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“CLEANER PRODUCTION INITIATIVES AND CHALLENGES FOR A SUSTAINABLE WORLD”

Oeco-Nomics in the Light of the Maximum Ordinality Principle The N-Good and Three Factor Problem

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Abstract

Fundamental Principles in Economics and, in particular, in Neo-Classical Economics (NCE), such as Walras General Equilibrium, Pareto Optimality, etc., are the result of a direct transposition to economic activities of the Principles of Classical Mechanics (CM) and, even more, of Classical Thermodynamics (CT).

Consequently NCE Principles suffer from the same defects as CT Principles, when the latter are analyzed in the light of the Maximum Ordinality Principle (MOP). In fact Utility-Expenditure Conservation Principle (corresponding to Energy Conservation) does not hold when reconsidered in terms of Incipient Differential Calculus (IDC), a mathematical language which is much more appropriate to describe Generative Systems.

This also means that neither does Walras General Equilibrium represent a “stable” equilibrium condition nor does Pareto Optimality represent a “maximum” condition, precisely because the latter presupposes the former.

In reality traditional Economics, in all its different Schools of Thought, does not recognize that Emerging Property, usually termed as Quality (with a capital Q), which vice versa is clearly pointed out by the Maximum Em-Power Principle or, in more adherent formal terms, by its generalized version represented by the Maximum Ordinality Principle. Quality in fact represents that fundamental aspect which is ever-present in any physical-biological-social Process, never ever reducible to mere phenomenological processes or to our traditional mental categories.

As a consequence of the same subjacent presuppositions, NCE is not even able to solve the “Three good, two factor Problem” which, on the other hand, is very similar to the more famous “Three body Problem” in Classical Mechanics.

So, by starting from the solution to the latter problem, this paper will focus on a different concept of “Economics” (thus here renamed as “Oeco-Nomics”) which, being based on the Maximum Ordinality Principle, is consequently able to lead us to a general solution to the “N good, three factor Problem”. A solution which evidently includes the solution to the “Three good, three factor Problem” and, as a particular case, the solution to the “Three good, two factor Problem” too.

These results then suggest that traditional economic maximization criteria (usually corresponding to Pareto Optimality) should preferably be replaced by the Maximum Ordinality Principle. The latter in fact enables the Decision Maker to recognize those optimal working conditions which realize the Maximum Ordinality level of the System and, at the same time, to

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evaluate the corresponding optimum economic conditions (Investments, Benefits, Incentives, etc.) as a consequential adherent reflex.

As a term of comparison, two well-known approaches will also be reconsidered: i) Kummel's KLE and KLEC Models; ii) and Odum's Emergy Synthesis.

The proposed approach allows us to conclude that: *Production becomes cleaner when Processes become Generative* and, at the same time, they are also characterized by a progressive Ascendant Ordinality. In other words, when Decision Making progressively tends to realize, in actual fact, the Maximum Ordinality conditions.

Keywords: *Economic Complex Systems, Walras General Equilibrium, Energetics and Classical Thermodynamics, Maximum Ordinality Principle, Incipient Differential Calculus (IDC).*
