Human Capital

Its Self-Augmenting Growth and Individuality – A Simple Possibly Naïve Approach

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1. Introduction

The 1990 *Human Development Report* clearly articulated the concept of ***human development*** (1). The first chapter, "Defining and Measuring Human Development," opened with the forthright statement that: **People are the real wealth of a nation.**

Human development is about freedom: human choice (opportunity freedom) and a participatory process (process freedoms). Human development is a process of enlarging people's choices: long and healthy life, to be educated and to enjoy a decent standard of living, and political freedom, guaranteed human rights and self-respect— what Adam Smith called the ability to mix with others without being "ashamed to appear in public."

Human beings are result of biological and cultural (much faster) evolutions. *"Evolution on this planet is a history of the realization of ever more possibilities. Through new knowledge it has defined man's destiny and responsibility….It is as if man has been appointed the managing director of the biggest business of all – the business of evolution"(2)*

1.1. Laws of Nature and Laws of Society

In the classical tradition of Galileo, Newton and possibly until today Laws of Nature are eternal truths – "thoughts of God" represented by mathematical equation. Kant considers them categories of human mind, but David Hume was critical. The 20th century shows that mathematically formulated laws extended to encompass social and political sciences. Models became a "sign of exactness" in economy and almost all Nobel prizes in economics were given for econometrics. However, criticism grew, e.g. Feyerabend, and in the 21st century the question was raised "Are Laws of Nature still essential. R. Rorty wrote "truth is made not found." A topical workshop on Laws of Nature is currently organized by Academia Europaea in Heidelberg and we will not discuss it here.

Rather we will just mention that physical science still endeavors to formulate The Theory of Everything which will encompass conservation laws and related symmetries, and obviously contain the basis of quantum physics: The Uncertainty Principle. As far as we understand physical laws have been immutable for 13.7 billion years, but possibly laws have evolved, as J.A. Wheeler suggested, possibly in an extremely short time span before the inflation. If there are multiverses, each universe has its own laws, and "our" is distinguished by being one in which life and human beings have evolved.

While the physical world – its basic laws and constants – did not change during 13.7 billion years, life and particularly society is evolving, rapidly in the last decades. It is very important to ask: should laws of society change? All laws? How should they change?

Law is a social organization of principles, rules and governance systems to manage relations among people and group of people. Laws evolves in response to ever rising demands of the people – expression of the development of the human capital (Laswell).

The concept of the *Rule of law* was popularized by British jurist Albert Dicey in 1885. *World Justice Project* – committed to advancing the Rule of Law – was initiated and it developed the RoL Index. Conditions include nine criteria among them: limited government power, security, absence of corruption and access to civil justice. And the "Law should be stable" **–** *is it possible and desirable in a rapidly changing world?*

In 1959 gathering of 185 jurists, lawyers and law professors from 53 countries speaking as International Commission of Jurists formulated the Declaration of Delhi: **The Rule of Law implies certain rights and freedoms, implies independent judiciary and social, economic, political and cultural conditions conducive to human dignity.** This is fully in our classical tradition of Cicero ("We are all servants of the law, so we may be free."). However, since we were always fully aware that human beings formulate laws, we were always concerned that laws may be unjust, and therefore from Cicero, through Augustine, Th. Aquinas, the USA founding fathers and Gandhi it was clearly claimed "*Unjust law is not a law!"* and law serves human beings (Bible).

Are there laws of society that have not simply "be made by human beings"? In a way, biological evolution through evolutionary advantages moulds "natural laws of human beings and human society". Studying human behavior and violence scientists concluded that "Violence is not Law of Nature" (3) and that Reciprocal Altruism is evolutionary advantageous (4) generating the Golden Rule – the basic law of human society in all cultures and religions. But who is our neighbor? It is remarkable that more than 100 years ago Darwin realized that all human beings are our neighbors, and that is the essential meaning of the concept of the Global World.

2. The Human Capital (5)

We define:
Capital as usable, productive resources, all forms of assets and capabilities that can be harnessed for human development. A. Smith introduced several forms of capital: land, building, machinery and human abilities. We define: *natural* (including physical and biological), *human* (including social and cultural, of course including scientific etc – **notably:** *ideas, individuality, values, etc*), *financial* and *all other human made capitals.*

And

Human Development as a process of increasing human welfare, well-being and human capital, increasing human freedom and creativity.

Anything becomes a resource (only) when its potential value is recognized by the human (mind). However, air is a resource regardless whether humans are aware of it. But, pitchblende is a resource only when humans discover fission.

All social and political sciences are human based. Human beings are rational and irrational beings. Collective interactions among human beings produce sudden, unexpected behavior and outcomes and socio-economic-political development is characterized by instabilities and uncertainties - black swans. These uncertainties are much less understood than the Heisenberg Uncertainty Principle. This essential feature was understood by economists hundred years ago, but keeps being overlooked in search for some "Newtonian type deterministic mathematical models. "Economics is not about goods and services, it is about human choice and action." (L. von Misses, 1949)

2.1. Individuality

Individuality is a product of human mental development, of social organizations, institutions and of a cultural sphere, imparting knowledge, skills and values, making available to each member the cumulative advances of the collective, and providing freedom and opportunity for unique individual characteristics to develop.

History proves the importance of individuals. It is interesting to ponder on Khrushchev's answer "who made Sputnik?'. His reply was "Soviet people" Was this just Soviet secrecy?

2.2. Development of the Human Capital

Through individual-society-culture interaction human capital can be augmented, destroyed, misused and wasted. The constant interaction, exchange, mutual dependence and reinforcement between the individual and the collective give human capital the unique capacity for self-development and self-augmenting. This bootstrapping accounts for the evolutionary character of civilization, resulting particularly from organization, education and culture. It gives rise to *the unlimited capacity of the human capital for development, the very basis for the progressive*

advance of civilization. Human capital evolved slowly, but in recent centuries the pace of development has accelerated exponentially.

Society now exhibits the apparent capacity to leapfrog in a single generation from riding llamas to flying in airplanes, from bullock carts to cell phones, from primitive agriculture to advanced ICT-based services.

The development of human capital over time is a function of the human capital (which includes all forms of social capital, denoted here by Ψ), natural capital (e.g., ecosystem, air, water, denoted by ΦN) and human-made capital (e.g., infrastructure, building, money - denoted by Φhm) and their evolution. Improving health care, education and employment augments human capital proportionally to the human capital (λΨ). Improving socio-economic and political conditions, stimulating creativity augment human capital even more than proportionally ($\mu\Psi^a$). Socio-economic and political conditions can have beneficial and destructive effects: λ and μ can be negative. In addition there are sudden changes, black swans, labeled P for those having positive and D for those having destructive effects. All scientific advances fall in category P, as well as social-political events such as the end of Cold War and nuclear disarmament. War, large income inequalities and violation of human rights destroy human capital.

$$d\Psi/dt = \lambda\Psi + \mu\Psi^a + P - D + \alpha(d\Phi N/dt)\Psi + \beta(d\Phi hm/dt)\Psi + \gamma(\Psi,\Phi N,\Phi hm)$$

The term α(dΦN/dt)Ψ demonstrates that human capital decreases if natural capital decreases. The term β(dΦhm/dt)Ψ shows that human capital decreases if human-made capital decreases, e.g., as a result of war. The complex interdependence of all capitals is the last term γ(Ψ,ΦN,Φhm). λ, μ, P, D, α, β and γ are time dependent.

The self-augmenting character of human capital is shown by the growth of GDP/c in recent centuries. In spite of a 22-fold rise in world population over the last 1000 years, GDP/c has grown 13-fold. Since the advent of the Industrial Revolution, both population and GDP/c have increased six-fold, signifying a 36-fold rise in productive capacity in two centuries, challenging the very notion of scarcity and economic limits. (see Fig 1) This means that λ and μ are positive, and effect of other terms cancel out (or are small, but that is not likely).

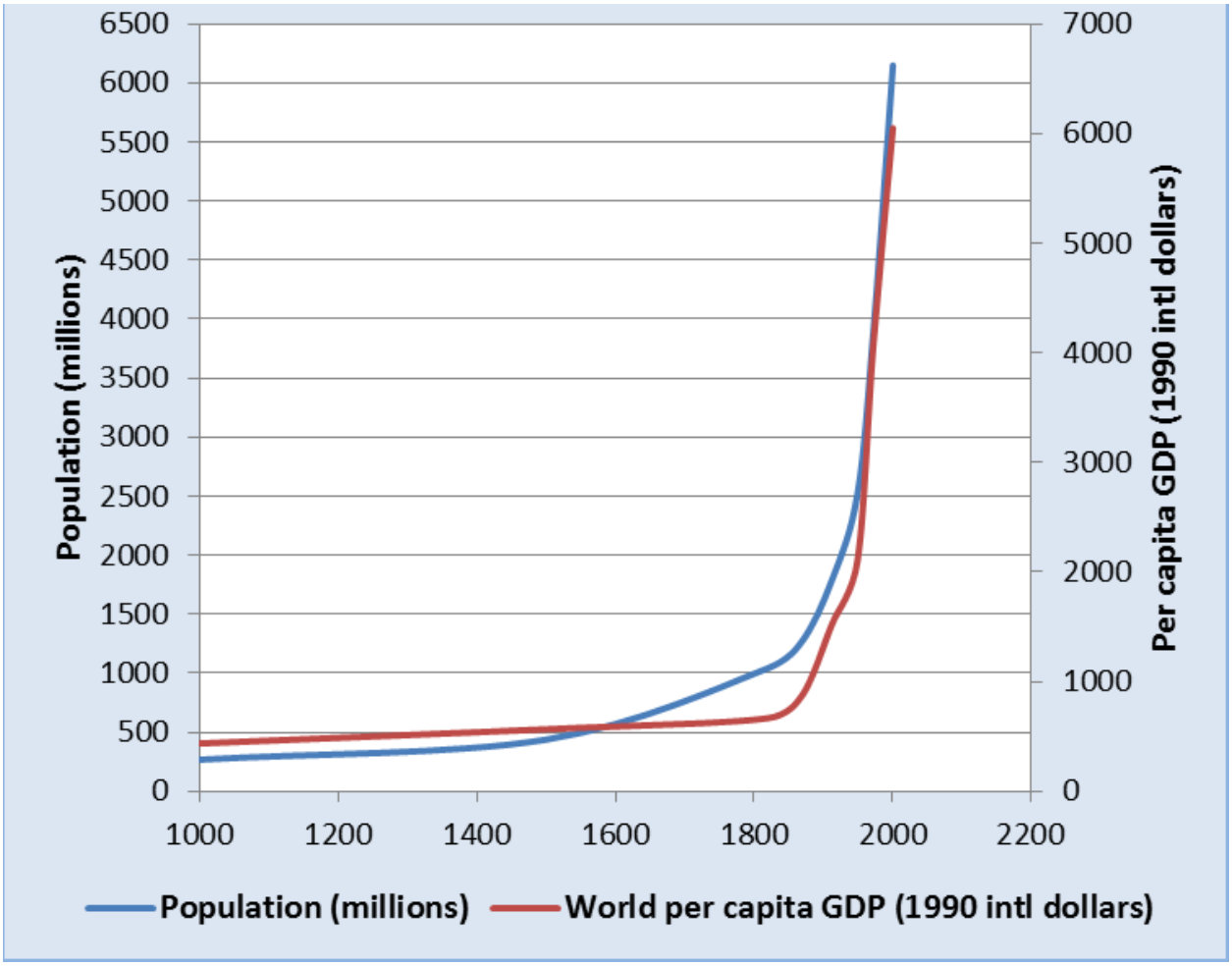


Fig.1.

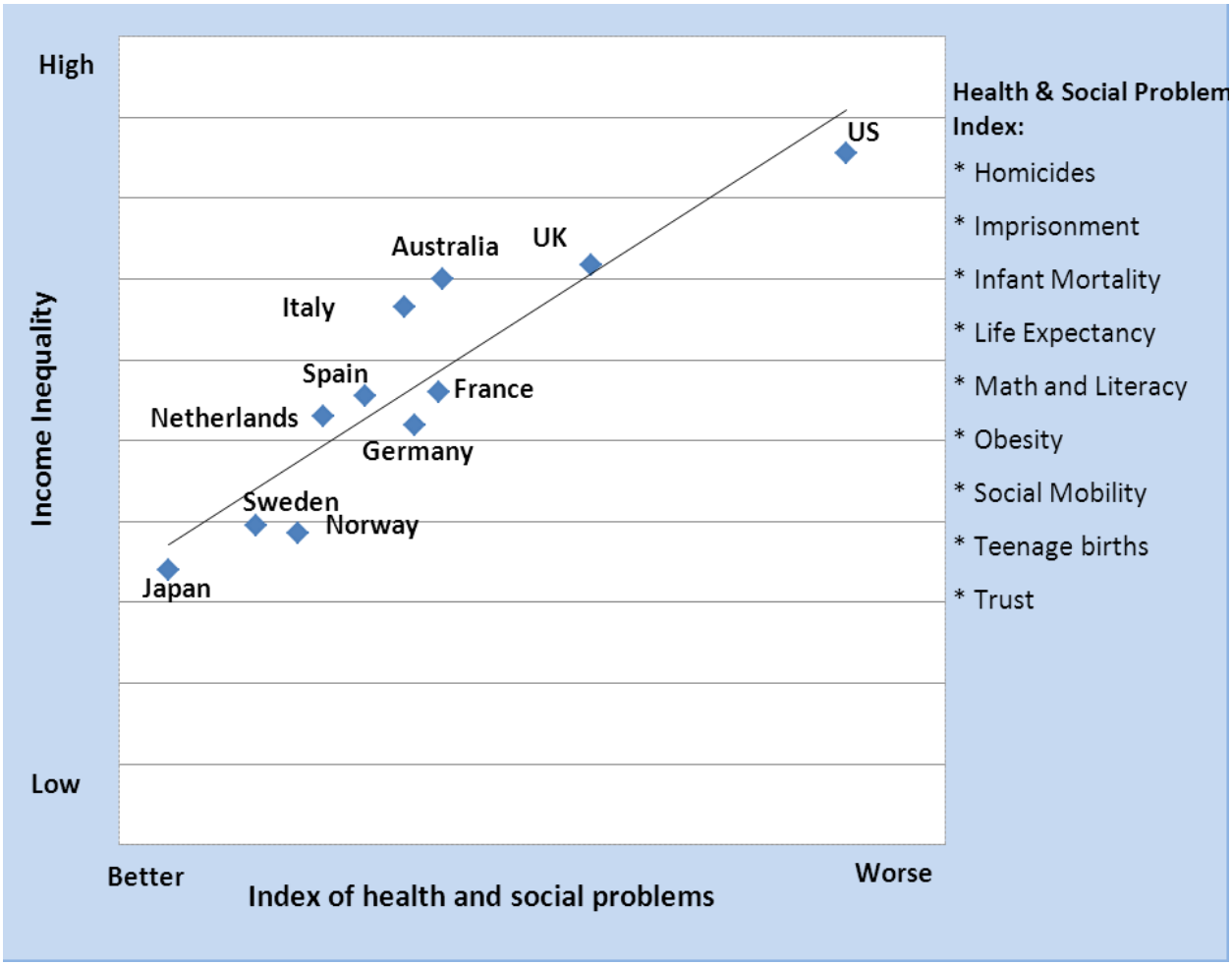
2.3. Human Security

The 1994 Human Development Report introduced and defined the concept of *human security* as "freedom from fear and freedom from want" and "safety from chronic threats such as hunger, disease and repression as well as protection from sudden and harmful disruptions in the patterns of daily life—whether in homes, in jobs or in communities."(6) This concept of human security was a radical shift in thinking on peace and conflict prevention. In the final analysis, human security is a child who did not die, a disease that did not spread, a job that was not cut, an ethnic tension that did not explode in violence, a dissident who was not silenced. Human security is not a concern with weapons—it is a concern with human life and dignity. Human security demands attention to all risks to human development, not just situations of conflict and post-conflict and fragile states.

2.4. Inequalities

Large inequalities destroy human capital (e.g. see Fig 2) (7). When taking into account inequality Human development index decreases: 27% for Arab States, 33% for Sub-Saharan Africa and 30% for South Asia. Interestingly, loss is largest is education (57%, 32% and 50% for Arab states, Sub-Saharan Africa and South Asia, respectively) and health (24%, 45%, 34%, respectively). In developed countries total loss due to inequality is 10%, mainly (67%) in standard of living.

There is an efficient inequality range which is most conducive to economic growth (8). However, the level of inequality that is optimal for economic growth may not be optimal for social stability and development of human capital. There is abundant evidence to support the view that lower levels of income inequality are essential for achieving optimal and sustainable development of human capital.



2.5. Measuring Human Capital

While financial capital, land, even labor and natural capital are measured or are attempted to be expressed through money, human and social capitals seem to be above and beyond expressing in money. One of the major tasks ahead is to measure human and social capitals, qualitatively and possibly quantitatively.

3. Conclusion

Human beings dominate our planet. This prompted P. Crutzen to suggest the name Anthropocene for our epoch (9). It was argued (10) that Anthropocene Epoch started 10,000 years ago with the Agricultural Revolution. If humans dominate, is the human capital increasing? Fig. 1 showed that human capital, or at least one aspect of human capital assessed through material wealth (GDP/c), seems to be increasing during the last 200 years. More significantly, progress in science and technology is remarkable generating a truly global, rapidly changing world with unexpected positive effects. There are important improvements in our political system: more democracies, more rule of law and many international laws regulating our commons. Is this the best of time, or the worst of time, since the 20th century witnessed two World Wars, Cold War and numerous "smaller wars" resulting in 100 million deaths. In addition, their own governments killed 200 million children, women and men (11). Even worse – we are now at the brink of destroying our Earth: ecological footprint is almost 50% larger than our Earth can tolerate, if no change in 2030 we will need two planet Earth to sustain us, and the study involving 2600 species showed 30% loss in biodiversity (12), catastrophic climate change is likely (13), we base our security on weapons and most of these weapons are more threat and danger than security, we are unable to solve the financial crisis - Apocalypse Fairly Soon wrote P. Krugman in NYT (14) commenting just on the euro crisis.

It seems that we are now reinforcing conditions to destroy and waste human capital. Absolutely sovereign states (in spite of diffusion of political power through international structures, TNC, NGO and more and more networks realizing what Harlan Cleveland called "nobody in control", our political structure is based on sovereign states – about 200 of them in gross disproportion of one global world and several thousand cultures we have to preserve) and our security system are obsolete concepts and are becoming dangerous. Our economic and political systems are not adequate. Change is so rapid that they, nor even present education, or public opinion can keep pace with it. Major improvements are needed. We need much more democracy, not less, and any extremist and authoritarian regime is only making everything worse. Individuals should not be manipulated – otherwise human capital is wasted. Large inequalities are detrimental for everybody, not just for poor but also for rich. Consumerism - unnecessary needs forced upon us – are stimulated by a grossly distorted picture (GDP) and lead to large ecological footprint. But disciplines and austerity are inappropriate, barely cosmetic remedies as circles upon circles could

not make the system of Ptolemy an appropriate representation of celestial motion – Copernican revolution was required. We do need ideas, ideas, ideas, and free, active persons are creator of ideas demonstrating again the self-augmenting character of the human capital.

The Club of Rome emphasizes mutual interdependence and addressing world problematique in such a fashion accepted the now world famous Report to the Club "Limits to growth". It underlined, actually it attempted to provide hard evidence through scenaria, that clinging to obsolete behavior the world runs into serious problems. One could claim that similar to Silent Spring, and WWF and IUCN endeavors the Club underlined the importance of natural capital. It is very appropriate that the World Academy of Art and Science is starting its e-journal Eruditio with the theme of individuality and human capital – this unique capital capable of evolution and self-augmenting, as Harlan Cleveland wrote "The only limits…are the limits to imagination and creativity" and Aurelio Peccei argues that human capital is the most underutilized of all forms of capital**. The potentials of human capital can never be fully utilized. It is the key to the effective utilization of all other forms of capital.**

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