

# The Metaphysical Ground of Information Processing

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# The Metaphysical Ground

Metaphysics of Emergence

Part 1: On the Foundations of Systems

xenomoi, Berlin, 2015.

# The Metaphysical Ground

Definition 1: *We call system a network of interacting agents producing a space with a well-defined boundary that is open in the sense of thermodynamics.*

# The Metaphysical Ground

Definition 2: *We call ground of a system from what, by what, and because of what a system actually emerges.*

# The Metaphysical Ground

Corollary 1: *Hence, ground is to system what non-being is to being.* (Note that *existence* is thus visualized as (permanent) transformation of non-being into being.)

# The Metaphysical Ground

Corollary 2: *The ground of the ground (or: primordial ground) is the non-being of non-being (i. e. the condition of non-being) and is called nothingness.*

# The Metaphysical Ground

forms of organization

<http://www.informationphilosopher.com/>

- 1) *order out of chaos* (information structures emerge in the universe)
- 2) *order out of order* (structures form self-replicating structures)
- 3) *pure information out of order* (organisms with minds externalize information, communicating and storing it)

# The Metaphysical Ground

degree of complexity (= connectivity of interactive networks)

substrate

*primordial matter based on the initial dynamics of de-coherence*

*matter (mass-energy) vs. Information (entropy-structure)*



# The Metaphysical Ground

## mathematical representation

A *category*  $C$  is a class of *objects*  $\text{ob}(C)$  and a class of *morphisms*  $\text{mor}(C)$  such that each morphism has a unique source and target object, respectively. Also, for every three objects  $a, b, c$  there is a binary operation of the form  $\text{mor}(a, b) \times \text{mor}(b, c) \rightarrow \text{mor}(a, c)$  called *composition* such that associativity and left and right identity laws are valid. (topoi!)

# The Metaphysical Ground

category of dynamical systems (Jonathan Jaquette, 2009) & various others

objects = dynamical systems = sets with an attached endomorphism (each dynamical system is itself a category with one object and one endomap)

morphisms in this category are required to commute with the endomorphisms

hence: category of categories, where the maps between objects are functors

# The Metaphysical Ground

Mind the Gap!

Modeling as Mapping what we observe, but not  
as reproducing what there actually is.

# The Metaphysical Ground

## Ontological Classification of Disciplines

*(all of them constitute reality)*

*being (what there actually is in terms of modality) [Dasein der Seienden = Wirklichkeit]*

*non-being (what is possible) [Möglichkeit]*

*nothingness (what is impossible, unless mediated by something possible of which it is the ground) [Un-Möglichkeit]*