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# Limits to Growth and the Philosophy of Life-Centred Economics

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## ABSTRACT

Arguing for a sustainability turn, I point out that it requires motivations that are more powerful than material ones. As the 95 Theses of the Budapest Centre for Long-term Sustainability indicated, sustainability requires a comprehensive, life-centered, community-centered and Nature-centered worldview, and the scientific and philosophical conditions are now ripe for it. I introduce the all-comprehensive Principle of Life that enables well-informed rational decision-making, completes materialism by a balanced and more inclusive worldview, aligns it with the Principle of Life and the Principle of Reason, and enables us to align our decision-making with the requirements of long-term sustainable development.

## KEYWORDS

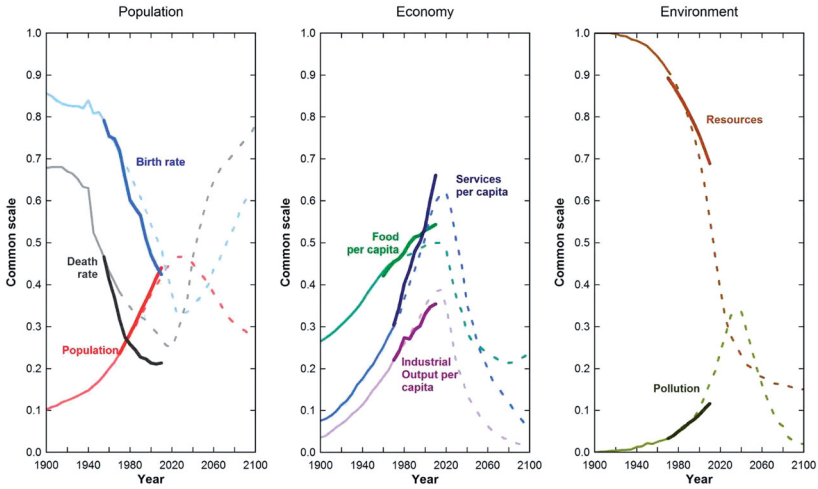
Comprehensive science;  
healthy environment;  
healthy society; life-  
centered worldview;  
long-term sustainability

## Economic Growth Has Its Limits—Sustainability Requires a Basic Change of Values and Goals

In their model calculations, Donella H. Meadows and her colleagues assumed that population, agricultural and industrial production grow exponentially, reducing the finite natural resource base, increasing pollution; they took into account also that technological progress can reduce pollution in a certain rate. Their results suggest that it would not be very surprising if within a hundred years population, agricultural and industrial production were to collapse. To avoid this outcome, “a basic change

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**Figure 1.** Modeled and observed trends in population, economic production measured by GNP and environmental pollution. Modeled: dashed line. Empirical: solid line.

of values and goals at individual, national, and world levels” is necessary (Meadows et al. 1972, p. 195).

The Meadows updated and checked their models after 20 and 30 years, and new calculations confirmed the earlier results. After 40 years, in 2014, Dr. Graham Turner of the Melbourne Sustainable Society Institute at the University of Melbourne examined how well the actual data for the past 40 years matched the models. He obtained reasonably good matches (Turner, 2014; Figure 1).

From 2020 onwards, more detailed checks have been carried out. The two best-fit scenarios point to a halt in growth of population, agricultural and industrial production over the next decade or two. In one of them, which follows the current trend, economic output and population measured in GNP (Gross National Product) decline sharply between 2020 and 2040. Such a collapse must be avoided. The other scenario assumes a rate of technological progress of 4% per year; this value seems to be far from being realistic, since the actual rate of technological progress is only around 1.5% (Herrington, 2021). Accordingly, the conclusions from the model calculations suggest that the solution is sustainability.

Add to this that a model is always a relatively narrow contextual representation of reality. We do not know which of the ignored factors will become significant and when. For example, we might add that more resources and even fusion energy could become available. But regardless of these reservations, we can agree with the main conclusion that a turnaround toward sustainability is inevitable. In the followings, we indicate that the present trend of “development” is in many respects so destructive

that sustainability is practically inevitable for all nations planning to survive.

## Sustainability Requires a Fundamental Change of Worldview

It is important to take into account that the 21st century has ushered in a new age of earth history, the Anthropocene, in which the impact of human activity on the Earth's ecosystems has become dominant. It is high time for all nations to find their place in the world in which we live. Although humanity is part of the biosphere, its contribution to the life of the biosphere is not really constructive, to say the least. Karl Polányi, one of the most important economic historians and social philosophers of the 20th century, had shown that the present trends of economics, the growth of the self-adjusting market “*could not exist for any length of time without annihilating the human and natural substance of society.*”<sup>1</sup> Now let us see a bit closer some fundamental facts regarding ‘development’ in the age of Anthropocene.

Modern man has transformed 75% of the land into a technological environment (New Deal, World Wildlife Fund [WWF], 2020a) to such an extent that *the extinction rate of species has accelerated a thousand to ten thousand times* (biodiversity, WWF, 2020b). If this trend continues, by 2050, 95% of the Earth's land will become destroyed and the rate of species extinction will continue to accelerate. It is also of fundamental importance that destruction in human nature is of similar extent (Schumacher, 1975).

Now let us present some further facts illustrating our situation. The mineral content of the seven most common vegetables in our diet decreased by an average of 39% between 1940 and 1991, and the micro-nutrient content of meat products decreased by 81%. Chronic physical and mental illnesses already cover 30–60% of the population in developed countries and this rate of damaged health increases quickly. What is more, there is an epidemic of stress, anxiety, depression, behavioral disorders and various personality disorders, especially among young people (Kopp, 2006). “*There is no atomic bomb or pollution that would pose a more serious threat to human survival*” (Kopp & Skrabski, 2006, p. 226). If we do not act against it, the spread of civilizational diseases will result within a few decades in a health and economic catastrophe (Zimmet, 2000).

Developed Western countries reached levels of material well-being as early as the 1970s. A further increase in consumption is achieved with the assistance of the media by shifting toward hedonistic pleasures. Such hedonistic pleasures do not improve happiness and in the long run are harmful for physical, emotional and intellectual health (BC4LS, 2021). The continuous increase of consumption is necessitated by the

continuous economic and GDP growth sanctified by mainstream economics. As a statistical indicator, GDP offers no information about the quality of people's life, the developments in financing, changes in social inequalities or the impact on the natural environment. As shown in the 1990s by Herman Daly, an economist focusing on sustainable development and nominated for the Nobel Prize, increasing material development in advanced countries is economically inefficient. In the 21st century, the world continues to use an indicator as a target variable that is unsuitable for assessing long-term sustainability (BC4LS, 2021, p. 9).

Contrary to popular belief, population growth is not the number one factor responsible for such a destruction of the natural and social environment. It is the materialistic worldview that determines the primary values of economics (Schumacher, 1975, p. 52). This materialist worldview sees the growth of consumption and production—in monetary terms—as the main goal of human life and economic activity. Based on a materialistic worldview, life is a mere epiphenomenon, a causally ignorable side effect of material processes. Accordingly, the destruction of human nature or natural environment are ignorable side-effects of materialism. It is the materialistic worldview that is responsible for the compulsion of economic growth regardless of the destruction of human nature and our environments. In this situation, there is an urgent need to renew economics and transform it in order to meet the requirements of long-term sustainable development (BC4LS, 2021, pp. 8, 41). Sustainability can be achieved only by a fundamental change in values, a change of attitude, in fact, by replacing the materialistic worldview by another one respecting life, human beings, and Nature. Philosophy professor Zhihe Wang, the director of the Institute for Postmodern Development of China, and his colleagues believe that the solution is a profound transformation of our worldview: “ecological civilisation requires [...] a fundamental transformation of world view, values and lifestyle” (Wang et al., 2014). As the 95 Theses of the Budapest Center for Long-term Sustainability indicated, and published to initiate a global debate, sustainability requires a comprehensive, life-centred, community-centred and Nature-centred worldview (BC4LS, 2021).

### **There Is a Fundamental Law of Nature That Should Become the Basis of Social Sciences: The Principle of Life**

Today, we know more and more about the details and less and less about the whole. And we don't know the answers to life's big questions at all. But the answers to these big questions shape our worldviews. In the absence of such answers, our worldview becomes easily manipulable. In the last centuries, knowledge became increasingly fragmented. The big

picture is lost to us—and it is this big picture that is essential for sustainability. “Long-term sustainable development rests rests on making our decision-making system comprehensive. In order to ensure the long-term sustainable development of nations, such decision-making systems, conceptual frameworks and value systems are needed, in which life, the nation and nature are key values, and in which material advancement is in harmony with physical, mental and intellectual development, the quality of life of individuals and society as well as the ecosystem on Earth. This decision-making system is ensured by a comprehensive worldview encompassing the material world, life and the sphere of intellect. Fixing our decisions calls for fixing our world view. Long term sustainable development can only be achieved with a worldview that helps our decisions change and improve the living conditions of nested communities” (BC4LS, 2021, p. 3). “A comprehensive conceptual turnaround centred on life, communities and nature is needed, and the conditions are now available and ripe for it. It is time for the New Renaissance, a great revival” (BC4LS, 2021, 5).

In our time, we are once again witnessing a radical change in our fundamental worldview, foreshadowed by Alfred North Whitehead’s organic process philosophy and Albert Schweitzer’s theory of civilization. A whole range of new disciplines are converging toward a life-centred worldview, including astrobiology, anthropic cosmology, general biology, biocentric cosmology, Gaia theory, quantum biology. These sciences, which investigate the relationship between life and the Universe, have shown that life also has a fundamental law of nature, just like matter. According to the formulation of the Nobel-laureate Christian de Duve, “life is a cosmic imperative.” Although this apparently unknown law driving all processes of nature toward conditions favorable for life are thought to be a physical law, actually it is a biological law so fundamental that it must be called as a fundamental principle of nature. This law already had been discovered by Ervin Bauer, who formulated the most general version of theoretical biology in exact mathematical terms, which he called the universal law of motion of life (Bauer, 1967). This is extremely significant because from this principle, which was later to be known as the Bauer principle, Ervin Bauer derived all the basic equations of biology, including the equations of metabolism, reproduction, growth, responsivity, all the basic phenomena of life. Therefore, this principle formulates only a physical aspect of biology which can be expressed in terms of energy expenditure.

Bauer’s principle has been generalized further to extend to time expenditure as well (Grandpierre, 2007). The so-obtained Principle of Greatest Action is of extraordinary importance because it mathematically encompasses the whole of physics. This principle is further generalized to the world of feelings and thoughts. The so obtained Principle of Life

involves in itself all the fundamental laws of physics, biology and logic (Grandpierre, 2021a, 2021b). Remarkably, an unprecedented turn occurred in the history of science: an all-comprehensive science is born on exact grounds. Realizing the all-encompassing nature of the Principle of Life fundamentally transforms our worldview. On the basis of this comprehensive, life-centred worldview, “The principal natural duty of humanity is to improve the environmental conditions for all natural communities, irrespective of their characteristics. A society built on the healthy world view benefits all stakeholders: individuals, families, nations, humanity, our environment and the communities of life” (BC4LS, 2021, p. 4). Taking into account the communal nature of life encompasses a cosmic system of interconnected communities of life extending from our cells, individual life, family, nation, humanity, Gaia to the Living Universe.

Nowadays, especially in economics, it is usual to assume that man is fundamentally a social being completely determined by the economic causal order of society and not at all by the causal order of Nature. Such a view assumes that social science is independent of the natural sciences. This assumption, however, disregards the basic fact that man was created in the course of the evolution of life on earth, in the causal system of Nature, and that he essentially belongs to this natural causal system. Basically, man is a natural being, and as such, man is a feeling and intelligent being. Realizing that the Principle of Life is a law of nature governing our natural motivations, that is, natural feelings and thoughts, has a crucial significance since our decision-making is based on motivations, feelings and thoughts. The basic Principle of Natural Feelings is that every living being wants to feel good and, if possible, even better under all circumstances (Whitehead, 2008, p. 8; Grandpierre, 2021a, 2021b). The Principle of Reason involves in itself the axioms of logic.

Life has goals that must be fulfilled in order for life to be adequate, to be what it should be: a full life with a sense of deep satisfaction with life. The Principle of Life is the guiding principle for the choice of life’s ends, and as such, the Principle of Life has a moral character. Since the Principle of Life involves in itself all the fundamental laws of matter, life and mind, it can be regarded as the organizing and driving force of Nature’s causal system.

All living beings are participants in the evolution of life on Earth. All of us belong to the biosphere, to our species, humankind, to our nation and family. Life is communal in its nature. We are much more than the sum of our cells, and cells are much more than the sum of their atoms and molecules. It is the Principle of Life that organizes and unites the constituent elements of living beings into a unified whole for the purposes of life. The communal nature of life encompasses the cosmic system

of interwoven natural communities of life from the cell through the individual and the family and the biosphere to the Living Universe. “The comprehensive worldview sees the nation as a natural community, the natural place of which is between family and humanity within the cosmic system of nested communities” (BC4LS, 2021, p. 4). In the Living Universe, the Principle of Life is also the fundamental natural law of nations, offering a natural directing, organizing and ordering principle for social order and decision-making. It is this most fundamental law of Nature. Remarkably, this most fundamental law of Nature corresponds to long-term sustainability.

The primary task of any science is to discover the laws that allow us to infer the future (Kopátsy, 2021, p. 34). We are to realize that the fundamental natural law of social sciences is the Principle of Life. It is directed toward the elevation and fulfillment of life, measured in terms of comprehensive quality of life (Grandpierre, 2021b). This most fundamental natural law of life harmonizes the natural and social sciences. A life-, community- and Nature-centred turn of worldview, encompassing both Nature and society, has been become possible. A new, comprehensive, life-centred science is available for the life-centred approach, which unifies the most fundamental natural laws of matter, life and reason (Grandpierre, 2021a, 2021b). This universal natural law of life is highly relevant to ensuring sustainability because it can serve as a guideline for setting goals that benefit life at individual, community and planetary levels and for developing a suitable measure of sustainable development.

## The Great Drivers of History

A sustainable society requires the ultimate resources of humanity, the highest potential of motivation and intellect. One can learn about this potential by systematic research of the great drivers of history (Grandpierre 2021a; Matolcsy, 2014; Kopátsy, 2021). Economics should learn a lot from history, regarding long-term sustainability as well as about the driving forces, especially the cultural roots of economically successful nations (Kopátsy, 2021, pp. 15–38, 47, 74, 96, 163). Apparently, the most important drivers of history include a shared vision and commitment, usually provided by the cosmology underlying religion and mythology (Huyghe & Huyghe 1999; Matolcsy, 2014; Kopátsy 2021; Shils, 1965; Weber, 2013). The greatest drivers of history are the natural aspirations for a good, happy and meaningful life, for the upliftment of all nations, humanity, our planet and for the advancement of the world.

The outstanding American sociologist Edward Shils recognized that *“the coherence and stability of any society depend at least in part on the*



*existence of the image of that society; on the attachment of the society's members to that image; and, concomitantly, on the attachments that the members of that society form with one another. Such an image includes beliefs about the society, about the ultimate meaning of life, and about the order of the universe. The nature of man evidently requires the recognition of, and is in some measure expressed in, the order of his society"* (Shils 1997, in: Grosby, 1997, pp. viii–ix). As the Nobel Prize winner Albert Schweitzer put it, the main guarantee of the uplift of peoples is a life-affirming and world-affirming worldview (Schweitzer, 1955, p. 240). In addition to a rational cognitive map—an adequate worldview—there is “a need for moral order for things to be fit into a pattern which is just as well as predictable” (Shils, 1965, p. 203). Man’s basic need is “to find an answer to the question of the meaning of his existence and to discover norms according to which he ought to live” (Fromm, 2002, p. 7). The ultimate goal of human life is to live a meaningful, happy, good and fulfilling life (Kopp, 2006, p. 2).

The basic function of the nervous system is to realize correctly what life wants from us and what possibilities of the world fits the best the most fundamental aims of life. The specific feature of man is that, in addition to our natural instinct for life, a potentially universal knowledge system capable of interpreting the world and guiding action plays an essential role in guiding our behavior. *That system of knowledge on the basis of which we interpret the world and evaluate the possibilities for action is called a worldview* (Grandpierre, 2021a). This fundamental system of knowledge is inseparable from its inherent value system. It is the socially dominant worldview that is basis of the “collective unconsciousness”, of our culture that connects the members of society with each other and informs them about the culturally imprinted patterns of thought and norms of behavior. This fundamental worldview is the main cohesive and driving force of society. In a life-centred worldview, this cohesive bond and driving force are profoundly personal and strong.

“The conclusions and prescriptions of economics change as the underlying picture of man and his purpose on earth changes” (Schumacher, 1975, p. 47). Of course, the picture of man and the purpose of humanity on earth are questions answered—usually implicitly—by our worldview. John Stuart Mill (1806–1853) saw *political economy* “*not as a thing by itself, but as a fragment of a greater whole; a branch of social philosophy, so interlinked with all the other branches that its conclusions, even in its own peculiar province, are only true conditionally, subject to interference and counteraction from causes not directly within its scope*” (Schumacher, 1975, p. 41). It is already pointed out that *economics is a 'derivative' science that accepts instructions from a more fundamental science, meta-economics* (Schumacher, 1975, p. 52). *This meta-economic basis*

*of economics is Western materialism* (Schumacher, 1975, p. 52). *It is this materialist worldview that determines the way of thinking and primary values of economics.* It is this materialistic worldview that makes it necessary for economics to be oriented toward continuously increasing GDP or other materialistic values like money, power or the production of material goods.

“Granted, a certain level of prosperity is necessary, and a higher level is conducive to a happy and healthy life. This level was achieved by developed countries in the early 1970s, and the gap has increasingly widened since then. The continued insistence on material consumption is more and more harmful and entails more costs to society” (BC4LS, 2021, p. 8). Material development only makes sense until material well-being is achieved. Once material well-being is achieved, it becomes the timelier to replace the materialistic worldview with a comprehensive life-oriented worldview oriented toward emotional and intellectual development, toward higher and higher cultural values. To do this, the decision-making system arising from the materialistic worldview must be replaced by a worldview of sustainability. In contrast to material development, the prospects for emotional and intellectual development are unlimited.

Remarkably, life not only exists but it also wants to be. It wants to develop. Life has a purpose, and that purpose is the full development of life. Life is communal in nature. We human beings belong to the four billion years of evolution of life on our planet, and this process is a manifestation of the cosmic evolution of life (Henderson, 1913, 1917). Accordingly, the Principle of Life is the principle of the upliftment of life of communities and communities of communities of life. Remarkably, Herman Daly and John B. Cobb worked out an ecological economics based upon the fact that individuals do not live their lives isolated from each other; rather, they are to be regarded as persons-in-community. Accordingly, the main aim of economics should be the well-being of persons-in-community, and this requires the well-being of society and of our natural environment (Daly & Cobb, 1989).

It is high time to recognize that the well-being of humanity is fundamentally linked to the biological laws of nature, to the well-being of local and ecological communities. The development of the emotional and intellectual, individual and community levels of life is at the heart of social development, instead of development directed toward the constant quantitative increase in the production of material goods.

The Principle of Life is the most fundamental principle of Nature. It constantly motivates living beings to live their lives as fully and perfectly as possible, mobilizing all their physical, emotional and intellectual capacities and energies to this end. The Principle of Life urges all living beings to do their best for achieving the highest levels of health, physical,

emotional and intellectual quality of life, for the whole of life, at all seven communal levels of the cosmic organization of life: the cell, the individual, the family, the nation, humanity, the biosphere and the Living Universe. The Principle of Life is about acting in the most committed way at every moment to identify and realize that action that is the best in the long-term for the whole of life. All living beings live their lives the most really when they benefit universal life in the most uplifting way possible.

The Principle of Life is also a moral principle. At each of the seven levels of communal organization of cosmic life it implies an inherent moral commitment to improving the comprehensive quality of life. A comprehensive life-centred worldview provides a system of decision-making that understands, interprets and evaluates the world and life in a way that harmonizes them to form the basis for decisions favorable for universal life. A comprehensive decision system enables well-informed rational decision making, replacing unilateral materialism by a balanced worldview integrating the fundamental principles of matter, life and mind toward development and upliftment of life. By making our decision-making system comprehensive, balanced and pro-active, it also encourages the uplifting development of our world of feeling and thought, and so our human quality. The Principle of Life urges us to develop our innate and valuable capacities to the highest level, to develop our creative powers and talents in the broadest and deepest context of human mind, and to use them for the benefit of our communities and of universal life.

Interestingly, comprehensive, life-centred economics retains the two basic elements of narrow materialistic economics, namely, the “principle of greatest happiness” and conceiving man as a rational decision-making being, with the crucial difference that “happiness” and “rational decision-making” are understood in a comprehensive and profound, all-encompassing context. Rather than passively observing the irrational and weak aspects of human decision making, as in behavioral economics, and seeking to exploit them for profit, it aims to establish, improve and develop human decision making, to improve human quality and thus human, social and natural capital. I call due attention to the recognition that developing our basic decision-making system to become comprehensive, balanced and pro-active gives a necessary account of human nature, communities of life, and Nature. In this way, it is suitable to serve as the foundation of long-term sustainable development.

## A Necessary and Sufficient Condition for a Long-Term Sustainable Society

There exist two types of causal systems: the primary is given by Nature; the secondary is given by man. Nature's causal system is based on the Principle of Life which is also the basis and guiding principle of natural causes. The man-made causal system works in the context of society. Society can only become sustainable in the long term if the man-made causal system is brought into harmony with Nature's causal system. This requires to consider the Life Principle as the basic guiding principle of society. A necessary and sufficient condition for long-term sustainability is that human decisions become consistent with the Principle of Life and the Principle of Reason (logic). Remarkably, the Principle of Life is suitable to serve as a guiding principle for good governance and good management of life, for the overall well-being of the individual, Nature and society (Grandpierre, 2021a, 2021b). Within the framework of a comprehensive, balanced and pro-active worldview, it is humanity's natural task to promote the well-being of the biosphere. Social well-being can be ensured by improving the general problem-solving capacity of the people, by increasing their ability to cope with difficulties. The worldview that fits the Universe in its all-comprehensive nature can serve as a universal mental tool capable to solve the most important problems humanity is faced on earth. Such a development can be achieved by a comprehensive and balanced system of social decision-making and culture. It requires to develop a high level of worldview awareness and commitment.

It seems there are some national initiatives pointing toward similar directions. For example, the main objective of the Hungarian National Framework Strategy for Sustainable Development is to create the goods necessary to promote the material, spiritual and mental well-being of all generations (Tanács, 2013, p. 21), and to ensure the possibility of a happy life for all (Tanács, 2019, p. 5). Family education, which ensures the conditions for physical, spiritual and intellectual development, is "the most effective investment for society" (Kopp & Skrabski, 2006, p. 226). *"Sustainable development needs to be understood correctly: sustainability is an approach and a set of criteria that permeates all areas of social action and must be applied in all socio-economic sectors and regions in a coordinated manner"* (Tanács, 2019).

The most effective power of societies is the profound understanding and correct appreciation of life and the world. A comprehensive worldview incorporates, strengthens and completes the great drives of history. For example, diligence is motivated and strengthened by the mobilizing power of the Principle of Life. The striving for physical-mental-spiritual health, for the betterment of the world, and the optimistic mentality arises from the uplifting character of the Principle of Life; being pro-

active for the well-being of communities is strengthened by the life principle's communitarian character. Faith in the ultimate meaning of life and trust in the future comes from a clear understanding of the living nature of the Universe. The desire for simple life arises from respect for universal life, the balanced nature of the comprehensive worldview, and acknowledging that the Nature's causal system is the primary one for our well-being. The life-centred worldview and the integration of society into the natural order offers a motivation that can be compared to the social uplifting power of religions, with the crucial difference that the comprehensive worldview is reconciling different religions and brings them into harmony with science. Education is the more effective the stronger is the will to learn, and this is strongest when the learner sees that he is acquiring knowledge that will help him to improve his life. In this respect, the life-centred nature of comprehensive worldview offers an epoch-making and beneficial difference by strengthening the appreciation of learning. Human creativity is the strongest when our horizon is the broadest and our understanding is the deepest, so that a comprehensive world view provides the most favorable framework for the development of creative power.

Awareness of the motivating, uplifting and mobilizing power of a comprehensive worldview turns the drives of history into an unprecedentedly strong and effective emotional and intellectual driving force.

The ultimate basis for material, emotional and intellectual, individual, social and natural wealth is an intellectual resource: knowledge (BC4LS, 2021, p. 32). Talent and creativity will become essential resources in sustainable, life-centred economics (BC4LS, 2021, p. 32). The knowledge revolution links human communities. Sustainability is about human civilization, so sustainable economics focuses on improving human relations (BC4LS, 2021, p. 41). The source of talent is motivation, its fruit is creativity. The comprehensive, life-centred worldview is also a highly effective motivator for the unfolding of human potential that is the main aim of development economics (Amartya Sen) and for the society of quality, which is based on knowledge and the development of talent (Kopátsy, 2021).

If we turn toward the upliftment of our lives, toward affirming the will of true life, becoming aware of the cosmic nature of the Principle of Life, which intimately connects us all to each other and to all life, it will provide us with a cosmic driving force that ignites the desire for the fulfillment of meaningful life, restore our human self-respect, facilitate the happiness of our community life, and raise our quality of life to many times what it is today. In this way, the comprehensive worldview can be the basic intellectual tool for guiding economics and society toward sustainable development, healthy environment and healthy society.

An inclusive measure of well-being that expresses all the three levels of overall quality of life (hedonic pleasure, flow experience, eudaimonia), all the three aspects of well-being (physical, emotional and intellectual) and all the seven natural communal commitments (cell, individual, family, nation, humanity, biosphere, Living Universe) can be useful for long-term sustainable development. Of the well-being measures already in place, the Gross National Happiness Index of Bhutan can be regarded as the closest; with some additions, it can be made more comprehensive.

## Conclusions

To lay the foundations for a long-term sustainable economics, we need to think and act in a broader and deeper context than the one materialist worldview can offer. In Nature, the most important context is given by the fundamental principles of nature from which all the physical, biological and logical laws can be derived. The most fundamental classes in the world of Nature are inanimate matter, life and intelligence. All three have their own fundamental principle. Nature is held together and governed by these fundamental principles. They are the basis for understanding the world as a whole and the essence of all its elements, including the properties and behavior of atoms or quanta. Recent developments in several disciplines studying the connections between life and the Universe had proved the living nature of the Universe (Grandpierre, 2021a, 2021b). The first principles of physics and biology have shaped the fundamental properties of matter in such a way as to make them suitable for behaving in accordance with the physical and biological laws. Similarly, the Principle of Reason has shaped the fundamental properties of intelligent beings capable for logical thinking. These three principles determine the fundamental, universal aspect of the behavior of inanimate bodies, living and intelligent beings, and the natural main direction of their behavior. These three principles are embodied in the most fundamental and general of them, the Principle of Life. It is this principle that is ignored in the foundation of economics. For long-term sustainability, we need a life-centred, community-centred and Nature-centred economics. In the fundamental context of Nature's causal system, it is the Principle of Life that determines the course of events, the development of life and of man.

It is time to recognize that the well-being of humanity is fundamentally linked to the biological laws of nature, to the well-being of local and ecological communities. A civilization that is sustainable in the long term is one that lives not only with the knowledge of physical laws but also with that of the principles of life and logic. Economics must become life-centred, because the production of material goods must serve the

upliftment of life of individuals and communities. Besides the production of such material goods, the development of the emotional and intellectual, individual and communal level of life becomes the main focus of social development. Our emotions and thoughts are meant to control our physical behavior. The need to improve the quality of our emotions and thoughts makes it necessary to broaden the breadth of our vision and deepen our understanding to the ultimate cosmic context. Our emotional and mental worlds are empowered by not smaller powers but the fundamental principles of Nature. Once we accept their urges arising from our life instinct, they enable us to develop our problem-solving and coping skills, both in our individual guidance of life and in social decision-making. A social order that takes as its guiding principle the Principle of Life acting in harmony in all our natural communities opens up new, broader and deeper horizons for making human life meaningful, deeply happy, good and truly fulfilling.

It is remarkable that the Principle of Life can be seen as a comprehensively grounded form of the principle of greatest happiness. Our quality of life includes the quality of our emotional and intellectual attachment to our natural communities, to the living world on earth and to the Living Universe. Thus, we are personally involved in improving the quality of universal life at all its seven levels, in harmony with each other. Accepting a comprehensive worldview endows us by the capability to decide in the framework of a comprehensive system of decisions that conceives, interprets and evaluates the world and life according to the fundamental principles of the Universe. It enables well-informed rational decision-making, completes materialism by a balanced and more inclusive worldview, aligns it with the Principle of Life and the Principle of Reason, and enables us to align our decision-making with the requirements of long-term sustainable development. The comprehensive science unifying the natural sciences and humanities by the all-encompassing Principle of Life offers an unexpectedly broad and deep, scientifically grounded basis for a life-centred economics, healthy environment and healthy society.

## Note

1. "Our thesis is that the idea of a self-adjusting market implied a stark utopia. Such an institution could not exist for any length of time without annihilating the human and natural substance of society; it would have physically destroyed man and transformed his surroundings into a wilderness" (Polanyi, 2001, p. 3).

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