative environmental and social impacts. This is the general mechanism that compels them to cause harm. In competitive markets, not holding companies responsible makes it impossible for them to stop harming society and remain in business. The foundational solution is to hold them fully responsible (i.e. abide by the rule of law).

Achieving these changes requires action in all major areas of society, including government, corporate/financial, and the general public. Only government can enforce the rule of law. In the corporate and financial areas, System Change Investing (SCI) can be used to engage companies and investors in system change. The approach rates companies on system change and uses this research to develop SCI funds. The new paradigm approach

shifts the focus of responsible investing and corporate sustainability strategies from company change and symptoms to system change and root causes.

The people collectively are the most powerful force in society. The clear vision and strategy provided by *Global System Change* can inspire action and demand for positive change. Raising public awareness about the urgent need for change requires many actions, including establishing honest media and empowering education. A critical action is overcoming vested interest-driven divisions and helping citizens to understand and act upon their many common interests.

One of the most important societal transformation strategies involves learning from and building upon success. For example, Jay Bragdon's books, *Companies that Mimic Life* and *Economies that Mimic Life*, analyze the superior sustainability performance of Nordic countries. Through education and culture, they understand that humanity is a sub-system of life. This accurate perception of reality enables them to achieve world-leading levels of prosperity and happiness.

Millions of people around the world are working to improve society. We have all the knowledge, expertise, and resources needed to achieve sustainability and real prosperity. We stand at the dawn of a new human consciousness and civilization. With free will, we can choose our destiny. Let us use it to reach our fullest potential and manifest the wisdom of nature in human society.

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Process of Social Transformation

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Humanity confronts existential challenges and unprecedented opportunities. Perhaps for the first time in history, there is a broad-based consensus among all the nations and peoples of the world regarding the common essential and desirable goals that need to be achieved—a rapid end to the worldwide pandemic is the most immediate and urgent. The accomplishment of all 17 Sustainable Development Goals and urgent actions to halt climate change are vitally needed to ensure longer-term human security and ecological stability, sustainability, and resilience.

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There is also a remarkable consensus emerging regarding the essential steps and measures needed to achieve these goals—universal vaccination, the shift from fossil fuels to renewable energy, strengthening of the multilateral system, extension of digital connectivity, and enhanced cybersecurity for all sections of the population, more and better quality education, financial inclusion, equitable tax policies to reduce inequality, respect and protection for the environment, reduction in air pollution, etc.

We also observe an increasing recognition that in fact, the world possesses the essential knowledge, technology, and financial resources to achieve these objectives. The total annual expenditure to support the UN system, including its vital peacekeeping activities, represents less than 3% of the total annual expenditure of $2 trillion by nation-states on military security. The shortfall in funding available for financing the SDGs is estimated at $4-5 trillion a year, which pales into insignificance compared with the more than $250 trillion in global financial assets and the availability of several viable strategies for filling the gap. Similarly, the world possesses all the essential knowledge and technological know-how to supply low-cost renewable energy, generate sufficient food, achieve full employment, deliver quality education, and provide digital connectivity to all.

In spite of this remarkable consensus, progress on the achievement of humanity's shared goals lags far behind the optimal levels of implementation. Yet, something seems to be missing. Something else is needed. Over the past two decades, the World Academy of Art & Science has examined the process of social change from various perspectives, in different contexts and fields of activity. We have concluded that what is missing is clear and complete

knowledge of the process of conscious social evolution, i.e. social transformation, or as Jeffrey Sachs terms it: a "theory of change". For the first time in history, humanity seeks to consciously and collectively alter the direction and radically accelerate the pace of social change. We know the goals, we know and possess the means, but we lack the complete knowledge of the process by which we can consciously and collectively act in a coordinated manner for the common good of all human beings.

Society changes, grows, develops, and evolves continuously. Change is incessant in all fields and levels, even during times of social stagnation, including the changes that fortify the past, reject the future, reverse progress, and zigzag back and forth between past and future. Growth is a natural horizontal movement of expansive energies to extend, replicate and multiply present types and levels of activity and organization. Development is a progressive vertical movement from lesser to greater levels of social organization, complexity, integration, and values already prevalent elsewhere, such as the extension of the 1st Industrial Revolution from England to the rest of Europe and beyond. Evolution is the creative emergence of new ideas, values, organizations, technologies, and social patterns, as expressed in the social and political transition from monarchism to constitutionalism inspired by Enlightenment ideas and values in Revolutionary France, and the multiple evolutionary transitions from animal power and human labor to steam, electricity, electronics and artificial intelligence spurred by technological advances in the 19th and 20th centuries.

All these forms of social transition are mostly unconscious or subconscious in the sense that they occur spontaneously at isolated points without a clear master vision of the values, goals, structure, and strategy they seek to manifest. They gradually unfold and spread by a long, slow process of trial and error, experimentation and imitation over decades or even centuries.

Social transformation is a further stage in the series and an exception. It seeks to replace the long, slow trial and error process of natural evolution with a conscious effort to accelerate social advancement. A dramatic example is India's Green Revolution launched in 1966 during a period of severe drought when 10 million lives were threatened by sudden food shortages. Initiated by the government from top-down, it sought to transform India from its dependence on foreign food aid to national food sufficiency within a decade. It was launched by a conscious decision of the government and was made possible by successfully enlisting the support and participation of tens of millions of farmers. The strategy involved the rapid induction of advanced production technologies for foodgrains based on hybrid varieties, combined with the establishment of a national food grain marketing organization to ensure purchase of surplus production and distribution in food-deficit regions, and special purpose corporations for production of fertilizers, hybrid seeds and warehousing. The participation of farmers was secured by guaranteeing producers a remunerative floor price for increased production, through a national program to demonstrate the new technologies on hundreds of thousands of plots on farmers' lands, and through expansion of agricultural research and extension services. The result was a 50% increase in foodgrain production within five years, sufficient to eliminate the need for foreign food aid, and a doubling of production within 10

years. India achieved an increase in a single decade equivalent to the total production it had achieved during 10 millennia of agricultural development.

Transformation may also take place when what begins as an uncoordinated grass-roots initiative gains sufficient attention and momentum to be adopted and consciously organized on a massive scale. It may spring up spontaneously by the initiative of local leaders, as air pollution control and recycling did in California in the early 1970s, generating spreading waves of awareness and acceptance by local communities, releasing social energies, and spurring rapid social innovation that spilled over to other regions of the country and spread overseas. Based on their initial success, a formulated pattern of values, principles, and organization mechanisms may be consciously replicated at higher levels over an increasingly wide area. The gradual evolution of Silicon Valley out of a small cluster of technology companies, universities, and research institutes quickly morphed into conscious efforts to reshape the region into the world's leading center for technological innovation not only in computing but in distant fields such as the automotive industry and biotechnology as well. At some point, such nascent initiatives acquired the critical mass and intensity needed to attract attention and support from the government, law, and other organized sectors of society. Then we can say the nascent evolutionary movement has become a conscious movement for social transformation.

Efforts at conscious transformation may be initiated locally as applied by the Asian Tiger nations to spur rapid economic development through export-driven rapid industrialization from the 1960s. Or it may emerge from a nascent small-scale experiment such as the recent application of the "doughnut economics" model in Amsterdam. The current worldwide endeavor to accelerate the transition from fossil fuels to renewable energy probably represents the greatest coordinated effort of the world community for transformative change on a global scale.

Regardless of the field of application or the circumstances, successful transformation involves several common elements. First, there must be a goal that is widely perceived to be desirable or essential to meet human aspirations. In the case of India's Green Revolution, the goal was complete food self-sufficiency of a country with a rapidly expanding population. Second, transformation requires an effective strategy or method for accelerating the transition. The method adopted in Green Revolution was an integrated approach that included induction of new technology, marketing, price incentives, research, infrastructure development, training, demonstration, and national information campaigns. India's integrated approach soon became the model for similar achievements in many other developing countries. Third, transformation involves a change in organization, such as the political organization for governance by democratic institutions, the organization of economic production into industrial clusters or global supply chains, and the social organization for personal relationships and commercial transactions through the Internet.

Finally, the effectiveness of these three elements depends on a fourth element—a social process for rapid transmission, imitation, and adoption by society at large. The social process for Green Revolution required educating, training, persuading, and incentivizing

tens of millions of uneducated traditional farmers to adopt new production methods within a very short time. The transformations that gave rise to the global environmental movement required building widespread social awareness at the household and community level combined with growing support for political action and new legislation, changes in research priorities and methods, induction of new subjects in the educational system at all levels, increasing coverage by the media, invention of new technologies, modifications in industrial processes, development of new types of jobs, creation of new types of businesses, changes

"What the world needs today is a global social movement inspired by high values and backed by the aspirations of youth determined to usher in a better world for all."

in accounting and economic measurement systems, new concepts and methods for financial risk management, alterations in investment behavior and countless other changes permeating virtually every aspect of social life.

Social transformation may be initiated by pioneering entrepreneurs such as Steve Jobs or Elon Musk or visionary leaders such as Lee Kuan Yew, father of Singapore's economic miracle, or C. Subramaniam, father of India's Green Revolution, but it acquires effective power and momentum only when it is backed by appropriate organizational mechanisms and fuelled by the endorsement, rising expectations and overflowing energies of society at large.

These are dramatic examples of what can be done in specific sectors and places. Countless experiments and successful models of this type can help prepare the ground for wider social change. A study of the successful transformations of the past—local, sectoral, national, and international—and the gradual growth and progression of change from one place and one sector to another can yield valuable insights into the process—its onset, stages, drivers, organizational and leadership strategies—relevant for accelerating transformation in countless areas.

But the transformation the world needs today is not limited to any geographic area or field of activity. It encompasses all sectors of society all over the world. Inspired leaders and organizations can play powerful catalytic roles in promoting and supporting the needed change as the UN is doing to support the implementation of the SDGs. But unless and until the need is embraced by a critical mass of informed individuals—political leaders, intellectuals, educators, journalists, business and financial executives, civil society and youth leaders, and representative of the wider population of humanity—it is likely to remain mostly on paper. What the world needs today is a global social movement inspired by high values and backed by the aspirations of youth determined to usher in a better world for all. No representative organization of government presently exists at the global level with sufficient power and influence to direct the movement. The global multilateral system first needs to be redefined and reinvented to serve the needs of humanity as a whole. No individual group can lead that

movement. But individuals and organizations can play a powerful role as catalysts in that movement.

Many organizations are working on goals and strategies for social transformation with specialized knowledge and research on specific fields, regions, and applications. The Academy's emphasis has been on a complete holistic knowledge of the principles on which social evolution and social transformation are based and the application of that knowledge to more effectively address global social challenges.

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An Integral Approach to Social Transformation

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1. Introduction

From conquering polio,* malaria,† or HIV/AIDS,‡ to the adoption of the Montreal Protocol to eliminate ozone depleting substances§, the history of humanity is full of success stories for collective action. According to research by the Oxford-based Our World in Data organization,¶ humanity is on average better off today than many decades ago. Despite the unprecedented population growth over the past century, we live during one of the most peaceful, most progressive, and stimulating eras in history. We are more apt to die from unhealthy lifestyle choices, suicide, or old age than from hunger, war, terrorist attacks, or transferrable illnesses. Since 1820, global poverty has been reduced from 94% to 9.6% in 2015, and global income has increased on average tenfold with falling global child mortality rates. Also, literacy has increased—from 12% in 1820 to 87% in 2014—and most countries are ruled by democratic governments. This progress would not have been possible without massive amounts of energy, economic globalization, and exponentially growing technologies, all of which must now become sustainable. This was all created by the collective application of human curiosity, innovation, creativity, a sense of wonder, and purpose. This should give us hope because creating better societies to ensure the future of life on Earth despite the grand global challenges can only occur if we believe it can be done. Positive motivation is important yet understanding the full picture including the factors hidden from view is the premise for any successful action.

To better understand how social transformation could be achieved within the context of planetary boundaries for many generations to come, let us take a closer look at the underlying factors influencing it through the lens of integral theory by Ken Wilber that has been successfully applied in more than 50 disciplines from medicine to economics, investing, and business. Explicating integral theory here would go beyond the scope of this paper, however, its roots are embedded in evolutionary theory and in the Platonic values, the True, the Good, and the Beautiful. Integral theory can help identify the missing pieces in the current paradigms that are failing us, and integrate all of reality, its exterior as well as interior dimensions, such as culture, emotions, and spirituality. It is a map that can help simplify and eventually navigate the complexity of reality while maintaining multiple world views and honoring the evolution of human consciousness from pre-modern to modern, postmodern, and post-postmodern structures of consciousness.

* https://en.wikipedia.org/wiki/Polio_vaccine
† https://en.wikipedia.org/wiki/Malaria_vaccine
‡ https://en.wikipedia.org/wiki/HIV_vaccine_development
§ https://en.wikipedia.org/wiki/Montreal_Protocol
¶ https://ourworldindata.org/

2. Inflationary Economics, Deflationary Technologies, & Social Manipulation

Nouriel Roubini warned about an impending collapse of the financial system long before the financial crisis of 2008.* Yet, we all know what happened then and during the COVID-19 pandemic making it obvious that our economic system in its current form would have to change to provide the necessary breeding ground for sustainable social transformation. Why? Because it is designed to allocate more money (quantitative easing) to an already bankrupted system that is based on debt versus real assets and one that is borrowing from future generations. Like cancer, the system must grow to prevent its own collapse. It is inflationary, it creates inequality, and is not sustainable long-term. It is hardly meeting the needs of the current generation and is compromising the ability of future generations to meet their own needs. The citizenry is losing trust in its government, a fact that leads to political and societal polarization across the globe.

Unfortunately, not only regular citizens will be affected, but the entire financial and economic system, said James Arbib and Tony Seba in their latest Rethink† report. They argue that a quickly growing global financial bubble around energy assets from conventional coal, gas, nuclear, and hydro power is imminent, and show that (1) achieving carbon neutrality more quickly and cheaply than expected is possible, (2) energy assets are severely mispriced, (3) fossil fuels, nuclear, and hydro power are no longer competitive and are doubly mispriced, (4) renewable energy sources have reached cost parity and are cheaper than non-renewable ones, and (5) governments must protect people, new companies, or industries from the financial risk of the conventional energy asset bubble.

At the same time, Silicon Valley technologists like Peter Diamandis insist that "tomorrow's speed of change will make today look like we're crawling" putting humanity at that ground-breaking point of technological evolution where its exponential growth is becoming explosive and massively disruptive.‡ Thus, sustainable social transformation can only occur if we quickly learn how to think, and most importantly to act, exponentially and globally, rather than previously in our history, locally and linearly. But that is easier said than done. While the complexity around us is accelerating making it virtually impossible to keep up with the storm of information, emails, explosion of technological advances, the price of technology and its application in every area of life from transportation to food, to education keeps tumbling too. Once an application or a gadget has been developed, the price of replicating it is virtually down to zero. A case in point is the smartphone. Before its creation, we had to pay separately for a camera, a GPS device, a computer to browse the internet, a recorder, or a dumb mobile phone, to name a few devices, all of which we now get as part of a relatively cheap smartphone. Thus, the technology explosion operates in a deflationary manner in the long run with one important caveat: its growth must occur sustainably and within planetary boundaries. This is currently not the case as demonstrated

* https://nymag.com/realestate/features/21675/

† https://www.rethinkx.com/energy-lcoe

‡ https://tinyurl.com/rnbcc27

by Sir Attenborough in the documentary "Breaking Boundaries".* If we want to ensure our future, we must go back to a safe planetary operating system. If climate emergency is not enough to threaten our very existence, we are also at war with sensemaking.

> *"How can capital abundance be leveraged to ensure the future of life within the context of deflationary technology, inflationary economics, and the grand global challenges including social transformation?"*

3. At War with Sensemaking?

Climate change has become obvious to most critics, but what is rather hidden from view and plays a key role in social transformation, is the digital technology behind the current social media manipulations. According to former Google ethicist, Tristan Harris†, the social media digital technology *à la* Facebook, Google, or TikTok, to name a few, has quickly become the most worrisome infrastructure of the 21st century. It is more intimately embedded in our minds and nervous systems than any previous infrastructure be it electricity, planes, cars, or printed media. In its current form, this unethical, unchecked digital infrastructure assaults the very foundations of our humanity. Individually and collectively, we no longer own the ability of sensemaking because we do not see the threats coming, we lack a good understanding of the underlying technology—mostly driven by unethical AI—and become the involuntary victims of its profit- or politically-oriented manipulations. These take place outside of existing democratic legislation, lead to unprecedented levels of addiction, depression, hate crimes, and act like a brain implant bypassing our explicit permission, volition, or approvals by accredited organizations that are supposed to protect us.

The Social Dilemma movie‡ demonstrates eloquently how the lives of billions of people on social media are manipulated by (mostly young) AI programmers without a deep understanding of the long-term impact their AI code might have on the society at large. Daniel Schmachtenberger goes even farther and argues that this situation has turned into a World War III that is not fought kinetically but on digital platforms.§

4. There is Hope

On the climate emergency front comes hope, for example, from the European Commission¶ that launched the European Green Deal. When completed and if implemented properly, this action plan can support the implementation of a sustainable finance model to

* https://en.wikipedia.org/wiki/Breaking_Boundaries

† https://en.wikipedia.org/wiki/Tristan_Harris

‡ https://www.netflix.com

§ https://aqalgroup.com/fighting-ww-iii/

¶ https://ec.europa.eu/info/publications/180308-action-plan-sustainable-growth_en

transform the economy of the European Union such that it can meet the goals of the Paris Accord and Agenda 2030 (SDGs) of the United Nations. The European Commission intends to achieve carbon neutrality by 2050 and has been joined by US President Biden's Green New Deal* and the Chinese government's 5-year plan aims to divest their investments from fossil fuels to green tech.†

These new green deals are providing the first regulatory and legislative steps for creating the economic foundation on which sustainable businesses can be built and societal transformations can occur.

5. From Capital Abundance to Social Transformation

The great advantage of both deflationary tech and inflationary economics is the availability of capital abundance starting with Venture Capital funding, Crowdfunding, or Sovereign Wealth Funds, to name a few. The only question is who gets the capital. VC funding has been a more traditional source of startup capital over the past five decades, helping to birth household names from Google, to Apple, and to Amazon, to name a few. Despite the pandemic, in 2020, U.S. venture capital investments reached the new staggering record of $156 billion (or about $428 million every day!), an increase from $136.5 billion in 2019; in Asia, VC capital ended up at nearly $80 billion, and European venture reached $40 billion in the same period.‡ On the crowdfunding side we can witness a similar capital abundance which demonstrates that crowdfunding has the potential to further disrupt the investment industry in a meaningful way because it levels the playing field by bypassing antiquated start-up funding through bank loans by attracting small capital investments to projects, business, and other causes from many people via Internet platforms. They are projected to grow by $124.35 billion during 2020-2024 with a CAGR of 18% in the same period.§

Mobile access is at the core of these developments with an estimated 80.9 percent of people having Internet access in developed economies in 2018 compared to 45.3 percent of persons living in developing markets. The global online access rate was 51.2 percent.¶ The significance of this connectivity from the economic let alone the social and cultural point of view is remarkable. Not only are there billions of additional minds and intelligences being added to the collective intelligence, but these minds have the potential to become both entrepreneurs providing new business ideas that seek funding online and to be also providers of cash/capital, in short, crowdfunders. This is not only true for the developed world but also for the emerging world. In 2013, the World Bank had estimated that the emerging world has the potential to leapfrog the developed world in crowdfunding, thanks to more than 344 million households that are able to financially invest via crowdfunding in community businesses.** By 2025 they should have the ability to deploy US$96 billion per year in crowdfunding investments with China in the lead and accounting for US$59 billion

* https://joebiden.com/climate-plan/

† https://www.weforum.org/agenda/2021/03/china-green-tech-coal-five-year-plan-environment-climate-change/

‡ https://tinyurl.com/ydwdxwp5

§ https://tinyurl.com/z8c49wp6

¶ https://tinyurl.com/nt6wfvwx

** https://tinyurl.com/y5rekclz

per annum. What does that mean? It means that somebody in one part of the world who has a great idea will get the capital she needs to start her company. That was never possible before. This is revolutionizing the start-up capital worldwide and could become a key vehicle to ensure the future of life on this planet, if guided in a sustainable manner. The same could hold true for another source of massive abundance of deployable capital, namely state-owned Sovereign Wealth Funds, which had held an estimated $9.94 trillion in global assets under management at the end of 2020.*

> *"The future of life can only be ensured through a massive mindshift toward a level of consciousness that can induce significant social transformation and save humanity from extinction. We know what to do. Now, we must do what we know."*

The main question remains: How can capital abundance be leveraged to ensure the future of life within the context of deflationary technology, inflationary economics, and the grand global challenges including social transformation?

6. Job Creation Is at the Heart of Social Transformation

An empty stomach will not get us anywhere. So, we must leverage said abundance in technology, money, and human capital to make the transformation to a sustainable world feasible. James Arbib and Tony Seba assert in their paper entitled "Rethinking Humanity: Five Foundational Sector Disruptions, the lifecycle of Civilizations, and the Coming of Age of Freedom" that this decade is decisive for the future of humanity. They argue that disruption will unavoidably affect all major sectors of the global economy from information technology, food, energy, to transportation, and materials, whose costs are projected to fall by a 10x factor or more. The production processes are prone to become more efficient by a significant order of magnitude and use 90% less natural resources while generating between 10x-100x less waste. Arbib and Seba join the ranks of Jorgen Randers et al. (2018) and consider that the implementation of the UN SDGs within planetary boundaries by 2050 is within reach. If we fail, we must be ready to face the resulting collapse and descend into another dark age as previous civilizations. They propose (1) to acknowledge that we are at a breaking point without equilibrium and there is no going back (2) to brace for the impact caused by the breaking down of every major system and mass migration, all of which will be compounded by technological disruption (3) to beware of the cascading impact of further disruptions and the race to the top (4) to follow smaller communities and big cities such as Shanghai, Seattle, and Silicon Valley that will be more likely to succeed over big countries (5) that resiliency and robustness will win (6) to rethink old concepts like economies of scale and efficiency because they are not shock-absorbent (7) to apply existing technology and tools to solve the

* https://tinyurl.com/5a44u7ru

problems; to not waste time to develop new ones (8) to follow exponential thinkers because they are more likely to succeed than linear thinking forecasters.

Small to medium enterprises (SMEs) have a significant role to play in achieving these goals, because they represent a significant economic force globally—with a contribution of about 90% of businesses and more than 50% of employment worldwide, according to the World Bank.* Also, SMEs contribute up to 40% of national income (GDP) in virtually all economies. Independent from the massive capital abundance, SMEs have suffered the most since the financial crisis of 2008 for governmental stimulus packages rarely reached them due to bureaucratic hurdles and outdated measurements criteria. That must change if we want to succeed.

Exponentially growing technologies are deflationary and are thus shifting the inflationary world economy right under our eyes. As the new green deals are getting implemented and massive amounts of capital are becoming available, SMEs are best positioned to fulfill the requirements of systemic change. They are by nature more flexible and progressive than older and larger corporations and can enable accelerated job creation in the new green economy. They can avoid social polarization. They are attractive to investors but de-risking becomes key because the new regulation eliminates investors and entrepreneurs' previous dilemma in which they had to choose between profit and impact; between traditional, for-profit-only models on the one hand, and multiple-bottom-line structures with a positive social or environmental impact on the other. This leads to the next paradigm in investing, the Integral Investing framework. With the support of new green deal legislation, capital abundance, exponential tech know-how, and existing talent, we are best positioned to create the type of social transformation we all desire. If we only knew what the hidden manipulators are! That, we do not see coming.

7. Hidden Attractors in Plain View

Unfortunately, climate change is not the only existential threat to humanity and social transformation. After nuclear threat, unsafe AI poses a third significant threat, particularly if it evolves to superintelligence, a major challenge for which we are not ready. It is time we join the ranks of Elon Musk, Oxford professor Nick Bostrom, MIT's Max Tegmark, and the late Stephen Hawking, who deem AI more dangerous than nukes and call for the general adoption of the 23 Asilomar AI Principles to ensure the ethical application of AI.† We must awaken to the reality that our current digital infrastructure (hardware and software) must be regulated and evolve quickly to counteract the already existing monopolies of AI-driven private platforms that rule the social media and are undermining democratic institutions right under our noses. These platforms already have a life of their own, unmitigated by law and legislation, and have become massively pathological and manipulative with the sole intention to maximize profit at the expense of human development and global unity. The result is ongoing cultural wars and societal polarization that manifest as ongoing attacks on science and reason by the ignorant. They pose a present danger to cultural evolution,

* The World Bank SME Finance, 2020, https://www.worldbank.org/en/topic/smefinance

† https://futureoflife.org/

social stability, and the future of consciousness. AI algorithms are data-hungry and depend on our data generosity because without data they cannot function. Their main purpose is to collect massive amounts of data to improve themselves, which in turn translates into higher revenues for their operatives. For example, nobody thought much about Google's vehicles driving through our streets and taking pictures of our houses, cars, or gardens. Without our consent, our data is available globally for everybody to access through Google maps. Before it become known that Facebook, to give another example, unlawfully sold millions of personal data sets to the Cambridge Analytica, hence enabling Russian hackers to target and significantly influence American voters during the 2016 election, few people took Facebook's AI algorithms seriously or thought them dangerous.* In fact, no one has offered me a share of the revenue derived from my own data, yet, although it would seem only fair to do so.

When I talk to people about their views about privacy, most say they have nothing to hide. But whistleblower Edward Snowden asks to think again: "saying that you don't care about privacy because you have nothing to hide is no different from saying that you don't care about freedom of speech because you have nothing to say." In other words, if we care about social transformation by preserving our democracies along with all our precious human rights—equality, freedom, and liberty—we must think again, and more profoundly. Why? Because our freedom is priceless, and it is certainly not up for grabs. I grew up in Romania under Ceausescu's dictatorship and felt first-hand what it means to have a Big Brother watching you all the time. We must take this very seriously. Organizations like Tristan Harris's Center for Humane Technology† or Daniel Schmachtenberger's Consilience Project‡ were built to accelerate the development of social transformation literacy by counteracting manipulative social media companies. We would be well counseled to stay vigilant.

In the final analysis, the future of life can only be ensured through a massive mindshift toward a higher level of consciousness that can induce significant social transformation and save humanity from extinction. We know what to do. Now, we must do what we know.

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* https://tinyurl.com/y9rorxln

† https://www.humanetech.com/

‡ https://consilienceproject.org/

Transformation Literacy as a Collective Stewardship Task

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The recent years have seen the increasing use of the term *transformations* in the context of the multiple crises of climate change, biodiversity loss, and global health challenges. Transformations encompass conscious change efforts that involve collaboration, innovation, societal learning, institutional strategy changes, and individual approaches towards thinking and acting. They include shifts in power structures and relationships and are built on the assumption that positive change for a future, a more sustainable state of the world, can be achieved. The premise is that human behavior can change at a collective scale. The envisaged transformations would alter the way human beings operate with each other and the planet Earth in the Era of the Anthropocene in favor of a world that works for 100% of humanity and the planet.

Societal transformations have always happened in human history, and many have been consciously and actively promoted. What is new about the situation at the beginning of the 21st century is both scale and depth. The scale of transformations needed—as a result of the impacts of climate change—is almost globally acknowledged. No country, no government, no company, and no citizen can escape the consequences of global warming. But the depth of change needed is only partly accepted. This is not surprising as the institutional and political structures on which our globalized current systems are built, tend to perpetuate the existence of the multi-faceted global arrangement that took us to the sustainability challenges we face.

The story about how the world works, how reality emerges, and how people can or cannot co-create the future, gives rise to narratives of possibilities, which are one of the key leverage points for *transformation literacy*. ***Transformation literacy*** **is the knowledge and capacity of collectives of decision-makers, change agents, and institutional actors to steward sustainability transformations effectively together across institutions, societal sectors, and nations** (Kuenkel 2019). It rests on people's ability to collaborate or act in complementarity, and refers to multiple actors in multiple places that can hardly be coordinated, yet need to find local solutions to global challenges, or drive global turning points that support local changes. There is already a scientific history of the call for mindset-shifts towards seeing the world as an interconnected living system that has a long history, which has been emerging as a backdrop to the increasing destruction of the living world.

Two complementary forms of narratives have been emerging in support of transformations in the last decade. The first is a narrative of **emergency**, evidenced in the frequent use of terms such as climate emergency or more recently called "planetary emergency" in which the scientifically predicted threats and the actual experience of such predictions such as extreme weather events, ocean level rising or droughts accelerate substantiated *anxiety* which leads to taking a more responsible decision, both individually and collectively. Examples are the Club of Rome report on 'Limits to Growth' (Meadows et al. 1972) and its updates (Meadows et al. 1992; 2004); the concept of peak resources and the corresponding effect on the global

economy (Heinberg 2011); the concept of a 'safe operating space for humanity to thrive' in the context of avoiding further transgression of the biophysical planetary boundaries (Cornell 2012; Rockström et al. 2009); the image of 'Hothouse Earth' (Steffen et al. 2018); the declaration of a 'Planetary Emergency' (Club of Rome 2020); the warning by more than 100 scientists of a 'climate emergency'(Ripple et al. 2020), the outlining of a 10 point action plan for a circular bioeconomy for sustainable wellbeing (Fath et al. 2020), and the emphasis on a 'global crisis' (Dasgupta 2021). The *emergency narrative* assumes that the operating system of humankind can be improved while using the existing institutional and political structures. Enhancing *transformation literacy* for implementing pathways to a regenerative civilization here means to foster the ability of institutional actors and political governance to decide, orchestrate and implement these solutions at scale.

The *second* narrative can be seen as one of **emergence** (Preiser et al. 2020). It has grown in the last decade more prominently around pathways to different futures that acknowledge the possibility of wellbeing on a healthy planet. It is a narrative that emphasizes the human potential, the ability to co-create the future more consciously, and, above all, the role of planetary care-taking as the likely route to Anthropocene responsibility. It is a narrative of possibilities and of inventing a different future in an interconnected world, while acknowledging that there will be plural futures and multiple pathways to enacting them. The *emergence narrative* is naturally complex, less directive, and open to fundamental, if not revolutionary shifts. It is a narrative of learning societies that are capable of adapting and also has a long history already. Scientific examples of the *emergence narrative* are the human responsibility to 'further life-enhancing structures and patterns' in the Potsdam Manifesto (Dürr et al. 2005); the concept of an 'Earth Community' (Korten 2007); the 'wellbeing' approach (OECD [Organisation for Economic Co-operation and Development] 2015); the concept of the 'regenerative economy' (Fullerton 2015); the concept of 'Earthland' (Raskin 2016); the B-Team's 'Great Transformation' approach*, the 'Meadows Memorandum' (Leading4Wellbeing 2017); or the concept of pluraversality (Preiser et al. 2020). *Emergence narratives* often emphasize the need to fundamentally shift the operating system of human action on the planet, call for reconstructing a more just global society, and a redefinition of the purpose of the economy to recalibrate its essential principles in line with planetary life support systems.

Both narratives influence the global discourse as much as local action. Some of the required transformative efforts get integrated into the tasks of companies, governments or international institutions. Other transformative efforts take place outside the dominant institutional structures, partly out of the frustration that change from within structures is too slow, partly, because transformative social innovations have always emerged from niches outside the mainstream (Verbong and Loorbach 2012). In transformation as well as transition research, it is widely acknowledged that social change at scale requires deliberate strategies: top-down approaches, such as advanced and future-oriented policy decisions, as well as bottom-up approaches which model the societal or even global change (Avelino et al. 2014, Rotmans and Loorbach 2010; Loorbach et al. 2016). In addition to administrative

* Source accessed on 15th April 2017: http://bteam.org/

transformation efforts and innovative communities, a new phenomenon has emerged in the last ten years: global alliances and networks of networks that subscribe to transformative change at scale and organize around issues and themes across the globe (Kuenkel et al. 2020; Waddell 2016, Waddell et al. 2015). Networked action is a patterned constellation that mirrors dynamic life structures much more than the ordinary, most often clearly delineated and hierarchical institutional set-up.

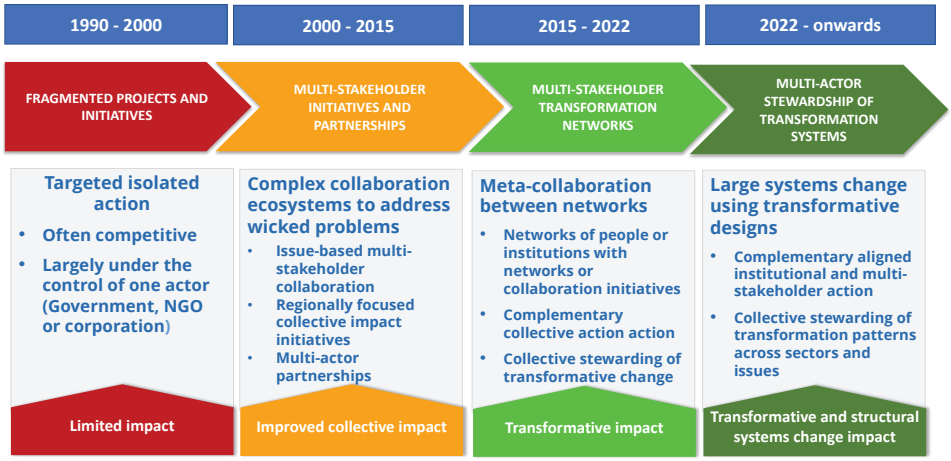
"No one network, movement or alliance can solve the multi-faceted sustainability problem because of their very embeddedness."

What is important to understand for *transformation literacy* is that partnerships and collaborative initiatives begin to knit new communicative and action-oriented structures into the given institutional arrangements. While in the last decade of the 20th century it was certainly strange to sit at the same table with company representatives, civil society activities, and government officials, today, this is perfectly normal. These multi-stakeholder partnerships have not always been easy to implement and may have had questionable results, but they contributed to cross-societal learning, overcoming stereotyped thinking, and developing new working relationships across societal sectors (Bierman et al. 2007; Kuenkel et al. 2020), which is a prerequisite for the collaborative capacity pro-active transformations need. Meanwhile, and partly parallel, the above-mentioned networks and alliances emerged. Some are composed of international communities of people and institutions who pursue the same sustainability goals in their different practices, others are deliberate networks of actors that intend to accelerate change in institutions at scale. Their purpose is to influence institutional and political actors in many entities across the globe at the same time. Often, they create meta-collaborations between existing initiatives and networks. Hence, they, again, create dynamic, new, non-hierarchical, cross-sectoral, and complex structures that bring forward transformative change across and within the existing institutional set-up. These multi-stakeholder transformation networks are at the forefront of pathways to regenerative civilizations, because they model many aspects of future societies that will be crucial for the way such societies will operate, such as complex adaptive structures, broad strategizing, and joint responsibilities. They allow fast communication across silos and institutional boundaries. Subsequently, they are able to adapt and adjust strategies more quickly; or, they develop strategies, information and action plans collectively in communication loops, which are non-hierarchical and allow for co-created results, and contextualized implementation in different areas. They have the potential to enliven not only their own members to experience that co-creating future is possible, but also bring the vision of regenerative civilizations into existing institutions.

These networks of networks and alliances are laboratories for a regenerative future. Stewarding transformative change in patterns of collaborative networked action will sooner

or later become the main and conscious managerial task of politicians, administrators, companies, societal actors, and citizens. Cross-sectoral and cross-institutional structures can better cope with the speed that sustainability transformations require. But there is a next step on the horizon of the trajectories towards transformations for which networked action as described above is the basis: the stewardship of *transformation systems.* The complexity of sustainability challenges is coupled with the insight that loosely coordinated intentional and collaborative systems of actors from within and outside institutional structures need to work together in a complementary way. Today, the many initiatives that operate globally begin to connect with each other, but tend to stay oblivious to understanding themselves as loosely connected parts of *transformation systems*. These interventions need to be implemented in appreciative acknowledgment of each other, without centralized coordination, and they also need to function as a collective learning system. Fig. 1 shows the trajectories of emerging forms of networked and collaborative section towards stewarding transformative and structural systems change. Of course, the periods overlap: there are still many isolated projects happening driven by institutional or sectoral silos, and only a few countries have adopted a collaborative multi-stakeholder partnership approach to overcoming sustainability challenges. But the trends are clear: pathways to regenerative civilizations require networked action and large systems change requires the stewarding of complex transformation systems with many institutional and non-institutional actors involved. We are only at the beginning to understand what it really means to build and leverage *transformation systems* for the transformative and structural systems change our planet and humankind needs.

Figure 1: Trajectories in Transformative Change (Copyrighted to the author)



Taking the perspective of *transformation systems* invites us to take care of the many small and large change efforts that already exist. Pathways to regenerative civilizations are organic processes that involve multiple approaches and practices. They are decidedly nonlinear based on multiple visions of regenerative civilizations that require translation into different

contexts. There is no 'one right way' to drive transformations. The more freedom there is to experiment with pioneering the future, the higher is the potential that transformative change happens. Yet, the experiments need to be exposed to collective learning, and ultimately, they need to be integrated in both existing and new structures. For the enhancement of *transformation literacy,* this means that actors from within and outside institutions need to become familiar with new approaches that tune into the emerging trend of dealing with the complexity of transformations in a more effective way. There are three strategic core approaches that require conscious attention in *transformation literacy*: *Collective stewardship* as the pro-active engagement for a regenerative future in mutually supportive strategies (Kuenkel 2019, Kuenkel and Waddock 2019, Kuenkel et al. 2020); *visionary multiplicity* as the acknowledgement of plural approaches to the quality of life as an underlying principle of regenerative civilizations; and *network leverage* as the deliberate and reflective use of power and influence across sectors and institutions. Table 15.1 shows an overview of how these strategic core approaches of *transformation literacy* manifest.

Table 1: Strategic Core Approaches of Transformation Literacy

Collective Stewardship	The pro-active engagement for a regenerative future takes place collaboratively by many complementary actors without centralized control. Mutually supportive strategies towards safeguarding planetary and human wellbeing at different levels of the global society connect in transformation systems.
Visionary Multiplicity	The strategic acceptance that the potential of humankind's future lies in its diversity allows for plural approaches to the quality of life as an underlying principle of regenerative civilizations. There cannot be one vision that fits all circumstances and contexts. The broad agreement on the properties of regenerative civilizations allows for a plurality of interpretations and manifestations to be anchored in the political and institutional landscape.
Network Leverage	Network leverage crosses boundaries to make use of the power and influence of the variety of actors involved in networks, alliances, movements or communities. Bridges between pioneering niche initiatives and the institutional landscapes create leverage to influence and finally shift structures and strategies of existing institutions.

In the complexity of transformative systems change with multiple actors in diverse places and various institutions who have different interests and capabilities, it is important to recognize that no one network, movement or alliance can solve the multi-faceted sustainability problem because of their very embeddedness. Only multiple contributions by many networks,

all referring to the broad vision of properties of a regenerative civilization, are the pathway to better functioning, more vital systems. No matter how small or large change initiatives are, they are evenly important, because multiple small system change is the cornerstone of large systems change. *Transformation literacy* integrates complementary approaches: from technical to social to cultural to economic. It is built on the understanding of essential features of life's processes which guide evolutionary processes. The design of transformative change needs to reach people's hearts and minds—because this is the pathway to dynamic and self-driven change in behavior. The agent of change is human, hence leveraging human competencies is central to the acceleration of change.

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From Below: Roots & Grassroots of Societal Transformation
The Social Construction of Change

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Those who aim for societal transformation, understood as systemic change, must first understand fully what the concept of systemic change indicates and implicates. Historically speaking, even before the scientific world had begun to explore the meaning of complexity, setting forth the unique characteristics of complex systems as opposed to merely complicated systems, the *idea of systems itself* had revolutionized the entire framework of the sciences, and later, the humanities as well as the sociological sciences, which unite both.

"That systemic change must begin from grassroots communities and single individuals and groups, and by definition can never be a top-down imposition, implicates a necessary rethinking of our educational institutions, which are still based on logics of separation and on "false dichotomies"."

In order to pursue systemic change, therefore, it is first and foremost essential to understand the basic structure of a *system*—of *any* kind of system, be it biological, physical, social, or otherwise. All systems, as defined many years ago by Ashby, Wiener, Von Neumann, Kauffman, Von Bertalanffy, Bateson, Anderson, Simon, Von Foerster, Morin, and others, are made up of smaller, interactive subsystems, or subunits, arranged *hierarchically*, where the changes "from below", in smaller sub-units, trigger changes in higher levels of units, changes which will affect the entire system and its interactions with other systems and with the environment [1-17, 18-58].

Systemic change, in fact, regards complex dynamic systems, open to the environment, whose changes and interactions, initiated among subunits, give rise to what is termed self-organization, or emergence, a universal phenomenon that is responsible for the appearance of life itself. What social leaders, political authorities, experts, intellectuals, and last but not least, economists fail to realize is the inescapable necessity that such change—systemic change—begins at the bottom level, among the smallest and most unassuming elements in the system. It is simply impossible to obtain systemic change from the top down, and herein lies the fatal error made over and over again by well-intentioned reformers from the upper echelons of society.

We continue to invoke "excellence", calling for the best of the best, the top talents, the most highly celebrated geniuses from the halls of the most prestigious institutions, to spark off, implement and execute the metamorphoses we need in order to transform society in the

most positive, efficient and enlightened manner. Yet despite the undeniable importance of a complex, systemic approach on the part of leaders chosen for their brilliance and integrity, true and profound change, that is, social and cultural change, can only come about from the bottom up, a transformation that will never be realized as long as the protagonists are taken solely from select groups of elites and/or intelligentsia, but must arise from a conscious, deliberate action intent on widening the foundations horizontally, as amply as possible, through processes of inclusive education and literacy, not only digital literacy. Because genuine societal transformation consists of local, national, and global citizens educated and trained in critical thinking and towards a systemic vision of reality, carried out on a long-term basis.

Thus, the first thing we must recognize is that systemic change shares the essential characteristics of complex adaptive systems and their emergent properties and processes. That systemic change must begin from grassroots communities and single individuals and groups, and by definition can never be a top-down imposition, implicates a necessary rethinking of our educational institutions, which are still based on logics of separation and on "false dichotomies" [1, 7, 15, 16], as well as on frontal didactic methods that exclude participation and empathy. The didactic methods that should be fostered from now on, adopted by teachers who have themselves been trained in systems thinking—thus requiring fundamental changes in the universities that carry out the function of "forming" future teachers and professors—are those encouraging collaboration and contribution, where the error is welcomed and analyzed, and where digressions from the main topic open other paths to knowledge. It is furthermore crucial to realize that schools and universities are not separate "entities", but rather are *a single ecosystem* and must be treated as such.

Furthermore, within a framework that has become essential, of rethinking and re-defining/overcoming the dichotomy nature/culture, an interdisciplinary and multidisciplinary approach to complexity is becoming more and more urgent for the analysis and study of dynamics that are themselves more and more complex (non-linear and unpredictable), in which the patterns of discourse strongly condition one another, sharply challenging traditional linear theoretical-interpretive models. All of these need to materialize into educational proposals and functional strategies for the *social construction of change*, which as we have said, when imposed top-down is (and will always be) an exclusive change, for the few and for a brief period.

Above all, it is not merely a matter of adapting educational and training processes to technological progress. It is essential to uproot the bases, modifying the entire *architecture of the fields of knowledge and skills* [1-16]. Our students and our teachers alike must be capable of recognizing the radical interdependency of all phenomena, and of the impossibility of eliminating uncertainty and unpredictability in complex systems such as biological and social systems, thus realizing that setting objectives of control and *elimination of error* (intrinsic to life itself) are based on pure illusion.

We are already living in a hyper-technological civilization that is progressively augmenting its systems of automation and simulation, which are pushing aside human beings and their decisional territories and reducing the dimensions of responsibility; a cultural paradigm

poised towards reaching perfection, towards rivaling the perfection of the machines. But it is precisely our errors that denote our being human and being free, which must include the *freedom to make mistakes* or even just to think about making them.

This means rethinking the relational and communicative spaces within the formative and educational institutions, re-launching education within a systemic perspective, which can only be socio-emotional.

Another essential requirement for educating towards societal transformation is the breaking up of what I have termed elsewhere the "tyranny of concreteness" [10, 11, 14-16]. Educators, students, and managers alike need to find the courage to go beyond that deceptive vision that pushes us to always look for something useful in what we do, even regarding our personal growth and intellectual maturation.

It is the passions and the interests of young people, instead, that should be awakened, encouraged and brought out through a complex educational pathway that must begin during the first years of school; avoiding the "great mistake" [1,3,5,7-9] of the hypertechnological civilization: that of believing that the kind of education and/or training that is necessary today is purely technical and/or technological, which instead is the exact opposite of what we so desperately need. While the universally declared objective of technological innovation is to improve human performance, paradoxically, this performance is measured in exclusively quantitative terms, while instead it is undoubtedly *qualitative*. Measuring quality is a contradiction in terms, but it is something that must be addressed. Certain benefits, for example, the effects of training, renewal, and update courses for human resources cannot be evaluated in quantitative terms, and especially not in brief periods.

Only through well-designed and implemented educational strategies can we produce the level of cultural change which can set off economic, political and social change: there is no room for improvisation or shortcuts—the strategic level for teaching begins in the earliest years of school: this is the crucial level where "well-made heads" are formed, and only here can a culture of legality, respect, and non-discrimination be forged, where the socio-cultural conditions of a New Humanism that will reduce the hegemony of the individualistic and egoistic value systems that have been weakening social bonds can be constructed.

The achievement of these dimensions will not be feasible, however, if students are not capable of critical analysis, systemic thinking, and using the *scientific method*, if they have not been taught how to use *logic* to develop or verify arguments, if they have not learned a method for synthesizing the enormous quantities of information they encounter, if they have not received an education that enables them to see the *connections* between knowledge and life-experiences and to evaluate the social-historical origins of cultural and legal norms.

Any global initiatives that may be set up to coordinate movements and ideas from local individuals, groups and communities, should have the following objectives, both on a macro and micro level:

- to overcome the age-old linear and cumulative models that are still profoundly affecting the structure and the very organization of fields of knowledge, by setting up **international**

projects focusing on rethinking education, training, and research within educational institutions. These projects should be designed to reformulate and redefine the complex architecture(s) of fields of knowledge and skills within educational institutions and training agencies, with the objective of transforming the logics of separation and mono-disciplinary visions into inter/multi/trans-disciplinary approaches;

- **to define new international networks of research and work with universities and scientific academies, associations and institutions, overcoming** the traditional idea or view of learning as a process of accumulation of knowledge, in view of increasingly complex and articulate learning processes that are, above all, more and more oriented towards cooperation and collaboration, with the aim of actually reformulating an entire system of thought, increasing what Morin has called the *knowledge of knowledge* [43, 44, 45] with greater awareness, with didactic methods using error, doubt, and unpredictability to form critical minds;
- To recuperate the complex dimensions of educational complexity through **local and international projects** rewarding empathy, critical thinking, a systemic view of phenomena, and the teaching of communication, other than those dimensions we have deliberately chosen to remove, namely, creativity and the collective imagination;
- To trace the "best" (rather than "ideal") itineraries by preparing people to *inhabit the current and future complexity*, favoring those who will be able to shape critical and elastic minds at every level: *hybrid figures* [1-11, 15, 16] open to the contamination among fields of knowledge and skills;
- To ensure that the international projects and working groups created are in agreement with and will act on the premise that **cultural transformation must not be underestimated by entrusting strategies and actions to technology alone.**

It is of the utmost importance, of course, to acknowledge that all of the above can only come about through **long-term policies and substantial investments** in education, training, and research as well as in **orientation**, which should never be delegated to mere marketing practices. Without funding, the self-organization and emergent properties that will spring up from grassroots participation will be unable to thrive and spread; thus, tangible actions must accompany the good intentions on the part of leaders, policymakers, and innovators.

It is time to become aware that the progress made so far in large areas of society is essentially technological in nature, whereas similar progress in social, cultural, and moral awareness has not yet been reached. Although we are surrounded by immensely sophisticated levels of connection and technology, new levels of inequality and asymmetry have emerged, even within (and sometimes owing to) this very technological progress.

In my opinion, social transformation implies *"inclusion",* which in the age of globalization, is a problem of global inclusion and global citizenship; because rather than simply "connected citizens", we need citizens educated and trained in critical thinking and with a systemic vision of reality (long period). Indubitably, innovation is a complex process;

"innovation is complexity". The absolute value of culture must be reformulated in terms of its being a 'common good' and a fundamental device for social cohesion, in a historical phase that asks us urgently to rethink the structural conditions of the 'social contract', of our cohabitation [2, 11, 13].

A project for transnational communities that, we hope, will carry with it the ambition of finally putting the *People* (and the *life-worlds*), and not *technique,* the market or *consumerism,* at the "heart" of a developmental model, which up to now has clearly shown us all of its criticalities and incongruences.

Conclusions

From a whole system perspective, societal transformation is the meta issue. All aspects of human society are sub-elements of it. Around the world, many experts have developed well thought out societal transformation theories and processes. The above essays reflect the rich diversity of ideas in this area.

The authors highlighted a number of key themes related to the arts, humanities, system sciences and economics. A main theme is that current societal narratives perpetuate system failure. There is a profound need for new narratives. Several authors suggested that they should be created through dialogic social processes (Reuter) as well as processes that facilitate reconstruction of societal ideas and systems (Werlen).

There also was a broad recognition of unsustainable values. Through the lenses of different fields, the authors discuss how the values and narratives of consumerism, growth and industrialization are unsustainable and driving system failure. The creation and cultivation of more sustainable values is an essential part of societal transformation. This goes hand in hand with a new worldview, one that recognizes the diverse aspects of society as interconnected parts of one dynamic whole system. Gills and Hosseini discuss this through their 'globalisations' and recognition of interconnected local and global systems. Several of the authors discuss the need for grassroots, local and communal processes and how these facilitate the development of new values and worldviews that support societal transformation.

The requirement for structural change is another theme emphasized by the authors. A consensus emerged around the need to recognize how fundamentally flawed systems perpetuate socio-economic inequality and ecological decline. To address this, several authors suggested different strategies for resolving systemic flaws in education, economics and the arts. There was widespread recognition that institutional and systemic change is essential for achieving societal transformation.

Combining the suggested new narratives, worldviews and system change strategies provides an overall framework for societal transformation. The framework recognizes the interconnectedness of local and global challenges, and shows that re-alignment with the laws of nature is essential. New narratives and societal transformation strategies must operate within planetary boundaries and abide by the laws of nature. Humanity cannot survive and thrive without these adaptations.

Many challenges and opportunities remain in areas including the arts, culture, education, and systemic change (economic, political, institutional). The above essays illuminate the need for cross-disciplinary, whole system approaches. Combining local and global, top-down and bottom-up approaches also is essential for successful societal transformation. These essays provide a foundation for the ongoing work of the WAAS Societal Transformation Working Group. Going forward, a primary emphasis will be on highlighting, developing and implementing practical, specific societal transformation strategies. Given the rapidly growing environmental, social and economic challenges facing humanity, there is an urgent need to engage in creative thinking together to develop real transformative alternatives and redesign civilization.

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Transformations to Sustainability:
Why integrated social change requires a political process based on inclusive communication

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1. Introduction: Ecological and Social Dimensions of Sustainability

Contemporary societies and their economies must undergo a transformation to sustainability without further delay if we are to avoid an ecological and socio-political disaster. To achieve a rapid transformation, principles consistent with sustainable ecosystems and social systems need to be identified, and then applied systematically across all sectors. What are these principles in their most fundamental form, and how can they be applied?

To answer this question, we can draw on the insights of anthropology, a bridging science dedicated to the holistic study of humanity across the entire span of its evolutionary development (physical anthropology) and across the full breadth of its cross-cultural diversity (cultural anthropology).

The professional practice of ethnographic fieldwork in anthropology is designed to produce a high level of self-critical, meta-cultural awareness, revealing that our taken-for-granted way of life is just one cultural option. Meta-cultural awareness lays bare the extent to which the social behaviour of human beings is culturally learnt and hence adjustable if need be. As a side effect of globalisation, furthermore, exposure to other cultures is now also experienced at a popular level, opening up the possibility to utilise meta-cultural awareness for the purpose of societal change. This new awareness can make us feel dis-embedded, enhancing the appeal of fear-based populist identity politics, but it also can boost self-reflection and thus liberate us from blind adherence to destructive cultural practices, potentially producing an 'anthropological moment' in the history of human consciousness.

Anthropological study of human societies has revealed that the health of human societies and ecosystems rests on the same two key elements: a high degree of diversification and a dense web of cooperative interdependence relationships that capitalise on this diversity. These system requirements are not recognized within prevailing economic narratives, whose proponents have instead promoted a naïve Darwinism to legitimize and promote self-serving and monopolistic behaviour. The false premises of this cultural narrative need to be challenged and its negative consequences charted. A new narrative is needed, promoting human wellbeing and responsible environmental stewardship.

Social and ecological sustainability are both based on diversification and interdependence, and hence we have a dual crisis with a common cause and similar solutions. The same strategy of unrestrained profit maximisation that drives escalating inequality also drives ecological destruction. Once the torch of reflexive, meta-cultural awareness is pointed at this destructive cultural practice and its supporting cultural narratives, particularly in economics, an opening is created for real change.

2. Unsustainability: The demand end of transformation

The current social crisis is caused by escalating disparities between rich and poor nations, as well as rich and poor citizens of particular nations. An Oxfam report notes that "eight men possess the same wealth as half the world's people." Middle-class people in affluent nations are also disadvantaged by these developments, as the research of Senator Elizabeth Warren has revealed. At the extremes of disadvantage, we find that some 795 million people went hungry in 2014, and more today in the wake of the COVID-19 pandemic. At the extremes of affluence, the meaning of wealth is disconnected from individual consumption and becomes primarily a quest for power. Such concentration of power works to perpetuate and institutionalise inequality through lobbyist influence on national and international policies.

> *"Effective solutions often stem from the imaginations of people at the social margins who are not so invested in the prevailing order as to be blind to its failings. Unfortunately, they tend also to be the most ignored and excluded from important conversations and decision-making processes."*

The current ecological crisis has been much discussed in academic literature, including anthropology, but even experts struggle to picture the full extent of the challenge. Non-renewable resources are peaking, and renewable resources are extracted above their renewal rate. Biodiversity loss occurred at a rate of 52% between 1970 and 2010, according to the WWF 2014 Living Planet Report. A less well-known ecological threat is the fact that half of the life-supporting and irreplaceable topsoil of the planet has been lost in the last 150 years.

3. Transformation: The supply end of sustainability

There is now a widespread academic consensus that deciding exactly what to do, locally, regionally, and globally to achieve the Sustainable Development Goals (SDGs) will be a complex task requiring a multidisciplinary and cross-sector approach. The scientific community can contribute factual analyses, but policies involve values and interests and are thus political. The lack of a process for achieving commitment to mutually agreed multi-scalar crisis action plans remains a major political obstacle to a rapid and integrated response.

Transformation to sustainability plans must first of all acknowledge the depth of cultural change that will be required. Increasing product life, repair, reuse, upgrading, closed loop recycling, resource (rather than labour) taxes, and a major redirection of investment flows and reallocation of labour are some of the key measures needed. Excessive per-capita consumption needs to be curbed, while the supply of essential items must be secure. For investors and consumers alike, modesty and restraint will be more palatable when there is a guarantee that reasonable profit expectations and basic needs will be satisfied. This will be the message of the new cultural narrative.

The prevailing assumption has been that technological innovation will solve all problems, notwithstanding the fact that the entire dilemma we now face is due to the inappropriate use of modern technologies. A sixth Kondratiev wave of innovation may well be sustainability-driven and delivered in part by the spontaneous efforts of inventors, entrepreneurs and investors, but there is a risk of further unintended environmental and social consequences. The high-tech, big industry perspective must thus be tempered by looking at what is already sustainable right now, or what was traditionally sustainable. We may rediscover that very often 'small is beautiful,' as Ernst Schumacher pointed out in the 1970s. A stunning contemporary example of this principle is the fisheries industry, which is heavily subsidised to destroy biodiversity, create enormous waste, consume large quantities of fuel and threaten the livelihoods of 12 million small fishermen, even though the latter are more efficient, have less impact on biodiversity, use less fuel and produce less waste. Similarly, local traditional agriculture tends to be more organic, diversified, sustainable, and socially responsible than the industrial variant. A fusion of sixth wave technology and small-scale diversified local solutions may be our best hope, based on a cultural critique of the modernist, science-based technological problem solving from a perspective of sustainability and social inclusion, along with a greater appreciation for local knowledge of sustainable living and on a cultural critique of the modernist, science-based technological approach that has been the source of all unsustainability.

"Unity must not be thought of as synonymous with sameness. Respect for the value of diversity and commitment to open information flows are the psychological and social foundation for reaching a shared and truly rational understanding of how we can build a socially and ecologically sustainable future together."

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4. Toward a Plan of Action: The Power of Diversity and Open Dialogue

Transformations to ecological sustainability require us first to change the way we deal with one other, our 'social ecology.' A political process is needed to generate the necessary shared commitment to sustainability. The key 'social ecology' principles of diversity and cooperative interdependence teach us how such a political consensus can be achieved: we need to enact values that reflect these principles.

Some of these foundational values include: Presence, Acceptance, Openness, Courage, Compassion, Imagination, and a Collective Sense of Responsibility. The value most evident from an anthropological perspective, however, is: Respect for Cultural Diversity. Unique personal and social histories and the associated diversity of personal and cultural knowledge are the greatest resources the world possesses. Ideally, if one person or culture was to discover an effective solution in a crisis, all would recognize and adopt it. In reality, we do not yet appreciate and respect diversity fully, despite much lipservice. What is needed is a dialogical

process that will free conversations about a shared future vision and action plan from the blinding effects of exclusion and domination.

Effective solutions often stem from the imaginations of people at the social margins who are not so invested in the prevailing order as to be blind to its failings. Unfortunately, they tend also to be the most ignored and excluded from important conversations and decision-making processes. Even in relatively open societies, marginal voices often are mistrusted and silenced. Knowledge and imagination are distorted or colonised by power. Quite apart from the injustice of it all, such colonisation of knowledge and imagination leads directly to an impoverishment of public discourse and practice.

On the other hand, humans also have shown a tremendous capacity to share knowledge and values and to engage in the collective imagination and joint action. We are endowed with a unique ability for language-based communication, which has enabled unprecedented social cooperation. Communication helps us unite, but unity must not be thought of as synonymous with sameness. Communication is only meaningful between those who are diverse and hence have different things to say. Respect for the value of diversity and commitment to open information flows are thus the psychological and social foundation for reaching a shared and truly rational (free knowledge exchange-based) understanding of how we can build a socially and ecologically sustainable future together.

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Transversalism and Transformative Praxes:
Globalization from Below

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Viewed in a world-historical perspective, social change, or social transformation, is not an "event" but rather a constant, a perpetual historical process. Human social organisation is perpetually in motion but within certain parameters of continuity. For over five millennia, since the origins of cities, the state, and class society, human social order has continued to evolve through a number of recognisable patterns of social change, including the historical formation of an ever-larger system of mutual interactions, or "World System" (Frank and Gills 1993). The historical trajectory of that world system has reflected and expressed the fundamental structural aspects of urban-class and state-based civilisation itself, including material, ideational, technological, and ecological sources, and dimensions of social change. These patterns have also reflected the particular social ecology of this form of civilisation, and its modes of human relations with the ecological systems upon which humans depend.

"The most important aspect of social change in this century involves how humanity must realise a relationship with the web of life based upon recognition of the unity and the sacred value of all life forms and living within the objective "planetary boundaries" of earth system dynamics."

Over the course of these past five millennia of the history of this form of civilisation and world system, fundamental patterns emerged constituting extractivist relations with the "environment" or "nature", culminating in the present global patterns. There have been certain continuities in the global history of this world civilisation and World System, including some secular trends, cycles, and rhythms, as well as alternating phases or periods of relative systemic stability and systemic crisis or instability. In periods of world systemic crisis, far-reaching social change and systemic reorganisation is a prominent feature (Gills and Frank 1992). These changes not only include such large-scale structural changes as "centre-shift" within the World System, but may also entail very significant ideational, technological, and other "material" changes in the social order.

Today we live in a "globalised" World System, but one which has significant continuities with the past, both structurally and ideationally, and in terms of some of the fundamental patterns and practices of human relations with the "natural" or "non-human" world and

web of life. We now live in a globalised civilisation, though one which entails proximity and encounters with many still existing alternative cultures, especially those of the world's remaining "indigenous peoples". This globalised and globally dominant world civilisation has now however entered a period of acute multiple and inter-acting crises. At present, these can be summarised under the triple conjuncture of the global crises of capital, climate, and COVID (Gills 2020).

The modern phase in the history of the world civilization system is characterized by its foundational dependence on 5Cs: (1) *Capital* replacing labour as the ultimate source of value; (2) *Carbon*—fossil fuels or more generally speaking, *extractivism*; (3) *Compulsive* economic *growth* through relentless commodification of socio-ecological relations and a multi-century mass appropriation of the commons, sustained through the constant promotion of consumerist cultures across the world; (4) *Coloniality*, i.e. the ongoing stratifying power relations and epistemes necessary for maintaining the integrity of intersectional hierarchies; and finally (5) *Corruptive politics*, energized by the rise of monopoly-finance capital, corporate-state interest-driven advances in surveillance, datafication, bio-, and neuro-technology, and robotic warfare (Hosseini 2020). The system is inherently crisis-prone since the 5Cs require an endless expansion of the planet's capacity. Since we have already passed the earth's biocapacity, and with no present technological solutions on the horizon that can retain this capacity, the same characteristics behind the ascendency of modern civilization are now contributors to its demise.

The present trajectory of this globalised world civilisation and world system is rapidly approaching or already crossing several vital planetary boundaries and thresholds, and crossing key tipping points in earth system dynamics, which threaten to accelerate one another and deepen and amplify their negative effects (Steffen and Morgan 2021). Together, these patterns indicate the onset of what Gills has elsewhere referred to as the "great implosion" in the present form of civilisation (Gills 2020), implying a critical turning point in human history bringing the future of human civilisation into question. What we (i.e., humanity as a whole) do in the coming decade of the 2020s to change our collective trajectory and establish a profoundly harmonious relation with the natural or non-human world will determine the future of humanity for several centuries to come. The most important aspect of social change in this century involves how humanity must realise a relationship with the web of life based upon recognition of the unity and the sacred value of all life forms and living within the objective "planetary boundaries" of earth system dynamics (Henry, Rockström, and Stern, 2020; Rockström et al 2009; Rockström and Gaffney 2021).

The urgent imperative question of our times is how to organise sufficient social, structural, and systemic transformation to resolve the multiple crises now facing humanity, and how to bridge the "local" with the "global" dimensions of this transformation. It is clear that to date, the responses of the dominant actors, including governments, corporations, leading financial entities, and many prominent international organisations, have been largely a failure, incapable of making the necessary dramatic radical transformations required in this era of global crises (Hosseini, Goodman, Motta, and Gills, 2020). In many respects, a culture,

and a discourse, of delay and deferral has been the dominant trend (Gills and Morgan 2019; Gills and Morgan 2020), both reflecting and perpetuating systemic complacency in the face of what is objectively a planetary emergency. The severity and the urgency of the present multiple global crises demand far-reaching mass social mobilisations, a "globalization from below" capable of realising the scale of social change and systemic transformation required to resolve the present global crises. This era requires radical transformative praxes (Hosseini and Gills, 2020). The concept of "transversalism" (short for "transversal cosmopolitanism") speaks to this situation and offers us a way of understanding a modality of social change through actively creating new forms of global solidarity and collective action across local and global dimensions (Hosseini, Gills, and Goodman, 2017; Salleh, Goodman and Hosseini, 2015; Goodman, 2007; Jung 2009).

Transversalism (transversal cosmopolitanism) is identified by its being founded on the *aspirations for an evolutionary move into a post-capitalist network of democratically governed and sufficiently autonomous alternative systems, and by the strong aspiration to build meaningful common ideological and political action orientations that transcend existing or potentially counterproductive divisions among diverse transformative movements*. It seeks an "accommodative mode of social consciousness" (Hosseini, 2011), centred on establishing common ground for dialogue, collective learning, and concrete action among multiple transformative identities and visions within the field of transformative praxes (Gills, Hosseini, and Goodman, 2017; Hosseini, 2015b; Hosseini, 2015a, 2013).

Transversalism aims at consolidating political coalitions and achieving ideational accommodation between social groups on both a class and a non-class basis. Therefore, it does not imply uniformity or a general theory of social emancipation and the collapse of all differences, autonomies, and local identities. It requires an attitude of openness, and the intention of exchanging mutual experiences (via engagement of Self with Others), and the intentional active sharing of ideas for social transformation across a variety of local fields of movements of social change and of "resistance" (Hosseini, 2006, 2011).

Transversalism grounds cosmopolitanist values on the foundations of local, grassroots, and communal particularities. This is a process of forming solidarities that requires "critical openness" (Hosseini and Saha, 2018) and systematic attempts to co-create common(ing) platforms for transformative perspectives, plans, and praxes. Transversalism thus consists of the following elements: (1) recognition of diversity and difference, (2) dialogue (deliberation across differences), (3) systemic self-reflection, (4) intentional openness (intention to explore the reality of the Other), (5) critical awareness of the intersectional nature of power relations that affects interconnections, and finally (6) strong commitment to creating alterity through hybridization and creolization of ideas and actions. On these premises, forms of transversal cosmopolitanism can emerge and develop, bridging the local and the global dimensions of social change. Human capacities of reflexivity, communication, and collective learning are vitally important aspects of the process of forming transversalist cosmopolitan movements for social transformation during this era of crises. It is upon these modes and sources of social change and "globalization-from-below" that much of the hope of humanity now rests.

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Effective Tools for promoting change in Complex and Interrelated Realities

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In order to find effective ways to manage the complex realities of our world, we need effective systemic tools to diagnose the problems, assess societies' readiness for change, design the solutions, implement the plans, monitor and evaluate the results.

There are many major and mounting emergencies facing us. For lack of space here, I will make some examples mentioning Goals 3 and 4 of the U.N. Sustainable Development Goals. We have scientifically known for long that in our planet and beyond that everything is interrelated and interacting with the other systems in a continuous process of mutual interrelationships. Here I will mention only some change-promoting approaches that are people-centered and which promote the quality of the relationships with oneself, others, and the planet by fostering empowerment and the resilience of all stakeholders.

There is ample and mounting scientific evidence that our present relationship with ourselves, others, and the planet we live in is the main variable influencing all life forms and the planet itself, a dramatic epochal change referred to by scientists as the Anthropocene (Crutzen and Stoermer, 2000).

The human population's exponential increase in numbers and consumption behaviour has produced such dramatic and exorbitant costs. Our present way of life has negatively impacted many of the ecosystems of our planet and a mounting number of scientists warn us that we are fast reaching a tipping point where mitigation and/or reversal of trends will not be within our reach if we do not act promptly and effectively (IPCC, 2007, 2012, 2019).

Notwithstanding the seriousness of the threat, many obstacles remain in the way of effective, community, national and international sustainable governance. The lack of awareness of the magnitude of the problems and the changes needed in the behaviour of all the stakeholders to manage the serious challenges facing humanity are in part due to barriers of a sociological and psychological nature and impede effective coordinated actions of various stakeholders. The underlying mechanism at work in the resistance to change varies from culture to culture: how reality is socially construed and how individuals and organizations construe their experiences and narratives is relevant also for the understanding of the adaption of change needed to promote sustainable governance and for understanding some of the barriers to change.

The human population has drastically increased in the last century with billions of people adopting consumption behaviour that has negatively impacted and polluted the earth at levels that our ancestors were never capable of.

The anthropogenic impact has largely surpassed the planet's metabolic capacities: It now takes the Earth one year and six months to regenerate what we use in a year. At present, humanity with its destruction of natural resources, pollution of air, land, and water is altering

the climate 5,000 times faster than the pace of the most rapid natural warming episode in our planet's past (Caldeira, 2012).

Ban Ki-moon, the former UN Secretary-General in his message to the Planet Under Pressure Conference, stated: "Climate change, the financial crisis, and food, water and energy insecurity threaten human well-being and civilization as we know it."

The scientific community can help us make sense of these complex and interconnected challenges, including by strengthening our understanding of "planetary boundaries" and "critical thresholds…. But policymakers often fail to turn to scientists for advice, or discount it too easily owing to electoral or other political considerations…."

Population multiplication is not the only variable, consumption patterns—how people live and how much planetary resources they consume—are of equally great relevance. If not resolved the inequities of resource access, distribution, consumption, and levels of pollution will become formidable obstacles to an effective, equal, and sustainable governance of our planet.

The ineffective or dysfunctional ways in which we may see things, the way in which we construe the experience of reality are at the root of many barriers to effective sustainability.

The pervasive mechanistic reductionist approach of the past has led to disastrous results nevertheless, and we largely continue to offer obsolete knowledge in the field of education recreating sequential boomerang effects.

The world in the past was focused on diagnosing problems or seeing reality on a mechanistic and unrealistic simplification, creating policies, services and products focused on fixing a specific part of the system, ignoring reality and the obvious impact that any single action has on the whole. For example, the development of pesticides and chemical fertilizers was seen as a scientific breakthrough for feeding humanity and building a better and more prosperous world. Unfortunately, this mechanistic, reductionist view did not take into account the complex interrelationships of the world in which we live. The massive use of pesticides and chemical fertilizers initially expanded the production of food; success encouraged one-crop cultivation that soon impoverished the soil, necessitating an ever-greater use of chemicals. This created a downward spiral of increasing chemical usage and decreasing soil vitality. After boosting crop production and killing unwanted pests and weeds, it became apparent that the pesticides had a long period of continued action on the environment affecting the food chain, water quality, and the health and survival of living organisms (Zucconi, 2008).

Systems theory is based on the awareness of the essential interrelatedness of all phenomena—physical, biological, psychological, social, and cultural. It is a total ecology model wherein the common denominator is the relationship. Systems theory sees all the structures of our universe as comprised of extensive subsystems that are in constant interaction and impact each other. The ecological, systemic view has relevant implications for the understanding of the health and wellbeing of all the forms of life, people, and society.

What is perceived as real varies from society to society and is produced, transmitted, and conserved through social processes. Our perception of reality is largely modelled on beliefs

and assumptions of the society and culture to which we belong. What we know, what we consider true and right, the behaviour we adopt, all are influenced profoundly by the social and cultural and schooling environment in which we grow and live. This process happens through the internalization of a "reality" that occurs during the socialization process (Berger & Luckmann, 1966).

The social construction of reality is not perceived as socially constructed by the majority. Therefore, it is not easily criticized or modified when aspects of it are dysfunctional. A consequence is a recurring persistence on the human history of dysfunctional attitudes and behaviour—both in individuals and society (Zucconi, 2008).

Our relationship with ourselves, others and the world is an important determinant of our mental, physical, and social health. People and societies that are alienated from parts of themselves relate to others and the planet in alienated and distorted ways.

At present, the way profit is calculated in a mechanistic reductionist way, the so-called "bottom line", at the national level is based on the GNP but those standards completely ignore the eventual destruction of human and natural capital. With a more realistic and sustainable approach, there are at least 3 variables that account for the so-called Triple Bottom Line (TBL) that measures economic, ecological, and social results. The Quadruple Bottom Line (QBL) also takes into consideration cultural aspects, including governance.

The Inclusive Wealth Index (IWI) has a broader way of measuring natural capital, such as forests, produced capital, such as roads and factories; and human capital, including levels of education, knowledge, and creativity. The findings indicate that it is possible to trace the changes in the components of wealth by country and link these to economic growth, taking into account the impact of decline and increase in natural capital as an economic productive base (UNU-IHDP, 2012).

Real economic growth can be attained only through ecologically conscious *green* or *blue* economies (Pauli, 2010).

When change generates a new threat, one-way in which individuals, communities, and cultures can cope with it is by experiencing fear, which in turn generates actions (fight or flight) to deal with the threat.

However, another less functional way of coping can be activated: anxiety. When anxiety is the response to the new threat (fear without awareness of the source of the threat), cognitive dissonance is the result.

Instead of self-regulation and taking actions to deal effectively with the threat, denial, a sort of self-inflicted blindness, takes over.

Denial is a well-known defense mechanism, used in situations in which people feel unable to face reality.

The defense mechanisms of a person or a society can be functional or dysfunctional: they are dysfunctional when the defense becomes chronic, limiting the coping capabilities.

Denial functions to protect the image of the self from awareness of things that the individual feels unable to cope with. But it is also the biggest barrier to coping with reality.

Similar mechanisms are operating in the denial mode about climate change or the destruction of human and natural capital experienced by individuals, institutions, and society.

Awareness of having created the Anthropocene Era and its many black holes of self-destruction not only generates fears and feelings of impotence but shatters one of our strongest held mythologies: our identity. We, the self-appointed intelligent species of the planet, are all deeply invested in the narrative that we are all-powerful, surrounded by unlimited resources, the planet. All animal and plant life forms are created to be at our disposal, industrialization and the consumerist lifestyles to which we have become addicted are a clear sign of our success and are synonymous with our civilization and a measure of our progress. Thus, the confrontation with the realities of the Anthropocene Era throws us into a nightmare.

Norgaard (2009), a sociologist, studied climate change denial in Norway, offering insights into the social construction occurring in that nation.

Norway is a country that has a national identity rich with positive narratives about nature and its nature-loving citizens. Some Norwegians were offered more information about pollution and man-made climate change, including the fact that Norway is one of the European countries with the highest per capita ecological footprint. To avoid the unpleasant truth, many Norwegians disconnect with the facts, they are doing something that they and their culture consider wrong. With this cognitive dissonance, they try to preserve their national identity and their positive mythologies of being a nature-loving nation.

Communicating these issues to society effectively can be quite a challenging task, complicated by several variables among which: Lack of a systemic and interdisciplinary understanding of how the barriers to change are created and how to effectively deal with their abatement or mitigation. Most of the proposed road maps for the governance of the anthropogenic impact and climate mitigation are mainly focused on financial, technological variables, giving little attention to the psychological, social, political, cultural, organizational, and institutional variables (Ekstrom, Moser and Torn, 2011).

Let us take a couple of examples mentioning two of the Sustainable Development Goals, Education and Mental health.

1. Mental Health

People are the greatest natural resource of a nation and consequently, mental health has a significant social and strategic role for the individual, social health, and well-being and is an important variable for achieving the Sustainable Development Goals (Izutsu et al. 2015; Marquez et al. 2016; Black et al. 2017).

Protecting and promoting mental health also protects and promotes physical health, social health, and prosperity. According to the WHO, mental illness is the largest cause of disability (YLD) in developed countries than any other group of diseases, including cancer and heart disease.

Mental illnesses exacerbate morbidity from chronic diseases with which they are associated: cardiovascular disease, diabetes, obesity, asthma, epilepsy, and cancer. Furthermore, the rates for intentional injuries (homicides and suicides) and unintentional deaths (e.g., from workplace accidents etc.) are two to six times higher among people with a mental illness.

"We need to retool and upgrade all levels of our education and use more effective pedagogies."

The Lancet Commission report on mental health (Lancet, 2018) states that mental disorders are on the rise in every country in the world and will cost the global economy $16 trillion by 2030. The economic cost is primarily due to the early onset of mental illness and lost productivity, with an estimated 12 billion working days lost due to mental illness every year. Mental illnesses generate economic costs of more than 4% of European Gross Domestic Product, some of which are direct costs of treatment, while more than a third are instead linked to lower employment rates and reduced productivity (OECD Report 2018).

Across the 28 EU countries in 2015, the overall costs related to mental ill-health are estimated to have exceeded 4% of GDP. This equates to more than EUR 600 billion. This break down approximately to an equivalent of 1.3% of GDP (or EUR 190 billion) in direct spending on health systems, 1.2% of GDP (or EUR 170 billion) on social security programmes, and a further 1.6% of GDP (or EUR 240 billion) in indirect costs related to labour market impacts (lower employment and lower productivity). Despite these staggering costs, they are still under-estimate, as several additional costs have not been taken into account.

These include social spending related to mental health problems, such as higher social assistance benefits and higher work-injury benefits, and the higher cost of treating a physical illness if the patient also has a mental illness. In addition, some of the indirect impacts of mental health problems on labour market participation such as reduced employment rates or working hours for informal caregivers taking care of people with mental health problems or the impact on co-workers, have not been taken into account.

Some researchers affirm that the magnitude of the mental illness burden is significantly underestimated and affirm that "we estimate the disease burden for mental illness to show that the global burden of mental illness accounts for 32.4% of years lived with disability (YLDs) and 13.0% of disability-adjusted life-years (DALYs), instead of the earlier estimates suggesting 21.2% of YLDs and 7.1% of DALYs. Currently used approaches underestimate the burden of mental illness by more than a third." (Vigo et al.2016).

The COVID-19 pandemic has increased significantly the burden of mental health and disrupted mental health services offerings (WHO, 2020).

The World Health Organization (WHO, 2018) underlines that the effective way to protect and promote mental health and wellbeing are interdisciplinary and intersectoral actions: "*A comprehensive and coordinated response for mental health requires partnership.*" Sectors

such as health, education, employment, judiciary, housing, social welfare, and other relevant sectors, including the private sector as appropriate to the country situation, should work in partnership to support the interruption of negative cycles of poverty, violence, environmental degradation, and mental disorders, with opportunities for action in the demographic, economic, neighborhood, environmental events, and social domains.

For example, an economic crisis can produce mental health effects that may increase suicide and alcohol-related death rates. However, those effects can be offset by social welfare and other policy measures, such as:

- active labour market programmes aimed at helping people to retain or regain jobs;
- enhanced family support programmes;
- available debt relief programmes;
- accessible and responsive primary care services to support people at risk and prevent mental health

In order to provide quality services to protect and promote mental health and well-being, we need to update and upgrade the training of mental health professionals who have been trained with approaches centered on diseases and teaching their patients to be passive, we need to retrain the heath sector professionals to become more effective and creating more sustainable approaches to health, learning and implementing people-centered and health and well-being approaches that defend and promote health by empowering and partnering with their service users. We need to educate the public about their rights and the relevance of their power to protect and promote their health and wellbeing assuming a proactive role as citizens of their polis, empowering themselves, and promoting the creation of services that are person-centered and promote recovery and agency. The World Health Organization has been stressing the importance of retraining health professionals and transforming the health care sector with people-centered care that is more effective and also cost-effective (WHO, 2010, 2012, 2018a).

2. Person-centered and People-centered Education for a Sustainable Change

The vision of the UN 2030 Agenda states, "…a world with equitable and universal access to quality education at all levels, to health care and social protection, where physical, mental and social wellbeing are assured." (United Nations, 2015)

Education is one of the most powerful drivers in shaping our future. It is during the educational process that much of the social construction of reality occurs.

Education is the process by which the minds of the new generation are shaped about what is real (Rogers, 1969, 1983); (Freire, 1970); (Morin, 2007a, 2007b); (Zucconi, 2013, 2015).

It is often said that knowledge is power, but we need a quick consciousness-raising eye-opener and realize that faulty knowledge is poisonous and debilitating, robbing people and communities of the power to cope with reality.

Teaching obsolete knowledge for a society is a lethally effective form of self-sabotage. All life forms' survival depends on effective and rapid learning as to how to adapt their behaviors to environmental changes.

We also know from research that traditional pedagogies do not facilitate learning and that student, person-centered pedagogy is much more effective (Zucconi, 2015).

We need to retool and upgrade all levels of our education and use more effective pedagogies. Formal and informal education at any point of our lifespan needs to offer us the knowledge, skills and attitudes that will enable us to survive and even prosper in the present period of change by learning the needed skills for coping and governing in peaceful and sustainable ways through the turbulent scenarios of the present Anthropocene Era.

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Systemic Change through a New Paradigm in Global Education

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Education is positively correlated with every metric of human welfare and wellbeing. Higher levels of employment, productivity, income, equity, health, environmental awareness, cultural integration, civic consciousness, and societal participation go with higher levels of education. Education is one of the greatest organisations humanity has developed. It encapsulates all the knowledge we possess and presents it to our children so they can acquire in a period of 12-15 years what has been gathered by humanity over millennia. Education is a tool for conscious social evolution. Meeting SDG4 is fundamental to meeting the other 16 SDGs.

The present system of education the world over has great scope for improvement, but education, in any form, particularly at higher levels, is itself a critical, unmet need in large parts of the world. There is an enormous qualitative gap between the exclusive group of world-class institutions and the tens of thousands of other institutions with shortages of faculty members, underfunded and inadequate facilities, and high student-instructor ratios. The focus of this note however, is another gap, that of quantity. Global tertiary enrollment is projected to rise from 216 million in 2016 to 380m by 2030 and nearly 600m by 2040, and this will still leave hundreds of millions of youth without access to higher education. College acceptance rates are already as low as 2% in some countries. If the future demand for higher education is to be met through the currently prevailing approach, it will require the founding of four new universities with 40,000 students every week for the next 15 years. Where will global society find the qualified instructors, facilities, and financial resources to achieve such phenomenal growth?

The quantitative gap between educational aspirations in society and the incapacity of the current system to meet the demand can be bridged only by a radically new global system that uses advancements in Information and Communications Technology to complement the existing system. The COVID-19 pandemic has made us conscious of how critical a viable and resilient system of education is to society. It has also demonstrated that alternative and complementary models can be quickly harnessed to reduce vulnerability and enhance accessibility, affordability, and quality of the global delivery system. Major elements of this new model are already being implemented, but they have not yet been shaped into a coherent, coordinated universal system that will multiply the benefits and dramatically reduce the barriers to education for all. A hybrid model of education that combines the value of face-to-face interaction with the power of digital learning can be used to design a global, world-class system of higher education that is affordable, accessible, and relevant to everyone everywhere.

A major feature of such a model will be a global delivery system for lectures by the world's leading experts and the best quality Open Educational Resources, delivered digitally in all major languages through low-cost digital devices. The lecture system ensures universal

access to high-quality content at the lowest possible cost. It draws on both existing formal educational resources in the present system as well as non-traditional sources. In April 2020, colleges and universities closed down due to the pandemic, disrupting the studies of 220 million college students in 170 countries. A global digital delivery system that provides quality lessons directly to a digital device is a reliable method that will be a proof against such disruptions in the future.

"We need new credentialing systems based on the premise that learning involves much more than merely the acquisition of specific course content."

Developing countries face a critical shortage of teachers. For instance in India, 38% of the faculty positions in the well-financed premier universities are vacant for want of funds and qualified teachers. The vacancy rate is even higher in private and state-run universities. The Indian government aims to increase the national Gross Enrolment Ratio from its current 27% to 50% by 2035. To achieve this target, the government needs 3.3 million more teachers, a 235% increase from the current availability. Even if the country were to find the resources to build these new institutions and equip its classrooms, laboratories, and libraries, where can it find the 3.3 million teachers? The use of recorded lectures from the world's best institutions can partially meet the need, at least of knowledge dissemination. Even where such a critical shortage does not exist, when teachers need no longer deliver lectures, they can become more productive as facilitators of learning. Precious classroom time can be spent in more interactive, collaborative, and mentoring activities.

In a world where the cost of education is rising rapidly beyond the reach of many students, online learning represents a way to deliver education at a fraction of the cost of traditional classroom education. In the US, over 60% of all college students take on debt to pay for their education, with the average loan debt per student being over $37,000. The total student loan debt outstanding in 2020 was $1.6 trillion. More than 60% of Chinese parents and 70% of Indian parents spend over a third of their income on their children's education. ICT can reduce the cost of the delivery of knowledge. When students listen to one-way lectures online instead of in the classroom, the hybrid model reduces the time students spend in campus and opens up possibilities such as completing a four-year degree in less time. This has the potential to make college education accessible for more people.

Digitisation broadens the concept of the textbook to encompass reservoirs of quality content offered by digital archives, online libraries, online publications, and multimedia content that can meet all types of learning needs. Digital learning content can be replicated and distributed at a fraction of the speed and cost of printed material. It can be updated constantly and translated readily into regional languages. While the expansion of traditional educational facilities is time-consuming, bureaucratic, and expensive, online education can

be rapidly and exponentially expanded to disseminate knowledge and raise the average level of education.

"A hybrid global model of education where technology complements rather than replaces person-to-person interaction can dramatically strengthen the capacity of the global delivery system to achieve UN SDG No.4 of "inclusive and equitable quality education" and "lifelong learning opportunities for all"."

Online education can be paced to adapt to the speed and capacity of each individual student. It can be customized and specialized to meet varied interests and needs. Those who need to drop out of college because of personal, social, or financial constraints need no longer compromise on their education because of competing priorities. Digital education, once the digital gap is bridged, can make education far more inclusive and accessible than it is today.

Separating certification from instruction can liberate the delivery of knowledge from accreditation. Breaking the monopoly which existing institutions have for certifying knowledge acquisition opens the field for a wide range of non-traditional educational sources and resources to supplement the formal system. It also facilitates the customization of massified, standardized courses and programs so that students can acquire knowledge customized to meet their interests and applications from any source, formal or informal, and have it validated through accredited third-party agencies.

We need new credentialing systems based on the premise that learning involves much more than merely the acquisition of specific course content. Measures need to be refined to assess the acquisition of a much wider range of competencies than mere courseware. These can shift the focus from certification of courses taken by students to validation of the actual competencies a person has acquired, regardless of whether they were obtained through traditional classroom instruction, online learning, on-the-job learning, or other forms of life experience. Such new models can decouple the educational and certification processes, and in the process make both more effective.

The proven technology needed to support such a system worldwide already exists. Low-cost devices and the internet require only political will to make them available to all. The costs of illiteracy, low-quality education, and unemployment far outweigh the costs of investment needed in the infrastructure required.

When the world switched to the online model in 2020, we did not have the luxury of debating the pros and cons of digital education, we had little choice. But as we gradually move towards normalcy, we can study the system we adopted objectively. We are still trying to improve centuries-old classroom education; online education that is merely a few years old will clearly need much planning and improvement. It may be a poor substitute for an

education at elite, research-oriented, well-funded, progressive institutions that constantly push the boundaries of knowledge and introduce innovations in every aspect of education for millions of youngsters. But a hybrid model will make the difference between receiving an education, any education, and remaining uneducated for hundreds of millions of people.

The possibilities of ICT in education have not yet been fully explored. Once we learn to do that, train our teachers, and offer to our students the best of a blended model, using face to face setting where possible, complemented by online learning, we have the opportunity, for the first time ever, to provide every human being with the means to acquire an education that is personalized, self-paced, person-centered, relevant, integrated, affordable and of high quality.

Interpersonal interaction has a value that digital meetings cannot replace, and technology offers possibilities that traditional methods cannot match. Together, they can offer us the solution we have been looking for. A hybrid global model of education where technology complements rather than replaces person-to-person interaction can dramatically strengthen the capacity of the global delivery system to achieve UN SDG No.4 of "inclusive and equitable quality education" and "lifelong learning opportunities for all".

The World Academy of Art and Science can bring stakeholders together and facilitate the creation of a global system designed from the beginning with the future needs of all humanity in mind and tailored to deliver world-class education to many students who seek it wherever they are in the world. The creation of such a system of education is one of the most potent and effective means for ensuring global human security.

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What Constitutes Societal Transformation?

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It is widely acknowledged that the pressing global crises today are societal rather than purely environmental issues. Challenges such as climate change and global warming, the loss of biodiversity, or the global water crisis call for deep societal transformations. Even the most adamant natural scientists or advocates of technological solutions concede that addressing the current challenges requires *societal* efforts since environmental, social, cultural, and economic issues are inextricably interlinked in today's crises.

"The pressing global crises today are societal rather than purely environmental issues."

Despite a high level of consensus on the diagnosis, there is great dispute about how to initiate the necessary change towards a more sustainable society. Political top-down strategies have undeniably had some degree of success in the past. International climate agreements, for example, set boundaries for greenhouse gas emissions and stimulated change in energy supply in many countries of the world. Global education programs, on the other hand, brought questions of sustainable development to the classroom and broadened curricula worldwide.

Yet it has become obvious in recent years that top-down approaches often face significant obstacles to implementation and are not sufficient to increase the speed and depth of the needed societal transformations. First, because they tend to impose "one size fits all" solutions that discount the need for culturally and regionally differentiated pathways towards global sustainability. Second, top-down approaches often disregard the knowledge and expertise of everyday actors and ignore their desire for making their own choices instead of executing imposed strategies. Transformations towards living sustainably are much more likely to be accepted if they are developed jointly by everyday people, specific stakeholders, and policy-makers at all levels working together with academic experts and scientists.

Promoting societal change requires efforts in many domains and at all levels. There are three pillars I would like to emphasize in particular.

1. Creating Laboratories of Change

A first pillar for pushing forward social transformations is to create (more) laboratories of change in the public sphere. Municipalities and universities are best suited to exemplarily lead this change. Local and regional governments, for e.g., can serve as a model for how to spark, develop and implement technological and social innovations at the very scale at which global change becomes tangible. Local authorities can explore new ways of engaging communities in collaborative decision-making processes and develop cross-sectoral networks with local businesses, civil society organizations, and other stakeholders to promote sustainability. Municipalities and regions can thus also counteract problematic or irresolute national policies. Universities, on the other hand, are not only arenas of academic

knowledge production and education of future decision-makers, but also shape their local contexts in ecological, economic, social, and cultural regard. As operators of buildings and other infrastructures, as major consumers of energy and materials, as employers and training providers, universities themselves create "real-world problems" and can thus also contribute to their solution. Turning campuses into "living labs" can both help enhance sustainability at the local level and contribute to strengthening the authenticity of scientific institutions, thus helping to (re-)build public trust in science.

"The arts in all their forms can provide novel perspectives on the relationships of humans to the natural world and to each other, and help envision and catalyze societal change."

2. Education as Key

Education is another key factor to facilitate change and shape societal transformations. Educational institutions and organizations like schools and universities, and also centers for adult education, public libraries, or museums promote understanding of the world and help build capacities for transformative action. Given the complex nature of today's "wicked" problems, however, traditional ways of organizing knowledge must be called into question and new forms of teaching and learning need to be developed. Despite the inclusion of sustainability-related topics in many curricula today, it is necessary to push teaching and learning beyond the boundaries of fragmented canonical knowledge and strongly promote the capacity to analyze across disciplines and school subjects. In schools, for instance, greater weight should be given to theme- or project-based approaches, in order to mobilize knowledge in a more integrated way. Learning by the example of locally embedded "real-world problems" will better enable learners to understand connections that remain undiscovered from a purely disciplinary standpoint. Education for sustainable development thus also entails fundamental questions about the organization of knowledge production and mobilization.

3. The Role of the Arts

A third pillar of societal transformation is the development of a new aesthetic for dealing with the natural and the social world. Un-/sustainable development is deeply linked to culturally embedded mindsets and resulting daily routines and habits. How we do things depends very much on what they signify to us, and how we see the world and our place in it. The arts in all their forms can provide novel perspectives on the relationships of humans to the natural world and to each other, and help envision and catalyze societal change. Works of art can create emotional impacts and empathy that can hardly be achieved by mere knowledge transfer, thus helping to mobilize everyday actors to engage for bottom-up social transformations. Art can give a voice to marginalized communities and raise awareness of their concerns. It can spark creativity and thinking-outside-the-box to explore new ways of living sustainably in all cultural and regional varieties. Ultimately, artistic practices are

also embedded in local communities and can help drive transformations. Individual artists and cultural facilities, for instance, can lead the sustainability shift by consistently adopting principles of sustainability in their operations.

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The Emerging Economic Renaissance

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A new political-economic paradigm is emerging in northern Europe and parts of the Asia-Pacific region that could signal a major turning point in human history. Like the time when humanity awakened to the fact that the world was round, rather than flat, this new paradigm radically challenges our perceptions of reality and the systems we have created to guide our lives.

"Instead of perceiving economies as bottom-line, capital-driven contrivances for growing GDP and profit (increasingly at the expense of people and Nature), the new paradigm sees economies as they really are: as sub-systems of life."

The impetus for this emerging shift is the increasingly catastrophic failure of humanity's conventional GDP-focused political-economic system. What started in the industrial age as regional and global competitions for hegemony and resources eventually developed into two world wars, expensive military arms races, ecological overstep, climate change, species extinctions and a surge of borrowing as those in power sought to solidify their hold on authority. Over the past few months, the fragile structure of this debt-driven competition has been exposed by the coronavirus pandemic, causing widespread panic in global markets.

So what is it about the emerging new paradigm that could reverse this self-destructive trend and alter the course of history? The answer is deceptively simple.

Instead of perceiving economies as bottom-line, capital-driven contrivances for growing GDP and profit (increasingly at the expense of people and Nature), the new paradigm sees economies as they really are: as sub-systems of life, whose primary assets are people and Nature and whose goals are to preserve the continuous wellbeing of humanity and the ecosphere in which we live. By such means, it resolves into a reinforcing loop, where means and ends serve one another rather than conflict. Simple. Logical. And remarkably effective.

1. Economies That Mimic Life

The wonderful thing about this living system archetype is how it generates economic success even as it reduces humanity's ecological footprint. In doing so, it overcomes the increasing frictions between means and ends that have plagued the mainstream "neoclassical" model and driven it to the edge of ruin. This is not to say that transitioning to the life-mimicking model will be easy. But in the final analysis, it comes down to whether the citizens and leaders of a country want to go down with a sinking ship or whether they want to find a more secure way forward.

Because the two models are so fundamentally opposite (incommensurable), attempts to find a compromise solution will almost certainly fail. That is because their foundational assumptions conflict and clash as can be seen in the following table. Consequently, the most promising (and profitable) way forward is to abandon the neoclassical model and adopt the life mimicking one.

That said, it is important to understand that the life-mimicking model is not a set destination, but an adaptable pathway forward—one that can (and must) be amended by continuous observation and learning as political-economic conditions change.

2. Comparison of Working Assumptions and Practices

	Living System Model	**Neoclassical Model**
Economies are:	Sub-systems of biosphere, society	The dominant system
Governance:	Egalitarian, networked, decentralized	Hierarchical, centralized
Mission:	Maintain healthy living systems	Maintain authority, control
Values:	Primacy of living assets (people, Nature)	Primacy of non-living capital
Vision:	Optimize living assets (circular economy)	Optimize GDP, profit
Leverage:	Living asset stewardship (inspiration)	Financial gearing (debt)
Mind-set:	Holistic, qualitative (non-linear)	Reductionist, quantitative (linear)
Metrics:	Focus on learning, adaptation (means)	Focus on results (ends)
Learning:	Multiple loop (open-ended)	Single loop (follow the rules)
Risk:	Being only generally right (Lack of precision)	Being precisely wrong (Climate change)

As one can easily see, the foregoing assumptions and practices reflect radically different worldviews/paradigms. Historically, each evolved to remediate the failures of a prior system. Therefore, just as the living systems model emerged to redress the failures of the neoclassical (industrial era) model, the neoclassical model emerged in Europe from the 17th Century Enlightenment as Europe sought to break free from the constrictive norms of the feudal system. Over the ensuing four centuries, it has become the dominant model for the world, displacing older native views that economies had to be in harmony with nature, which also had considerable influence in the much older Indian and Confucian wisdom traditions of Asia.

To leading Enlightenment thinkers of that era, humanity had a right to govern itself by virtue of its capacities for reason. There was, however, a darker side to this mindset: that

humanity also had a "divine right" to dominion over Nature (Sir Francis Bacon); and that we were entitled to be "masters and possessors of Nature" by virtue of our rational thinking and scientific knowledge (Rene Descartes). These latter thoughts, sadly, became embedded in the ego-driven norms of the industrial age, which taken to extremes, have evolved into their own self-destructive tendencies.

> *"As the US and other large industrial economies try to protect their regional and global hegemonies, they have exploited the very sources of their strength (people and Nature) and borrowed far more than their weakening economies can afford."*

In each such pendulum swing of humanity's learning journey, we have developed new insights and governance systems as we seek to break free from the past and move forward. Although we periodically regress, in some cases catastrophically, there is also some encouraging truth to this progression as we are now discovering.

The power of the living system paradigm is embedded in what we have absorbed from biology, physics, neuroscience, systems theory, and the history of human civilization. With such knowledge, we now have a capacity to observe, reflect and learn from the living world as it changes. As Donella (Dana) Meadows said in her famous essay, "Dancing with Systems," we cannot impose our will upon a system as our reductionist science has led us to believe. (That is why we now have climate change.) However, "We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone."

Interestingly, as Dana was writing these very words in the late 1990s, a group of Nordic countries was showing how this ideal could work in practice. The secret of their success was a life-centered culture that enabled them to work with each other and the larger living world—not as supreme conqueror or controller, but as mindful, caring partners.

3. The Nordic Model

The Nordic Model as we know it today evolved from a philosophy of education that emerged in the mid-19th century. Called widely by its German root, Bildung, its goal was to cultivate in people, regardless of economic status, an inner desire for learning and self-development. Starting with primary school and continuing through adult education, it aims to expand people's sense of belonging (connection)—from family to town to nation and ultimately to the larger world. In doing so, it instills in citizens a capacity to understand complex systems and a propensity to take personal responsibility for the wellbeing of fellow citizens, humanity, Nature, and future generations.

On the strength of this philosophy, the Nordic region evolved from one of the poorest in Europe during the mid-19th century to one of the most prosperous over the space of several

generations. Today the countries of Denmark, Finland, Sweden, Norway, and Iceland are regularly placed at the top of global surveys on prosperity, quality of life, health, democracy, freedom, innovation, productivity, and sustainability. As bastions of open, free markets, they have also become global innovation powerhouses in spite of holding less than half of one percent of the world's population.

In the course of becoming more prosperous, Nordic countries have developed a system of robust universal safety nets. Although supported by high individual tax rates, these have strengthened their economies by providing an abundance of healthy, educated, secure, and motivated citizens. Because of this, Nordic countries today have some of the industrial world's highest labor participation rates and per capita GDPs—advantages that in turn support their capacities to fund their safety nets. Compared to the lose-lose outcomes of the neoclassical model, this interaction creates a dynamic win-win reinforcing loop.

As evidence of this loop, Iceland today ranks higher than the US on the annual Legatum Prosperity Index. During 2019 this was supported by its higher labor participation rate (82% vs. 63%) and stronger per capita GDP ($67,037 vs. $65,112). Iceland's economic advantage is even greater when debt is taken into account. That is because its sovereign debt ratio is less than a third that of the US, its safety nets are fully funded and its gross domestic savings rate is higher.

This brings us back to the earlier mentioned vulnerabilities of the neoclassical model. As the US and other large industrial economies try to protect their regional and global hegemonies, they have exploited the very sources of their strength (people and Nature) and borrowed far more than their weakening economies can afford. Consequently, while Nordic economies go from strength to strength by partnering with Nature and nourishing their people, the US and others operating on the neoclassical model are falling further and further behind.

Looking back on history, such conditions characteristically precede paradigm shifts. As countries across the world learn more about the Nordic Model and emulate its features, we could be in the midst of the greatest shift yet—one where humanity discovers where our real creativity and strength reside.

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Conclusions

From a whole system perspective, societal transformation is the meta issue. All aspects of human society are sub-elements of it. Around the world, many experts have developed well thought out societal transformation theories and processes. The above essays reflect the rich diversity of ideas in this area.

The authors highlighted a number of key themes related to the arts, humanities, system sciences and economics. A main theme is that current societal narratives perpetuate system failure. There is a profound need for new narratives. Several authors suggested that they should be created through dialogic social processes (Reuter) as well as processes that facilitate reconstruction of societal ideas and systems (Werlen).

There also was a broad recognition of unsustainable values. Through the lenses of different fields, the authors discuss how the values and narratives of consumerism, growth and industrialization are unsustainable and driving system failure. The creation and cultivation of more sustainable values is an essential part of societal transformation. This goes hand in hand with a new worldview, one that recognizes the diverse aspects of society as interconnected parts of one dynamic whole system. Gills and Hammad discuss this through their 'globalisations' and recognition of interconnected local and global systems. Several of the authors discuss the need for grassroots, local and communal processes and how these facilitate the development of new values and worldviews that support societal transformation.

The requirement for structural change is another theme emphasized by the authors. A consensus emerged around the need to recognize how fundamentally flawed systems perpetuate socio-economic inequality and ecological decline. To address this, several authors suggested different strategies for resolving systemic flaws in education, economics and the arts. There was widespread recognition that institutional and systemic change is essential for achieving societal transformation.

Combining the suggested new narratives, worldviews and system change strategies provides an overall framework for societal transformation. The framework recognizes the interconnectedness of local and global challenges, and shows that re-alignment with the laws of nature is essential. New narratives and societal transformation strategies must operate within planetary boundaries and abide by the laws of nature. Humanity cannot survive and thrive without these adaptations.

Many challenges and opportunities remain in areas including the arts, culture, education, and systemic change (economic, political, institutional). The above essays illuminate the need for cross-disciplinary, whole system approaches. Combining local and global, top-down and bottom-up approaches also is essential for successful societal transformation. These essays provide a foundation for the ongoing work of the WAAS Societal Transformation Working Group. Going forward, a primary emphasis will be on highlighting, developing and implementing practical, specific societal transformation strategies. Given the rapidly growing environmental, social and economic challenges facing humanity, there is an urgent need to engage in creative thinking together to develop real transformative alternatives and redesign civilization. Bozesan M. (2020). Integral Investing: From Profit to Prosperity. Springer: Cham, Switzerland.

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