Some conceptual propositions of my forthcoming book 'Semantic Tradition of Pictures to Syntax to Inferences'

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1 Following Reza Negarestani

Intelligence needs to be made intelligible, the mind needs to be approached functionally in terms of "what it does" (behaviors and functions), which needs to exist within a "history of histories" (spirit).

2 Brandom's Claim

Brandom makes the claim that not only Geisteswissenschaften exists within history but moreover Naturwissenschaften. Science inherently has a historical dimension, which is not to say that it is socially constructed but rather the semantic truth of scientific theory involves context-dependent norms that make determinate scientific truth.

3 Michael Friedman in *Dynamics of Reason*

Michael Friedman argues that there is a contextual milieu that provides the relative a-priori for each and every scientific revolution. David Corfield says, "If we are to follow Friedman's schema, then the period we are currently in is his 'metascientific' one, where thinkers refashion mathematics and reformulate physical principles in a philosophically-minded way. Think of Helmholtz, Mach, Clifford, Klein, Poincaré,..., Einstein." This a-priori is both universally valid and relativized.

4 Brandom's Argument

Brandom argues that most statements in a language need to be materially good and are not substitutable, i.e., not formally inferred. Following David Corfield's book on the philosophy of HoTT, it is agreeable that Homotopy Type Theory

can correct this through "terms and types" of (∞,1)-topos where 2-morphisms, 3-morphisms, 4-morphisms, etc., are reversibly substitutable, and therefore formally inferred. Corfield has pointed me (in a private email) in the direction of Quantum Natural Language Processing, in particular linear homotopy type theory, and he says it provides a means of defining a topological metric between similar words, and formal substitution is defined by such a metric.

5 Semantic Ascent vs. Semantic Descent

As opposed to J.N. Findlay, who argues for semantic ascent in Hegel from the object-language to the meta-language (a move championed by Tarski) in order to define a judgment, Brandom argues for semantic descent to the bottom level or the materially good inferences.

6 Theorem

Apart from the original morphisms and objects directed in the lowest level, there exists a transit up and down and vice versa between object language and metalanguage through (∞,1)-topoi. In Agda (the proof-checker/proof-assistant language for Univalent Foundations) **a type of types** or **type of types of types** corresponds to varying universe levels. For example, see Agda documentation: "Agda' type system includes an infinite hierarchy of universes Set_i : Set_{i+1}. This hierarchy enables quantification over arbitrary types without running into the inconsistency that follows from Set : Set."

7 The Universally-Valid A Priori

The universally valid a-priori prior to a scientific revolution, which informs said revolution, is context-dependent and exists within a history of histories.

8 The Curry-Howard Correspondence

The Curry-Howard Correspondence states that $\prod$ types are equivalent to $\forall$ intuitionistic quantifiers, $\sum$ types are equivalent to $\exists$ in logic, and maps are equivalent to intuitionistic implication.

- "Types correspond to logical formulas (aka propositions)."
- "Programs correspond to logical proofs."
- "Evaluation corresponds to simplification of proofs."

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.

9 Univalence Axiom and Awodey's interpretation

9.0.1 $(A = B) \cong (A \cong B)$

9.0.2 Awodey (as quoted in private email): "The Univalence Axiom was indeed the work of Voevodsky, but the interpretation of identity types as topological path spaces, which forms the basis of HoTT, was in fact due to me."

10 Fibrations and Co-fibrations

Fibrations are equivalent to $\prod$ types and co-fibrations are equivalent to intervals

11 Pure Geometry, Arithmetic, Logic

Following Per Martin-Löf, it is agreeable that pure geometry, arithmetic and logic are modes of synthetic a priori knowledge epistemologically.