

Prospectus to a Homotopic Metatheory of Language

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Book Launch at Triest

1 The Urgency of Metatheory

SCIENCE & CREATIVITY

Prospectus to a Homotopic Metatheory of Language by Eric Schmid proposes that mathematics does not involve the discovery of a synthetic a priori. In other words, mathematics is not a stable transcendent object of knowledge. Instead, Schmid defines math as a language that depends on an infinitely large network topology of inferences.

- Scientific progress can be expressed through the language of homotopy type theory.
- Scientific revolution does not involve the discovery of an existing truth
- Instead, scientific discovery relativizes synthetic a priori.
- The metatheory for scientific progress can be expressed by speaking the language of homotopy type theory.

Importantly, this metatheory can be applied not just to the disciplinary specific languages of computer & natural science, but also ordinary & public languages.

Mathematics is not the discovery of transcendent concepts, but a dynamic evolving language of inquiry.

Schmid turns to Fernando Zalamea's "Synthetic Philosophy of Contemporary Mathematics" to introduce a synthetic approach to method. Zalamea blends diverse mathematical structures with philosophy to expand models of inquiry. For instance, Zalamea discusses sheaf theory not only as a mathematical tool, but a rhetorical analogy. The book, like Zalamea's, responds to an urgency to increase the dynamism and categorical depth of mathematical thinking beyond the models proposed by set theories or synthetic a priori.

In order to answer to the limits of computability and formal logic, homotopy type theory and synthetic mathematics offers models that genericize information among levels of abstraction.

Category theory broadens the scope of inquiry within the limits of computability and logic. Likewise, metatheory considers not just abstraction, but the pragmatics of abstraction. In short, the urgency that the book responds to is that rigid transcendentals do not yield accurate models of language nor scientific revolution.

Disentangling epistemology from metaphysics allows dynamic & rigorous imagery for describe phenomena to be more available.

2 Syntax & Semantics

Reza Negarestani writes that "Syntax, under the right conditions, is indeed sufficient for semantics, and meaning can be conferred upon syntactic expression if such conditions are satisfied."

The semantic ascent from a language to a metalanguage makes *descriptions of communication processes* available for inquiry.

Natural languages can be instituted through quantum processing structures in a network of words. This categorical approach is, as Corfield suggests, linearly dependent to homotopy type theory.

3 Intelligence

Intelligence needs to be made intelligible, the mind needs to be approached functionally in terms of 'what it does'... which needs to exist within a 'history of histories.'" (page 15)

"If we are to follow [Michael] Friedman's schema [from *Dynamics of Reason*], then the period we are currently in is his 'metascientific' one, where thinkers refashion mathematics and reformulate physical principles in a philosophically-minded way." (page 15) "Mind becomes only what it does functionally and therefore what is computable. Spirit becomes context-dependent codifications of public

language in an inferential network of ∞ topoi." (page 17)

4 Abduction

REASON & APPERCEPTION

- Agent 1 apperceives.
- Agent 1 reasons as a judgement.
- Agent 2 understands and abducts.
- Etc.

An agent apperceives the physical world from existing mathematics. They ratiocinate on physics forming a novel judgement. Then another agent understands and abducts from the novel (exact) judgement.

This explication is only partially ratiocination because it has yet to be upended by new discoveries.

The process of scientific discovery defines a relative a priori. Apperception occurs from existing math \rightarrow ratiocinated on physics \rightarrow novel judgement abducts.

This global view leads the following local view and vice versa. Language is co-extensive with sociality, general intelligence is coherent if and only if language is understood inferentially in terms of semantic social norms.

If mind is understood computational-functionally, self-consciousness is co-extensive with public language through social interactions among agents. A general intelligence, but not a totality, generates novel language modes of expression.