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The **pattern recognition** of economic cyclicality and spirality by mathematical and linguistic *methods* is lacking an exact grammar; geometric T-theory (introduced later on) can probably contribute to the exact precision of visual models for economic reasoning.

Quantum economic spirality is, therefore, dedicated to detecting the **grammatic patterns of human economic activity** (past, present, future); various major biases have to be considered, among these are monetary behavior, systems innovation and management

ingenuity. Quantum economic spirality could be visualized as a *helix model in a tetrahedron*; for example, as a sand clock model (above), but it is scientifically important to methodically research into the temporal ‘elasticity’ of the helix behavior. What types of economic behavior do cause all these unpleasant fluctuations or undesired effects in production and distribution cycles which affect the lives of billions of people existentially? In order to answer this question, we have to focus on the **grammar of economics** and to rectify common errors in methodical thought; 1-2D thought is an important accounting tool of statistical data science, but it can not help us to deeper understand the real 3-4D workings of economic reality or body economic.

In 1-2D models, the economic earth/sphere is flat and bankers can employ financial alchemy; in 3-4D models, the economic sphere works in spiral cyclicity and even money is bound to biophysical limits: **money is a symbolic representation of energy in economic motion**, formulates independent research scientist O#o van Nieuwenhuijze (MS,MD). It is very safe to assume that money

plays a decisive role in all the economic waves, cycles and spirals of recorded human history, since its early technical inception as a civilizational institution for *economic organization* in the Sumerian city-states, i.e. the economic profession evolved actually as a monetary accounting method for private property, credit and interest (e.g. 'rich' of tools for private asset management), but 'poor', in scientific terms, for explaining the real motion of economic activity. In other words, it works very good for the statistics of private gain, profit or wealth maximization (counting numerically static equilibrium) by neglecting the real implications for the public dynamic consequences in the economic sphere, i.e. it has no model for dynamic efficiency. Those who really want to gain a deeper understanding of human economic activity, in the scientific terms of energy, vibration and frequency, have to apply the methodical range of 1st- 4th order cybernetics (1:energy, 2:entropy, 3:syntropy, 4:synergy) and to model on a 3-4D scale.

Electrical engineer Kelvin Abraham has developed a **tetryonic theory** (*T-theory*) that claims to explain the grammar of the mathematical language and the natural phenomena perceived, observed and measured; all patterns that science can detect in reality (patterns=construction principles/'laws') have to be formulated, calculated or equated in natural or mathematical language (usually as a sophisticated mix from both of them and hardly to understand for 'outsiders'); as T-theory seems to represent the underlying grammar of the scientific method and the natural world in geometric terms, it might be possible to apply T-methodology to the systemics of economic processes.

From the viewpoint of physical cosmology, the interval of time-lengths on this planet has become constantly and periodically shorter; the counting of 50000 years of re-traceable human history, documented 5000 years of economic history and available data from the last 250 years of the industrial economy, which can all be subdivided into 50 year cycles and make up for about 1000 cycles, is actually a generational data line of economic evolution. From this perspective of understanding the human economy, the overall leitmotiv of private profit maximization is only reflected by canonical economic theory and monetary behavior. However, if humanity wants to survive further on this earth, new models and **alternative visualizations of economic thought** have to be invented that show us the irrationality of prolonging this 'behavioral relicts from the animal kingdom'. Formal systems of rational reasoning and ethical systems of morality have to be applied and visualized to better comprehend the urgency of this economic problem, i.e. the biophysical limits of economic systems behavior and especially monetary agency. This is in actual fact not a beauty contest of formal or ethical reasoning, but a question of existential survival. The rapid decimation of plant and animal species will ultimately end up in the decimation ('supernova limit') of the human race, if no counter measures are creatively found. It is, therefore, the sincere hope of this author that we enable ourselves to invent visual models that effectively teach and instruct us about the cause of our economic errors and its eco-logical effects; solutions and resolutions to this economic problem are at hand and should be utilized. Consequently, the *future management of our biophysical resources* will be led by creative economic prudence; of course, this is also a matter of mental and physical health or healthy bodies of thought.

The following conclusions shall help to clarify the assumptions for reaching resolutions to the current economic crisis. Firstly, the visual scaling of the human economy can not be done without an appropriate grammar, probably by models using T-Theory. Secondly, the visual model should be able exactly inform about dynamic efficiency, i.e. the missing link between short-term and long-term economic causes and effects. Thirdly, the visualization should have managerial value for practical economic decision-making. Finally, quantum economic spirality must be based on monetary thought because we live in a monetary production economy.

Links:

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