

**The Goi Peace Foundation, Japan
Kaposvár University, Hungary**

PATHS TOWARD A CIVILIZATION OF ONENESS WITH DIVERSITY IN THE SPHERE OF THE ECONOMY

Authors:

Sándor Kerekes, Kaposvár University, Hungary

Tamás Kocsis, Corvinus University of Budapest, Hungary

Study overview

In the Spring of 2014, The Goi Peace Foundation sought background studies in four spheres (the economy, politics, media, and business) to show how its goals for humanity, as expressed in the Fuji Declaration, at that time provisionally entitled, “AWAKENING THE DIVINE SPARK IN THE SPIRIT OF HUMANITY: For a Civilization of Oneness with Diversity on Planet Earth” can be achieved. The Declaration points to the possibility of a worldwide shift in consciousness, from materialism-centered sustainability to full-spectrum flourishing.

This report presents a background study about the economy. It outlines the path toward a Civilization of Oneness with Diversity as it is being shaped and advanced by the economy.

In this study, we describe:

- The economic theory behind (un)sustainability;
- The shift towards an economy of flow (a GDP-friendly path);
- The concept of the ‘celestial footprint’ (the increase of which is always advantageous, in contrast to increases in the ecological footprint);
- The shift towards voluntary simplicity (a GDP-reducing path)

We conclude by commenting on the interdependencies between our economic and ecological system which highlights the importance of Oneness and the need for a paradigm shift as expressed in the Fuji Declaration.

Table of Contents

1

Introduction: The world economy is growing faster than the population	2
The economic theory of (un)sustainability.....	4
„Imagine no possessions I wonder if you can” (John Lennon).....	8
„Imagine all the people Sharing all the world..” (John Lennon).....	11
The need for ecological and social resilience.....	14
Introducing the Celestial Footprint	16
Paths of Gaining Happiness	18
(Non)material and (non)monetary trade-offs	21
IPAT and the logic of Celestial Footprint	22
Voluntary Simplicity: a radical, non-market strategy for increasing Celestial Footprint	23
Conclusions: Sustainability and interdependencies	26
References	28

Introduction: The world economy is growing faster than the population

Between 2000 and 2030 the world's population will grow by 2.5 billion, the demand for food will nearly double and industrial production and energy consumption will triple, but the corresponding rate of increase in developing countries is expected to quintuple. This growth carries with it the risk of environmental disaster, but also the opportunity to create a better environment and the conditions for providing mankind with basic goods, clean air and healthy water. Which of the alternatives will happen basically depends on political decisions. Some predictions indicate that the average GDP per capita in Europe will exceed \$40.000 by 2050. By 2100, China will catch up with the United States in terms of GDP per capita, while India will become a superpower by 2030 because its population growth exceeds the global average. Dividing the annual gross domestic product evenly among the peoples of the world would provide every individual with \$5-10.000. This “economy” could theoretically provide people with healthy drinking water and organized health care and could reduce the number of births and eliminate illiteracy too. Unfortunately, this trend is not developing yet; differences just keep growing. There exist countries with a GDP per capita of over \$100 000 (Qatar, Luxemburg), and there are very poor countries with a GDP of around \$1 000 (Bangladesh, Sub-Saharan Africa). In 1970, the income of the richest 20% of the world's inhabitants was

only thirty times as much as that of the poorest 20%. By 2005 the income of the rich had grown to seventy-five times as much, and the difference keeps growing. In the meantime, the global population is exponentially increasing. In 1800 only one billion people lived on the Earth and 130 years passed before this number doubled. Another doubling occurred in 47 years, another in 12 and then one more in only 9 years – in total another 4 billion had been added. The rate of increase is slowing a little, but the growth in Asia and Africa seems unstoppable. Population growth is characteristic of poor regions.

Data concerning the increase in the productivity of agricultural work are available to the public. In the past 100 years, while the amount of cereal grown per hectare has increased 6-10 fold, the number of working hours and thus the number of employees required per hectare has dropped to a fraction of this (it has decreased by about 95%). It is common knowledge that in developed countries 2-5% of the entire workforce are capable of providing the whole of the society with food, and before long the proportion of workers employed in the industrial sector will also drop below 5-7%. According to optimistic analysts, demands for employment will be absorbed by the service or tertiary sector. Others predict that there will be more free time for individuals because the same amount of work will be distributed among more people, which will result in a double benefit – more free time favors the development of the service sector and creates demand for services.

The situation seems more complex in reflection of the statistical data. In certain regions – e.g. South America – a third generation is growing up with no-one in the family ever having had a permanent job; this generates huge social tension, and there is not much hope that children socialized in such families will become employed as adults.

The other no less surprising fact is that employees' free time is not increasing even in developed countries; what is rather typical is that people work more than 8 hours a day and cannot even take their vacations. When we examine the labor market, it is only with difficulty that we can find jobs which offer 4-6 hours' employment, although such working hours would be critical for the healthy functioning of families. That is to say, changes in the labor market do not support the more optimistic predictions; a developed economy can only manage with well-qualified labor force that is prepared for competition, and those who want nothing 'but' to make a living are of no value to the current economy. Social supply systems attempt to handle these issues using welfare states, and such problems are in theory usually easily manageable in the economic sense. A productive economy is capable of taking care of the physical needs of the unemployed. Ensuring the quality of life of the millions that are

excluded from economy, however, is a more complex problem than simply satisfying their physical needs.

The economic theory of (un)sustainability

The concept of sustainable development has undoubtedly made a major influence on the economy – e.g. by supporting the uptake of environmentally friendly consumption habits, clean technologies and increasing appreciation of the significance of renewable resources and defining development as qualitative rather than quantitative growth.

The roots of sustainability (Hicks, 1946) are found in Hicks' writings that claim that "a man's income is the maximum value which he can consume during a week and still expect to be as well off at the end of the week as he was at the beginning". In 1970, when the outlines of the environmental crisis were already visible, the same John Hicks claimed that a few grains of sand in the wheels of international finance would do the job of slowing down development. This so-called Tobin tax is just now being re-invented by the EU bureaucracy and domestic politics. It may seem strange that what then was expected to slow down development is now hopefully going to intensify economic growth.

Ecological economics partly builds its conceptions about sustainable development on Hicks' Theory of Wages (Marshall, 2004). The need for equality between generations that appears in Brundtland's definition is also rooted in the history of theory and can be discovered in the Solow-Hartwick sustainability rule (Marshall, 2004). This rule states that consumption is sustainable and may even grow even if the proportion of non-renewable resources drops, provided that the benefits generated by the use of these resources is invested into reproducible capital. In 1920, Marshall wrote: "When capital ceases to increase, income likewise will stop growing. Hence seeking to keep capital intact should be seen as fundamental to income generation." (Marshall, 2004). When referring to natural capital, environmental economists keep repeating this mantra, but their words fall on deaf ears. Natural capital is decreasing because there is hardly any effort being made to replace what has been used.

In ecology, the carrying capacity of a given territory is considered to be the land area required to support the largest possible population (over the long term) that does not damage the given territory. We may now ask the theoretical question: how many people can the Earth accommodate at an acceptable or preferable standard of living?

Simon Kuznets (1971), considered to be the pope of growth theory, was awarded the Nobel Prize in 1971. It may be natural that Kuznets viewed growth in an optimistic way. In the

speech he made at the Nobel award ceremony, though acknowledging the negative effects of growth, he affirms quite clearly that “two points are relevant here. First, the negative effects of growth have never been viewed as so far outweighing its positive contribution as to lead to its renunciation - no matter how crude the underlying calculus may have been. Second, one may assume that once an unexpected negative result of growth emerges, the potential of material and social technology is aimed at its reduction or removal. In many cases these negative results were allowed to accumulate and to become serious technological or social problems because it was so difficult to foresee them early enough in the process to take effective preventive or ameliorative action. Even when such action was initiated, there may have been delay in the effective technological or policy solution. Still, one may justifiably argue, in the light of the history of economic growth, in which a succession of such unexpected negative results has been overcome, that any specific problem so generated will be temporary - although we shall never be free of them, no matter what economic development is attained.”

Back in 1971 Kuznets claimed that no-one had ever questioned the idea that growth results in more good than bad, and that growth offers solutions that will offset negative effects (through the deployment of technology). With circumspection, Kuznets presents six basic characteristics of modern economic growth:

1. Significantly faster growth of national product per capita and population in developed countries compared to earlier periods,
2. Significantly faster increase in work productivity as compared to earlier periods,
3. High speed structural changes in the economy, agriculture taking a back seat and the developing dominance of industry first and the service sector later. Companies take the lead from private enterprises, which changes employment circumstances,
4. Rapid change in social structure and associated ideologies,
5. Transport and telecommunication technologies enable developed countries to easily access the rest of the world, which leads to the convergence of the world,
6. Despite economic growth, three quarters of the world's population have a much lower standard of living than that it would be possible to provide them with through the application of modern technology.

Kuznets's ideas were presented far earlier than the emergence of the theory of sustainable development. While Kuznets was being awarded the Nobel Prize, the writing of first report of the Club of Rome, entitled "The Limits of Growth", was already underway. The Meadows' book was published in 1972 and expressed doubts about the long term sustainability of growth and stated that the effects of growth are rather positive than negative (Meadows, 1972).

The authors of the Club of Rome certainly did not argue with Kuznets. If we take a close view of Kuznets's statements, above, it is obvious that the growth theory of this economist – still considered a classic today – mostly encompasses all that researchers have presented as *criticisms* of growth theory in the past thirty-five years. Kuznets views technological and social innovations as being the basis of development, but also deems natural, social and cultural dimensions to be important by saying "thus, modern technology with its emphasis on labor-saving inventions may not be suited to countries with a plethora of labor but a scarcity of other factors, such as land and water; and modern institutions, with their emphasis on personal responsibility and pursuit of economic interest, may not be suited to the more traditional life patterns of the agricultural communities that predominate in many less developed countries."

Kuznets certainly does not interpret GDP as a welfare indicator; moreover, in his aforementioned paper he clearly states that "the conventional measures of national product and its components do not reflect many costs of adjustment in the economic and social structures to the channeling of major technological innovations; and, indeed, also omit some positive returns". This shortcoming of this theory in confrontation with new findings has led to a lively discussion in the field in recent years, and to attempts to expand the national accounting framework to encompass the so far hidden but clearly important costs, for example, in education as capital investment, in the shift to urban life, or in the pollution and other negative results of mass production. These efforts will also uncover some so far unmeasured positive returns – in terms of better health and longevity, greater mobility, more leisure, less income inequality, and the like.

Professionals have made estimates and found that the peak of the inverted parabola, the so-called turning point, is situated at very different per capita GDPs for various pollutants. For carbon monoxide, as is mentioned above, this happens at only \$35-57 thousand, and the GDP per capita of the USA is still far below this level. For sulfur dioxide the level is \$9400-11300; this is where an improvement becomes demand.

The situation is even more complex with water pollutants, though there is a correlation that is clearly supportable with data concerning the change in biological and chemical oxygen shortage or the potable water supply and sewerage of homes.

Using an understanding of economics based on the concepts of the environmental Kuznets curves, politicians frequently think that economic growth will also solve environmental problems. However, it has become clear by now that economic growth will not solve the problems that exist with easily externalizable pollution for which there is little chance of establishing the liability of the polluter (as is the case with greenhouse gases and some other wastes), or with contamination that causes irreversible degradation or damage (e.g. the accumulation of heavy metals, stable organic contaminants, etc. due to the shade effect),

The political optimism about the omnipotence of economic growth is overshadowed by yet another contradiction with development. Based on several forecasts, most of the world will not, even by 2030, reach a per capita GDP at which the quality of the environment should start improving. According to prognoses, the most developed countries in the world will reach and exceed a per capita GDP of \$50000, while the world average may produce only \$12000 and Asia²⁸ around \$8000. Even if the future deepening of the North-South crisis were socially and politically tolerable (although obviously it is not), this situation is certainly intolerable in the ecological-environmental sense. The figures show that without a radical change in the conditions of distribution, squalor will remain permanent in the developing countries to such an extent that it will pose an obstacle to positive demographic and environmental change. Taking the delay inherent in feedback into consideration, should this prediction come true we would most probably have to expect disaster.

The assessment is made more complex because we have no knowledge about the resources future generations will use, or about the course of development the countries of the third world will take. The best possible outcome and the worst possible outcome are probably very different. Historical experience proves that there is room for optimism: this perspective reminds us that discoveries come from people, and if there are enough people trying to solve a given problem, they will manage to do it (Simon, 1998). The recent change in the dimension of change, however, counters the optimistic point of view. So far the economy has been dwarfed by the size of the biosphere, but it is now becoming dominant.

The supporters of the optimistic approach take heart in the idea that today's generation may leave less natural resources for generations to come, but our successors will have a higher standard of technology and greater capital.

Regarding prognoses about the future of the Earth, it is crucial how limited we consider the planet's carrying capacity to be, and how resistant carrying capacity is to erosion.

"Imagine no possessions, I wonder if you can" (John Lennon)

The 'second shift' now occurring refers to a potential source of economy that is now used for accumulation, even by the middle class. If, instead of accumulating the income saved by doing a 'second shift', we paid employees to do most of the housework we now do (i.e. through employing quality services), the amount of free time we have would increase and the quality of our lives would improve. Social differences would be reduced with very beneficial social-environmental effects. Finally, we would live in a world more capable of staying in harmony with Earth's limited carrying capacity. The Economy would finally use the resource that is available almost without limit: the human labor force. One of the main obstacles to this occurring is man's tendency to possessiveness. If man did not desire to possess, but rather to satisfy needs, he would not strive to accumulate assets but to maximize happiness.

Disregarding housework when calculating GDP is a frequently-cited error. Provided such activity was turned into paid service, this would result in the growth of GDP with reduced environmental impact. A better division of labor would have a number of beneficial effects. How prepared the world is to make this change is questionable, but it is interesting that there are positive examples from two areas. Going back in time, it is obvious that the hunter-gatherer society was a world in which opportunities were exploited and profits were 'hidden' through common activity and ownership, but this mode of being has been left behind for the society of individuals, which has an exaggerated emphasis on private property and prestige based on consumption. Now we have arrived at a point where some members of developed societies are no longer so tolerant about the proliferation of private property or the type of capitalism they have created. There are a growing number of those who, in the name of "back to basics" (Kocsis, 2002), are trying to question the traditional values of the welfare society. The limit to Earth's resources, pollution issues, the growing population in the third world and the reduction in the size of the population in the developed countries of the world are all well-known, commonplace-sounding issues. The demand for consumption, however, is not only increasing in developed countries, but in the emerging new middle class in developing countries – mainly India and China. This may lead to serious sustainability problems not only in the long run but also in the short term.

In a study published in 2000 (Mont, 2000), the Swedish Environmental Protection Agency identified the following three potential paths to promoting urgently needed sustainability:

- reduce the population
- reduce the level of consumption
- make consumption sustainable.

The first option is obviously impracticable in the short run since all the indications are that, even if the growth rate of the population does not accelerate but stays stable, the global population could reach 8-10 billion by 2100. (Walker, 2014)

Sustaining such a huge population clearly makes the second option, cutting down on consumption, impossible. The situation is made even graver by the fact that most of the population growth will happen in developing regions where living standards lag far behind those seen in the developed part of the world. Improving economic performance, however, will mean that even the citizens of poor regions will want to consume in a similar way to inhabitants of the 'developed' world. Moreover, inhabitants of countries that are emerging from poverty will much less be sensitive to conservation approaches and will rather be inclined to exploit environmental resources disproportionately to enjoy marginal improvements in their living standards. Efforts to reduce consumption would be liable to evoke major public dissent in countries where inhabitants already consume much more than is required to meet their basic needs. No national government would be ready to support such programs.

Today, improvements in eco-efficiency are partly the result of price competition. Everybody is trying to sell products more cheaply. This creates demand for new branches and services and, in this sense, has an important part in stimulating economic growth. In some sense, this is also a paradox because due to improvements in eco-efficiency, the rate of increase in GDP should be slowing down, but it seems to be gaining speed. In environmental studies, the rebound effect is a well-known phenomenon that describes how eco-efficiency leads to increases in consumption because any money saved by using more efficient goods and services is recycled and invested into purchases in other areas. However, an increase in eco-efficiency could be used to favorably affect GDP growth if the economies gained from increases in eco-efficiency were ploughed back into structural development.

In his study into the Steady State Economy, Herman Daly (Daly, 1977) points out that unlimited economic growth is impossible on a limited Earth. Grossman and Krueger (1994) state that economic growth affects the quality of environment in three ways. The first is the so-called scale effect, which refers to when large scale economic activity causes large scale environmental degradation through the increased demand for inputs, including natural resources, and the correspondingly higher output rate, which is indicated by the production of waste. The second is the so-called structural effect, which may yet be environmentally favorable in the future. The first structural changes that affected economic activity – urbanization, the shift from agricultural production to industrial production, etc. – had a negative environmental impact. Current structural changes, such as the tendency to increases in energy efficiency, sectors with greater added value and the expansion of services indicate a favorable change in that they reduce environmental impact per unit of GDP. The third significant factor also brings favorable effects since wealthier countries are spending more on research and development, which enables the replacement of polluting technologies with cleaner ones, thus reducing environment impact. This is usually called the technical-technological component of growth.

In the past century, economic growth has taken a trajectory, which, regarding Earth's limited resources, cannot be maintained. There might be, however, another course to take, which offers the economic growth necessary to create opportunities for those currently excluded from income generation (the unemployed) to make a living, and to appear on the market with purchasing power. There remains the possibility for structural economic growth. This proposal is in close harmony with Grossmann's ideas, and what Weizsäcker and Lovins (Hawken, Lovins & Lovins, 2013) call a shift from a "stock" economy to a "flow" economy. Countries with low raw material consumption per capita have significantly reduced in number over the past two decades. These countries also include some fairly opulent ones. When observing the history of countries with rapid economic growth, like Finland or Singapore, we may note that their sudden economic growth went hand in hand with the large scale consumption of raw materials and resources. There are, however, developed countries, which have also managed to create significant wealth with relatively low per capita resource consumption. The so-called eminence of Finland's environmental position may be called into question if we note that average per capita resource consumption in Finland is over double that of Italy's, which is considered to be a laggard in terms of environmental matters.

"Imagine all the people sharing all the world..." (John Lennon)

The idea that the main goal of man's life is "self-fulfillment" has become a major factor in appraising quality of life, although there is only a thin line between self-fulfillment and selfishness, which may be useful for boosting the economy but has little to do with human happiness. Quality of life does not seem to be related to wealth or sustainable development; however, in reality, cultural perceptions and messages about one's quality of life fundamentally influence sustainability. The differentiation between wealth and 'well-being' is important, because if an average shopping cart contained more (and here the term is broadly interpreted) 'culture', increases in wealth would require less consumption of material and energy and thus environmental impact would be lower.

According to estimates, the population of Earth is bound to reach between 7 and 10 billion in the following 30 years. It is also public knowledge that, at present, 800 million people are living (or starving) on less than \$1 per day, and nearly 3 billion are living on less than \$2 a day: the poverty level. That can still mean that economies remain viable because people who work 12-14 hours a day are fairly productive and can "finance" well-developed social support systems.

The frequently-mentioned notion of competition generates the illusion that every "game" in life is zero-sum. If tax revenues are spent on environment protection, there will be no resources left for building motorways. If pensions are subsidized, there will be nothing left to support small enterprises. These suppositions that suggest that only one goal can be realized – to the detriment of another – are all too familiar.

Sustainable development needs a radically different way of thinking. "Sustainability" means the development of multiple dimensions. In this respect, the word "or" should be erased from our dictionaries since the simultaneous development of different dimensions can only be expressed by the words "and/both". There are always favorable compromises that can be made, and it is never true that there are only two options to pick from: inevitably, innumerable potential options exist. The sin of dominant paradigms is that in certain periods certain approaches are prioritized, and society is 'made' to face a choice. This is where government intervention comes in; a government is a system of institutions operated by society without which there would be no environmental safety, or even a moderately tolerable environment.

Csikszentmihályi (1997) states that, in a welfare economy, consumers care little about "existence" itself but their attention turns towards "experiential" needs instead. That is, they need activities to satisfy their need for practical experience. Interestingly enough, the consumer's main interest changes from merchandise to the experience of shopping itself. This

may have positive and negative consequences from the perspective of sustainable development.

Sustainability means ensuring the continuous existence of “something”. Growth in GDP does not necessarily mean growth in wealth, and even less that of well-being. Growth in well-being requires the development of education, increases in healthy life expectancy, the improvement of life and social security and even the improvement of factors like personal freedom, which are all components of the quality of life.

According to the Easterlin (1974) paradox, the satisfaction or happiness of people is not linearly correlated to wealth (Stevenson & Wolfers, 2008). Those who do not become preoccupied with statistical averages but pay attention to individuals claim that over half of the active population suffer from depression, and note that the disease tends to also attack those who live in a state of “wealth”. Perhaps the illness does not only affect wealthier nations, but they certainly constitute the basis for the diagnosis of depression as the endemic disease of the modern age. Earth’s carrying capacity is limited and seems to be failing under the environmental impact of mankind: the needless and mindless consumer habits of the rich or the misery of the poor, since both overload the global ecosystem. Maria Csutora and her colleagues at the Institute of Environmental Science at Corvinus University, Budapest describe an interesting phenomenon concerning people’s environmental awareness and ecological footprints. While one would expect environmentally-conscious people’s ecological footprints to be smaller than those of non-environmentally-conscious people, the research found no such correlation. In her research, which has major international resonance, Csutora calls the phenomenon – which we might label the Csutora-paradox – the “Behaviour–Impact Gap”. The main point of the paradox is that the ecological footprints or the carbon footprints of so-called ‘brown’ (the least environmentally-conscious) and green (the most environmentally-conscious) consumers do not significantly differ from each other. Ecological footprints are correlated to income, but the beneficial effect of environmental awareness cannot be demonstrated (Csutora, 2012).

Environmentally-conscious consumers are ready to undertake some ‘self-limiting’ activities (selective waste collection, turning off the tap, disconnecting the telephone recharger, etc.) that only have marginal effects on the ecological footprint, while they typically reject making radical changes. They do not give up flying, become vegetarians or move into smaller homes. This certainly does not mean that environmentally-conscious consumption does not have positive long-term effects, but rather that these long-term effects are structural in nature and are difficult to numerically express.

Regarding this observation, and accepting the premise of macro-economics that says that economic growth is a necessary condition for the growth of wealth, a major dilemma arises as to what type of economic growth causes the least damage to the natural environment, or rather which type best serves the goals of sustainable development. Ecological economists and scientists deny the existence of such types of economic growth. However, there is a concept of economic growth that serves sustainable development that we may call *structural economic growth*. Eco-efficiency may be increased in a way that it simultaneously results in an increase in the division of labor within society. Supported by an increase in the division of labor, the consumption of services in the economy would also significantly increase at the expense of material consumption, which would mean the *replacement of the stock economy by a flow economy*. Instead of buying washing machines, refrigerators and kitchen equipment, we would buy clean clothes from the laundry and we would eat out in restaurants. We would hire specialists, rather than do things ourselves at home. Specialists equipped with professional tools would clean our homes. This would promote economic growth because, due to the division of labor, we would pay for these services: however, instead of spending our money on buying washing machines we would only need to settle the laundry bill. These days, television sets that offer a movie experience are available to buy: in a flow economy we would just go to a movie theatre where 400 of us could watch the program on one 'set'. High-income people can afford home movie equipment because the necessary technology has become cheap enough. A television set meeting nearly all the user's needs, providing 3D quality images, 'only' cost three hundred thousand forints (approx. \$1000) in 2014. The cost of cinema tickets is typically a multiple of hiring a film on DVD. Technology is growing cheaper, while services are becoming more expensive, largely due to increases in wages. But this up-to-date home movie equipment, however, is consuming 150W of energy in the background. According to careful estimates, this means that while we are watching our movie at home, at least two strapping "energy-slaves" are required to power the equipment (MacKay, 2008). Each is capable of keeping a 75W light bulb on. If we leave a 75W bulb on and go to sleep in front of the TV, two slaves will be doing unnecessary work (Grossman & Krueger, 1994). It is easy to realize what a change in environment impact the change in our entertainment-related behavior has caused just over the past five years. The energy consumption of a single commercial movie projector (per head) is nothing in comparison to the energy consumption of hundreds of individuals watching TV.

The development of the economy in the past one hundred years indicates that it is capable of more efficient development if not hindered by government or other regulations. It has also

been proven that the market itself is unable to successfully deal with problems such as poverty or social inequalities. The market creates an irresolvable contradiction by attempting to minimize the use of labor as a production factor while high employment rates are more desirable for society as a whole. The size of an economy and rates of consumption are defined by the size of the human population, the complexity of ecosystems, and how much, what and in what way an individual consumes.

The need for ecological and social resilience

What does ‘resilience’ mean when applied to social science and ecology? Obviously, something different than it does to a mechanical engineer. Walker, Holling, Carpenter and Kinzig (Walker et al., 2004) discuss the three concepts: "Resilience, adaptability and transformability", the interaction of which they think determine the resistance and stability of systems against external shock. “While the technological flexibility approach focuses on the steady state and defines the amount of disturbances needed to move the system from one stability domain to another, ‘ecological flexibility’ is characterized by the amount of changing circumstances which the system is able to absorb before its structure transforms due to the modification of variables, processes and the nature of management” (Walker et al., 2004). The sustainable relationship between nature and man requires attention to ecological flexibility because its central concern is the space between stabilization and destabilization: present day development, global environmental change, decreases in biodiversity, degradation of ecosystems and sustainable development. The term ‘technological flexibility’, however, gives the dangerous impression that natural systems may be efficiently managed, that consequences are predictable and the goals of sustainability are achievable (Walker et al., 2004).

A flexible, adaptable and thus sustainable social-ecological system is characterized by having the following characteristics:

- it maintains diversity and supports the preservation of biological, landscape, economic and social components,
- “human control” of ecological diversity is limited,
- it respects modularity (combined systems are better able to withstand shock),
- it recognizes and emphasizes the importance of education, social networks and locally developed rules.

To sustain the operability of a flexible and adaptable social-ecological system it is necessary to.

- give prompt feedback: e.g. in the case of drought, immediate irrigation is needed with no time spent waiting for EU support policy to change. If there is no demand for selectively collected waste paper, its energy content must be exploited through incineration before it degrades in a backyard. There may be no time for prolonged discussion about the best course of action;
- direct the attention of politics to better managing slow variables and processes of accumulation, despite the fact that politicians are disinterested in these kinds of issues: they are not newsworthy. When a river floods or a fire breaks out there always are funds available for repairing the damage, while nobody really cares about the slow degradation of dams or fire stations. The slow increase of nitrogen, or the accumulation of heavy metals in the soil is a graver problem than the occasional foaming of the River. The latter phenomenon, luckily, attracts attention, while the previous one does not;
- ensure an appropriate balance between private and public property and overlapping rights of access. Seemingly, the state is a bad proprietor, which is why the liberal economy wants to privatize everything. The state may be a bad proprietor in the economic sense, but it is good in the ecological sense – for example, in the case of public assets such as drinking water; moreover, also with non-public assets (e.g. energy supplies, where a private owner may be able to cut prices but is unable to ensure security of supply);
- create a strict system of sanctioning and a culture of honesty. The health of the environment and society can only be ensured if an appropriate system of moral values exists;
- create a harmonized, overlapping institutional system that functions on different levels of decision-making. The principle of subsidiarity does not only mean that decisions should be made on the level at which information is available, but also that upper levels should support lower levels in handling problems. Expertise, material resources and perhaps coercive measures are desirable if, for example, a local government, driven by economic interests, harms the living standards of local inhabitants. Some inhabitants of metropolitan agglomerations have fallen victim to such conduct;
- recognize and incorporate non-priced ecosystem services into development proposals. The construction of a motorway, a wind farm, a landfill or a sewage system involves

environmental destruction, the rate of which may be decreased only if suitable impact assessments are prepared and alternative proposals are also examined;

- be open to change: create an atmosphere supportive of innovation and experimentation – this presupposes the existence of trust in institutional systems. It is worth testing everything out on small scale before mass rollout. Smaller shocks can be met through the flexible responses of ecosystems and society;
- be strongly committed to avoiding major shocks and to responding quickly (e.g. providing feedback about) large scale events.

Introducing the Celestial Footprint¹

One of the greatest dangers of using GDP is that it is often associated, more or less, with wellbeing which is a different and more complex concept. Such misleading use is easy to avoid. We now also introduce an analysis of a measure of subjective wellbeing (or happiness,² see Diener, 1984, 2002) which seems to be a better candidate for an index of general wellbeing than GDP. For specific purposes, of course, GDP may be regarded as a somewhat good proxy for the objective conditions of wellbeing, while happiness may be its subjective side (cf. Vemuri and Costanza, 2006). As a limiting factor we use ecological footprint data (Wackernagel and Rees, 1996).

Now, using this happiness and ecological footprint data, the concept of *celestial footprint* can be introduced. The name 'footprint' refers to the concept of the ecological footprint which is designed to quantify human material demand relative to a sustainable basis. The name 'celestial' refers to features of human existence complementary to the ecological footprint - because human beings need far more than just material resources to reach a state of wellbeing and a good quality of life. To highlight the contrast with the earthly emphasis on the ecological footprint it seems suitable to name this concept 'celestial', which clearly points to the spiritual and/or non-material parameters of human existence (cf. Clark and Leikes, 2009) without any demand for the subject to be familiar with any specific religious tradition. Of course, the important question of the type of spirituality needs additional consideration. Moreover, it must be recognized that sources of celestial footprint might not be solely spiritual, although spirituality is an important element.

¹ This section of the paper is part is mostly based on Kocsis (2012).

² We use *subjective wellbeing* and *happiness* as synonyms.

As a theoretical concept, celestial footprint is not directly measurable. But as a good proxy it is worth estimating it as a ratio of perceived subjective wellbeing and calculated ecological footprint (happiness/gHa) over some time period.³ This concept is not sensitive to the size of population, as by using per capita measures we produce the same ratio mentioned above $[(\text{happiness/capita}) / (\text{gHa/capita})]$. Celestial footprint is therefore a general characteristic of a community regardless of population (*ceteris paribus*, changes in population do not affect celestial footprint). As the ecological footprint usually measures privately consumable material resources it naturally depends of the size of the population. As ‘consumption’ of celestial/non-material resources measured by celestial footprint has a communitarian (non-private, common good) characteristic it is the same size either for one person or a million.

Celestial footprint relates to the non-material content of the happiness of a specific community or of a person. The higher the celestial footprint is, the less the material content of a specific happiness level. The dynamic face of pursuing a bigger celestial footprint is easy to recognize: this is the question of “*how to be happier with the same ecological load*”; or of “*how to decrease our ecological load without being unhappier*”. Of course, the numerator and denominator may change simultaneously. The question of the celestial footprint is crucial in a materially limited and by now unsustainable world because our celestial resource pool of happiness is by its nature unlimited. But the potential to utilize this resource is not given by nature – it is rather a question of ability, influenced by culture, attitudes, and values of individuals (cf. Elgin, 1993; Soper, 2008).

While the concept of celestial footprint in itself seems to be clear, it is worth analyzing its relationship to the economy and to monetary issues too. This leads us to two other important ratios which may be identified as components (or factors) of celestial footprint in the monetary world of economics. We now introduce the Kuznets factor (eco-efficiency)⁴ and the Easterlin factor⁵ into our analysis.

³ We may think of this ratio as an environmentally efficient measure of wellbeing. This concept was introduced by Dietz et al. (2009), though their method is different.

⁴ As the Environmental Kuznets Curve conception analyses the connection between affluence (A) (usually measured in dollars of GDP/capita) and specific environmental loads it seems reasonable to call the \$/gHa ratio a Kuznets-factor. An increase may indicate greater monetary affluence from the same environmental load or less environmental loading with the same monetary affluence. Of course the numerator and denominator may change simultaneously, leading to many special cases.

⁵ As Ronald Easterlin (1974, 1995) first analyzed the connection between monetary affluence and happiness in a country over time, it seems reasonable to name the happiness/\$ ratio the Easterlin-factor. It measures the de-monetization of happiness. An increase in the ratio may indicate higher levels of happiness from the same level of monetary affluence or less monetary affluence paired with the same level of happiness. Of course, the numerator and denominator may change simultaneously leading to many special cases.

It is worth noticing here that both Kuznets and Easterlin factors are indifferent to changes in size of population (as is true for the product, celestial footprint). As increases or decreases in the economy should rarely be ends in themselves, it is hard to say that higher or lower Kuznets or Easterlin factors are good or bad in themselves. For example, sustainability experts usually praise higher eco-efficiency (higher Kuznets factors) but the origins of these increases are too manifold to be positively evaluated without additional information. Despite these issues it is true that both the Kuznets and the Easterlin factors are factors of the celestial footprint whose growth is *always* beneficial. The upper part of Table 1 summarizes all the information regarding celestial footprint, Kuznets factor, and the Easterlin factor.

Table 1

The Celestial Footprint, the Kuznets Factor, and the Easterlin Factor; Paths of increasing Happiness and Trade-offs between paths of Gaining Happiness

	Kuznets factor	X	Easterlin factor	=	celestial footprint
Measure	\$/gHa	X	Happ/\$	=	Happ/gHa
Essence	non-material dollars (eco-efficiency)	X	Non-monetized happiness	=	Non-material happiness
IPAT ^a	$1/T_{env}$	X	T_{happ}	=	$T_{happ}/T_{env} (I_{happ}/I_{env})$
Channel-1 ^b	—		↑		↑
Channel-2	↑		—		↑
Channel-3	—		—		—
Channel-4	↓		↑		—
mat. trade-off	↓		—		↓
non-mat. trade-off	↑		—		↑
monet. trade-off	↑		↓		—
non-mon. trade-off	↓		↑		—

^a For the connection with the IPAT formula

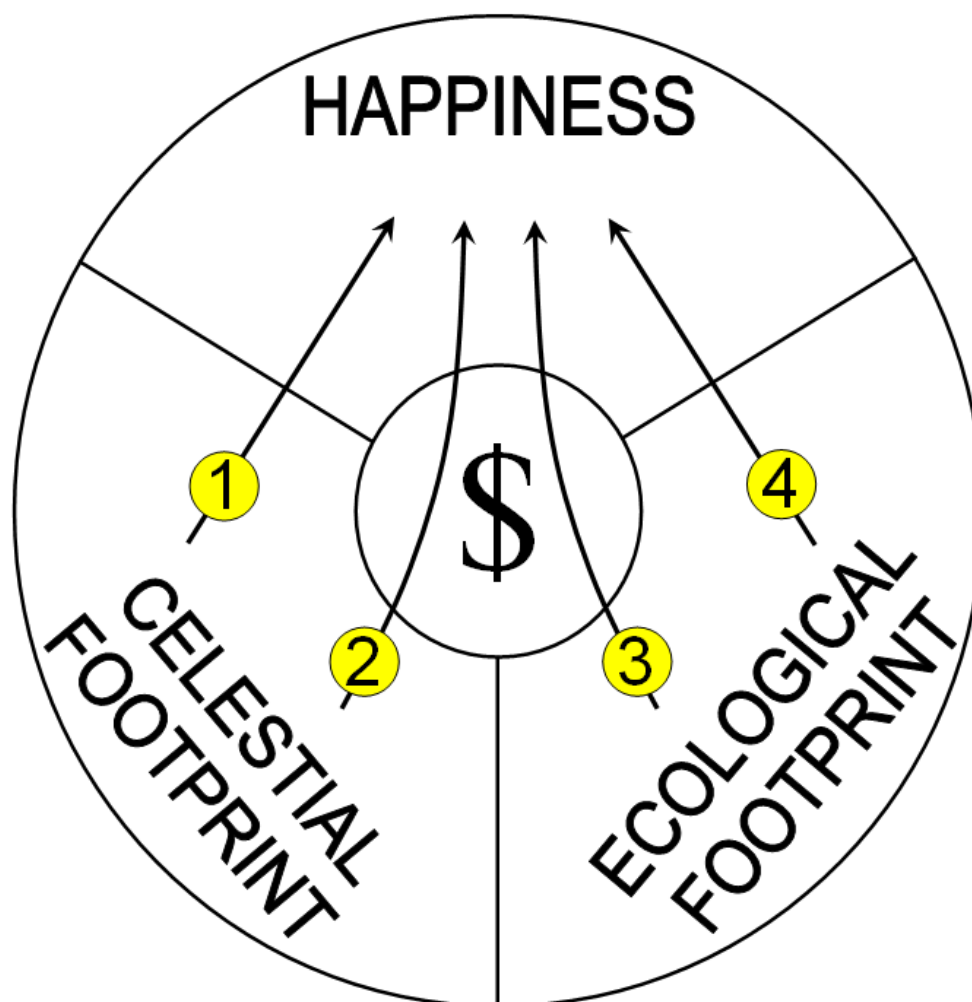
^b Upward pointing arrows indicate an increasing tendency for the measure in question; downward pointing arrows show the opposite.

Paths of Gaining Happiness

Too aid in understanding basic happiness-gaining scenarios, a simple model was developed (see Fig. 1). There are thousands of ways to increase/maintain happiness but all these seem to have commonalities as: (1) they either use earthly or celestial resources; and, (2) these resources are either achieved via markets (price tagged resources) or they are not (i.e. they are

free in monetary terms).⁶ These possibilities indicate that there are four basic channels for gaining human happiness.

Channel-1: Here we directly use non-material (celestial) and non-price-tagged resources which have nothing to do with market mechanisms or the economy and which may be regarded as ‘storing up treasures in heaven’. Warm family atmospheres, a high level of social capital (Leung et al., 2011), the enjoyment of natural beauty or silence, or having the benefits of a clear world-view may all have this characteristic, as does receiving an English lesson in kind, too. This way of gaining happiness corresponds to the later-described strategy of voluntary simplicity and increases celestial footprint through increasing the Easterlin factor (see the middle section of Table 1).



⁶ Causality is a constant issue for happiness studies. As our model is a resource-based one we suppose that resource use is the cause, and happiness is the effect.

Fig. 1 Channels of Gaining Happiness (Note: Increasing celestial footprint and decreasing ecological footprint is always beneficial in our materially limited world.)

Channel-2: This channel uses the same non-material resource pool as Channel-1 while resources are used via market mechanisms. In modern societies, every marketed and monetized *value added* to material resources falls into this category. Eco-efficiency (or the Kuznets factor) as a non-material source of GDP reflects this phenomenon. Economic *development* – without *material growth* – also falls into this category. The monetary values of licenses, marketed logos or cultural relics all are examples of this category, as well as the whole strategy described earlier based on more intensive use of services and greater division of labor (the flow economy). This way of gaining happiness increases the celestial footprint through an improved Kuznets factor (see the middle section of Table 1).

Channel-3: “*repay to Caesar what belongs to Caesar*” (Mt 22,21)/. This channel corresponds to our main understanding of economy. Here we use material resources via market mechanisms for buying all types of material resources, foods, clothes, etc. Critics of economic growth – familiar with the stock economy – assume that: (1) this way of pursuing happiness is the most typical and yet is unsustainable in a materially limited world, and that; (2) dollars of GDP (or any other category of indicators of economic performance) correlate to the ecological load of humanity.⁷ While this connection clearly exists, it would be misleading to forget about the other three channels of pursuing happiness. This method of gaining happiness does not increase celestial footprint at all, as we get happier through increasing the ecological footprint here (see the middle section of Table 1).

Channel-4: “*Look at the birds in the sky; they do not sow or reap, they gather nothing into barns, yet your heavenly Father feeds them*” (Mt 6,26). This channel indicates our direct use of material resources which are not mediated via market mechanisms - these resources are free in monetary terms. Breathing fresh air and drinking free clean water are all examples of this. What is more, in a system of reciprocity (see Polanyi, 1944), material resources are usually exploited via the reciprocal help of a wider family net without any money transfers. While this mode of activity may have less weight in a modern market system, it can still be significant (housework, etc.). The importance of this way of gaining happiness may differ considerably between countries/communities. This method of gaining happiness does not

⁷ For example, the sustainable ‘de-growth’ movement is strongly based on this assumption (see e.g. Martínez-Alier et al., 2010).

increase celestial footprint at all, as we get happier by increasing the ecological footprint, but it restructures the relation between the Easterlin and the Kuznets factors (see the middle section of Table 1). What the Easterlin factor gains, the Kuznets factor loses, nullifying all effects on celestial footprint. (This way of gaining happiness – along with Channel 1 – corresponds to the later described strategy of voluntary simplicity.)

Of course, these channels may be the ‘sources’ of different kinds of ‘bads’ as well, which act to lessen our happiness (leaking happiness). Identifying these is easy, as we only need to reverse all the above-discussed developments (cf. Fig. 1). Analyzing these bads opens a new way of discussing negative externalities too, which may be the subject of another paper. In sum, these channels may be combined in almost endless variations, offering myriads of attractive or avoidable development paths for any country/community.

(Non)material and (non)monetary trade-offs

Using our 4-channel happiness model it is possible to identify two basic trade-offs; namely, the (non)material trade-off and the (non)monetary trade-off.

Clean cases of *material* trade-offs occur if reducing Channel-1 will be compensated by increased use of Channel-4; or if reducing Channel-2 will be compensated by increased use of Channel-3 (Fig. 1). In these cases the ecological footprint and material content of happiness increase while the level of happiness is unchanged. Celestial footprint decreases here through a mitigated Kuznets factor (eco-efficiency worsens; see the bottom section of Table 1). The reverse of this development is the *non-material* trade-off. As this latter reduces ecological footprint without any happiness loss through better eco-efficiency and a bigger celestial footprint, it is always a blissful scenario.

Clean cases of *monetary* trade-offs occur if reducing Channel-1 will be compensated for by increased use of Channel-2; or if reducing Channel-4 will be compensated for by increased use of Channel-3 (Fig. 1). In these cases dollars of GDP and the monetary content of happiness increase while the level of happiness is unchanged. Celestial footprint is untouched while Kuznets factor is increased (eco-efficiency is improved) and the Easterlin factor decreases (see bottom section of Table 1). This is the classic version of Easterlin-paradox. The reverse of this development is the *non-monetary* trade-off. As this reduces dollars of GDP (indicates a shrinking economy) without any loss of happiness through an improved Easterlin factor, it does not seem to be a socially harmful scenario, while its impact on the environment, in its clean form, is completely indifferent.

Naturally, these types of monetary or non-monetary trade-offs still raise the important question of which absolute level of economy (or with which economic considerations) a society should live, or what level of connectedness between economy and society should be regarded as sound and desirable. The strategy of a *flow economy* says that more dollars of GDP and greater division of labor in a society is advantageous, while proponents of *voluntary simplicity* would argue the opposite (see later). These two basic, alternative economic strategies demonstrate the diversity of viable sustainability paths, while their commonality relates to the human oneness declared in the Fuji declaration: we need happiness and well-being in a sustainable form.

IPAT and the logic of Celestial Footprint

At the macro level one of the best possible analytical tools for analyzing environmental load is the IPAT formula developed by Ehrlich and Holdren (1971, 1972) and Commoner (1972) - for more details on this topic see McNicoll (2002).

$$I_{environment} = P \cdot A \cdot T_{environment}$$

Here, mankind's load on the environment (*I* – Impact) is viewed as three factors acting together: population (*P*), affluence (*A*), and technology (*T*). Accurate measurement of these factors is crucial. *P* will be dealt in its natural dimension (capita). *A* will be measured by GDP/capita (where GDP is measured in US\$, using purchasing power parity). One of the most comprehensive measurements of *I* uses the ecological footprint (Wackernagel and Rees, 1996) which is measured in global hectares. Thus for *T*, the most obscure factor in IPAT, we get gHa/\$, which is a measure of material intensity. So our equation, written in units of measurement, looks like this:

$$\text{gHa} = (\text{capita}) \cdot (\$/\text{capita}) \cdot (\text{gHa}/\$)$$

But it is worth developing a second, hedonic IPAT formula too. Here, our main question is “*what is the use and aim of economic activity?*” To answer this we rely on the subjective wellbeing (SWB) conception using data from the most comprehensive worldwide database (Veenhoven, 2006). This is usually measured using an eleven (0–10) grade scale – or is transformed to this scale – wherein the highest value refers to the highest subjective wellbeing or happiness. To collect this data, the surveyor should phrase a question similar to this: “*Taking all things together, would you say you are very happy/quite happy/not very happy/not at all happy*” (this question is taken from *World Values Surveys*, organized by Inglehart).

This measurement helps us to view not just the material resource-based side of economic activity but its positive side too. Now we are able to reformulate the classical IPAT formula with a modified focus:

$$I_{happiness} = P \cdot A \cdot T_{happiness}$$

It is clear that economic activity ($P \cdot A$) – as a starting point – contributes not just to environmental load but to human subjective wellbeing as well, because increasing human wellbeing is usually the main motive for transforming and exploiting our natural environment through economic activity. Of course, subjective wellbeing does not exactly originate from economic activity: lots of other subjective factors are involved and combined together (psychological, cultural, and behavioral; see Diener et al., 2003; cf. Fig. 1); these can be summed up in the factor $T_{happiness}$. This factor opens up a way to extend the IPAT analysis through involving important human characteristics (cf. IPBAT: Diesendorf, 2002; IPANT: Daniels, 2010; etc.) without sacrificing the mathematical rigor of the original IPAT formula. Using units of measurement our equation can now be written as:

$$\text{aggregate happiness} = (\text{capita}) \cdot (\$/\text{capita}) \cdot (\text{aggregate happiness}/\$)$$

The $T_{environment}$ and $T_{happiness}$ concepts were combined to make the concept of celestial footprint.

Voluntary Simplicity: a radical, non-market strategy for increasing Celestial Footprint

The concept of voluntary simplicity, as well as the movement associated with, it is considered to be an institutionalized form of resistance to consumer society. The essence of voluntary simplicity is a way of life which is outwardly simple but inwardly (spiritually) rich. It has its roots in the legendary frugality and self-reliance of the Puritans, Thoreau's naturalistic vision at Walden Pond, Emerson's practical and spiritual espousal of simple living and high thinking as well as the teachings and social philosophy of spiritual leaders—with different levels of authority—such as Jesus and Gandhi. According to the advocates of voluntary simplicity, the current social and environmental crisis is placing special emphasis on these ideas, urging people to live a socially and environmentally responsible way of life.

It is easier to understand the current implications of voluntary simplicity if we compare its value set to that the material worldview. In this way we can highlight what the theoreticians and conscious followers of the voluntary simplicity movement do not accept about the

prevalent social-economic system (Elgin, 1993) and how they define themselves in opposition to it.

Voluntary simplifiers strongly criticize consumer society, which is based on materialism. The material nature of consumer society is proved by the fact that its goal is material progress and one's identity is defined by the material goods possessed one possesses, as well as the social position one can achieve based on these goods. According to this view, man is nothing more than a group of molecules which exists alone and separately, other human beings are considered to be rivals, while the living or inorganic environment is regarded as a resource to be exploited. Voluntary simplifiers do not deny the importance of material goods but—as opposed to materialists—they also emphasize the importance of spiritual concerns. They think the goal of life is to co-evolve both in a material and spiritual way. A person is an inseparable part of the universe around him/her: this view results in co-operation with other human beings and other living beings, as well as showing respect for them. The mass media have an especially important role in the forming of values. Voluntary simplifiers think they are dominated by commercial interests which promote material values, although they should emphasize a balanced diet of values and the importance of taking an ecological approach to living. Voluntary simplifiers stress the role of personal responsibility in relation to global problems (the importance of the aggregate effect of a lot of minor actions) and reject the idea of shifting responsibility to the free market or government bureaucracies (that is, they oppose extreme libertarian capitalism and communism).

There are five values which lie at the heart of voluntary simplicity: material simplicity, human scale, self-determination, ecological awareness and personal growth (Elgin–Mitchell, 1977, 5–8.).

The extent of one's *material simplicity* can be examined by answering the following questions (after The American Friends Committee): (1) Does what I own or buy promote activity, self-reliance and involvement or does it induce passivity and dependence? (2) Are my consumption patterns basically satisfying or do I buy a lot of things which serve no real needs? (3) How much is my present job and life style influenced by installment payments, maintenance and repair costs and the expectations of others? (4) Do I consider the impact of my consumption patterns on others and on the Earth?

Answering these questions can help one to establish a life of creative simplicity and to free oneself from excessive attachment to material goods, aids with national sharing of wealth with those who cannot fulfil their basic needs (the poor), helps individuals to become less

dependent on large and complex public or private institutions and restores the balance between the material and non-material components of life.

Adherents of voluntary simplicity regard *human-scale* living and working conditions as important because they think that operating on a massive scale results in anonymity, incomprehensibility and artificiality. As stated by Ernst F. Schumacher in his book entitled *Small is Beautiful* (1980), living and working environments as well as supportive institutions should be decentralized as much as possible in order to create more comprehensible and manageable entities. Each person should be aware of what he or she is contributing to the whole and how much his or her responsibility (as well as share of the reward) should be.

The notion of *self-determination* in voluntary simplicity refers to a form of consumption which results in greater control over one's desires and suggests that one should be free one from paying installments, maintenance costs and the expectations of others. The key principles of this process are "grow your own", "make your own" and "do without", all of which help to reduce (both psychological and physical) dependency on consumption. The principles also act against the excessive division of labor.⁸ The aim of human labor will be again be to produce the whole of a product, not only a small part of it, in this way making the sense of contribution more evident. Self-determination also includes aversion to the unnecessary intrusion of distant bureaucracies and a wish for greater local self-determination and grass roots political action.⁹

Ecological awareness is the recognition of the mutual connections and interdependence of people and natural resources. It acknowledges that the resources of the Earth are limited, which should encourage us to conserve physical resources and reduce environmental pollution, as well as to maintain the beauty and integrity of the natural environment. Ecological awareness often extends beyond the issue of scarce resources and includes social responsibility: it makes us aware of those who are less fortunate than us. The philosophy—espoused by Gandhi—means that one should avoid wanting what the least fortunate inhabitant of the Earth cannot afford. In this way the philosophy of voluntary simplicity extends beyond the boundaries of a nation, making it less isolated and self-centered than it otherwise could be.

⁸ This strategy is clearly different from that of the *flow economy* which was described earlier. By following the principles of voluntary simplicity, GDP would be reduced, but humans may nonetheless be fulfilled, and nature preserved.

⁹ This effort, termed subsidiarity, has been part of the social teaching of the Roman Catholic Church since the 1930s.

For a lot of people, taking up a materially simple way of life means *personal growth*; it can help one with clearing up external chaos and exploring one's 'inner life'. The above-mentioned basic values of voluntary simplicity encourage one to grow both psychologically and spiritually. If all you do is maintain yourself physically and forget about personal growth, then life becomes merely about "not dying". Numerous advocates of voluntary simplicity think that American society (in the 1970s) became occupied with sustenance and forgot about the non-material aspects of life (cf. Scitovsky, 1976). Though personal growth often includes a spiritual component, it should not be associated with any particular philosophy or religion—it can embrace views ranging from humanistic psychology, transpersonal psychology, Eastern meditative traditions and feminism, as well as fundamental Christianity. This tolerant approach clearly points to support for human diversity and to "the divine spark in the heart and mind of every human being" that is highlighted in the Fuji Declaration.

Conclusions: Sustainability and interdependencies

The Stockholm Resilience Centre examined ten dimensions with regard to the limits of the Earth. These dimensions are climate change, biodiversity, the nitrogen and phosphorus cycles, ocean acidification, stratospheric ozone depletion, freshwater use, land use, atmospheric aerosol loading and chemical pollution. By examining these dimensions it becomes obvious that if we transcend what constitutes "the Earth's boundaries" in any one of these dimensions, it will have an effect on several other dimensions. Many researchers emphasize the importance of systems theory and the necessity of holistic thinking, but we rarely find scientific findings that are multi-disciplinary in their approach and aimed at exploring interdependencies. With regard to sustainable development, the problem is further complicated by the dimension of time. In the case of economic research and forecasting, a 20-30-year time horizon is already considered to be 'long-term', whereas in the case of sustainability research, even a few centuries count as an unduly short period of time.

Modelling is being used more and more extensively in order to predict economic and social processes. One often finds forecasts that contain different scenarios. Models are suitable for implementing sensitivity tests as well. It is interesting that predictions that have been based on models frequently contain outcomes that could not occur, in reality. For instance, fossil fuels may run out, in theory; in practice, however, this cannot occur because we would "cook" the Earth before we got to that point. In other words, significant portions of the Earth's continents would become unsuitable for human life before the potentially-available fossil fuel was

consumed – it would not be possible for 9 billion or even more people to live on the Earth. If there were fewer than nine billion people, the demand for energy would be less – and this train of thought can be continued in a similar way. One can make predictions about the development of air travel or tourism but data-based estimates are unrealistic as it is impossible that as many passenger air kilometers will be travelled or guests accommodated as is shown by such predictions. Thus the problem is that investigations and models are narrowed down to examining independent problems and the fact that the phenomena under investigation mutually affect each other, and there is a connection between almost everything, is generally left unexamined. Politicians and economic experts are concerned to a great extent with ageing and collapses of the welfare system but if we take into account tendencies in the migration of the world's population, it becomes clear that Europe will not get older but will rather become more multicultural due to its young, non-Christian immigrants; what may become an issue is whether we will be able to create an institutional system that is able to maintain the level of social solidarity that we are used to in Europe. The issue is not so much the ageing of the population, but rather the question whether immigrant youth from Africa, China and India will be willing to work in Europe in order to provide for an older generation which did not have 'enough' offspring to support itself.

This group of problems that stems from cultural diversity is probably unresolvable without the paradigm change defined by the 'Civilization of Oneness' principle of the Fuji Declaration.

At the same time, it is obvious that an equally radical paradigm change is necessary in the area of the economy. On the one hand, for those who are radically opposed to the current market-based civilization, the voluntary simplicity movement seems viable. On the other hand – complementing, rather than contrasting with this trend – more market- and GDP-friendly economic scenarios can be delineated for less radical citizens. According to these, what should be made the focus of the economy is employment rather than profit; the fulfillment of needs rather than ownership; and the creation of durable and safe products and services rather than products and services that are subject to planned obsolescence. These changes will help to maintain and increase human wellbeing and quality of life, while at the same time preserving our finite natural environment for future generations, fulfilling, as it were, the principles laid down in the Fuji Declarations and completing the necessary economic paradigm change.

References

- Clark, A., E., Lelkes, O., 2009. Let us pray: Religious interactions in life satisfaction, Paris School of Economics, Working Paper 2009/01.
- Commoner, B., 1972. The Environmental Cost of Economic Growth, in. Population, Resources and the Environment, Government Printing Office, Washington, DC, 339–363.
- Csikszentmihalyi, M. 1997. Finding flow: The psychology of engagement with everyday life. Basic Books. Retrieved from http://www.google.com/books?hl=hu&lr=&id=HBod-fUzmBcC&oi=fnd&pg=PP11&dq=csikszentmihalyi+m&ots=V_4s0LxQVD&sig=-Ek4y8TomuxIy4dskZV6fhL4peI
- Csutora, M., 2012. One more awareness gap? The behaviour–impact gap problem. *Journal of Consumer Policy*, 35(1), 145–163.
- Daniels, P. L., 2010. Climate change, economics and Buddhism – Part 2: New views and practices for sustainable world economies, *Ecological Economics* 69, 962–972.
- Daly, H. E., 1977. Steady-state economics. San Francisco. Retrieved from http://www.google.com/books?hl=hu&lr=&id=DfLEt7HvbtYC&oi=fnd&pg=PA250&dq=daly+stady+state+economy&ots=Nhx2KLOeha&sig=q84x57_NBps26ihlvW1NN8qq7fc
- Diener, E., 1984. Subjective well-being, *Psychological Bulletin* 93, 542–575.
- Diener, E., 2002. Well-being (Subjective), Psychology of, in. *International Encyclopedia of the Social & Behavioral Sciences*, 16451–16454.
- Diener, E., Oishi, S., Lucas, R. E., 2003. Personality, Culture and Subjective Well-Being: Emotional and Cognitive Evaluations of Life, *Annual Review of Psychology* 54, 403–425.
- Diesendorf, M., 2002. I = PAT or I = PBAT?, *Ecological Economics* 42, 3.
- Dietz, T., Rosa, E., A., York, R., 2009. Environmentally Efficient Well-Being – Rethinking Sustainability as the Relationship between Human Well-being and Environmental Impacts, *Human Ecology Review* 16 (1), 114–123.
- Easterlin, R. A., 1974. Does economic growth improve the human lot? Some empirical evidence. *Nations and Households in Economic Growth*, 89, 89–125.
- Easterlin, R., A., 1995. Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior and Organization* 27, 35–47.
- Ehrlich, P., Holdren, J., 1971. The impact of population growth, *Science* 171, 1212–1217.
- Ehrlich, P., Holdren, J., 1972. One-dimensional ecology, *Bulletin of the Atomic Scientists* 28, 16–27.
- Elgin, D., 1993. Voluntary Simplicity: Toward a Way of Life That Is Outwardly Simple, Inwardly Rich, Revised Edition, Morrow, New York (first edition: 1981)
- Elgin, D. – Mitchell, A., 1977. “Voluntary Simplicity (3),” *The CoEvolution Quarterly*, Summer, 4–19.
- Grossman, G. M., & Krueger, A. B., 1994. Economic growth and the environment. National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w4634>
- Hawken, P., Lovins, A. B., & Lovins, L. H., 2013. Natural capitalism: The next industrial revolution. Routledge. Retrieved from [http://www.google.com/books?hl=hu&lr=&id=MXTdAAAAQBAJ&oi=fnd&pg=PP1&dq=\(](http://www.google.com/books?hl=hu&lr=&id=MXTdAAAAQBAJ&oi=fnd&pg=PP1&dq=()

Hawken, J., Lovins, A., & Lovins, H. (1999). *Natural Capitalism*. Retrieved from [http://www.elsevier.com/locate/S0924-6460\(99\)00050-0](http://www.elsevier.com/locate/S0924-6460(99)00050-0)

Hicks, J. R., 1946. *Value and capital* (Vol. 2). Clarendon Press Oxford. Retrieved from <https://web.archive.org/web/20140806105600/http://webspace.utexas.edu/hcleaver/www/368/368hicksVCutility2.htm>

Kocsis, T., 2002. *Roots. Pleasure and Wealth in a Globalizing Consumer Society*. PhD-Dissertation; http://phd.lib.uni-corvinus.hu/737/1/Kocsis_Tamas_den.pdf

Kocsis, T., 2012. Looking through the dataquadrant: characterizing the human–environment relationship through economic, hedonic, ecological and demographic issues, *Journal of Cleaner Production* 35, 1–15.

Kuznets, S., 1971. Nobel Prize Lecture: Modern economic growth: Findings and Reflections.

Leung, A., Kier, Ch., Fung, T., Fung, L., Sproule, R., 2011. Searching for Happiness: The Importance of Social Capital, *Journal of Happiness Studies* 12, 443–462.

MacKay, D., 2008. *Sustainable Energy-without the hot air*. UIT Cambridge. Retrieved from <https://www.repository.cam.ac.uk/handle/1810/217849>

Marshall, A., 2004. *Principles of economics*. Digireads. com Publishing. Retrieved from http://www.google.com/books?hl=hu&lr=&id=99HDrfwM_ZoC&oi=fnd&pg=PA7&dq=principle+of+economics++marshall&ots=Fe_lmz_fLC&sig=7WwxjNTP19PvRkTACKqey1MQ8DI

Martínez-Alier, J., Pascual, U., Vivien, F-D., Zaccai, E., 2010. Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm, *Ecological Economics* 69, 1741–1747.

McNicol, G., 2002. IPAT (Impact, Population, Affluence, and Technology), in. *International Encyclopedia of the Social & Behavioral Sciences*, 7903–7906.

Meadows, D. H., 1972. Dennis I. Meadows, Jorgen Randers, William W. Behrens III.: *THE LIMITS TO GROWTH*. A Report to the Club of Rome. Universe Books, New York.

Mont, O., 2000. *Product-Service Systems*, Swedish Environmental Protection Agency. Stockholm: Sweden.

Polanyi, K., 1944/2001. *The Great Transformation*. 2nd Edition, Beacon Press.

Schumacher, E. F., 1980. *Small is Beautiful*, London: Century Hutchinson Publishing Group.

Scitovsky, T., 1976. *The Joyless Economy*, New York: Oxford University Press.

Simon, J. L., 1998. *The Economics of Population*. Transaction Publishers. Retrieved from <http://www.google.com/books?hl=hu&lr=&id=VEu9EwQ9vTcC&oi=fnd&pg=PR5&dq=Julian+Simon&ots=kc90viA9tR&sig=nCgRuxWMrUrmKjBrmErN8bGkNlw>

Soper, K., 2008. Alternative Hedonism, Cultural Theory and the Role of Aesthetic Revisioning, *Cultural Studies* 22 (5), 567–587.

Stevenson, B., & Wolfers, J., 2008. Economic growth and subjective well-being: Reassessing the Easterlin paradox. National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w14282>

Veenhoven, R., 2006. *World Database of Happiness*, continuous register of scientific research on subjective enjoyment of life, Erasmus University Rotterdam, Netherlands, <http://worlddatabaseofhappiness.eur.nl> (accessed on 02.12.2014)

Vemuri, A., W., Costanza, R., 2006. The role of human, social, built, and natural capital in explaining life satisfaction at the country level, Toward a National Well-Being Index (NWI), *Ecological Economics* 58, 119–133.

Wackernagel, M., Rees, W. E., 1996. *Our Ecological Footprint*, New Society Publishers.

Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A., 2004. Resilience, adaptability and transformability in social–ecological systems. *Ecology and Society*, 9(2), 5.

Walker, R. , 2014. Population, Climate Change, and the Post-2015 Development Agenda. Retrieved December 7, 2014, from http://www.huffingtonpost.com/robert-walker/population-climate-change_b_5863938.html