**Kassel Project Meeting**
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Report by Christian Fuchs

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One of the tasks of this meeting was the discussion of the approaches of the Vienna- and of the Kassel-teams. Besides that there were seminars on the theory of art and music.

**The Vienna Approach: Unified Theory of Information and Self-Organisation**

By merging semiotics and a theory of evolutionary systems (the latter being a synthesis of 2nd Order Cybernetics and concepts of evolution as well as touching the relationship of information and emergence), a Unified Theory of Information seems feasible. A UTI could make use of the interdisciplinary character of the theory of self-organisation.
The notion of emergence is put forward by the theory of self-organisation because the latter deals with the emergence of macroscopic structures from interacting microscopic entities. Emergent Evolution deals with emergent qualities of systems that occur at an evolutionary transition from one organisational level to another. Emergence has diachronous as well as synchronous connotations. In the literature they are usually separately referred to as specification and scalar hierarchies among others. But it can be shown that both hierarchies are only the two sides of the same coin. A stage concept of systemic evolution may reconcile both of them.
The first connotation of emergence refers to evolutionary development paths where processes of self-organisation show so-called meta-system transitions. In the course of evolution one system is linked to another--the old to the new--by emergence, i.e. the first one gives rise to the second and disappears.
Emergence as the forward loop of self-organisation cycles brings about the change from one system in one phase of evolution to another system in another phase. It moves the historical sequence of the systems.
The second connotation is applied to nested hierarchies of systems in which processes of self-organisation take place. The upward process links a system unit to a super-system unit by emergence, i.e. new features appear at the level of the respective super-system unit by virtue of activities at the level of the respective system unit. This kind of emergence is accompanied by a downward process. This downward process is a kind of domination or assertion of superiority. In this way the super-system level both enables and constrains activities at the lower system level.

The levels in question may also be referred to as system and subsystem levels. Emergence as an upward loop of self-organisation cycles effects the progression from one system level to a higher system level in encapsulated systems. It propels the structural build-up of systems.
The clue is that both meanings of emergence can be brought together insofar as systems that produce other systems in diachronous processes do so by interlocking their behaviour, in other words by coherent interactions; the new system has a hierarchical character enabling synchronous processes between the two levels; i.e., meta-systems turn out to be super-systems in which the systems that diachronously constitute the new holistic entity are in the Hegelian sense synchronously "sublated" ("aufgehoben") as constituent parts. That is, the old system is overcome, but conserved by the new one. Thus, a stage model which combines both so-called specification and scalar hierarchies can be sketched.
An as yet-to-be-developed theory of evolutionary systems would seek to show reality to be the totality of the systems that have given rise to one another, continue to influence each other, and remain in a state of constant development. From this perspective of systemic evolution, the world may be understood as a system of systems that organises itself, i.e. that created itself and continues to develop itself. The systems have subordinate subsystems and are themselves components of higher level systems. Together they form a layered structure in which the systems that arose at later stages of the evolutionary process are found at higher levels, just as the older systems are found at lower levels. The higher levels of the systems rest on the lower ones both structurally and as processes; the lower ones allow for further development at the same level and (when the performance of system-specific functions there reaches its limit) the higher organisation of the systems at the next level may or may not be realised by the systems. The lower levels form quasi-potential preliminary stages for higher level development, but they do not determine the development at the higher level in detail.
For a Unified Theory of Information (UTI), merging the notions of emergence and information, evolutionary systems and self-organisation, means that we identify three evolutionary levels of organisation, which are seen as different types of self-organising systems: dissipative, autopoietic, and social systems. The qualities of a higher level emerge from the underlying level.
The core of a UTI has to be formed by a concept of information which is flexible enough to perform two functions. It must relate to the various manifestations of information, thus enabling all scientific disciplines to use a common concept. At the same time, it must be precise enough to fit the unique requirements of each individual branch of science. The general and the specific thus should be combined – the general as constituting the governing laws of each form of information, the specific as constituting those characteristics which make different types of information distinct from each other.
A Unified Theory of Information and Self-Organisation is based epistemologically on the principle of qualifying preconditions (incomplete explanation or prediction), ontologically on the principle of propensities (less-than-strict-determinism) and axiologically on the principle of systems design (governance).

**The Kassel-Approach: Transcendental Materialism**

The aim of this approach is a unified philosophy of nature and an explicit theory of the worldly totality which wants to re-construct philosophical thinking within a modern framework of scientific knowledge, treating the world as one totality which is governed by a unified set of rules. Everything is related to everything else, what should be explained is how the different perspectives of the world are interrelated. Its the task of philosophy to work out such explanations because the single sciences are restricted to a specific section of the totality, but do not cover the totality as such (philosophy as a science of totality). For achieving this self-set goal, a new type of language for grasping phenomena philosophically which consists

of both formal (quantitative) and non-formal (qualitative) concepts of description should be established. Traditional, analytical philosophy does not take into account that which could be, it does not have a speculative character and is only occupied with testing, developing and re-testing the adequateness of language.

This approach makes an an ontological differentiation between nothingness (the impossible, what is not and cannot be), non-being (possibility) and being (actuality). If something has become actual, then it must have been possible in the first place. There can be no creatio ex nihilo. The foundation of being is not nothingness, but something: it is, what is not, but can be. It is possibility. This is in line with the thought of Schelling and Bloch who stressed becoming instead of being and understood philosophy also as speculation about what could be. He also speaks of the necessity of a Transcendental Materialism that goes beyond the existing totality and takes potentiality, non-being and not-yet-being into account. Schelling understood his own approach as transcendental philosophy in the sense of a speculative metaphysics (=science of being, researches the fundamental conditions of all being, unity of ontology, cosmology, anthropology, theology) that wants to explain the whole world from a highest, general principle. The Kassel-approach postulates that there is a foundation/ground of the world, i.e. something that is reason and cause of the world at the same time and that produces the world. According to what we perceive, we model the world. But not all that is can be perceived by us. Speculative philosophy speculates about those parts of the world we do not perceive.

Dialectic is the general study of the evolution executing itself objectively within a unified being which shall reach a final state by means of a stepwise processing among contradictions or by actually re-establishing this unification [at the final state proper], respectively.

*Add*: Evolution's substratum is matter itself. The direction towards the final state is indicated by the increasing complexity of the forms of matter.

*Cave*: Matter is a classical [emergent] concept as it is being modeled by human consciousness according to a consensual communication which is permanently performed with respect to the individual cognitive reconstruction of what is being perceived of the world. There is a world independent of our perceiving it. (principle of realism) But how it actually is cannot be perceived at all. At most, it can be speculatively deduced with the minimal condition that *as our world's foundation* it must be such as to be able to produce the classical world as we do perceive it.

*Principles of the Blochian Approach:*

1. Start from the immediate individual subjectivity of perceptions
2. Conceptualize experience by means of precepts rather than concepts
3. Visualize the categorizing as a dynamically open process rather than as closed procedure
4. Reconstruct the worldly organizational hierarchy of forms by introducing increasing distances (stepwise process of rotation-elevation)
5. Return to the initial state utilizing the results achieved so far (which have by then changed precepts into concepts) for a recursion which improves the insight into starting points
6. Start allover again, taking the concepts developed as new initial precepts now