

Systems and Process Metaphysics

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Systems engage in various kinds of processes, so it might seem that a process metaphysics would be a natural approach to complex systems. Indeed it is, but systems are usually construed in terms of the interactions of parts that are not themselves modeled as systems or processes. The parts collectively form the stable base among which the system processes occur. Adopting a genuine process metaphysics forces more fundamental changes in approaches to complex systems:

It overturns several standard conceptual and explanatory defaults, and

It enables posing and exploring new questions and explanatory frameworks.

In particular, a process metaphysics:

Shifts the explanatory default from stasis to change. It requires explanations of stability and persistence, rather than being able to presume them as for substances and structures.

Overturns the assumption that metaphysical emergence cannot occur — after all, you cannot get a fifth substance out of earth, air, fire, and water. New organizations of process become a potential locus of such emergence.

Transcends the split between substance and fact, on the one hand, and normativity and intentionality, on the other, that was introduced by Empedocles' substances and Democritus' atoms, and codified by Hume's argument that norms could not be derived from facts. It renders at least conceivable that normativity and intentionality might themselves be emergences.

Overturns the assumption that metaphysical basics must simply be assumed, as for Empedocles and Democritus. Instead, the explanation of origins in terms of emergences from new organizations of process becomes conceivable.

Can participate in the differentiation between determinism and predictability that is manifested in chaotic dynamics.

Supports and is consistent with a shift from an assumption of fundamental physical particles to an ontology of (quantum) fields.

In conjunction with thermodynamic considerations, a process metaphysics overturns standard assumptions about the individuation of entities in terms of boundaries. What are the boundaries of a hurricane or a candle flame? Certainly we can find various kinds of phase changes across relatively short distances, but, for far from equilibrium systems, these will not be boundaries with respect to which the system can be isolated (ffe systems will go to equilibrium and cease to exist if isolated), and they may not be cohesion

boundaries (you cannot push a flame with force on any small part of it). For many kinds of systems, such as in biology, a strict focus on process forces questions such as why are there any boundaries at all — why cells, organisms, and species? What creates and what maintains such boundaries? These questions are particularizations, and particularly important and fascinating particularizations, of the general shift in default from an assumption of stability (and corresponding individuation) to a default assumption of process and change (which requires explanations of boundaries and other forms of individuation).

Permits new kinds of explorations of phenomena such as historic change and historic hierarchies and trajectories of emergence, again with biology — especially macro-evolution — providing a central, though not exclusive, range of examples.

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