

## New Economics: Nature's Laws

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### Abstract

Global Economics or planet economics and Inter planetary economics are interdependent in terms of investment and resource transfer respectively for human mankind. New Economics deal the economic driver of industrialization of moon and colonization of mars. This is a new mission of man extraterrestrial life imperatives. This is possible space exploration of moon and universe. Scientists seeks is an "economical" description of nature. This would be difficult to prove to modern scientific world that nature laws are working out of a simple teleological purpose. The present paper analyzes historical evidences and rationales that bridges economics and natural laws in particular and with natural sciences, biology, biophysical economics and other social sciences in general. The study found that the role of maximum, minimum and optimum economic principles involved in natural sciences. The study concludes that essentially scientist who evolve empirical laws basically involve economizer's phenomenon. The study advocates scientists new understanding of new economics of nature's laws is imperative for extraterrestrial life and prosperity and global development. Economics and Science are two important drivers for mankind welfare. An integrated economics-natural science model is important in future. Scientific discoveries or progress solve interplanetary economic problems.

**Keywords:** Economic growth; Planetary economics; Global economics

### Introduction

Global Economics or planet economics and Inter planetary economics are interdependent in terms of investment and resource transfer respectively for human mankind. Scientific discoveries or progress solve global economic and interplanetary economic problems. Economics and Science are two important drivers for mankind welfare. Mankind is created. Evolution of planets created. Man has achieved cosmic new heights because of scientific revolution. Man's new mission is extraterrestrial life, industrialization of moon and colonization of mars. This is possible because of breakthroughs happened in space and rocket science. The economic driver of man would pursue extraterrestrial life and new economics play important role in interplanetary life. Dastagiri [1] reported that natural resources are boon for the mankind. However, they have been progressively destroying in recent years endangering the wellbeing of future generations. It is possible to build a world more secure and more sustainable; however, it requires a global partnership.

The conceptual model of Biophysical economics starts with connecting and sustaining economy to flow of energy, materials, and services of ecosystem. The physiocrats believe that if humans are accurately derived nature law economic behavior implications their social welfare and trade would be maximized.

The global economy faces a number of serious challenges in the 21<sup>st</sup> Century. Some global problems are short term, such as the recent recession caused by the *credit crunch* and related banking crisis. Other global problems are longer term. These problems include global inequality and unequal economic development, global poverty, the exhaustion of non-renewable resources, depletion of the environment and global warming, and systemic problems associated with inadequate regulation of financial markets.

According to Frisch [2], deep in the human nature there is an almost irresistible tendency to concentrate physical and mental energy on attempts at solving problems that seem to be unsolvable. Evariste Galois (1811-1832) was the one of the greatest mathematical geniuses that ever lived. His theory of transformation groups laid for instance completely bare the nature of roots of algebraic equations. This is

striking example of supreme intelligence. Travelling at a speed superior to that of light. It is customary to think that this is impossible. But is it really? It all depends on what we mean by 'being in a certain place'. In fact, a thought of mind will travel faster than wind and light. In 1968, the astronaut William Anders who circled the moon in Apollo 8, expressed in interview in OSLO, nothing is impossible.....it is no more practical posting Einstein on the wall and say nothing will go faster than light and sound and not possible to fly higher than 50,000 feet. We achieved both. We have actually surpassed the speed of light experimentally.

During 1835-1882, Stanley Jevons (mathematician) and Stanley Jevons (Economist) imagined the day of quantify at least some of the economic regularities, principles and laws. In reality today we quantified because of breakthrough in Econometrics.

### A Philosophy of Puzzle

Oxford Dictionary defined "Philosophy" as "love of wisdom or knowledge, especially that which deals with ultimate reality" [3]. Scientifically, how can we prove exclusively this is really happened because of one reason? This is really important when we talk about ultimate reality. The important philosophy is we created laws of nature? Instead of discovering them. This point of view will be huge impact on human view point. This will help to rethink more advanced way rather than preconceived. This will help greater vision in science, economics and econometrics in future.

It is evident that the chances of survival of the man will be more when he finds regularities in outer world. To quote the Darwin general

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theory "Survival of the fittest", which clearly says the man who is not fittest will be eliminated. And Lemark principle says that "use and disuse theory" are the best examples of survival of the man in regularities of outer world. This is what man is adopting since age old biologically and empirically [4].

The present paper analyzes historical evidences and rationales that bridges economics and natural laws in particular and with natural sciences, biology, biophysical economics and other social sciences in general. The specific objectives of the paper are

## Objectives

1. To analyze historical evidences and rationales that bridges economics and natural laws in particular and with natural sciences, biology, biophysical economics and other social sciences in general.
2. To study the role of maximum, minimum and optimum economic principles involved in natural sciences. And to suggest strategies for new understanding of new economics of nature's laws which is imperative for extraterrestrial life and prosperity.

## Data and Methodology

The study is based on frame work of the history of intellectual thought that bridges economics and the social sciences on the one hand, with natural science and biology in particular on the other. The study analyzes historical evidences and rationales that bridges economics and natural laws in particular and with natural sciences, biology, biophysical economics and other social sciences in general. It also analyzes logically, mathematically and rationally the role of economic principles such as maximum, minimum and optimum principles involved in nature's laws and finally the study suggest for scientists new understanding of new economics of nature's laws is imperative for extraterrestrial life and prosperity. It is possible to build a globe more secure and more sustainable; however, it requires a global partnership.

## Results and Discussion

### Economics development in the last century

In the past 19<sup>th</sup> Century, John Stuart Mill (1806-1873) in his seminal work "Principles of Economics" quote that as of this time general principles concerned the theory of price and value fully explained and nothing to add by any author. At present as knowledge and science continuously progress it is difficult to understand such a stamen could be made. But Mills words seem to be close to the truth the generation of that time. Mills perceived in his "principles" the concepts of great economists Adam Smith (1723-1790), David Ricardo (1772-2823) and Thomas Robert Malthus (1766-1834) logical and complete. But classists and neo-classists not put efforts to verify theoretical results by statistical annotations [5].

In the era of 20<sup>th</sup> Century the philosophy changed. Due to criticism the theoreticians done systematic work and framed theory and linked to natural sciences. The theory derives its concepts from observation techniques. In 1968 Prof. Louis W. Alvarez [6], Physics Noble Laurites said: "Physics is the simplest of all the sciences... when we add small heat to the system the whole will be warmer and this is easy to predict but in infinitely complicated system such as the population of a developing country like India, no one can decide how best to change the existing conditions. This is problem of econometric planner and

excuse not reached precision as well as physicists and hope we achieve in future.

### Principles of maximum, minimum and optimum in analytical economics and nature science

Samuelson [5] described the economics maximization principle by mentioning its involvement in day to day life and quote maximum principle is inbuilt at the foundations of maximization subject. Joseph Schumpeter formulated famous claim that men operate struggle for survival is the Darwinian outcome. Just like thumb evolved to make living and brain evolved to meet economic problem. Konrad Lorenz and Nikolaas Tinbergen found similar findings in ethology [5].

Schumpeter was articulated in launching of new econometrics subject. He claimed that physicist and natural scientists studied quantity later and sophisticated stage. The credit goes to the followers of Galileo and Newton for using mathematical approach. Schumpeter said in Economics, the subject matter itself in quantitative form, for e.g. Take away magnitude of price and barter exchange ratio then nothing is left.

### Maximum principle in natural sciences

The falling of apple in vertical line and wondering of planet in elliptical orbit explained is based on principle of optimization rather fallacy of the freedom of apple and planet deliberately minimizing. It implies or nature takes the shortest course of action. Galileo's ball rolls down the inclined plain are example of minimization of integral action or minimize Hamilton's integral. This helped physicist to predict nature uniformities [6]. Scientists find Samuelson's sophisticated methodology on "Revealed preference" provided a proof of human behavior studies to positively describe the maximizing problem.

Mach reported that what scientists seek is 'economical' description of nature [7]. It is difficult to prove this to modern scientific world that laws of nature are operating teleological purpose. Mach is not saying Mother Nature is an economist what he said that scientists who formulated empirical phenomena are inbuilt economizer. So physicists get better economical description of nature who formulates the laws of nature based on maximization principle. To illustrate this, Newton's falling apple cane be written as; its acceleration toward the earth is a constant. Or its position as a function of time follows that arc which minimizes the integral.

To illustrate the usefulness of minimum principle in physics: light travels between two points in the air before me along a straight line. Just like apple's fall, the arc can be said the solution to minimization problem. But when light is reflected in mirror we may observe angle of reflection [5]. Observe big toe in the water, no longer it will be straight because of velocity of light differ in water and air travels or least time principle Fényes [8].

Samuelson [5] explained the illustrative economics with an example of profit-maximizing firm that sells its output along a demand curve. He describes how the demand curve has tremendous economy description possible. He compared this economic principle with mathematics, thermodynamics and Hotelling integrality.

### The dynamics and maximizing

Naturally there is a rich dynamics which can be related to maximizing. Thus consider the dynamic algorithm for finding the top of a mountain which consists of the 'gradient method' [7]. Frank Ramsey's pioneering work (260 of more than forty years ago), they

provide a rich dynamics. Such a dynamics is quite different from that of say a positivistic accelerator- multiplier analysis.

The concept of economics of the opportunity-costs frontier is not very different from the conventional mathematics of physics and maximization principles. It is clearly witnessed through one of the great lectures of Von Neuman around 1945 at Harvard on his way of describing the general equilibrium model.

### Empirical studies

A study by Stokes [9] on 'Man and the Biosphere to political economy' reveals that the dialectical development of economic thought from the physiocrats through Marx to the present. It is a broad treatment of the history of intellectual thought that bridges economics and the social sciences on the one hand, with natural science and biology in particular on the other. The study is concerned with systems theory and treats the economy from the perspective of the biophysical thermodynamic dimensions of the economic process. The analysis is closed with a discussion of organizational theory that relates to the formation of institutions and the issue of freedom in a society dominated by technology. The study comes full circle in examining the moral and ethical concerns that first influenced the physiocrats and other founding fathers of economic science.

Humanity and environment closely related and it requires rational choices. These were not made by design but it will be made by default. The economists view environment as composite asset which providing number of amenities. It depends on human actions and constrained by physical laws, such as the first and second laws of thermodynamics. The positive and normative economics help to use environment and natural resources efficiently. The positive economics deals actions of humans and impact on natural resources and normative economics guide on optimal services can be attained. Normative economics suggests two precise criteria for judging the optimal level and composition of services: efficiency and sustainability. The former suggests maximizing the present value of net benefits to society. When the use of natural resource in one period introduces scarcity or increases the degree of scarcity of that resource in subsequent periods, the efficient allocation must take the marginal user cost into account. Failure to do so would cause a smaller than efficient amount of the resource to be conserved Stadler [10].

An integrated economics-natural science model (ECEMOD) used to describe non-point source pollution problem is presented. Results of analyses conducted over 20 years (for a sequence of climate) on small watersheds (silty, sandy and clayey soils) in Norway, were compared with a base scenario where no environmental regulations were introduced. Data including changes and variability in N leaching, and private and social costs are discussed. It is concluded that care is necessary when making policy recommendations based on ECEMOD simulations Romstad et al. [11].

Focusing on agriculture, it is argued that part of the sustainability problems of farming, such as ground water pollution by nitrates, can be framed adequately in a natural science perspective. For sustainability problems related to nature conservation, a natural sciences perspective will not suffice. Three roles for the social sciences are distinguished with regard to sustainability agriculture: develop, support and evaluate policies that gear the practices of production and consumption to sustainability requirements; assess the moral and aesthetic values underlying nature conservation, in order to underpin cultural sustainability requirements; and develop and test future-oriented

models that meet the claims to agriculture in an integrated way Koppen [12].

An overview is presented of ecological economics, a discipline lying at the interface of economics, natural science, and philosophy, focusing on the concepts and methods required integrating sciences and humanities in order to build ecological economics. The central dilemma of control over nature by humans ignorant of the environmental impacts of their actions is addressed. An argument is put for an evolutionary approach to human - nature interactions and for the use of natural science concepts, such as entropy Faber et al. [13].

In studies in Michigan, the sphecidpassaloecuscuspidatus was observed gathering fresh pine resin (*pinusstrobus*) which they used for creating partitions and closures in their nests. Based upon measurements taken of the cells, and an estimate of the load carried by the wasps, the number of collecting trips made by the wasps was correlated with the quantity of resin contained within the nest partitions and closures Fricke [14].

The constraints and opportunities to understanding the complex relationships between environment and society are highlighted. The political and social aspects of constructing a natural science view of the environment-society relationships are then presented called 'political ecology'. Having established a methodology that links different levels and scales, this is illustrated by taking the case of land degradation. Examples are drawn globally, but mostly from African countries Blaike and Morse [15].

According to Milton, anthropology has a distinctive contribution to make to current debates on 'green' issues. Drawing on studies in sociology and law, as well as anthropology, the contributors challenge the view that environmental issues are the province of natural science alone and explore the interdisciplinary nature of the environmental ideology and imagery, and environmental law and policy, through local environmental activism, to ethnographic analyses of human/environment relations in indigenous societies. Milton [16].

Tietenberg [17] study reviews current economic research on climate change, including challenges in performing assessments on a problem of this inters temporal complexity. Initial studies indicate both gainers and losers from climate change and significant costs for some abatement strategies. Research problems are also noted, including a lack of usable natural science information for some important long-term consequences. In general Environmental and natural resource economics focus on economic development within limited environmental and natural resources Tietenberg [17].

Ekveland [18] reported the history of biophysical process from 18<sup>th</sup> Century physiocrats to recent empirical studies. He said that Biophysical economics includes various analysts from different specializations who apply ecological and thermodynamic principles to study the economic phenomenon.

Christensen [19] recognized the interdependence of economic activities of living bodies' physiological analogy to nascent materials production. He reported that the progress of ecological economics demands a radical rethinking of economic theory. The study suggests that synthesis of classical production model with insights of ecological and system approach is vital for future direction of integration of physical, information and organizations approach to economic activity [19].

Kaufmann [20] analyzed the areas in which Marxist economists and biophysical economists benefit each other analysis. Marxists economist

benefits in production and biophysical economists benefit valuation and distribution. For Marxists can understand how biophysical economists classify production and for biophysical economists understand social forces effects physical production.

Dastagiri [21] suggested strategies for food for planet is that research into sustainable farming systems, essential for the preservation and enhancement of the earth's life support system, which is a primary conservation goal. Future policies demand that any 'green revolution' increase production in many folds in an economically profitable, socially equitable and environmentally friendly.

Tobisson and Rudqvist [22] reported that the existence of natural science and economic bias confuses the relationships between local social group and natural resources utilized and managed. This bias constitutes an "environmental Experts".

Goswami [23] reported that the physical universe of matter exhibits evolution. The galaxies segmented as the universe expands. The galaxies themselves evolve. Stars evolve too and at old stage, stars end up as white wares or neutron stars or block holes.

Daily and Ellison [24] reported that historically, the service of nature has been thought mostly free. We have not taken even ecosystem capital stocks. We do not have formal system of appraising and monitoring the value of nature's assets and means of insuring them against their damage.

Barker [25] described that New Economic thinking is an interdisciplinary strategy or methodology to economic problems that very well take insights and analysis from other disciplines, particularly from natural scientists, ethics, history, engineering and evolutionary theory and complexity.

Callaway [26] make use of population-genetic data to predict economic success. Economics researchers who claim that a country's genetic diversity can predict the poverty and success of its economy.

Foundation Earth [27] reported on "the big rethink to a better world" that if every country adopts changes as suggested we and planet would be well the way to socially and ecologically sensible way of living. This is a meaningful shift to a better world.

Esteban [28] reported that nature supports our social and economic systems. It allows life on Earth possible and worth living. It plays vital role in economic and environmental development. In spite of that we fail to realize its potential.

## Conclusions

Planet economics and Inter planetary economics are interdependent in terms of investment and resource transfer respectively. New Economics deal the economic driver of industrialization of moon and colonization of mars. This is a new mission of man extra-terrestrial life imperatives. The study found that essentially scientist who evolve empirical laws basically involve economizer's phenomenon. If man finds regularities in outer world his survival will be very high. Physicist and other natural scientists studied quantity at a very late whereas in Economics, the subject matter is designed in quantitative form. The role of maximum, minimum and optimum economic principles involved in natural sciences. The physicists should frame the observed laws by a maximum principle in order to get more economical description of nature.

To understand intricacies between humanity and environment, ecology requires rational choices necessary if not made by design.

Biophysical economics includes wide range of researchers who apply ecological and thermodynamics laws to the economic process. Economics-natural science model is important to study human-nature science in future.

The study found that the role of maximum, minimum and optimum economic principles involved in natural sciences, physics and human behavior. The study concludes that essentially scientist who frame empirical laws basically involve economizer's. The study advocates scientists to understand new economics of nature's laws for extra-terrestrial life and prosperity. Scientific discoveries or progress solve interplanetary economic problems.

## References

- Dastagiri MB, Kantharaju ML, Nadagoud VB (1997) G-7 Countries Natural Resources Utilization in the Global Scenario: Policies and Prospects. *Indian Journal of Economics* 3: 199-214.
- [http://nobelprize.virtual.museum/nobel\\_prizes/economics/laureates/1969/frisch-lecture.pdf](http://nobelprize.virtual.museum/nobel_prizes/economics/laureates/1969/frisch-lecture.pdf).
- [www.math.lsa.umich.edu/news/CID\\_math\\_Bass.pdf](http://www.math.lsa.umich.edu/news/CID_math_Bass.pdf).
- Rugina AN (2003) 3. Nobel Laureate: Paul A. Samuelson (1915- ). *International Journal of Social Economics* 30: 424 – 452.
- Samuelson PA (1970) For the Scientific work through which he has developed Static and Dynamic Economic theory and actively contributed to raising the level of analysis in Economic Science, Noble Lectures, Economic Sciences, World Scientific, Singapore, New Jersey, London, Hong Kong 53-62.
- <http://www.lbl.gov/LBL-PID/Nobelists/LibI Alvarez.html>.
- Assar Lindbeck, Economic Sciences (2013) The SverigesRiksbank (Bank of Sweden) prize in economic sciences in memory of Alfred Nobel 1969-2007. World scientific publishing co.
- Fényes TI (1992) Sustainable agricultural development: The role of international cooperation, XXI International Conference of Agricultural Economists, 22-29 August 1991, Tokyo, Japan. *Development Southern Africa* 9: 105-115.
- Stokes KM (1992) Man and the Biosphere: Toward a Coevolutionary Political Economy, Graduate School of International Relations, International University of Japan, Tokyo, Japan. 12: 323.
- Stadler P (1990) Ultrasonography of the equine thorax, *pferdeheilkunde* 6: 213-228.
- Romstad E, Vatn A, Bakken LR, Botterweg P, Romstad E, et al. (1997) Economics Ecology Modeling - the case of Nitrogen, Controlling mineral emissions in European agriculture. *Economics, Policies and the Environment* 23: 225-248.
- Koppen Van CSA (1997) Social Dimensions of Sustainable land use. *Tijdschrift voor Sociaalwetenschappelijk Onderzoek van de Landbouw* 12: 122-136.
- Faber M, Manstetten R, Proops J (1996) Ecological Economics: Concepts and Methods. *Ecological economics: concepts and methods* xiv: 342.
- Fricke JM (1995) Economics of Cell Partitions and Closures Produced by *Passaloecus cuspidatus* (Hymenoptera: Sphecidae). *Great Lakes Entomologist* 28: 221-223.
- Blaikie P, Morse S (1995) Records Understanding environmental issues. *People and environment* 1995: 1-30.
- Milton K (1993) Environmentalism: The view from Anthropology. *ASA Monographs* X: 240.
- Tietenberg T (1992) Economics of the Environment: An Overview. *Environmental and Natural Resource Economics* 18-43.
- Ekveland CJ (1987) Biophysical Economics: Historical Perspective and Current Research Trends. *Ecological Modeling* 38: 47-73.
- Christensen PP (1987) Classical roots for A Modern Materials: Energy analysis. *Ecological modeling* 38: 75-89.
- Kaufmann RT (1987) Biophysical and Marxist Economics: Learning from each other. *Ecological Modeling* 38: 91-105.

21. Dastagiri MB (1998) World Food Production Research. Out Look on Agriculture 77-80.
22. Tobisson E, Rudqvist A (1992) Popular Participation in Natural Resource Management. Stockholm: Development Studies Unit, Department of Social Anthropology, Stockholm University. 11: 41- 45.
23. Goswami A (2000) The Physicists View of Nature- from Newton to Einstein (Part1). Kluwer Academic, New York.
24. Daily GC, Ellison K (2002) The new economy of nature. Orion magazine.
25. Barker T (2005) Towards new thinking in Economics. The Cambridge Trust for New Thinking in Economics.
26. Callaway E (2012) Economics and genetics meet in uneasy union. Nature 490: 154–155.
27. Foundation Earth (2012) The economic rethink who does it well.
28. Esteban A (2012) Nature's role in delivering well-being and key policy goals – opportunities for the third sector. Natural solutions.