# 20 50

connext
SOCIAL **FUTURING** CENTER

## TAMÁS KOCSIS

# FINITE EARTH, INFINITE AMBITIONS: SOCIAL FUTURING AND SUSTAINABILITY AS SEEN BY A SOCIAL SCIENTIST
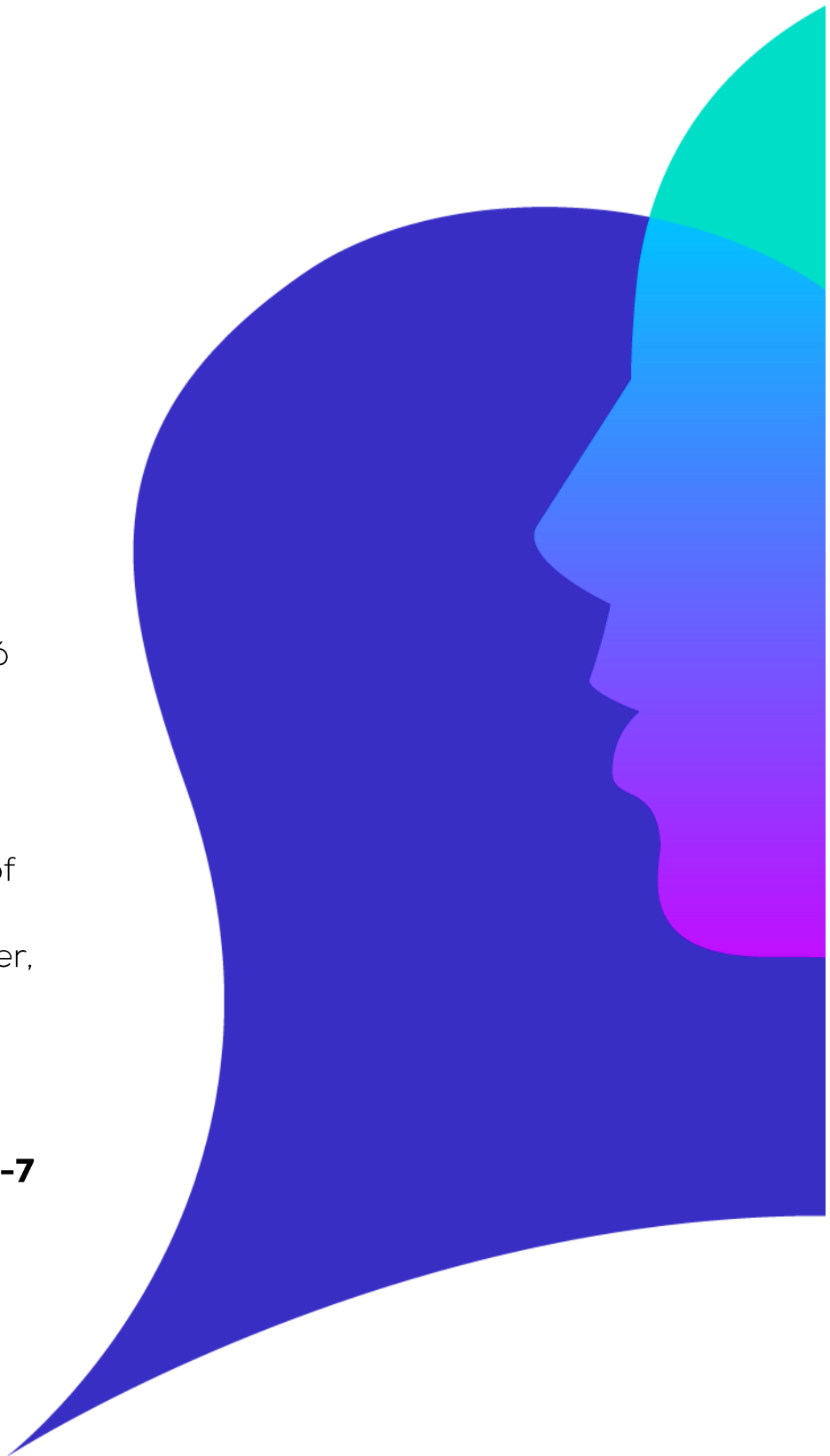
# 1. INTRODUCTION[1]

Is the future an opportunity or a threat? It is probably both. In futuring, the former is envisaged in contrast with future-proofness, which presumes the latter. With regard to the natural environment, threat is the dominant sentiment felt nowadays. What will happen if we use up all or most of the planet's natural resources? What if the climate irreversibly changes? How will human civilisation, as we know it today, survive? Our initial premise is a difficult one: we have to cope in a world that is based on a finite material environment. Looking down on planet Earth from outer space we can see that the above premise is indeed correct.

Deeper analysis requires us (1) to provide a brief outline of human ambition leading to the present state of affairs; (2) to examine the relation between the common concept of environmental sustainability and the recent concept of social futuring; and (3) to demonstrate the potential in human nature which, as we hope, may lead to the formation of a futurable structure. We shall attempt this from the viewpoint of the social scientist. The issue at hand, i.e. that the natural environment is finite, is supported by natural sciences. Although the topic of sustainability necessarily has a global focus at first sight, this study emphasises "bottom-up" solutions rooted in the depths of human nature. Since the human individual is also the basic "unit" of higher level social entities, considerations of sustainability should be interpreted in this spirit at those higher levels as well. Possible "top-down" government policies will only be referred to briefly at relevant places; for further reading, we recommend political analyses conceived under the aegis of social futuring (for example, Ambrus 2017).

# 2. THE HUMAN AMBITION

" Be fruitful and multiply, and replenish the earth, and subdue it.
And have dominion over the fish of the sea, and over the fowl of
the air, and over every living thing that moveth upon the earth."

(Genesis 1.27)

The simplest way to demonstrate the dominance of mankind on this planet is by presenting the increase of global population over time. There has been a spectacular growth from the prehistoric age to the present day. This population trend is, however, interpreted by many groups (mostly environmentalists) as a risk. True, we may regard overpopulation as a threat – although ecological cataclysms (that is, the collapse of human population) have only occurred so far sporadically at a local level [cf. e.g. the collapse of civilisation on the Easter Islands (Diamond, 2007)].

If we only regard masses of 1 billion as absolute population growth, human race reached the first billion by 1804. We had to wait more than a century for the next billion – global population reached 2 bn in 1927. Then, at an ever-increasing growth rate, by September 2017 global population was just over 7.5 billion, and the trend continues.[2] However, population growth is slowing down. According to recent UN forecasts, global population will have reached 9.4 to 10.2 billion by 2050, and 9.6 to 13.2 billion by 2100 (at a probability rate of 95%). Of course, estimates react very sensitively on even the slightest changes in expectations, which is also mentioned in the UN report. For example, only 0.5 fewer children calculated for each woman of a childbearing age compared to the mean estimate would result in global population reaching 8.8 billion by 2050, dropping back to "only" 7.3 billion by 2100 (UN, 2017). In time, global population will inevitably reach a maximum/saturated level – unless technological change based on *external control* (to be discussed later) enables

---

[2] For details, cf http://www.worldometers.info/world-population (Last updated 05. 09. 2017)

mankind to expand its ecological space considerably. However, this does not seem to be likely, since the size of ecological space is already partly unsustainable.

Although the population count is a spectacular index of the human race's dominance over planet Earth, it is worth mentioning that the increase has not solely been quantitative. There has been a qualitative increase, too: the present day average living standards – the affluence of average individuals - cannot be compared to those in the past. We may attempt to give a historical estimate of this phenomenon, even though it partly relies on a vague methodological basis (Tóth–Szigligeti, 2016). The magnitude of such estimates would be difficult to dispute.

"Replenishing" and "subduing" the planet - as a human project of a historical scale - leaves barely anything to be desired, both quantitatively and qualitatively. There have even been proposals by significant groups of natural scientists to introduce a new geological era, *anthropocene*. The date marking its dawn has not been specified yet (Smith–Zeder, 2013), however, the start of the industrial revolution (between 1750 and 1800) seems likely. It was the era when mankind "learned" large-scale consumption of fossil fuel sources. Since then, we have spent fossil energy, which has both advantages and disadvantages, predominantly for peaceful purposes. The topic has had its own periodical, *Anthropocene*, since 2013. If the first phase of the human project ended so successfully, what challenge may the future pose us? Does environmental sustainability necessitate the launch of an entirely different historical age with entirely different ambitions? We think it does, and we shall elaborate on it in part III of this study.

## 2.1. ENVIRONMENTAL SUSTAINABILITY VS. SOCIAL FUTURING

The various concepts of environmental sustainability is discussed in depth by Kerekes and Szlávik (2003). The classic definition of *sustainable development* by Brundtland states that sustainable development is a development that secures the satisfaction of present generations' needs without making it impossible for future generations to satisfy their similar needs (Brundtland et al., 1987).[3] Ecological economists amend this dynamic approach with a static limit: the total social-economic sphere (the product of global population and average consumption per capita; scale) cannot exceed the carrying capacity of the planet (Georgescu-Roegen, 1971; Daly, 1996; strong sustainability). The present study relies on the same arguments regarding environmental sustainability. Carrying capacity (instead of which, the term *ecological space* will be used later as it is more palpable in our opinion) may be increased via technological development (technological development serving the expansion of ecological space), yet this expansion will prove partly unsustainable in the long run if it involves non-renewable power sources. According to ecological footprint calculations, this state of affairs is valid globally.

According to the Corvinus University of Budapest Research Centre of Social Futuring, *social futuring* is an umbrella term, and the frame it gives may be filled in a plethora of ways. Lasting prevalence, functional operation, creating a future image and strategic acting are essential, while the preparation for influencing changes (exploiting opportunities or managing risks) would also be important to consider (Szántó, 2018). Social futuring may be applied to entities in the present, but the concept strongly projects to the future.

The concepts of environmental sustainability and social futuring are difficult to tell apart at first sight, and they are both clearly future-oriented. It is worth mentioning that, on a historical scale, the notion

---

[3] Differentiating between needs and wants is of strategic importance when this definition is interpreted. Necessity can be calculated objectively, based on scientific facts (e.g. daily nutrition), while needs are predominantly determined by society, and as such, they vary from culture to culture. It is for this very reason that the latter is to be adjusted for time, place, and social entity, which also secures a strategic leeway to decision makers.

of "sustainable development" is a kind of response to environmental problems, and it only relates to these, while social futuring has a wider perspective. In other words, tackling environmental sustainability responsibly, with regard to its human and social aspects, is a futurable act in itself, while an environmentally sustainable entity is socially futurable, too. The new notion is therefore nothing more than a euphemism of the old one. Yet the situation is even more complicated, with the relations between concepts needing deeper analysis. Writing a list of the most basic cases that are logically possible may be a reasonable first step.

The initial question here is whether the two concepts regard their content similarly, suggesting a coordinate relation, or is one of the two subordinated to the other?

If one concept is embedded in the other, there are two cases: in the first case, the notion of social futuring includes, by definition, that the targeted process or structure has to be sustainable – in an environmental sense, too – indefinitely in time. In other words, social futuring cannot be conceived without environmental sustainability. From this viewpoint, non-renewable natural resources and overriding supportability are threats. And as such, they need to be countered. A wristwatch can be made shockproof and waterproof the same way a society can be made future-proof. Socially futurable strategies are, by definition, environmentally sustainable. (If something is unsustainable, it is inherently unfuturable.) According to this approach, social futuring has to be researched as a part of environmental sustainability (Figure 1).

| Environmental SUSTAINABILITY | |
| --- | --- |
| | social FUTURING |

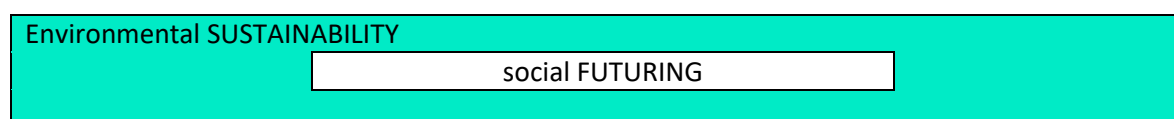Figure 1: Social futuring as a part of environmental sustainability

The relation is reversed in the other case of subordination. In this case the existence of socially futurable processes and structures without long-term sustainability are allowed. Structures and processes that are environmentally sustainable in the long run are possible parts of social futuring here, but they are not a necessary

condition. From this approach, environmentally sustainable things are, by definition, socially futurable, too.

(If something is unfuturable, it is inherently unsustainable.) In this case, the issue of environmental sustainability has to be examined as a part of social futuring. *(In our opinion, this latter is a less fortunate relation, so we do not recommend it. Following this line would be similar to assuming that some socially advantageous structures are also environmentally sustainable. Later this assumption may prove false.)*

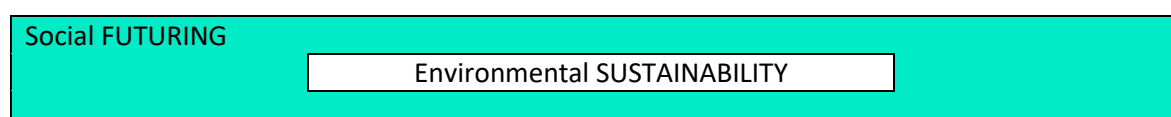| Social FUTURING | |
|---|---|
| | Environmental SUSTAINABILITY |

Figure 2: Environmental sustainability as a part of social futuring

Finally, the set of theoretical possibilities also includes the case where the two notions are independent and *not* embedded into each other. In such a case, environmentally sustainable, but socially not futurable processes and structures exist (cf. life conditions in sub–Saharan Africa), and vice versa (for instance, in wartime the short–term prevalence of a social entity may be achieved by inflicting considerable damage to the environment temporarily) (Figure 3). In this case, the subject of analysis may be the present. Then, the initial situation has to be defined from viewpoints of sustainability and futuring (defining the cell the entity will occupy in the figure), followed by the designation of the most desirable target (which cell we intend to get into and, more importantly, how.) Also, here the optimal situation would be an entity being environmentally sustainable *and* socially futurable at the same time (lower right cell, Figure 3).

| | | Social FUTURING | |
|---|---|---|---|
| | | NO | YES |
| Environmental SUSTAINABILITY | NO | | |
| | YES | | |

Figure 3: Environmental sustainability and social futuring in a coordinated relationship (red shades: undesirable and less desirable combinations; green: desirable combinations)

Throughout this study, it is presumed that there is a coordinated relationship between sustainability and futuring. Although the concept of social futuring contains, by definition, the condition of an

entity's long-term prevalence, multiple examples will be cited below which are environmentally sustainable, but – as far as social futuring is concerned – they do meet standard, or are downright undesirable (lower left cell, Figure 3). (The cases in the uppermost line of figure 3 received less attention here for being environmentally unsustainable.) It is important to note, however, that *long-term* social futuring cannot be conceived without environmental sustainability.

## 2.2. POLLUTION COUNTERING VS. SOCIAL FUTURING

The (corporate) methods aiming to combat environmental impact as a *problem* and the main possibilities aiming to realise social futuring have many things in common. In order to make a comparison, it is advisable to take a *problem*-oriented approach to social futuring. The question that needs to be answered here is: what are the causes that lead to flawed social futuring? The change is environmentally undesirable if pollutant emission levels exceed the environment's assimilation capacity levels, resulting in pollution[4] .

If we group corporate methods influencing emissions (dealt with by many researchers e.g. Kerekes–Szlávik 2003), a structure similar to the one drawn up in Figure 4 will emerge. We may, however, regard any decision-making entity as a "corporation". Likewise, the dotted line separating the corporation from the environment also exists when the entity is different (ranging from organisations, institutions, towns and regions to countries, country groups, societies and nations – Szántó, 2018). When decisions are made, external conditions that cannot be influenced by that decision have to be taken into consideration.

"Production" is an alteration process of some sort that results in an output useful for humans (this is the very reason for this action).[5] The figure, however, does not focus on the useful output, but on harmful

---

[4] Pollution means that the inflow of materials and energy into the environment is faster than the pace the environment could process and assimilate them (Kerekes, 1998, p. 32).
[5] Let us now disregard the well-known critique of consumer society, which say that many products and services are completely useless in the first place. If some of these really prove to be unnecessary, it might make sense to do without them. To be built on later (doing without = increasing internal control).

side effects like pollution (negative external effect[6]), which at the end of the process, appears in the environment as emission (the amount of pollutants emitted in a unit of time).
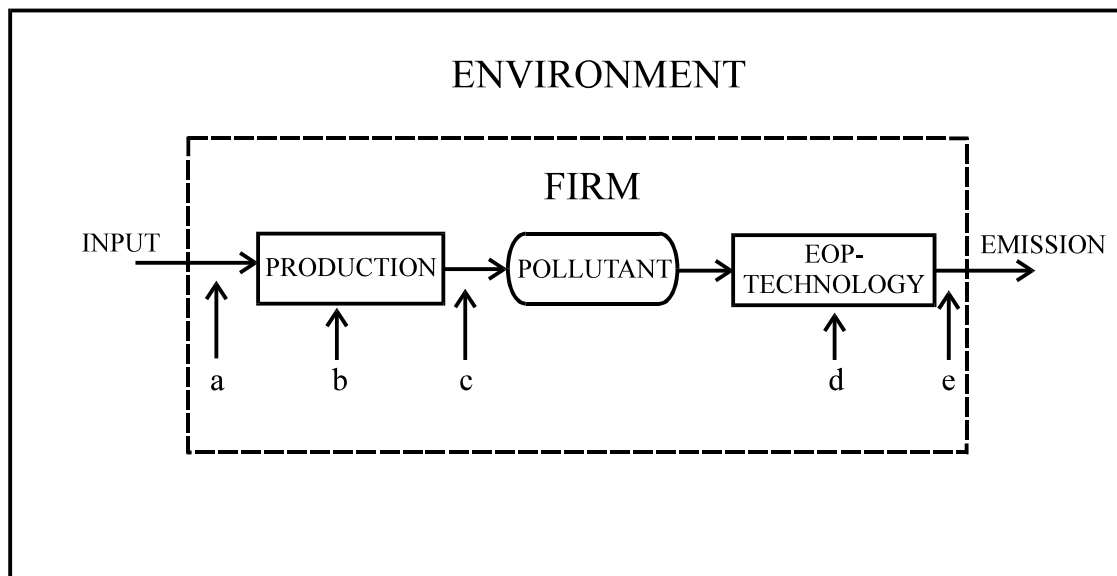


*a:* using a cleaner input, which results in a lower pollutant/product unit ratio (intensive environmental protection)
*b:* holding back production
*c:* employing a new technology, which results in a lower pollutant/product unit ratio (end-of-pipe technology, intensive environmental protection)
*d:* holding back pollutants already created during the manufacturing progress (extensive environmental protection)
*e*: dilution of pollutants before emission (passive environmental protection)

Figure 4: Firm methods influencing emission (Kocsis, 2002c)

Generally, the corporation continues its main activity of producing useful products/services without taking care of by–products and impacts – for example, contamination. Up to the point that activities of this type are insignificant in scale compared to the global system, there is no problem; the waste assimilation ability of nature can assimilate and neutralise pollutants, and there will be no perceivable pollution. However, nature's assimilation ability, which is a renewable resource itself, can be overloaded, and the expansion of production results in the appearance of emission. Enforcement can take many forms, from new laws (bans, fines, taxes, etc; Kocsis, 2002a) or consumer feedback, or the aim for mere survival (if the contaminant is highly toxic); nevertheless, this is the very change that every

---

[6] The external effect influences the welfare of a third person (neither producer nor consumer); it is unintentional and uncompensated. (Kerekes, 1998, p. 74.)

corporation – or any other entity, for that matter – has to adapt to. If it fails to do so, it is not socially futurable.

Corporations, just as other socially futurable entities, have various possibilities for intervention (cf. Szántó, 2018). Active intervention results in an actual decrease in the amount of the potential problem source (ie. contaminants). It may involve problem prevention (intensive and active intervention) and the management of apparent problems that are still within the corporation's scope (extensive and active intervention).

In Figure 4, the intervention possibilities "a" (cleaner input, for example burning coal with a lower sulphur content, if existing technologies allow this) and "c" (new production technology, for example installing a power plant appliance operating on natural gas instead of coal) are similar in effect; they prevent the problem by cutting out the pollutant (for example sulphur dioxide) from the process (active and intensive variant). Nonetheless, the production of a pollutant is not necessarily emission, while it is still within corporation limits; the entity may choose not to emit the contaminant into the environment. For instance, a filter in a chimney or a catalyst in a car plays such a role (intervention possibility "d") (active and extensive variant). Last in line is intervention possibility "e", which despite not reducing emission by itself, makes it more tolerable for those potentially exposed to its effects, for example by erecting a taller chimney (passive variant). By harnessing the waste assimilation ability of natural environment more effectively, pollutants will be emitted in diluted concentrations and consequently, will inflict more moderate damage to those exposed. The classic example for this method proposes taller chimney for factories, but at a household level, introducing flues in ancient smokey kitchens would be something similar.

Both solutions are technical, which means that they realise a sort of "external control" over the environment to achieve the result that best suits us humans.

All these things considered, it is not too difficult to spot the similarities between the main possibilities available to socially futurable entities.

Decreased demand for managing emission levels is one target in the broader objective of diverting *unfuturability* and reacting to unfavourable changes. Emission, no matter how insignificant in quantity and scale it had been initially, became intolerable and threatening over time. It is, beyond any doubt, an *unfavourable change*.

Bearing this in mind, let us first try to create a situation and make structural changes on a larger scale – in a *proactive* manner – that may subsequently lead to a solution to the problem. This compares to the development and application of a cleaner and greener production technology, or as we shall see later, unless technological development results in an unsustainable enlargement of ecological space, it may generally correspond with this solution (cf. Figure 4, intervention points "a" and "c" – technological change causing rearrangement within ecological space).

If this is not possible, or if the range of possibilities has been depleted, the entity may, within its scope, still try to diminish the disadvantageous impact of an emerged problem – i.e. the broader causes of unfuturability – in an *active* manner. Pollutants "wanting" to leave may also be taken advantage of. If collected, they will not necessarily burden the environment, but can become a useful input material of useful activities (products) instead. (Figure 4, intervention point "d"). (Not forgetting about thermodynamics, the natural law that limits recycling – 100% recycling is impossible!)

Finally, if we run out of the above possibilities, both active and passive, we may still adapt to changes. For example, pests can not only be controlled (let alone exterminated) with the extensive use of chemicals, but also by exploiting the *existing* mechanisms of nature purposefully. Organic farming has many good examples of this (intervention point "e", Figure 4).

It can be argued that all the methods mentioned so far (no matter if regarded as methods for environment protection or futuring) are similar inasmuch as they all rely on actively influencing the environment. What they differ in is their mechanism and the result of their application. There is still one possibility, perhaps the simplest,

that has not been mentioned yet: holding back production/activity (Figure 4, intervention possibility "b"). This possibility disregards the scale of human activity and focuses on the basic question of *whether it is worth doing a particular activity to the extent it has been done before*. If the answer is negative, the *status quo* should be changed, resulting in doing without a certain thing. This is a classic example of "internal control"[7], the concept of which is to be introduced later. Can we really make do with less? It is important to note that this possibility requires no investment and no technological development whatsoever. The opposite process, production, bringing about environmental change, has been the most general phenomenon of human history. This has hitherto been the main goal of mankind, the very essence of human ambition. Altering this process, let alone reversing it, is by no means a banal task for companies, social entities, and people in general. This task is generated by the need for environmental sustainability, without which no social entity can survive in the long run (Figure 3, lower right cell). It is therefore a key element in creating a strategy.

---

[7] It is important to note that the distinction "internal" and "external" does not refer to spaces "within" and "outside" the entity. Instead, internal/external means that individuals (decision makers) intend to reach a goal either by manipulating their environment (external control) or by reconsidering their ambitions (internal control).

# 3. *HOMO SAPIENS*: THE HUMAN POTENTIAL

Julian Simon, the author of *The Ultimate Resource (1981)* is one of the founding fathers of today's climate scepticism and the ultimate "bogeyman" of green movements. He is still adamant that there is no reason to be afraid of using up non-renewable natural resources, as the available quantity of these materials will increase in time, while their market price will decrease. He made a bet with one of the most well-known neomalthusians[8], Paul Ehrlich on the price tendency of five natural resources of Ehrlich's choice for a ten-year period. Simon won the bet and we can still observe the same tendency – the prices of natural resources "about to be depleted" are generally going down, as if they were more readily available rather than disappearing.

Since it is impossible to expect "finite" resources to yield "infinite" quantities, we do not go deeper in explaining Simon's respective thesis (for further reading cf. Herman Daly's criticism of Simon's book mentioned above, from 1982). At the same time, how is it possible that facts – that is, the raw material prices – seem to justify Simon? The ultimate resource he referred to were humans themselves – their inventiveness and creativity which enabled spectacular technological development throughout history. In this sense, human as a resource – which, in this case, does not refer to exploitation – can be regarded as infinite. We also consider human as an endless source of opportunities, on which an environmentally sustainable *and* socially futurable strategy can be based.

## 3.1. STUDY THESES, CONCEPTS, KEY POINTS

Figure 5. shows the main concepts used in this paper. On the right side of the figure, the impact of humanity on our planet is indicated; the determination of its value in numbers is strongly dominated by

---

[8] In his book first published in 1798, Malthus concluded that global population growth was a geometrical progression, while food production could only increase in an arithmetical progression, and since the gap between the two would widen over time, future poverty would be all the graver. Technological development has not given evidence to this forecast – yet. It is for this very reason that the people who doubt continuous technological development or emphasise the technological inevitability of environmental limits are called "neomalthusians".

natural sciences. Further left in the figure, human relevance gains in importance. Accordingly, the role of social science increases. On the far left, the measurement of subjective well-being is linked directly to the entity (of course, well-being is not entirely independent from natural and environmental contexts). This duality is merged in *celestial footprint* – the concept of which is to be introduced later – which can be expressed as subjective well-being (happiness) per ecological footprint (global hectare: gHa). We included suggestions in the figure concerning proposed measurements and relevant formulae to illuminate relations. (On the right and left side of Figure 5, by multiplying the two lower apexes of the triangles, we get the result shown in the upper apex).

Based on all the above, our main theses are as follows:

**First thesis**: in the early 21st century, the ecological space occupied by humans via exerting external control is *too* big [there is an overshoot] *(because: the development of technologies which expand space consume non-renewable energy sources)* (the red oval shape on the right side of Figure 5 symbolises overshoot).

**Second thesis**: population (which can be influenced by population control) is external control multiplied by internal control. Basically, an increase in internal control is needed (also because there is hardly any other possibility), by which ecological space may be "freed" (if the effect is not deteriorated by population growth). (*Rearranging* technological development *only restructures within ecological space. By itself, it cannot decrease ecological space occupied by humans, and therefore, it might be wrong to have too much trust in this type of technological development*) (relations of the right triangles in Figure 5).

**Third thesis**: when creating strategies, subjective well-being (happiness) has to be taken into consideration.[9] The product of happiness and internal control is the celestial footprint. It would take considerable human potential to exploit this (other species do not

[9] Although some other authors make a difference between "well-being" and "happiness", the two terms are used as synonyms in this study. It is sometimes argued that happiness only lasts for moments while well-being is a more stable, long-term phenomenon.

possess celestial footprint, only humans) *[Reasoning: if an increase in internal control is forced and leads to unhappiness, the environmental strategy is not futurable socially, since it does not lead to a life worth living (Csák, 2018)]* (relations of the left triangle in Figure 5).
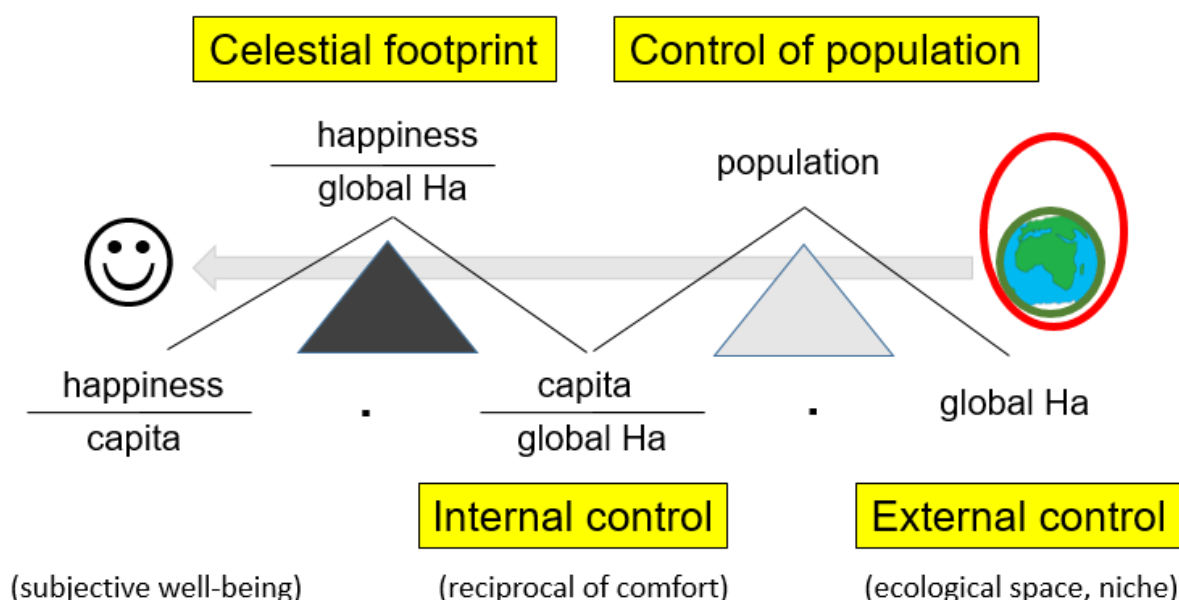


Figure 5: The main concepts and relations depicted in the study (from right to left, the role of social science increases and the role of natural science decreases)

## 3.2. FILLING ECOLOGICAL SPACE AND INTERNAL CONTROL

The list of features differentiating man from animals is rather long. However, in social futuring the human ability to *control* human *population* is of utmost importance. Consequently, as far as ecological space (niche) is concerned, (i.e. unused resources that can be exploited to sustain life)[10] humans are not only able to increase population to environmental carrying capacity limits, but they can also control population to increase the affluence and consumption per capita. The sheer fact that this ability exists does give us some

---

[10] More precisely: Ecological niche refers to the role that individuals of a certain species play in the community, and the environmental factors they need, or that they are able to endure. Hutchinson (1957) gave a modern definition to ecological niche. According to him, the ecological niche is an n-dimensional abstract space the axes of which represent limiting sources and habitat features relevant to the living conditions of the species examined. Each living organism in the system fills its own niche. (Bihari et al., 2008)

hope in this finite world of resources. A "good life" can really be lived within ecological limits. Humans have a potential to achieve that. Filling in an ecological space completely is not genetically predetermined in the human race, as opposed to other species.

The challenge lies in the fact that we have never seen any global, voluntary population control, which successfully aimed to combat environmental impact. It is just as unprecedented as technological development shrinking global ecological space.[11] It might well have been unnecessary – as it seems, "cowboy economy", as described by Kenneth Boulding (1966), was able to carry on with continuous expansion until there were vast streaks of land that had not seen much use. Back then it was a viable model. What is more, it suited human ambition perfectly well. Today, however, ecological footprint calculations have shown that one planet would prove inadequate to serve its population in an environmentally sustainable way (supplying material comfort for the current population via renewable energy). We are in dire need of a new strategy. Social futuring, both locally and globally, would need that this doubtlessly existing control be applied in the fields of population and/or consumption, preventing mankind from filling in *temporarily* available niches in ecological space with people and/or consumption, as the existence of these niches are down to non-renewable natural resources, especially fossil fuel. Then we could finally see an actual decrease in environmental impact. "Carrying capacity" and "scale" are terms similar to "ecological space", used most frequently in this study.

To illustrate the issue of environmental sustainability, it is best to start out from the widely used *IPAT* formula, in which environmental impact (*I*) is a product of population (*P*), affluence (*A*) and technology (*T*).

$$I = P * A * T$$

Note that technology (*T*) is only a factor here that serves to make a connection between affluence and environmental impact. If affluence (*A*) is measured in some unit of money, it has to be converted to environmental impact (*I*), which can be, for instance,

---

[11] By its nature, sustainability has to be understood globally. At the same time, it is essential to be able to apply it on entities smaller in scale than global, with centres and peripheries. An example of such an analysis is presented by Kocsis (2014) on a national level, examining ecological footprint data.

measured in global hectare (gHa) the "shoe size" of ecological footprint.[12] In order not to complicate matters, it is better to focus on environmental impact only, and measure affluence in "environmental impact per capita" terms instead of money. In this case, the formula is

$$I = P * A$$

Researchers often started out from this (cf. Ehrlich–Holdren, 1971). The formula makes a very simple reference to the possibility that ecological space can be filled with population and/or consumption, with humans having free choice. Among animals, consumption is determined by genes, while population is determined by ecological space.[13] In this formula, "technological development" can be grasped by the size of ecological space ($I$).

For better understanding, let us first relate the correlation found in the animal kingdom to humans; the number of individuals living on the planet correlates with ecological sphere (carrying capacity). The size of the latter, in this case, also depends on the level of technology. If ecological space was a pie, the number of humans living at a minimum standard would be the size of the slices of the pie that could feed just enough for physical sustenance. Unattractive as it may be, this state is theoretically the maximum of the internal control of consumption (physical minimum living standard). However, people are able to control their population, and thus increase the size of pie slices well beyond the physical minimum per capita. This decreases the internal control of consumption.[14] In the long run, the size of ecological space depends on the available level of technology. The

---

[12] Ecological footprint is calculated with average productivity of all biologically productive areas on the planet which enables comparisons. That is the concept of global hectare (gHa).

[13] Daniel Quinn's popular sustainability novel "Ismael", demonstrates this issue with the example of a cage of rats. Although it is simplified by linearity, hardly anyone has ever disputed its validity. If the rats are given twice as much food, in time there will be twice as many rats (and vice versa). The amount of food available to rats can be identified with the ecological space or niche that is available to us.

[14] It is important to note here that we do not condemn the decrease in internal control and promote living at minimum standards. However, the current situation we witness and experience involves such a decrease in internal control, coupled with an increase in affluence, that an enhanced control could well be set as a strategic target. (As it will also be asserted in this study, see later.)

formula will be more precise if the relations are reflected differently (Figure 5, triangle on the right):

$$P = I * (1/A)$$

Technology and technological advance are of course still very important factors, even if they do not appear in this formula; that is, not explicitly, since the impact we have - or the impact we can have - on the environment in a certain period of time is heavily dependent on technology, ranging from poking the ground with sticks to satellite-controlled precision fertilizing.

Historically, technological development served environmental sustainability in a way that it formed and expanded ecological space to suit human needs. As a rule, it is followed by the process of filling in space with population ($P$) and/or consumption ($A$). This rule is just as strong as natural laws; application of the Jevons paradox (York, 2006) also leads to this conclusion. In this case, total impact ($I$) increases, however, this increased level is not necessarily unsustainable. We will only meet a sustainability issue if the increase in ecological space can only be temporary (even if this interim period is several centuries long); in the case of an ecological overshoot, the increase is bogus. The issue stems from the fact that a virtual niche is filled with actual population and/or affluence. A bogus increase of ecological space happens when non-renewable energy sources are consumed to fuel technological development. The ecological space thus created is ephemeral and unsustainable.

On the one hand we may say that the global population ($P$) of 7.5 billion (9 to10 billion by 2050) is unsustainable at the current average material comfort level ($A$), but as the current level of population and affluence obviously exists, there must be a necessary ecological sphere that is available here and now. The long-term availability of this niche is dubious though. Environmental issues are apparent, the sustainability of the system has to be taken into consideration. (Compared to other ages, this is the very novelty in anthropocene.)

Social futuring explores the possible ways in which humanity, or smaller subsets and entities thereof, will be able to face the

inevitable decrease of ecological space and cope with ensuing corrections. A purely logical deduction might be that it does not matter; if the occurrence of this phenomenon is so apparent and predictable, we can also affect it. We can, for instance, slow it down by some sort of wise foresight (proactive intervention), benefit from it (active intervention), or face a slow correction/swift cataclysm, in which case the minimisation of losses and the management of risks will become a necessity (passive adaptation). It is certain that a social entity that prepares for a shrunk ecological space – as described above – will be in a more advantageous situation, especially if it makes adequate plans for scenarios on all of the three "strategic lines".

*Homo sapiens* have a highly multifunctional, important and unique tool: *internal* control. (For population, we use the term population control, not to be confused with "internal control" introduced here.) There have been numerous thinkers describing the ability of internal control in various ways, for example as frugality (Nash, 2000), and it is among the most prized virtues in religion and ethics.

Giving this human ability a more or less neutral, or technical label seems rational inasmuch as it will compare more easily with the *external* control of the environment. External control results in expanding ecological space – this is exactly what has been happening in the past millenia of human history. (Even primitive sticks count to the arsenal of external control over nature – a vast, monocultural field does more so, of course, if we consider how much energy and how developed technology it takes to sustain). Because of environmental unsustainability, ecological space needs to be limited somewhat, a proactive influencing of which could be a technological maintenance task of some sort (risks of "planet engineering", of course, needs constant attention). On the active and passive fields of social futuring, however, social sciences will most probably play a more marked role if the application of internal control, interpreted as a unique feature of human nature, comes into focus.

To present the scientific – and opinion forming – potential in interpreting and comparing the two controls, we shall present global

population as a compound of two forces (as it has already been given theoretical evidence, cf. formula 3). Even in social sciences it is of key importance to make a phenomenon measurable and able to be assessed in numbers (it would not be fortunate though to make it a standard). Anyway, if measurements can be found, assessing becomes possible.

External control, ie. the artificial human ecological space, can easily be assessed by calculating ecological footprint (Wackernagel–Rees, 2001)[15], but other indices of environmental impact, like total carbon emissions, could also be used. Global Footprint Network, the organisation which developed the methodology of calculating the ecological footprint, published their latest data in 2017, according to which the global footprint of the human population had been 20.6 billion global hectares (gHa) in 2013. In comparison, the available biocapacity of renewable energy sources had only been 12.2 billion gHa's that year, which points to an overshoot of 69%. We can thus say that the difference in the numbers shows the size of mankind's "virtual ecological space", which is not environmentally sustainable, but which is filled in with actual people and affluence anyway. This is what recent ecological footprint data tell us about external control, shown on the horizontal axis of Figure 6.

Expressing internal control in numbers is a much larger challenge, as we cannot really grasp the "average self-control" of humans in figures. However, if we start out from the number of people that a unit of ecological space (gHa) can nurture (person/gHa), we can get an approximation of internal control. On the one hand it seems obvious that the more people want to prevail in the same ecological space, the greater self-control in terms of material wealth and comfort they need to show. On the other hand, measuring internal control in this way has the advantage that it corresponds to external control, the product of the two resulting in (global) population

$$person = gHa * (person / gHa)$$

---

[15] In spite of its many flaws and shortcomings (cf. e.g. van den Bergh–Verbruggen, 1999), ecological footprint is currently the most concise index of environmental impact.

Figure 6 shows this relation with internal control on the vertical axis. Population counts appear on the surface that spans between the two axes with values of the two controls. The population isographs of 1, 3, 6 and 9 billion are marked. An appropriate question about social futuring is for example: knowing that ecological space will inevitably shrink sooner or later, how can we make the best of this?

- We "voluntarily" returned to at least the level of actual ecological space, marked with the thick white vertical line (Figure 6) *(which still indicates 100% human use, not giving anything to species labelled "useless" by humans, though this level would still be considered a success)*.
- Depleted non-renewable energy sources (including emission assimilation, which is an overloaded renewable source) will force us to back out, resulting in a crisis-managed and forced return to an environmentally sustainable level.[16]

The question inevitably arises: would there be a way, through technological development, to enlarge ecological space to an extent that it is still environmentally sustainable, i.e. without using *non-renewable* energy sources? We cannot rule out this possibility (since it could well be the predominantly technical-scientific *proactive* aspiration of any socially futurable entity). However, the first and second law of thermodynamics makes the creation of a perpetual machine impossible. Some opportunities for such development surely exist – in the middle ages, switching to two-field and later to three-field farming is an example of this narrow leeway. Holocene, the age preceding anthropocene, was not entirely free of technological development. However, technology did not rely at all on finite fossil fuel sources. A good example for today's challenge is fertilizer production. Arguably the most energy-intensive industrial process, fertilizer production should be redesigned to rely *completely* on a renewable basis. However, the advantages of a complete replacement of fossil energy consumption are questionable. In general, it is *expected that available ecological space will* sooner or later *decrease – an entity that is socially futurable has to take this likely possibility into consideration.*

---

[16] In spite of envisaging catastrophe, this is still an optimistic scenario which does not expect a collapse in the ecosystem.

Having introduced the concepts of internal and external control, we attained a clear framework for analysis. To test it, let us look at Kocsis's example of famine (2010). The age-old phenomenon of global famine, which affected about 800 million people in 2015 according to FAO, can be tackled in various ways. An even distribution assumed, we can argue that by dropping one or two meals that contain animal products a week, the "developed" world could contribute to the solution [17] (requiring an increase of internal control at a community level). On the other hand, for some time, industrial agriculture could be further developed to become even more productive, e.g. by introducing more GMOs, thus increasing external control (cf. Borlaug 2002). Of course, we could also illustrate this with examples taken from other fields. Like the need for mobility may also be satisfied by using public transport instead of cars. Riding a bicycle or walking instead of driving necessitates increased internal control, as the comfort levels of these activities are lower). We may also try to enhance oil production and develop industrialised farming to grow genetically modified biofuel crops by shaping biosphere more intensively to meet human needs, thus increasing the human pressure on nature even further (i.e. increased external control).

Figure 6 clearly shows that in the period from 1961 to 2013 a significant increase in external control occurred (the tendency over the period of millennia is anyone's guess), whereas the affluence of mankind also increased on average with a simultaneous decrease of internal control levels. The result of these two forces is significant global population growth, also mentioned earlier in this study. Ecological space suitable for human use, created through exerting external control, was filled with population (where the trend intersects the population isographs) *and* consumption/affluence, indicating a decrease in internal control. In other words, mankind has always been able to increase its material comfort levels (and decrease its internal control) in spite of continuous population growth. This is not only true for the past five decades, but for the past ten millennia. (The three horizontal lines represent the average comfort levels of Europe, the US and Africa.)

---

[17] Energetically it is much more efficient to consume plants directly than indirectly – it results in significant energy loss to feed the produce to livestock first and eat the animals later to cover daily nutrition, since animals use most of the energy intake for maintaining their life functions (breathing, moving, etc.)
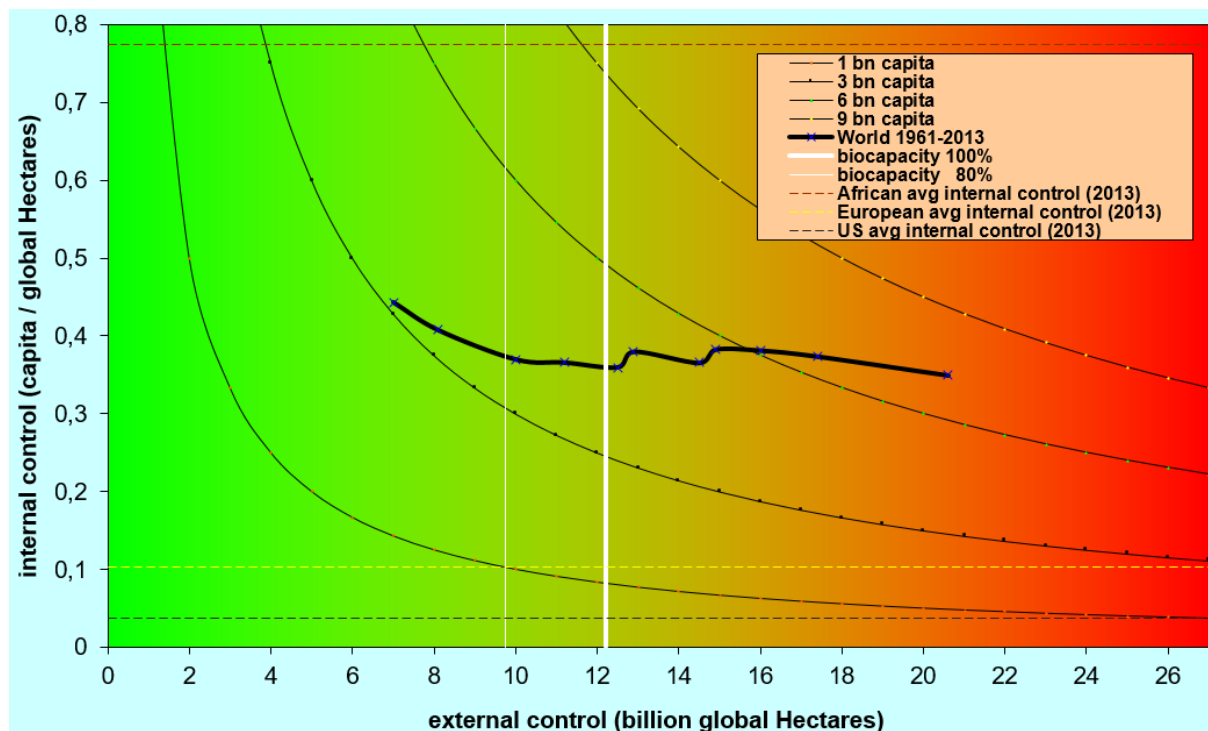
Figure 6: Human population as determined by the combination of internal and external control (1961: left end of the bold graph, 2013: right end of the bold graph; data taken from the 2017 database of Global Footprint Network)

As far as the unsustainable, virtual component of ecological space is concerned, "stepping back" to levels of environmental sustainability may also be interpreted as a combination of internal and external control. Since the size of ecological space suitable for humans was identified with external control, the figure clearly shows the various strategic possibilities for maneuvering. In the case of a shrinking ecological space, humanity will need to decrease population and/or increase internal control. These processes are unprecedented both globally and historically.

## 3.3. SOCIALLY FUTURABLE AND ENVIRONMENTALLY SUSTAINABLE STRATEGIES

The main possibilities that decrease virtual ecological space and excessive external control fall into two categories: the "brave new green world" and "towards harmony" (Figure 7). (Further increasing external control is likely to end in a disaster. Discussing its two variants i.e. overpopulation and over-comfort is beyond the scope of

this study, both being environmentally unsustainable and thus unsuitable for socially futurable entities to build strategies.

The two basic sustainable scenarios are discussed here based on Kocsis's research (2010). Compared to the world as it is now, approaching the bottom left part of Figure 7 could be seen as an effort to create a brave new green world. This strategy, by limiting external control over nature (by decreasing the virtual part of ecological space) doubtlessly contributes to the creation of a more environmentally sustainable world, however, it promotes a further decrease in internal control levels (by further increasing levels of affluence). These two objectives can be realised simultaneously by radically decreasing population (strong population control). This is a comfortable, Western kind of "environment protection", which does not require any self-control in consumption/affluence, but wants limitations of "breeding" in the "third world" instead (cf. Connelly, 2008). It is a dangerous road and the risks are made apparent by the introduction of forced birth control here and there.[18] This is a typical example of the case when a strategy is environmentally sustainable but not socially futurable. According to our normative standards, such curbing of personal liberty is unacceptable (Csák, 2018). For this reason, we suggest a strategy which can be characterised as the most harmonious one (Figure 7, top left).

In comparison to today's average, this would require more internal control from the majority of humans - in a material sense, a less comfortable life, which can be seen as freer and more worth living (Csák, 2018), contrary to the one that seems to unfold worldwide in the consumer societies of the countries we call developed (characterised by mainly material wealth-driven ambition). Subsequently, the external control over the environment should also be relaxed with a less extensive exploitation of nature. This might really make the system more sustainable environmentally. In this

---

[18] Aldous Huxley gave an impressive description of such a world in his novel "Brave New World" (1932). The system depicted is characterised by total population control which is not only quantitative but also qualitative. In "Brave new world", various technologies, drugs and chemicals systematically provide maximal comfort to people who do not have to bother about internal control at all. If continuously decreasing internal control is a benchmark of the historical development of mankind, we have no reason to criticise this world. And still, if there is a single human left if at all who is able to face the world without artificial and manipulative influences, he will flee, roaring, to a freer and more human reservation (in the book it is inhabited by savages).

system, changes in external control and internal control will decide whether global population will grow, decrease or stagnate (see Figure 7). In this approach, the absolute size of population is not of primary importance, so there is no need to control it in "enlightened" ways that so often conflict with human dignity (Greenhalgh, 2003)[19], not even for the sake of environmental sustainability or future generations. (It is exactly the concern over the survival of future generations that makes the creation of socially futurable structures and entities urgent and essential.)

It is therefore important to realise the significance of the extent and result of external control (over natural environment) and internal control (over the material affluence we have). Again, we do not suggest that population count is insignificant, but we do state that the population is a combination of various control types (so it is more likely an effect than a cause in a complex chain of causes and effects, and it can be realised technically via population control), especially if the thesis on filling the ecological space (niche) is also taken into consideration. So, if the causes of environmental sustainability and human dignity are to be tackled simultaneously, meaning that environmentally sustainable alternatives should also be made attractive and socially futurable, it will be necessary to pay more attention to the type and extent of control exerted than to conspicuous figures of absolute population counts.

---

[19] Of course, on the account of unwanted children as an issue (population control), there are solutions similar in nature to internal and external control. Also, in this case, securing a favourable output (unborn babies) is at stake – controlling the factors that raise the probability of childbirth. Various chemical, mechanical and surgical birth control methods are similar to external control, while "natural" ways – like purposefully exploiting the menstruation cycle or men's body functions to avoid pregnancy – are similar to internal control. These latter can and should be learnt; their use is due to scientific advance (i.e. they are not obsolete, "prehistoric" methods).
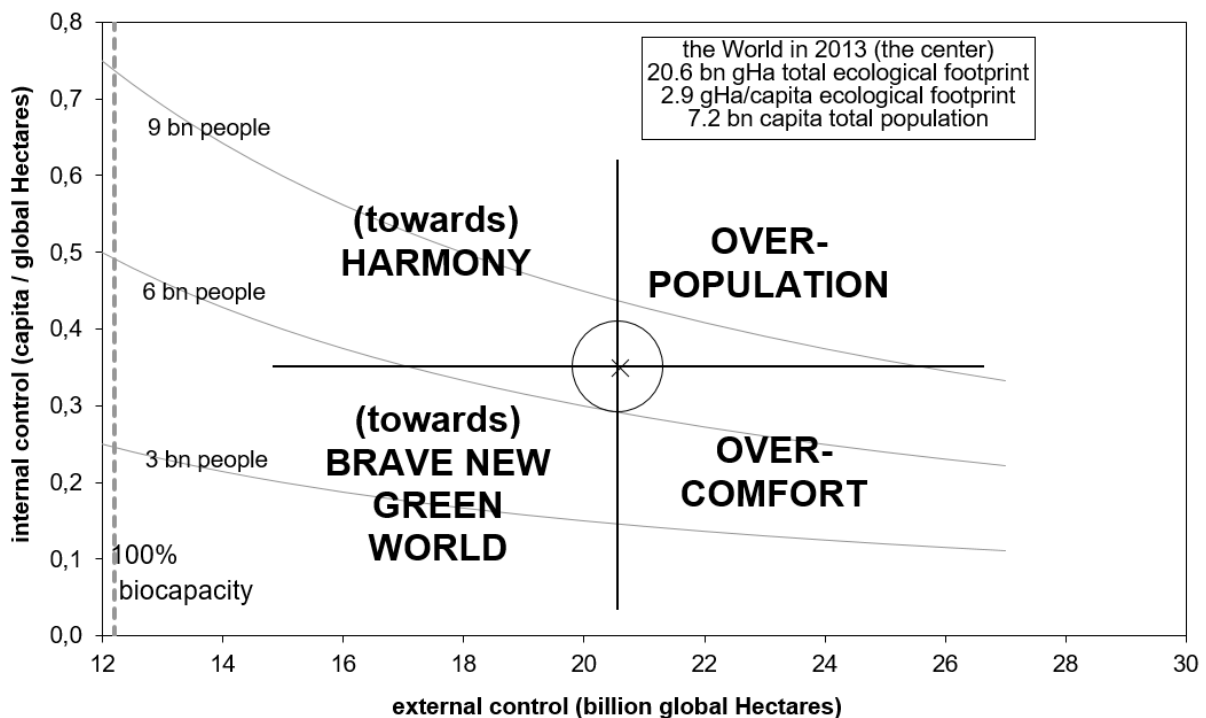
Figure 7: Catastrophe scenarios and environmentally sustainable strategies in the space designated by internal and external control (based on Kocsis, 2010)

## 3.4. HAPPINESS (SUBJECTIVE WELL–BEING) VS. INTERNAL CONTROL (PERSON/ECOLOGICAL FOOTPRINT)

There are two important things to notice regarding the desire to head "towards harmony". First, in the course of history, Homo sapiens have already been at higher levels of internal control, as required by this strategy, and so it would be false to state that enhancing internal control is impossible. However, a high level of internal control was anything but *voluntary* back then (since today's material comfort was unimaginable, they had nothing to give up) and it was (and still is) always determined by the actual level of technology.

In connection with the "strategy towards harmony", it might be argued that it reverses history; this argument is often brought up on occasions of unveiling more radical environmental strategies. Indeed, external control has increased continuously throughout history, owing to successful innovations in technology. As a result,

population has grown and internal control has decreased. In layman's terms, more and more people live better and better lives. The first stage of the "human project" was then successfully accomplished. Our socially futurable and environmentally sustainable strategy would require just the opposite: lower external control combined with higher internal control (the resultant of which combination is population). (See Figure 7)

However, our futurable environmental strategy cannot be regarded as an attempt to reverse history. A global environmental catastrophe would throw mankind to a world of crisis management and shortage, as it has been described by various authors (many of whom also predicted the date of the cataclysm, and proved wrong). A responsible thinker has to find ways to avoid such a catastrophic alternative – this is also the objective of social futuring. Now, for the first time in history, the challenge is how not to fill available ecological space, conquered by ways of new technologies, with population and/or affluence, and how not to enlarge this space even though it would be possible. "We could do it but we won't" could be the slogan of a new age, that is, deliberately *not* using available technology capable for the exertion of immense external control. Not using our nuclear arsenal that would be able to wipe out all life gives us a hint that we might possess the ability. This example is not perfect though, since production seems to be involving constructive, rather than destructive technologies, and "not using" here means a less intensive use of such technologies than it would otherwise be possible. Who would have thought for instance that the Indian "green revolution", that is, the extensive fertiliser use in agriculture saving millions from starvation, was in fact devastating? ("Green revolution" had successfully enlarged ecological space in India and reduced hunger, however, the population there started growing shortly afterwards.) However, such an effort in such a scale is both environmentally unsustainable and socially unfuturable.

We can illustrate the volume of the challenge with the relation that summarises actual values of ecological footprint per capita (the multiplicative inverse of internal control shown on Figure 5) and

subjective well–being (happiness)[20] (Figure 8).[21] Higher points denote countries with lower internal control (higher material comfort). On the right we find countries with higher levels of contentment and happiness. A conspicuous tendency shows here – greater comfort generally leads to greater happiness, and vice versa. It is hardly surprising. However, it is the lower right corner of the figure that represents an ideal state. There, a relatively high internal control is coupled with greater happiness levels. This is true for some Central American and South American nations (Costa Rica, Brazil etc.). (Hungary is in the middle on Figure 8, close to China, with near–average levels of happiness and internal control.)

Another tool that is widely used for analysis, the Happy Planet Index, reflects this issue rather well. This index adjusts happiness for ecological footprint per capita (internal control), taking the quotient of the two, and also takes life expectancy at birth into consideration (more recently, it also considers income inequality). Based on this index, countries in the world can be ranked (Jeffrey et al., 2016). Countries of Latin America head this list, too. These countries, maintaining a relatively high internal control level have considerably high levels of happiness as well. The end of the list is dominated by countries of Sub–Saharan Africa. Environmentally sustainable they may be, however, very few people there feel that their lives are worth living (Csák, 2018) and therefore they lag behind social futuring. The sentiment of the population underpins the fact that their region is the most unhappy place in the world. These countries can be found in the lower left corner of Figure 8.

Although the Happy Planet introduced important factors to the analysis by integrating life expectancy and income inequality into

---

[20] Subjective well–being is often measured by assessing the answers for the following question: "All things considered, how satisfied are you with your life as it is now? Zero stands for »really unsatisfied«,
and 10 for »really satisfied«. Where would you place yourself on this scale?" (cf. http://www.gallup.com/poll/122453/understanding-gallup-uses-cantril-scale.aspx (Last updated 06. 09. 2017.)
[21] If, instead of subjective well–being, an objective welfare index is brought into the analysis, for instance Human Development Index (HDI) developed by UN, it will also be apparent that mankind has so far avoided combining well–being (or welfare) with environmental sustainability, although there are significant differences between entities i.e. countries. (No such figures are shown here. cf. e.g. http://www.footprintnetwork.org/our-work/sustainable-development – Last updated 06. 09. 2017.)

their index, we still find it meaningful to create a less complicated index that is as plain as one's nose. This would be the quotient of ecological footprint per capita and subjective well–being. Since internal control is the reciprocal of the former; the formula can be rearranged: the above mentioned quotient is the product of internal control and subjective well–being (Figure 5, relations of the left triangle). This product could be called "happiness efficiency" with a technical term, but calling it "celestial footprint" would be even more fortunate, given that this concept might be communicated more easily. Celestial footprint therefore complements terrestrial/material footprint in terms of human well–being (feeling as a whole), and it combines natural scientific relevance with fields of social science concerning human happiness.



Figure 8: Relation between internal control (ecological footprint per capita) and happiness (subjective well-being) in 2012
(Source: http://www.footprintnetwork.org/2016/03/25/imagine-happiness-treading-lightly-earth/ Last update 2017. 31. 08)

From the aspect of social futuring, an important research direction could be to look into causes of the diverse "performance" of social

entities in terms of internal and external control resulting in a different celestial footprint (happiness efficiency); it would also be useful to find ways for "underperformers" to adopt potential good examples. It is for instance interesting that – according to figures – Australia and Norway have completely different internal control levels and virtually the same results on the happiness scale, whereas the internal control figures for China, Hungary and Brazil are similar but the happiness results very different (i.e. the size and consistency of our "celestial footprints" vary to a considerable extent). Researching this for social entities, which are smaller than countries and nations would be desirable and important in the future.

## 3.5. EXAMPLE FOR GOOD PRACTICE: VOLUNTARY SIMPLICITY

*Voluntary* population control as a means to decrease internal control is unique to humans. There are no other species in the animal kingdom that deliberately choose not to fill out available ecological space with offspring for the sake of more affluence and welfare. Humans are indeed capable of this, which is the very reason that not global population itself refers to available ecological space, but the product of global population and average affluence (consumption) per capita ($I = P * A$). In terms of affluence, there is of course a difference between people. It is for this reason that an average affluence is used in the formula. There is also a peculiar trade-off between population and affluence, which has definitions varying from one individual, community, country – i.e. social entity – to another. (Naturally, this choice is *one* source of the infamous inequalities of income and wealth, for instance; it would therefore be advisable to examine the idea of equality-righteousness more frequently in this perspective.)

Studying the issue at a national level, where economic and sustainability figures are found in abundance, is beyond a doubt convenient, however, many good examples can be found at local levels, too. We do not necessarily need to go as far as Latin America, or the United States of America for that matter (cf. Takács–Sánta, 2017), however, the emergence and moderate spread of the

*voluntary simplicity* movement is quite a remarkable phenomenon, considering the fact that the US is one of the richest and most developed countries in the world, setting examples in many aspects (not including environmental sustainability, by the way). The philosophy and practice of this movement highlights the possibility of exploiting human potential practicing the internal control of consumption. This is not "giving up" but rather "opening up" to a broader and freer human completeness, which is also the basis of social futuring (Csák, 2018).

Let us then examine this lifestyle, characterised by high levels of subjective well-being (happiness) and a resistance against material growth and consumerism, from a number of aspects. The voluntary simplicity movement stands on sound theoretical and practical foundations (Gregg, 1936, Elgin–Mitchell, 1977, Elgin, 1993). And it has not lost from its popularity (Schreurs, 2010; Gambrel–Cafaro, 2010; Jackson, 2008, Gandolfi–Cherrier, 2008; Shi, 2007; de Graaf–Wann–Naylor, 2005; Etzioni, 2004; De Geus, 2003). As we cannot possibly undertake to unfold all details of this sophisticated concept here, only the most typical features of a voluntary simplifier will be described.

The theory and practice of voluntary simplicity may be seen as institutionalised resistance against the consumer society. Voluntary simplicity is essentially a lifestyle which is outwardly simple but inwardly rich (Elgin, 1993). The movement is rooted, for example, in the legendary frugality and independence of puritans, in Thoreau's close-to-nature vision at lake Walden (1854), in Emerson's practical and spiritual dedication to a simple life, and in the social philosophy of spiritual leaders like Jesus and Gandhi. According to advocates of voluntary simplicity, the present social and environmental crisis is a further argument to dedicate ourselves to leading a socially and environmentally more responsible life (for details about voluntary simplicity and its criticism see Kocsis, 2002b, Chapters 3 and 4). Elgin and Mitchell's book published in 1977, now a classic, differentiated five basic values of voluntary simplicity, such as: material simplicity; human scale; autonomy; ecological awareness; and personal growth.

But who are voluntary simplifiers exactly? Valuable information can be found on this account in the questionnaires of researchers studying the movement. Shama and Wisenblit's (1984) dogmatic statements identifying followers of voluntary simplicity have seen much use in research, even in recent times. (1) I believe in voluntary simplicity, which means that I only buy and consume in quantities I need. (2) I believe in the "small is beautiful" principle (cf. Schumacher, 1980), for example, I prefer a small car to a larger one. (3) The function of a product is more important than its looks. (4) I prefer personal growth to economic growth. (5) I aim to have greater control over my life, for example, I abstain from instalment buying. (6) I believe I am ecologically aware (Shama–Wisenblit, 1984, p. 233). Of course, the values and beliefs distilled from agreeing with these statements are in close connection with the realisation of a lifestyle that is less material intensive and, at the same time, requires more internal control.

Questionnaires surveying voluntary simplicity in practice usually enquire about respondents' everyday activities. A good thirty years ago this activity started out from California; no wonder, as that region was - and still is - one of the most developed in the world materially. The movement has since become much more widespread globally. Dorothy Leonard-Barton's questionnaire, originally used in California in 1981, is a household survey nowadays, popular among researchers studying lifestyles and environmental sustainability in connection with voluntary simplicity (Alexander–Ussher, 2012; Schreurs–Martens–Kok, 2012; Merrick, 2012; Chhetri–Stimson–Western, 2009; Hamilton–Denniss, 2005; Huneke, 2005; Grigsby, 2004; Craig–Hill, 2002; Pierce, 2000).

According to general findings of the survey, a typical voluntary simplifier makes presents instead of buying them; rides a bicycle for recreation and transport; recycles glass bottles or collects them selectively; self-trains to become more independent (e.g. to paint the house); chooses to do without meat; buys clothes in second-hand shops; buys furniture, even the bigger pieces second hand (above approx. 20 USD); builds furniture and makes clothes for the family; makes barter deals to avoid use of cash; grows vegetables in the summer for consumption (Leonard-Barton, 1981; pp. 250–251.).

Considering all the above being *voluntary* (involuntariness would refer to a state of material poverty), it seems reasonable to assume that voluntary simplifiers may be able to decrease the material use of the economy (as well as environmental impact).

It is important to note that creating adequate *structures* may be essential to promote such activities. For example, there should be good quality and safe bicycle lanes, selective waste containers in the neighbourhood; barter deals and local currencies should be legal and neither frowned upon by authorities nor persecuted as tax evasion. These may also suggest the possibility and the importance of sober top-down policies to promote internal control and make it official.

Voluntary simplicity may only become attractive if people have fully and *securely* satisfied their basic *physical and physiological* needs – this presumption also fits Maslow's thesis on basic human needs (1954). "*Voluntary simplicity is thus a choice a successful corporate lawyer, not a homeless person, faces; Singapore, not Rwanda. Indeed, to urge the poor or near poor to draw satisfaction from consuming less is to ignore the profound connection between the hierarchy of human needs and consumption. It becomes an obsession that can be overcome only after basic creature comfort needs are well and securely sated*" (Etzioni, 2004, p. 415). Thus, it is consumerism, rather than consumption itself, that voluntary simplicity aims to limit (Etzioni, 2004, p. 416).

This also points to the issue that not any social entity can afford voluntary simplicity. For this reason, it cannot be regarded as a universal strategy to be followed by everyone. In reality, the sustainable position has to be found along the continuum designated by necessity, comfort and excess. Voluntary simplicity can be interpreted as an artistic attempt that is indeed socially futurable since it offers the possibility of a life worth living.

# 4. CONCLUSIONS

The first part of the human project has doubtlessly ended; the earth has been "replenished" and "formed to our image". You cannot possibly find a single spot on the planet that is completely exempt from human (anthropogenic) influence. To a significant extent, the systems of biosphere are engineered in a way that they yield maximum social-economic profits to mankind. We live in the geological era of anthropocene by the virtue of technological development brought along by humans. It has been an impressive success. Humans are worthy of the highest praise. At school, they would get an A+.

Now, the second phase of the human project is to be launched – the sooner the better – and it will be just as challenging as the first phase. That is because the system has been overdone; plans went beyond expectations, and so, corrections are necessary. Technological development, through which ecological space available for humans was enlarged successfully, has relied heavily on non-renewable natural resources and energy sources, especially fossil fuel, in the *anthropocene* era, started at – or rooted in – the time of the industrial revolution. Our technology now enables us to exert an immense external control over our environment. Nonetheless, this attitude is by no means sustainable in the long run. Will "homo" be "sapiens" enough to realise this, and dedicate resources and creativity to solving this problem in the second part of this historical age?

Achieving environmental sustainability – which must not be perceived as a static, non-changing state – has become a task, an objective, which we, human *persons*, must realise partly by creating structures that turn individuals toward the correct direction. This latter is the political relevance of this topic, which will not be discussed in this study. Anyway, we may well hope that social futuring will be realised at the level of various entities some time in the future, and as a result, mankind will eventually prevail.

The active shrinking of ecological space, having been enlarged beyond limits, will not be easy, since we have already moved in; population and affluence is already there, filling in the space

seamlessly. It happened exactly in line with the natural law that states that each species will eventually fill in the available niche with population. Technological development never meant to shrink our ecological space. On the contrary, it enabled us to increase that space by making it possible to rearrange and restructure the issues (e.g. the environmental hazards of a nuclear power plant instead of those of a fossil plant, catalysts turning air pollution to hazardous waste, or taller chimneys emitting the same amount of pollutants while using more of the waste assimilation "service" of nature). Technological changes resulting in rearrangements on the ecological scene may win us time, but the issue of overdose still remains. A non-technological solution, however, is within arm's reach as it lies in human nature itself. Creativity and human potential – which has been responsible for the incredible development and the alteration of the environment – support our optimistic premise that we shall be capable of exerting a voluntary control on ourselves.

This existing and functioning internal control tells us to do without *some* of the material wealth created by *external* control, because it is environmentally unsustainable in the long run. Times in which mankind was forced to keep a greater internal control are not unfamiliar – just think of the summers you had to survive without air conditioning! It is easy to get used to comfort – deciding to do without it is much more difficult. Anyway, it is far from turning history back. Abstaining from some of the comfort is hardly a "back on the tree"-label strategy that is often assigned to deep ecology. However, if we consider this control a source of inevitable *unhappiness*, we may just as well go on and enjoy the material blessings of a "last age". A future correction will happen anyway, all by itself, and as a result, mankind will return to a level that really is environmentally sustainable – yet it will take much graver human and ecological sacrifice.

As responsible thinkers, we need to figure out new, socially futurable *and* environmentally sustainable strategies in order to avoid this disaster. There are numerous individuals and movements that can be considered as examples of functioning internal control. In this study, we presented the US-based movement of voluntary simplicity. We have seen that an increase in internal control (doing without some of the available material comfort) may result in an

increase in happiness (subjective well-being). In many cases, this attitude seems even to be the right one achieving happiness as a sole target (without considering environmental sustainability). This way we attain an agreeable strategy rooted organically in human nature. Less is more. This phenomenon – by introducing the concept *celestial footprint* we coined – can be interpreted and communicated quite easily: humans are in the possession of a resource that is not limited by any material issue, and its potential can be equalled to human creativity, which enabled technological development. Increasing the celestial footprint (internal control coupled with increased happiness) is a real art beyond individual-level. The creation and implementation of a suiting political strategy must be adopted just like the external control over our natural environment. This is the most important socially futurable *and* environmentally sustainable task in the second stage of the human project.

# BIBLIOGRAPHY

Alexander, S.–Ussher, S. (2012): The Voluntary Simplicity Movement: A multi-national survey analysis in theoretical context, *Journal of Consumer Culture 12*, pp. 66–86.

Ambrus L. (2017): *Jövőképesség és politikai társadalom [Futuring. Political Strategy].* (Manuscript), Corvinus University of Budapest, Social Futuring Center, Budapest

Bihari Z.–Antal Zs.–Gyüre P. (2008): *Természetvédelmi ökológia.* Digitális tankönyv, Debreceni Egyetem, http://www.tankonyvtar.hu/hu/tartalom/tamop425/0032_ okologia/index.html (2017.08.31-i állapot szerint.)

Brundtland, G. H. et al. (1987): *Our Common Future* – The World Commission on Environment and Development; Oxford University Press, magyarul: Közös jövőnk; Mezőgazdasági Kiadó, Budapest, 1988

Borlaug, N. E. (2002): Feeding a World of 10 Billion People – The Miracle Ahead; *In Vitro Cellular & Developmental Biology – Plant 38*, pp. 221–228.

Boulding, K. E. (1966): *The economics of the coming spaceship Earth.* in. Jarrett, H. (szerk.): Environmental Quality in a Growing Economy. Johns Hopkins Press, Baltimore, 3–14. o., magyarul: Az eljövendő "Föld űrhajó" gazdaságtana. in. Pataki Gy.– Takács-Sánta A. (szerk.): Természet és gazdaság – Ökológiai közgazdaságtan szöveggyűjtemény. Typotex Kiadó, Budapest, 2004

Chhetri, P.–Stimson, R.–Western, J. (2009): Understanding the Downshifting Phenomenon: A Case of South East Queensland, Australia, *Australian Journal of Social Issues* 44 (4)

Connelly, M. (2008): *Fatal Misconception – The Struggle to Control World Population*; Harvard University Press, Cambridge, MA

Craig, Lees M.–Hill, C. (2002): Understanding Voluntary Simplifiers. *Psychology and Marketing*, 19(2), pp. 187–210.

Csák J. (2018): *Social Futuring – A Normative Framework.* Working Paper 2/2018. Corvinus University of Budapest, Social Futuring Center, Budapest

Daly, H. E. (1982): The Ultimate Resource by Julian Simon. Review, *Bulletin of the Atomic Scientists,* January

Daly, H. E. (1996): Beyond Growth: The Economics of Sustainable Development. Beacon Press, Boston

De Geus, M. (2003): The End of Over-Consumption: Towards a Lifestyle of Moderation and Self-Restraint, Utrecht, International Books

de Graaf, J.–Wann, D.–Naylor, T. (2005): Affluenza: The All-Consuming Epidemic. második kiadás, Berret–Koehler, San Francisco

Diamond, J. (2007): Összeomlás: Tanulságok a társadalmak továbbéléséhez. Typotex, Budapest

Ehrlich, P. R.Holdren, J. P. (1971): Impact of Population Growth – Complacency concerning this component of man's predicament is unjustified an counterproductive. Science 171 (3977), március 26. pp. 1212–1217.

Elgin, D. (1993): Voluntary Simplicity: Toward a Way of Life That Is Outwardly Simple, Inwardly Rich, Revised Edition, New York: Morrow (first published in 1981).

Elgin, D.–Mitchell, A. (1977): Voluntary Simplicity (3), The CoEvolution Quarterly, Summer, pp. 4–19.

Emerson, R. W. (2012): Természet, ember, társadalom. Fapadoskönyv.hu Kiadó, Budapest

Etzioni, A. (2004): The Post Affluent Society, Review of Social Economy 62 (3), pp. 407–420.

FAO (2015): The State of Food Insecurity in the World 2015. http://www.fao.org/3/a-i4646e.pdf (2017. Last update 05. 09.)

Gambrel, J. C.–Cafaro, P. (2010): The Virtue of Simplicity, Journal of Agricultural and Environmental Ethics 23, pp. 85–108.

Gandolfi, F.–Cherrier, H. (szerk.) (2008): Downshifting. A theoretical and practical approach to living a simple life. Hyderabad: Icfai University Press

Georgescu-Roegen, N. (1971): The Entropy Law and the Economic Process; University of Alabama Distinguished Lecture Series, No. 1, (magyarul: Az entrópia törvénye és a gazdasági probléma; in. Pataki Gy.–Takács-Sánta A. (szerk.): Természet és gazdaság – Ökológiai közgazdaságtan szöveggyűjtemény; Typotex, Budapest, 2004, pp. 41– 54.)

Greenhalgh, S. (2003): Science, Modernity, and the Making of China's One-Child Policy; Population and Development Review 29 (2), 2003. június, 163-196., magyarul Tudomány, modernitás és a kínai egykepolitika megalkotása, Kovász 14 (1–4), pp. 53–97.

Gregg, R. (1936): Voluntary Simplicity. *Visva-Bharati Quarterly*, August, reprinted in *The CoEvolution Quarterly*, 1977, Summer, 20–7.

Grigsby, M. (2004): *Buying Time and Getting By: The Voluntary Simplicity Movement.* State University of New York Press, Albany

Hamilton, C. – Denniss, R. (2005): *Affluenza: When Too Much is Never Enough,* Allen & Unwin, Crows Nest, NSW

Huneke, M. E. (2005): The Face of the Un-Consumer: An Empirical Examination of the Practice of Voluntary Simplicity in the Unites States, Psychology & Marketing 22 (7), pp. 527–550.

Hutchinson, G. E. (1957): Concluding remarks. Cold Spring Harbor Symposia on Quantitative Biology 22 (2), pp. 415–427. http://artifex.org/~ecoreaders/lit/Hutchinson1957.pdf (2017.08.31-i állapot szerint.)

Jackson, T. (2008): *The Challenge of Sustainable Lifestyles*, in. State of the World 2008, The Worldwatch Institute, pp. 45–60.

Jeffrey, K.–Wheatley, H.–Abdallah, S. (2016): *The Happy Planet Index 2016 – A global index of sustainable wellbeing.* New Economics Foundation (NEF), UK

Kerekes S. (1998): *A környezetgazdaságtan alapjai.* Egyetemi jegyzet, Budapesti Közgazdaságtudományi Egyetem, Környezetgazdaságtani és Technológiai Tanszék, Budapest

Kerekes S.–Szlávik J. (2003): *A környezeti menedzsment közgazdasági eszközei* – Környezetvédelmi kiskönyvtár 2., KJK-KERSZÖV Jogi és Üzleti Kiadó Kft, Budapest

Kocsis T. (2002a): Állam vagy piac a környezetvédelemben? – A környezetszennyezés-szabályozási mátrix. *Közgazdasági Szemle 49*, pp. 889–892.

Kocsis T. (2002b): *Roots – Pleasure and wealth in a globalizing consumer society.* PhD Dissertation, Budapest University of Economic Sciences and Public Administration, Budapest http://phd.lib.uni-corvinus.hu/737/1/Kocsis_Tamas_den.pdf

Kocsis T. (2002c): Polluting production – environmentally sound alternatives. Society and Economy 24, pp. 69–100.

Kocsis T. (2010): Létkérdések: Önkényuralom és népesedés a bioszférában. *Kovász 14 (1–4),* pp. 3–52.

Kocsis T. (2014): Is the Netherlands sustainable as a global–scale inner-city? Intenscoping spatial sustainability. *Ecological Economics 101*, pp. 103–114.

Leonard-Barton, D. (1981): Voluntary simplicity lifestyles and energy conservation, *Journal of Consumer Research*, vol. 8, pp. 243–252.

Malthus, T. R. (1798): *An Essay on the Principle of Population.* magyarul: *Tanulmány a népesedés törvényéről.* Politzer Zsigmond és fia, Budapest, 1902

Maslow, A. (1954): *Motivation and Personality*, Harper and Row, London, New York

Merrick, H. (2012): Promoting sustainability and simple living online and off–line: An Australian case study, *First Monday* 17 (12)

Nash, J. A. (2000): Toward the Revival and Reform of the Subversive Virtue: Frugality. in. Chapman, A. R.–Petersen, R. L.–Smith-Moran, B. (szerk.): Consumption, Population, and Sustainability: Perspectives from Science and Religion. Island Press, Washington, DC, Covelo, California, 2000, pp. 167–190.Magyarul: A mértékletesség felforgató erényének felelevenítése és megújítása felé. *Kovász 4 (1–4),* pp. 25–52., 2000

Pierce, L. (2000): *Choosing simplicity, real people finding peace and fulfillment in a complex world.* Gallagher Press, Carmel, CA

Quinn, D. (1992): *Ishmael*; Bantam Books, New York. Magyarul: *Izmael*; Föld Napja Alapítvány, Budapest, 1993

Schreurs, J. (2010): *Living with less: Prospects for sustainability.* Maastricht: Schrijen-Lippertz

Schreurs, J.–Martens, P.–Kok, G. (2012): Meet the Dutch downshifters: How people adjust consumption expenditures, experience downsizing and contribute to sustainability, *International Journal of Home Economics 5 (2)*, pp. 290–306.

Schumacher, E. F. (1980): *Small is Beautiful,* London: Century Hutchinson Publishing Group. Magyarul: *A kicsi szép – Tanulmányok egy emberközpontú közgazdaságtanról.* Katalizátor Könyvkiadó, Budapest, 2014

Shama, A.–Wisenblit, J. (1984): Values of voluntary simplicity: Lifestyle and motivation, *Psychological Reports,* vol. 55, pp. 231–240.

Shi, D. (2007): *The Simple Life: Plain Living and High Thinking in American Culture,* Revised Edition, Athens, University of Georgia Press

Simon, J. L. (1981): *The Ultimate Resource*; Princeton University Press, Princeton

Smith, B. D.–Zeder, M. A. (2013): The onset of the Anthropocene. *Anthropocene 4*, pp. 8–13.

Szántó Z. O. (2018): Social Futuring – An Analytical Framework. Working Paper 1/2018. Corvinus University of Budapest, Social Futuring Center, Budapest

Takács-Sánta A. (2017): *Építőkockák egy új világhoz – Ökológia, közösség, boldogulás – helyben!* Andron Könyv Kft., Budapest

Thoreau, H. D. (1854/1989): *Walden,* Princeton University Press (first published in 1854). Magyarul: *Walden – A polgári engedetlenség iránti kötelezettségről.* Fekete Sas Kiadó, Budapest, 2015

Tóth G.–Szigeti C. (2016): The historical ecological footprint: From over-population to over-consumption. *Ecological Indicators 60*, pp. 283–291.

UN (2017): World Population Prospects – The 2017 Revision. United Nations, New York
https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_KeyFindings.pdf (2017.09.05-i állapot szerint.)

van den Bergh, J. C. J. M.–Verbruggen, H. (1999): Spatial sustainability, trade and indicators: an evaluation of 'ecological footprint'. *Ecological Economics 29*, pp. 61–72.

Wackernagel, M.–Rees, W. E. (2001): Ökológiai lábnyomunk – Hogyan mérsékeljük az ember hatását a Földön?; Föld Napja Alapítvány, Budapest

York, R. (2006): Ecological Paradoxes: William Stanley Jevons and the Paperless Office. Human Ecology Review 13 (2), pp. 143–147. Magyarul: Ökológiai paradoxonok – William Stanley Jevons és a papírmentes iroda. Kovász 12 (1–2), pp. 5–15., 2008

# NOTES

# NOTES

# NOTES

**Social Futuring Center (SFC)** is a multi-disciplinarian research unit of the Corvinus University of Budapest (CUB). Our aims are to develop the conceptual and normative framework of social futuring, to construct the **Social Futuring Index (SFI)** and to manage the **ConNext 2050** research project. The main scope of its research is the analysis and interpretation of social futuring of different social entities, focusing on short and long-term future changes (2017-2050).

The SFC periodically publishes **working papers** that highlight the findings of its research. They are published to stimulate discussion and contribute to the advancement of our knowledge of multidisciplinary matters related to philosophy, sociology, psychology, bionics, informatics, economics, political science, environmental studies, futures studies, network science. SFC working papers are available online on the **www.socialfuturing.com** website.