

REENTRY VERSUS CO2 SUSTAINABILITY MEASURE

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1 INTRODUCTION

Climatic change is one major challenge in a society that has to be counteracted for a sustainable world. According to Luhmann [1, p. 404], we today use morality, as a, as we would say, "soft measure", to argue for ecological problems, as they are difficult to tackle economically and politically. Hence we need "hard measures" to cybernetically control sustainability. Nobel prize winner Giorgio Parisi et al. [2] has shown with a basic climate model the possibility and importance of temperature jumps that can trigger ice or warm time as a stochastic resonance phenomenon. This model is based on the global energy balance that is today shifted towards higher temperatures because of an increasing CO₂ amount in the atmosphere. For this reason, CO₂ is one important stressed factor that is now quite common in political and socio-economic considerations to decarbonise society or humankind. This "demonisation" of CO₂ is focusing on the reduction of CO₂, which might be even counterproductive, e.g. when it is argued to use "atomic" energy as "green" energy, as it is neutral concerning CO₂ production. Another part is the often discussed CO₂ emission trade in industrial countries to counteract CO₂ emission as a control tool. Although CO₂ has many advantages in measuring and even controlling the global temperature rise, this measure has significant limits to be used as a global control instrument for climatic change.

In the worst-case scenarios, the energy efficiency can lead even to "backfire" - increased energy and resource consumption due to optimised resources efficiency [4-6]. Nico Paech introduced a new subdiscipline of the economy as an alternative to modern efficiency strategies. It is called "Postwachstumsökonomie" (Post-Growth-Economy) and is based on the critical consideration of sustainable developments and economic growth [7]. In [8], Paech introduced the main principles of the Post-Growth-Economy, which are based on the abolishment of economic growth dependency reasons, such as immoderate expectations of profits, external power supply through global division of work, modern monetary system. As an alternative, he proposed a focus on regional markets, shortened value-added-chains and balance between self-and extern supply [8]. This can be related to our flow/storage terminology. These theses can hence decouple the consumer, e.g. from price or social standards dependencies. From a systematic theoretical point of view, it can also be regarded as a market decentralisation.

2 SUSTAINABILITY MEASURE

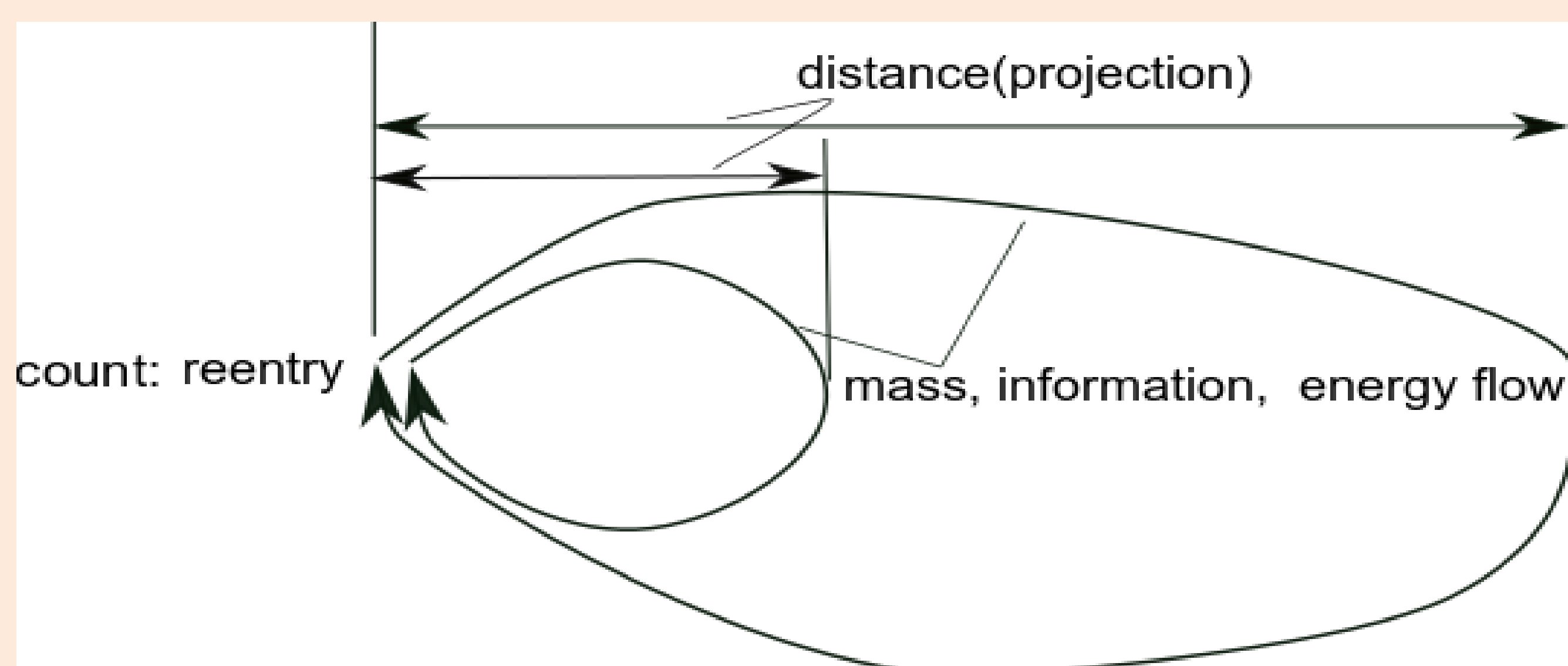


Figure 1: Reentry Measure

Sustainability is a main term, especially concerning ecology, which is one main problem today, as the system environment distinction is increasingly interwoven, which means that the human impact on nature makes global interconnectedness more evident. The CO₂ measure refers only to one circular path, that of CO₂, which means that it is a sustainability measure that is related to the earth's climate temperature increase (cf., e.g. [2]). According to Fig. 1, we suggest using different terminology that is a) based on different sustainability measures, with respect to basic *media* like energy, information and mass, altogether with respect to flow and to distance, that can be measured in the distance (projections), with respect to room, time, room-time or number, which we then denote as reentry level or with respect to orgiton and holon theory as hierarchy and self-reoccurrence level. The same as a) can then refer to a *depth* of surface interpenetration level. This depth can also be interpreted as a scan level of the flow process or a second-order reentry phenomenon, which means that it is a more abstract reentry measure.

3.1 METHODOLOGICAL ATTACHMENT POINTS – APPLICATION TO THE POST GROWTH ECONOMY

In the following, we sketch some connections and synergies from our quantitative approach to that of the Post Growth Economy more qualitatively. Modern economic sustainability trends are currently primary oriented on the *increase of efficiency*. It means that e.g. industrial consumption of resources seek to produce more outputs, e.g. through technical innovations. However, this can lead to prices' reduction of consumed goods and energy, which can lead to the so-called "rebound" effect – "unrealised potential energy savings" [3, 4].

3.2 LIMITATIONS

The main problem of this sustainability approach is that it models a, with regard to a time-space point relative measure and hence has its advantage in its only historically invariant measure, like that of current "peers". Further limitations are that it may not be clear which material shall be regarded for the process, which energy and information flow, as well as that of the proper consistency of those variables. The main advantage of this measure is that there can be given a clear distinction between fossil and renewable energy sources in principle, and hence there is a much better argumentation possible concerning sustainability, as it orients on the flow process, the distances and the respective storage process. With this distinction, the fossil resources are penalised regarding energy extractions, as they are, in this respect, highly irreversible.

4 CONCLUSION AND OUTLOOK

The outlook and future work will be to further generalise the systemic terminology with regard to ecology, more practical applications and simulations to which the world of researchers in this field is invited to contribute according to their individual background for the good and preservation of mankind.

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