The Metaphysical Ground of Information Processing

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Introduction

Whilst discussing various ethical implications of new technologies that are changing the conditions of communication, it is often forgotten to take into account the foundations of the concepts one is dealing with in practice. The point is that neglecting the metaphysical origin of conceptualization means to open the gates for errors and misunderstandings. Hence, it is the metaphysical ground itself which has to be illuminated in the first place, before being able to actually proceed with developing ethically adequate praxis. How this can be done shall be discussed in this contribution by showing that praxis is already theoretical while theory is always practical.

Results and Discussion

What we find is that on the route to developing a unified conception on systems, we are simultaneously engaged in looking for evolutionary stages of the interaction between energy-mass (matter) on the one hand, and entropy-structure (information) on the other. The generic approach to a unified concept is that of category theory, taking the mathematical origin of systems in Poincaré's theory (long before this notion has been introduced by Bertalanffy) literally. But at the same time, whilst drafting out a framework for the unified treatment of systems, we also find that a detailed differentiation of the types of systems is necessary in order to understand the primary starting points for the subsequent applications of what has been conceptualized before.

Conclusions

Obviously, there is a multitude of various types of objects for categories that model one or the other type of system. Essentially, there are two criteria that help to differ among them: The first criterion is the *form of organization* of a system. This is a concept related to the actual flow of information. We

have thus *order out of chaos* (i.e. information structures emerge in the universe), *order out of order* (structures form self-replicating structures), and *pure information out of order* (organisms with minds externalize information, communicating and storing it), respectively.[1]

The second criterion is *the degree of complexity* inherent in a system: This is what determines the localization of the appropriate level of evolution that can identified with the region associated with an explicit type of order production. The interacting parameters which determine form of organization and complexity, respectively, are energy-mass (matter) and entropy-structure (information) then.

Note that the *substrate* of all of this is always the same: We can call it *primordial matter*, possibly based on the initial dynamics of *de-coherence* as it is known in quantum physics. But we have also to note that in fact, when we are modelling the world, we permanently *talk about* the world as we can observe it, and as we would like to speculatively model it as a possibility – but we do not encounter the *real* world after all. So all the time we have to keep this "knowledge gap" in mind ("mind the gap"), in order to realize the ontological distance we cannot actually cover by our methods. This is the reason why we define systems by what we *call* them rather than by what they *are*. But while on the route towards a unified concept of systems, it has become obvious that category theory (in the mathematical sense) is not only helpful, but mandatory in the first place.

References

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[1] We follow here the ideas of Robert Doyle. See: www.informationphilosopher.com/introduction/information/