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Onto\logical Conditions for Emergence

(Abstract)

1. General framework

1. General ontology is the most general discipline, for it deals with the most general question we can ask: *How and why what is possible is possible?* The ontological space, the proper realm of ontology, is therefore the space of all possibilities.
2. General ontology should be distinguished from particular ones, which come by suitable particularizations of the above ontological question. For example, metaphysics is defined by the question: *How and why what exist is possible?*, whereas psychoontology – by the question: *How and why psyche is possible?* Etc.
3. Three approaches to general ontology are general enough:
 - Relational one, considering the ontological space as the realm of all items (objects) we can consider with suitable relation(s) governing it. Its chief notions in modern times are: *configuration* and *structure*.
 - Qualitative one, considering objects as qualitative beings, i. e., subjects of some qualities. Chief notions here are: *qualities* of two types – *descriptive* ones and *determining* ones; and the notion of *form*.
 - And last but not least¹, approach through the General Theory of Analysis and Synthesis (GAS).

The above approaches are closely connected.

4. GAS, in turn, can be developed in three ways as well:
 - Pure relational way, as the relational space of two closely connected relations: *to be simpler* $<$, and *to be a component of* \blacktriangleleft .
 - Operational way, as the theory of two conjugate operators: *analyzer* α and *synthesizer* σ .
 - And, again last but not least, the modal approach developed by extensive use of two basic ontological modalities: MP – *making possible* and MI – *making impossible*. Clearly, the above three approaches are strongly interrelated as well.
5. The resulting ontology is the ontology of combinations and recombinations, configurations and reconfigurations, processes and events, situations of two kinds – facts and counterfacts.

2. Change and emergence

6. In the above, general and simple, framework I will search for ontological conditions *making possible*, or even *making real*, emergence.

¹ For everything is the fruit of analysis and synthesis (Descartes, Leibniz).

7. Change is done by series of reconfigurations, whereas emergence results either by internal extension of forms, or by onto\logical melioration, or by an appropriate extension of domains under consideration (or in different ways still waiting for proper recognition and consideration²).
8. Emergence is a special case of change, when something really new emerges, extending thus either the domain or enforcing it to emerge a new level of being.

3. Three approaches to emergence

9. **Forms' extensions.** Forms are collections of qualities of given objects. To be more exact, consider the basic ontological connection yx , which is understood as application of quality y to subject x . The form of x , or its characteristic, is the family of all qualities of x :

$$Q(x) := \{y: yx\}.$$

Crucial clue: Any essential change, including emergence, is determined by an appropriate extension of $Q(x)$, which results by a suitable application of one quality to another one. In particular, by self application! Execution of this idea needs suitable applicative algebras.

The idea is borrowed from my theory of elements' generation (JP "Elements of Monado\logic. An Outline.", 1988/91, unpublished).

10. **Onto\logical melioration.** We say that a condition A is meliorated if and only if it is better, in a sense, to be A than not- A . To formalize this idea we need suitable frame $\langle U, M \rangle$, where U is the universe, whereas M is a relation *to be melior than*. Put

$$MA: \leftrightarrow \neg A(x) \rightarrow \exists y (A(y) \wedge xMy).$$

The key lemma of the theory of onto\logical melioration says:

(AP) *For any M – maximal x , if MA then $A(x)$.*

Meliorated conditions are properties of maximals.

Melioration implies transgression – from finite to infinite (Cantor), from usual beings to the most perfect one (Anselm, Leibniz & others), etc.

Key clue: To describe emergence in terms of melioration modify the above definition by introduction of suitable operator $*$ instead of negation, i. e., to deal with $M^*(A)$ instead of MA :

$$M^*A: \leftrightarrow A^*(x) \rightarrow \exists y (A(y) \wedge xMy).$$

The idea is borrowed from my analysis of Anselm's Ontological Argument (JP, "Onto\logical melioration", 2005, unpublished)..

11. **Complementation.** Recall quite common mathematical practice: For a given field (of numbers, etc.), if its domain is not closed under suitable operations, pass to suitable extension of the domain by introducing appropriate objects (new numbers, etc.). In metaphysics it is turn of Boscovich and Kant from Leibniz's monadology to physical monadology.

Key idea: Use the above procedure to describe emergence of really new beings, features, topics, etc.

² For example, emanation, which is quite traditional idea.