Experience, Reason, and the Crisis of the Republic
Volume 2

Experience, Reason, and the Crisis of the Republic Volume 2:

Reason and the Crisis of the Republic

By

Gil Null

Cambridge
Scholars
Publishing

TABLE OF CONTENTS

Part IV The Crisis of the Republic

INTRODUCTION:

A FOUR-PART REALIST METAPHYSIC OF EXPERIENCE

§1. This Work's Contents, Organization, and Citations

This work is a two-volume exegesis of the thought of Edmund Husserl (1859-1938) in the four Parts I: *Objects of Experiences* and II: *Experiences of Objects* of Volume 1, and III: *The Logic of Experience* and IV: *The Crisis of the Republic* of Volume 2. Volume 1's realist constituent ontology of dependence (Part I) and Husserl's Brentano School theory of experiences as cognitive events with intentional contents (Part II) comprise the theory of experience applied in Volume 2's Part III formal temporal semantics of the 1st-order predicate modal logic B of experience (conceived as reason) of any 1st-order predicate modal language $\mathscr{L}$ which encrypts intentional contents of experiences (e.g. empirical scientific observations). Part IV applies the Parts I-III realist accounts of experience and reason to Husserl's (1938) analysis of how the nominalist view of experience core to Galileo's view of natural science evolved into a European crisis (patent and worsening since World War II) of Plato's ideal and Jefferson's historic republics. Volume 2's Chs. 21-22 focus on the American crisis, proposing Parts I-III provide a metaphysical means to the end of resolving the 21st Century political crisis of Jefferson's historic American republic.

Parts II-IV are applications in epistemology, (modal) semantics, and political philosophy of Volume 1's Part I, with which my descriptive comments begin. Ch. 1 introduces and Chs. 2-9 formulate a realist dependence ontology as the axioms, definitions, and theorems of the Calculus [CP] of Phenomena. [CP] uses two primitive (proper part and foundation) predicates to define eight

types of dependence in a realist ontology of pieces and moments of dependent and independent, singular and plural, individual and collective, and non-categorial and categorial objects. Of plural independent categorial objects, some are relation complexes, some are categorial relations, non-categorial collectives and individuals are pieces of each, and each are implicated in the Volume 2 Part III formal semantic definition of truth. Ch. 10 bases its general definition of 'constituent ontology' on N. Goodman's work, contrasts [CP] to the Leonard-Goodman Calculus [LGCI] of Individuals as realist v. nominalist constituent ontologies, contrasts realist to nominalist constituent ontological atomism, and avers that the epistemic and semantic tasks of Parts II and III are relevant for deciding the relative values of realist and nominalist constituent ontologies. Neither [CP] nor [LGCI] have any obvious relation to time, while classical realist distinctions (e.g. of temporal particulars v. a-temporal universals) did, and Parts II-IV pointedly do, refer to time. So the concluding Ch. 11 of Volume 1's Part I discusses [CP] in relation to time and classical realism as a bridge to the epistemic, formal semantic, and historical topics of Parts II-IV.

Volume 1's Part II develops a theory [E] of intentionality in two (*noetic* v. *noematic*) fragments as Husserl's Brentano School view of events of experiencing objects. The first (*noetic*) fragment is a theory of time ordering events of experience into past, present, and future, and is notable for Husserl's thesis that time well-orders past and present, but partially orders future events, of experiencing objects. The second (*noematic*) fragment of [E] is a theory of intentional contents of events of experiencing objects, and is notable for its use of [CP]-objects distinguished in Part I as (not parts of, but) *functionally correlated to* events (*noeses*) of experiencing objects. This view of intentional contents as [CP]-objects correlated to events of experience supports Husserl's and Gurwitsch's *correlation* conceptions of intentionality and Part III's formal semantics of languages (and the logic) of experience as encrypting intentional correlates of events of experience.

Volume 2's Part III uses Husserl's 1901-1929 distinction between grammatical (syntactic) and semantic categories to formulate a three-valued *noetic* semantics for any 1st-order modal predicate language encrypting intentional contents of events of experience, and formulates the logic B of any such language as an inference system suitable for a second-semester university logic course. Part IV is a mainly historical discussion of what has gone

wrong in the West's philosophical development since the 14th Century, arguing the 21st Century crisis of the West is the contemporary hegemony of nominalism over realism. Ch. 21 of Volume 2's Part IV includes three substitution instances of a syntactic (object-language) B-proof and one semantic (meta-language) proof justifying Jefferson's 1776 claims that some natural rights are not civil entitlements, and suggests some revision of university philosophy, sociology, and history curricula including a 2nd-semester logic B of experience, greater emphasis on Weberian, and less emphasis on non-Weberian social science and history is indicated. Volume 2's Ch. 22 uses Volume 1's constituent ontology [CP] of dependence to design and request realist sociological studies of 20th Century political-economic states of the U.S.A. intended to provide empirical scientific evidence for or against the work's philosophical argument.

Square bracketed citations refer to Bibliography entries (preceding colons); page numbers precede commas, last page numbers precede semi-colons if they precede something else, and the closing square bracket otherwise. E.g. [57] refers to entry 57 (*The Critique of Pure Reason*), and [5: xxxviii; *Cf*. 119: 38-49, 249-255; 28: 100-101, 163-166] refers to p. xxxviii of entry 5 (*The Social Contract*), to pp. 38-49, 249-255 of entry 119 (*Origins of Totalitarian Democracy*), and to pp. 100-101, 163-166 of entry 28 (*Totalitarian Dictatorship and Autocracy*). I cite chapters or sections to facilitate use of editions or translations other than those cited.

§2. What This Whole Work is About (Metaphysically Speaking)

A prospective reader should know that Volume 1's Part I is core to what both volumes of this work are about, but some with a prior interest in Part I may wonder what the whole work is about, and why it includes Parts II-IV. Parts I-IV are related in ways the work will reveal. Saying the work is about everything is (mischievous but) not unjustified, but risks provoking the (equally mischievous but not unjustified) response that whatever is about everything is likely about nothing. To pin it down a bit more: The whole work is about metaphysics (i.e. *first* philosophy, *viz*. the part of philosophy needing no other, but needed by any other, part of philosophy). But many among us opine metaphysics is the best

example of something which is about nothing just because it is about everything.

The work introduces those who so opine to contrary opinions that metaphysics is about three things, referred to by Descartes as *res Extensa*, *res Cogitans*, and God, and by Kant in his *Critique of Pure Reason* [57] as the *transcendental ideas* of world, self, and God. On either view metaphysics is about three things (so is about something). But also on either view, metaphysics is about everything, because these three general topics encompass all there is. Neither Husserl nor this work is Cartesian or Kantian, but also neither is intellectually far from either (especially from Kant). Husserl's *Cartesian Meditations* speaks for itself; to see what I mean about Husserl and Kant the best source [58] is (sadly) untranslated (but see Volume 1's Part II *infra*). To see what I mean about this work and Kant, note Part I: Objects of Experience is to Kant's transcendental idea of world as Part II: Experiences of Objects is to Kant's transcendental idea of self and as Part III: The Logic of Experience is to Kant's transcendental idea of reason (God), and that Part IV: The Crisis of the Republic is to Parts I-III as Kant's (2nd) *Critique of Practical Reason* was to the ideas of world, self, and God of his (1st) *Critique of Pure Reason*.

In short, this work applies a post-Kantian metaphysic of experience (and reason) to issues of fact and value pertinent to the empirical sciences of nature and culture, and is a single whole c(r) one moment r of which unifies its four maximal pieces (Parts I-IV). This work refers throughout to its immediate moment r of unity as its moment of (extreme collective) *realism*. One wondering how four maximal pieces of an independent whole c(r) are unified by its immediate moment r of unity will find in the Constituent Ontology [CP] of Dependence (Part I *infra*) the following answer: The independent whole c(r) is the completion of its immediate moment r of unity; all but one of c(r)'s maximal pieces are maximal pieces of c(r)'s immediate moment r, and the other maximal piece of c(r) is the reification of c(r)'s immediate moment r. So think of this work as the completion c(r) of its immediate moment r of realism, of Parts I-IV as the four maximal pieces of c(r), and of Part I: The Constituent Ontology [CP] of Dependence as the reification r(r) of c(r)'s immediate moment r of realism. Thus, this work is one of the things it is about, but that should not be too surprising (since I warned you this work is about everything).

§3. What This Whole Work is Really About (Less Metaphysically Speaking)

§2 really just said you have to study Part I to get a grip on understanding what this whole work is about (intimating that grip will become less tenuous as you study Parts II-IV, but that Part I is unique in discretely founding the moment of realism which unifies the work). I think that needed saying, although the reader may think it might be better said in a postscript than in an introduction. The issue is that first philosophy (metaphysics) is like a (lazy-eight) snake eating its tail; where it begins and ends is an issue. So it seems best to append a few less cryptic comments as §§3-4. Parts I-III are mostly mathematical with some history tossed in as an intuitive anchor, while Part IV is mostly historical with some mathematics tossed in to frame intuitive issues clearly. I here lift from Part IV comments meant to foster an intuitive grasp of mathematically formulated dependence ontological, intentionality, and formal semantic contents of Parts I-III. If you find them orienting here they will have served their introductory purpose; I hope you understand them (and this introduction) more fully when next you see these comments in Part IV, Ch. 21, §15.

> …Plato's ontology was realist because it admitted temporal particular *and* ideal objects, and was extreme because it admitted universal ideal objects (Platonic Ideas). He saw philosophy as the search for true definitions, and definitions as true iff they (adequately) describe some ideal universal. His dialogues illustrate this search, using his realist ontology to defend his view that any definition *describes* some unique ideal universal (e.g. *Virtue* in the *Meno* and *Justice* in the *Republic*) in which distinct particulars (of the same type) participate to some (greater or lesser) degree, and are good in direct proportion to the degree of their participation.
>
> Plato's theories of value (axiology and ethics), law, and politics are just *applications of* the extreme realist ontology of his metaphysics. We experience any particular temporal object x as participating (to some degree) in some ideal universal, which is the standard of value we experience x as having; we experience any x participating in some ideal Idea as good in direct, and as bad in inverse, proportion to the degree x participates in it. …If particulars are [so] experienced …then (nominalist) theories which replace ideal universals by idiosyncratic, ephemeral individual or collective

feelings and/or conventions cannot account for our experiences of individuals as virtuous or of laws or governments as just.

Part IV shows how modern philosophy from Copernicus to Rousseau evicted ideal universals (Platonic Ideas) from their early medieval place between heaven (God's intellect) and Earth (nature), leading to the 19th Century collapse of value… Parts I-III reject the nominalist (Galilean/Cartesian) theory of ideas to provide for Plato's ideal objects (and the basis of value they provide) a new home …in experience. …but Brentano's thesis that experience is intentional entails [we] experience modality, a topic of Part III: The Logic B of Experience (Reason) and Part IV: The Crisis of the Republic.

§4. At Whom, by Whom, and How this Work is aimed

Volume 2's Part IV argues: i) Western culture suffers a metaphysical malaise; ii) caused by the post-15th Century failure to articulate a metaphysics compatible with both modern natural science and communal beliefs and values serviceable as a viable moral compass for negotiating life in a cultural context; iii) this failure is the result of the 16th-19th Century rejection of realism in favor of nominalism regarding experience, and last; iv) Parts I-III are an alternative realist metaphysic of experience I prescribe for the malaise of European and hence American culture. This statement of this work's theses reveals the work is not intended for general readers seeking entertaining diversion or relaxation; think of it more as a self-help book aimed at ailing cultures generally, ailing European cultures less generally, and at a critically ailing American culture in particular.

Had your family life gone seriously awry you might study a relevant self-help book promising (little entertainment, but maybe) a solution to your problem. If you were seeing a (e.g. Gestalt) therapist about your family problems and came across such a book (hard to understand but maybe plausible), you might ask your therapist what s/he thought about it (seeking a more informed opinion about whether it might help). But if the book argued your family's cure requires rejecting your therapist's basic beliefs, what reply would you expect from your therapist? In this metaphor this work aims at the therapist, who represents the professors of philosophy, history, psychology, and social sciences who staff European and American universities and are intellectually responsible for our cultural health, but typically suffer most grievously from the

metaphysical crisis now afflicting our culture. European socialist and American progressivist ideologies share the nominalist premises which entail the West's metaphysical crisis. Secular relativist views of science and rejections of late 18th Century (founding) American values at American universities are effects of the 19th-20th Century defeat of realist by nominalist views of experience and reason, and will respond only to a reversal of that historical defeat.

They also serve whose *thought* defends the U.S. Constitution against all enemies foreign and domestic. This work frontally assaults the nominalist metaphysical premises of the progressivist ideology typically inculcated by contemporary American universities. Frontal assaults are hopeless without effective weapons, so I avail precise, mathematical formulations and proofs of relevant concepts. Of readers irritated by such precision I beg indulgence; it is necessary for understanding experience and reason well enough to have even a prayer of overcoming the crisis.

Last, this work's mathematical approach to its philosophical topics bequeaths it a feature sufficiently rare in the humanities to be worth mention. Understanding some things (e.g. the calculus) requires understanding other things (e.g. analytic geometry and limits); mathematics curricula reflect, so students exposed to such curricula understand, that. Further, this feature is common to pure and applied mathematics. Understanding physics requires understanding the calculus (so analytic geometry and limits); students of science and engineering understand that because they are exposed to curricula which reflect that. However, this ordering of studies necessary for developing *understanding* is not necessary for developing *motivation*; some students become motivated to study mathematics only after learning that doing so is an intellectual means to the end of understanding physics or engineering. Such students included Hobbes, Descartes, and Einstein (all motivated by interests in physics to study mathematics) and myself (motivated by interest in philosophy to study mathematics). So here is the upshot:

Relative to *understanding* this work, the four parts I-IV of Volumes 1 and 2 must be read in order. Volume 1's Part I must be studied and understood first, and understanding any part of Volume 1 or 2 requires understanding all preceding parts of either Volume. But this order of approach is unnecessary relative to *motivation*,

where the readers best initial approach will depend on personal interests. Begin with a perusal of i) Part IV first if your interest is primarily in political philosophy, or ii) Part III first if your interest is primarily in philosophy of language, or logic, or science, or iii) Part II first if your interest is primarily in cognitive science, or psychology, or mathematics. After doing so assess whether you are motivated to study earlier parts of the work, but *don't confuse motivation with understanding*; you will most likely *understand* any part which interests you only if you return to study it carefully once you understand each preceding part of the work.

PART III

REASON AS THE MODAL LOGIC B OF EXPERIENCE

CHAPTER 15

SEMANTIC CATEGORIES
AND COUNTERSENSE

Kant rejected Leibniz's "dogmatic rationalist" view of possible worlds for a "critical" view of experiences (subsumed to categories) as modal semantic contexts. Husserl followed Kant's restriction of semantic categories to experience, but distinguished distinct material regions of experience, and avoided Kant's psychologism by a Brentano School view of any event e of experience as having a unique intentional content $\langle ®(e),\ sc(e),\ rc_\infty(e),\ t(e),\ cr(e)\rangle$ including e's unique semantic category $sc(e)$, and using $sc(e)$ to distinguish *Unsinn* (§3's *syntactical* nonsense) from *Widersinn* (§4's *semantical* countersense) of linguistic formulae for e. Ch 15 examines *Widersinn vis-à-vis* i) *excluded 3rd* in §6 and ii) intentionality and the 1950 Schutz-Gurwitsch letters about Koyré's challenge to Gurwitsch's and Husserl's view that some identity claims are *Widersinn* in §7, argues *the semantics of identity, not of negation (*as mistakenly thought by Husserl *et al.*) is key to this issue, rejects Koyré's for Husserl's and Gurwitsch's view (so revised), and concludes with §8.

§1.   Noetic Semantics' Historical Context:
Logic, Psychologism, and Reason

At the end of the 18th Century Kant observed logic (unlike mathematics) had not advanced significantly since antiquity. But Lobachevsky's 1829 "*On the Principles of Geometry*" soon impugned Euclidian geometry's 'Transcendental Aesthetic' role, and the rest of 19th Century mathematics impugned Aristotleian logic's 'Transcendental Analytic' role, in Kant's *Critique of Pure Reason* [57]. Boole's 1847 *Mathematical Analysis of Logic* and 1854 *Investigation of the Laws of Thought*, DeMorgan's 1847

Formal Logic, Weierstrass' 1859 work on irrational numbers, Cantor's 1863 Berlin exposure to Weierstrass and 1874-1897 work on class theory, Frege's 1879 *Begriffsschrift* and 1893-1903 *Grudgesetze der Arithmetik*, Peano's symbolism, the influence of Weierstrass' and Dedekind's ideas on Peano's 1891 natural number axioms and 1895-1908 *Formal Mathematics*, Hilbert's work on axiomatic theories, Zermelo's 1904 and later class-set theories, the logic of relations core to Russell's 1903 *Principles of Mathematics*, and Russell-Whitehead's 1910-13 *Principia Mathematica* combined to end the stagnation of logic on which Kant remarked (and, sadly, relied).

19th Century mathematics exposed the intimacy of its relation to logic (and hence philosophy) as patent for 20th Century (mathematical) logic and philosophy. Peano saw logic as part of mathematics, Frege and Russell saw mathematics as part of logic, and Husserl saw logic and mathematics as the same thing differently conceived. These early 20th Century views of logic could not abide received (psychologistic) views of logic as a theory of mental events involved in reasoning (e.g. displayed by Boole's 1854 title '…*The Laws of Thought*'). Husserl and Russell each persuasively attacked such received views as *psychologistic*, effectively suppressing 20th Century logicians' tolerance for any role of psychology (or mental events) in logic. They avoided traditional references to propositions as meanings of events of judging or assuming or inferring conclusions (etc.), referring instead to linguistic *syntax* (symbols and *formulae*), to (syntactical) relations of syntax to syntax, to (semantic) relations of *syntax* to objects and classes of objects, and to logic as the mathematical study of such (syntactical and semantic) relations. The 19-20th Century *mathematical* approach achieved logic's greatest *technical* advance since antiquity, but also initiated our progressive alienation from logic's intuitive meaning as the science (*viz. mathematics*) of *reason*. Hilbert's view of logic as a metamathematical theory of syntax emphasized that alienation by de-emphasizing semantics; Husserl's view of syntax as encrypting intentional contents resisted that alienation by emphasizing semantics.

By consensus the history of mathematics includes at least three great intuitive crises: 1st, the ancient Pythagorean discovery of incommensurable magnitudes, motivating ancient rationalists' emphasis on Euclid's geometry over analysis; 2nd, the lack of clarity of the 18th Century view of limits in terms of infinitesimal magnitudes,

criticized by Berkeley and unresolved until the 19th Century work of Weierstrass, Cauchy, and Dedekind; and 3rd, the early 20th Century set-theoretic antinomies, avoided by sundry technical artifices (e.g. Russell's type theory or Zermelo's axiomatization) of which none enjoyed decisive intuitive support. But plausible candidates for 4th and 5th intuitive crises in the history of mathematics include 4) the lack of early 20th Century clarity on the function concept and associated widespread resistance (by Russell *et al.*) to Zermelo's Choice Axiom, and 5) the 20th Century collapse of (and lack of viable alternative to) the classical faith in logic as *the science* (and in the 19th Century, *the mathematics*) of *reason*.

Husserl's *Prolegomena zur Reinen Logik* [44] assaulted psychologism but defended logic as *the mathematics of reason*. Acceptance of the former (assault) and rejection of the latter (defense) is symptomatic of the *psychophobic* divorce of 20th Century logicians from the historical intuitive meaning of their domain of expertise. The intuitive divorce of logic from thought is a philosophical crisis of 20th Century logic; the scandal is manifest when parents, students, administrators, and professors of literature, history, sociology, etc. view professional logicians as (generally) irrelevant beyond certain arcane topics in information technology and (specifically) as ill-prepared to teach critical thinking. Logic teachers not afflicted with social myopia can hardly avoid wondering if the view that logic bears no *prima facie* relation to thought (critical or otherwise) should be rooted out of graduate schools as enemy propaganda.

Noetic semantics is a means for re-establishing contemporary logic's relevance to the pre-20th Century view of reason as linguistically expressed thought. Where possible-world semantics refers to possible worlds, *noetic* semantics refers to possible *speech* events, which are cognitive events (*noeses*) with unique intentional contents encrypted in linguistic syntax. So *noetic* semantics refers to linguistic syntax encrypting relations of the *noeses* of Part II *supra* to sundry [CP]-objects distinguished in Part I *supra*, including relation complexes, (singular and plural) non-categorial maximal pieces of relation complexes, categorial relations, semantic categories, and material regions. E.g., any cognitive event (*noesis*) e is a [CP]-integrative quality (founded immediate moment) of some [CP]-individual (independent singular) subject ρ of experience. *Noetic* semantic references to *noeses* as mental events entail ontological commitments to singular or plural

and independent or dependent [CP]-objects, and so are not psychologistic.

These ontological commitments are explicit in the *noetic* semantic view of any experience of objects as an intentionality septuple $\langle\rho$, e, ®(e), sc(e), rc$_\propto$(e), t(e), cr(e)$\rangle$ comprised of (i) some [CPD31] individual ρ and (ii) *noetic* event e (integrative quality of ρ) with some unique intentional content $\langle$®(e), sc(e), rc$_\propto$(e), t(e), cr(e)$\rangle$, where (iii) ®(e) is the unique material region e accesses; (iv) sc(e) is e's unique semantic category of region ®(e); (v) rc$_\propto$(e) is e's unique semantic field (infinite set) of semantically relevant type-1 relation complexes which are pieces of sc(e) [and of ®(e)]; (vi) t(e) $\in$ rc$_\propto$(e) is e's thematic type-1 relation complex (theme and *noematic* sense) [tacit: the reification r{u[t(e)]} of the moment u[t(e)] of unity of e's *noematic* sense t(e) is e's unique *noematic* referent]; and (vii) cr(e) is the categorial relation e experiences its *noematic* referent r{u[t(e)]} as typifying. *Noetic* semantics is a non-psychologistic *mathematical* account of how variables, predicates, and formulae of some formal language ($\mathcal{L}$) encrypt the correlation of events of experience to objects of experience included in their intentional contents, and objects of experience (typically) are parts of *neither* the language *nor* the *noeses nor* the individual subjects of experience to which *noetic* semantics refers.

The mathematical character of *noetic* semantics invites the following comments. Just as work in theoretical physics is as legitimate as work in experimental physics, *mathematical* studies of language are as *legitimate* as *empirical* studies of language. Whether a logician prefers *noetic* or possible world semantics, s/he understands that engaging in empirical linguistic studies of English, German, French, Spanish, Arabic, Japanese, Mandarin, etc. is not necessary for constructing the syntax (lexicon and grammar), semantics, and inference system (logic) of any formal language $\mathcal{L}$ of interest. *Empirical linguists* must judge the degree to which $\mathcal{L}$ is like or unlike some ordinary language, and must describe ordinary languages to accomplish that (empirical) task. But *theoretical logicians* (mathematically) describe the syntax, semantics, and logic of abstract languages. *Noetic* and possible world semantics are (alternative) non-empirical, mathematical theories of abstract (formal) languages, and both are *contextual*, meaning any semantic value of any linguistic syntax at issue is relative to some semantic context.

But *noetic* and possible world modal semantics are unlike in their choices of modal semantic contexts. The latter's possible worlds of, and the former's experiences of, objects are intuitively different kinds of modal semantic contexts, but the semantic (mathematical) roles of possible worlds and experiences of objects are analogous. Using possible worlds as modal semantic contexts requires no study of empirical natural science, and complaints that it relies too much or not enough on empirical scientific studies of reality in describing formal modal languages are *neither true nor false, but irrelevant* for the (mathematical) project of possible world modal semantics. Similarly, using events of experience (*noeses*) as modal semantic contexts requires no study of empirical psychology, and complaints that it relies too much or not enough on empirical psychological studies of real events of experience are *neither true nor false, but irrelevant* for the (mathematical) project of *noetic* modal semantics.

No doubt logic includes formal (e.g. possible world or *noetic*) modal semantics, and mathematics includes logic. But mathematical experiences are more or less intuitively relevant to non-mathematical experiences. Kant's and Husserl's *noetic* modal semantics is more intuitively relevant than is Leibniz's possible world modal semantics to our daily non-mathematical experiences of ourselves as distinguishing many distinct experiences but no possible worlds other than the world of objects of experience while reasoning about objects of experience. So *noetic* modal semantics reconnects logic to the phenomenon of *reason* in a way intrinsically intuitive for any (human or non-human, natural or artificial) self-aware subject of experience using language to reason daily about actual and possible objects of experience relevant as means or ends of the actions in which that subject routinely engages as an agent of (social) action.

§2.   Noetic Semantics and Category Theory: Aristotle, Kant, Husserl, et al.

Rejecting possible worlds in favor of events of experiencing objects as modal semantic contexts re-establishes an intuitive connection between reason and the logic $\mathbb{B}$ of any language $\mathcal{L}$ of experience, granting (at least one) logic its classical status as *the mathematics of reason*. My comments *supra* that some complaints about logic and the empirical sciences *are neither true nor false, but*

irrelevant for the mathematical business of (*that*) logic hint at the peculiar *categorial* feature of *noetic* semantics. Its third semantic value W(*idersinn*) (the lack of which impaired Tarski's 1931 use of Husserl's 1901 categories) supports those comments and the goal of overcoming the *psychophobic* estrangement of logic from its pre-20th Century role as the *mathematics of reason*.

    The *categorial* feature of *noetic* semantics involves its view of any *noetic* event e as having some unique intentional content $<®(e), sc(e), rc_\infty(e), t(e), cr(e)>$, and of any least experience e as an intentionality septuple $<\rho, e, ®(e), sc(e), rc_\infty(e), t(e), cr(e)>$ where sc(e) is e's unique semantic category of the region $®(e)$, $rc_\infty(e)$ is e's unique (infinite) set of type-1 relation complexes which are pieces of sc(e), e's unique *noematic* sense $t(e) \in rc_\infty(e)$ is a [CPD55] type-1 relation complex and maximal piece of e's unique categorial relation cr(e), some reification $r(e) = r\{u[t(e)]\}$ of the moment u[t(e)] of unity of the relation complex t(e) is a maximal piece of t(e), a piece of cr(e), and e's unique independent, non-categorial *noematic* referent, and e's unique categorial relation cr(e) is a maximal piece of e's unique semantic category sc(e). Any *noetic* event e's unique *noematic* sense t(e) is a (categorial) object of the sort Aristotle referred to as 'an *accident* of' e's unique independent, non-categorial *noematic* referent $r(e) = r\{u[t(e)]\}$.

    On Aristotle's account only individuals have accidents, but on my account $r(e) = r\{u[t(e)]\}$ is an individual or a (non-categorial) collective; so our accounts differ, but Aristotle's is the ancient provenance of my account. Aristotle sorted accidents into ten *categories* (a.k.a. *predicaments*): substance, quality, quantity, location, time, action, reaction, affection, position, and state (the last two perhaps later abandoned). Kant used 18th Century logic to recast these ten *categories* of *accidents* into four groups (quantity, quality, relation, and modality) of three (so: twelve) *categories of experience*. I follow Husserl, who distinguished (at least three) distinct material regions of experience, and any material region as having its own unique family of categories into which the categorial relations characteristic of that material region of experience are sorted.

    Brentano's harsh *Theory of Categories* [11: 81, 89] judgment of Kant was unjust. Kant's category theory availed late 18th Century logic, geometry, mathematics, and physics, none sufficiently developed to support his task. My view of accidents as [CPD55] n-ary relation complexes for n = 1 is commensurate with

Brentano's view, and my view of accidents as *noematic* senses of *noetic* events is commensurate with Kant's (narrower) view of categories of *accidents* as categories of Newtonian (experimental) physicists' *experiences* (observations). I generalize Kant's view to include any (Weberian) social scientist ρ's experience $<\rho$, e, ®(e), sc(e), rc_∞(e), t(e), cr(e)$>$, where ®(e) is the life-world described by social (not natural) science, and the [CPD55] relation complex (accident) t(e) $\in rc_\infty$(e) is a piece of ®(e). But in either case the [CPD55] relation complex (accident) t(e) is a piece of some unique [CPD67] categorial relation, [CPD74] semantic category, and [CPD73] material region of experience. *Noetic* categorial semantics is a 21st Century mathematical solution of a problem announced by Aristotle's account of *categories of accidents* and historically traceable through Kant and Brentano to Husserl and Tarski.

§3.   Substitution of Variables in Formulae of any Language $\mathcal{L}$ of Experience

The concept of intersubstitutivity *salva congruitate* for any classical first-order predicate language $\mathcal{L}$ presupposes only the syntax (lexicon and grammar) of $\mathcal{L}$, and not the semantics of $\mathcal{L}$ (*viz.* some value assignment v of $\mathcal{L}$ into some $\mathcal{L}$-model including some domain D of discourse). Assume a standard lexicon including the following five grammatical categories of $\mathcal{L}$: (i) logical and (ii) n-adic (Φ and Γ are monadic) predicate $\mathcal{L}$-constants, (iii) particular $\mathcal{L}$-variables (e.g. α, β, and χ), (iv) quantifiers ranging over D, and (v) punctuation. Assume also $\mathcal{L}$-formation rules (*viz.* $\mathcal{L}$'s grammar) and $\mathcal{L}$-transformation rules (*viz.* $\mathcal{L}$'s inference system $\mathbb{B}$). To show what is *not* relevant for intersubstitutivity *salva congruitate* I also assume some value assignment v_1 of $\mathcal{L}$ into the domain D of discourse, including an assignment of each $\mathcal{L}$-variable to one member of D, each n-adic $\mathcal{L}$-predicate to one n-ary relation of members of D, and each grammatical (well-formed) $\mathcal{L}$-formula to some truth-value for D, $\Phi\alpha$, $\Phi\beta$, $\Phi\chi$, $\Gamma\alpha$, $\Gamma\beta$, and $\Gamma\chi$ being well-formed atomic $\mathcal{L}$-formulae with one free $\mathcal{L}$-variable.

The following paragraph's $\mathcal{L}$-variable and $\mathcal{L}$-predicate v_1-semantic values are for use in §§3-4; only v_1 is relevant in §3, but other value assignments of $\mathcal{L}$ into the same domain D will be introduced in §4 *infra*. §3 holds v_1 invariant to show that syntactic substitutions can have semantic consequences. §4 introduces alternative value assignments v_2 and v_3 of the same symbols to (i) show *semantic* consequences of §3's substitutions are *available without* substitutions; (ii) distinguish violations of *semantic* from violations of *syntactic* categories; (iii) show accounting for violations of *semantic* categories requires adopting a three-valued semantics, and; (iv) show why Tarski's 1931 attempt to use Husserl's concept of semantic categories [120] failed.

Assume v_1 interprets the language $\mathcal{L}$ into the domain D of discourse described in Edgar Rice Burroughs' *The Gods of Mars*, assigns the $\mathcal{L}$-predicate 'Φ' to the property '_ is falling toward Mars', the $\mathcal{L}$-predicate 'Γ' to the property '_ is striving to get to Mars', and the particular $\mathcal{L}$-variables α, β, and χ to three individuals as they are on that clear, cold night in the early part of March, 1886 when Captain John Carter of Virginia stood upon the bluff before his cottage in New York: v_1 assigns α to a meteor x at that time on course to collide with Mars, β to John Carter, and χ to Dejah Thoris, daughter of Tardos Mors, Jeddak of Helium. Note that v_1 assigns $\mathcal{L}$-wffs '$\Phi\alpha$' and '$\Gamma\beta$' to *T*(*rue*) and '$\Gamma\chi$' to *F*(*alse*) in D, since at that time in D the meteor x was falling toward Mars, and John Carter *was*, but Dejah Thoris (already on Mars) *was not* striving to get to Mars.

The concept of substitution Tarski shared with Husserl can be illustrated by holding the language $\mathcal{L}$ and its value assignment v_1 into D constant, and restricting $\mathcal{L}$-substitutions to symbols in $\mathcal{L}$'s lexicon (i.e. to $\mathcal{L}$-symbols). Consider the following $\mathcal{L}$-substitutions of $\mathcal{L}$-symbols:

1)   In the (true) $\mathcal{L}$-claim '$\Phi\alpha$', substitute 'β' for 'α' to yield the formula '$\Phi\beta$';

    a)   '$\Phi\beta$' is the (false) $\mathcal{L}$-claim that John Carter is falling toward Mars;

2)   In the (true) $\mathcal{L}$-claim 'Φα', substitute 'χ' for 'α' to yield the
        formula 'Φχ';
        a)   'Φχ' is the (false) $\mathcal{L}$-claim that Dejah Thoris is
                falling toward Mars;
3)   In the (true) $\mathcal{L}$-claim 'Φα', substitute 'Γ' for 'Φ' to yield the
        formula 'Γα';
        a)   'Γα' is the $\mathcal{L}$-claim that the meteor x is striving to
                get to Mars;
4)   In the (true) $\mathcal{L}$-claim 'Γβ', substitute 'α' for 'β' to yield the
        formula 'Γα';
        a)   'Γα' is the $\mathcal{L}$-claim that the meteor x is striving to
                get to Mars;
5)   In the (true) $\mathcal{L}$-claim 'Γβ', substitute 'χ' for 'β' to yield the
        formula 'Γχ';
        a)   'Γχ' is the (false) $\mathcal{L}$-claim that Dejah Thoris is
                striving to get to Mars;
6)   In the (true) $\mathcal{L}$-claim 'Γβ', substitute 'Φ' for 'β' to yield the
        formula 'ΓΦ';
        a)   'ΓΦ' is the $\mathcal{L}$-formula 'is falling toward Mars is
                striving to get to Mars;
7)   In the (true) $\mathcal{L}$-claim 'Φα', substitute '~' for 'Φ' to yield the
        formula '~α';
        a)   '~α' is the $\mathcal{L}$-formula 'it is not the case that the
                meteor x';
8)   In the (true) $\mathcal{L}$-claim 'Φα', substitute '~' for 'α' to yield the
        formula 'Φ~';
        a)   'Φ~' is the $\mathcal{L}$-formula '_ is falling toward Mars it is
                not the case that'

        1) - 8) *supra* illustrate three types of $\mathcal{L}$-substitutions in
some *well-formed* $\mathcal{L}$-formula. 6), 7), and 8) do not transmit well-
formedness as a grammatical property of the resulting $\mathcal{L}$-formula. In
6) an $\mathcal{L}$-predicate is substituted for an $\mathcal{L}$-variable; in 7) an $\mathcal{L}$-logical
constant is substituted for an $\mathcal{L}$-predicate; and in 8) an $\mathcal{L}$-logical

constant is substituted for an $\mathcal{L}$-variable. Here the substituted and substituting symbols belong to different *grammatical* categories of $\mathcal{L}$, so the resulting $\mathcal{L}$-formula is grammatically ill- (not well-) formed. In 6) 'ΓΦ' is not well-formed because the $\mathcal{L}$-predicate symbol 'Φ' occupies the place of an $\mathcal{L}$-variable; in 7) '~α' is not well-formed because the $\mathcal{L}$-variable 'α' (hence the $\mathcal{L}$-formula '~α') is not a well-formed $\mathcal{L}$-formulae; and in 8) 'Φ~' is not well-formed because no well-formed $\mathcal{L}$-formula occurs in the scope of '~'.

Any $\mathcal{L}$-substitution is of the *salva congruitate* type iff the substituted and substituting symbol belong to the *same* grammatical category of $\mathcal{L}$. 6), 7), and 8) are $\mathcal{L}$-substitutions which fail to be of the *salva congruitate* type for that reason, and so generate ill-formed $\mathcal{L}$-formulae from well-formed $\mathcal{L}$-formulae. Note that substitutions 1), 2), and 5) convert a true $\mathcal{L}$-wff to a false $\mathcal{L}$-wff, but substitutions 6), 7), and 8) convert a true $\mathcal{L}$-wff to an ill-formed $\mathcal{L}$-formula which is neither true nor false, because the $\mathcal{L}$-value assignment v_1 specified assigns neither T(rue) nor F(alse) as the semantic value of any grammatically ill-formed $\mathcal{L}$-formula. That leaves substitutions 3) (of one $\mathcal{L}$-predicate for another $\mathcal{L}$-predicate) and 4) (of one $\mathcal{L}$-variable for another $\mathcal{L}$-variable), each of which is an $\mathcal{L}$-substitution of the *salva congruitate* type which converts a true $\mathcal{L}$-wff to the $\mathcal{L}$-wff 'Γα: The meteor x is striving to get to Mars.'

Two questions arise here. (i): Should the $\mathcal{L}$-value assignment v_1 assign some semantic value to Γα? And (if so then) (ii): *What* semantic value should the $\mathcal{L}$-value assignment v_1 assign to Γα? The answer to (i) is 'yes'; v_1 assigns some semantic value to any (grammatically well-formed) $\mathcal{L}$-wff, and Γα is an $\mathcal{L}$-wff. The answer to (ii) is less clear; meteors do not number among objects which strive to reach destinations, so it seems v_1 *should* assign F(alse) to Γα, and T(rue) to its negation ~Γα. That was Koyré's classical answer to (ii) (*vide infra*), which ignores the intuitively obvious fact that the (true) $\mathcal{L}$-wff 'Γβ' is *contingently* true, while the (false) $\mathcal{L}$-wff 'Γα' resulting from substituting 4) the variable 'α' for

the variable 'β' is *necessarily* false. I.e. 'John Carter strives to get to Mars' is true for the early March 1886 event at issue here, but on some (other) occasion 'John Carter strives to get to Mars' is false. 'The meteor x strives to get to Mars' is false for the early March 1886 event, but on no (other) occasion is 'The meteor x strives to get to Mars' true.

Koyré's classical answer to question (ii) ignored the *semantic* change from Γβ's *contingent* truth to Γα's *necessary* falsehood for the early March 1886 event effected by substituting the variable 'α' for the variable 'β'. But this (modal) *semantic* consequence of the *syntactical* change from 'Γβ' to 'Γα' motivated 17th Century demands that the natural sciences banish anthropomorphic claims (like 'Γα': *viz*. the meteor α strives to reach its natural place). So Koyré's classical answer to question (ii) ignores something central to the development of modern science, and thus deserves a closer look.

Of $\mathcal{L}$-substitutions we can distinguish those which are from those which are not *salva congruitate* in at least two equivalent ways *without reference to the $\mathcal{L}$-value assignment* v_1 as follows. For any $\mathcal{L}$-symbols δ and φ, any $\mathcal{L}$-substitution S of φ for δ in any well-formed $\mathcal{L}$-formula Ω is of the *salva congruitate* type *means* i) δ and φ belong to the same grammatical category of $\mathcal{L}$; or ii) if Ω is well-formed then the result Ω(δ/φ) of substituting φ for δ in Ω is well-formed (i.e. S transmits grammatical well-formedness of $\mathcal{L}$-formulae as an invariant). So any non-*salva congruitate* $\mathcal{L}$-substitution may convert a well-formed $\mathcal{L}$-formula Ω into an ill-formed $\mathcal{L}$-formula Ω(δ/φ), to which Husserl referred as *Unsinn*. Any $\mathcal{L}$-formula is *Unsinn* (grammatical nonsense) iff it is not well-formed, and this purely syntactical concept of *Unsinn* informed Husserl's *Logical Investigations* of 1901.

Neither of the foregoing views of substitution *salva congruitate* involves the concept of *the $\mathcal{L}$-value assignment* v_1, but Husserl also adduced a *semantic* criterion for this distinction: *viz*. that if any well-formed $\mathcal{L}$-formula Ω is either true or false under the $\mathcal{L}$-value assignment v_1 and the $\mathcal{L}$-formula Ω(δ/φ) results from Ω by substitution *salva congruitate*, then Ω(δ/φ) is not *Unsinn* (is not grammatical nonsense). This follows from the facts that if i) Ω is