

# Algorithmic-Heuristic Categorial-Combinatoric Ideographical Dialectical Method.

by Karl Seldon

f<u>or</u> Foundation <u>Encyclopedia Dialectica</u> [F.<u>E.D.]</u>.



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**Omni-Copyright Statement**. This F.E.D. text is a partially self-exemplifying exposition & record, of an ongoing self-critique of the ideas advanced herein. The 'ideo-system' behind it is a ''meta-dynamical''''meta-evolving''' conceptual object. The time sequence of changes in the form/content of this text is predicted to be both an illustration and an instantiation of the 'meta-model' of '[ideo-lontogical meta-dynamics' that the F.E.D. opus explores, as well as of the 'homeomorphic defect' of that 'meta-model'. We expect that successive editions of this document will document an 'ideo-onto-dynamics' rather than an 'ideo-onto-stasis'; a 'meta-evolving ideo-ontology'; a 'multi-meta-ontic, multi-meta-monadei'. ideo-cumulum'; an expanding, and ever ''thickening''', inter-generative' ideas, elaborated upon a mounting count of 'metafinite', 'meta-fractal' scales, all exemplifying a "non-standard", 'contra-Boolean logic' -- the ontologically dynamical logic of the dialectical "law" signified by the 'ideo-

ontological', "purely"- $\underline{qual}$ itative,  $\underline{NQ}$  <u>dialectical</u>-algebraic <u>in</u>equation --  $\underline{X}^2 \stackrel{1}{\neq} \underline{X}$ .

tion --  $\underline{\mathbf{X}}^2 \neq \underline{\mathbf{X}}$ .

This *text* is a potential contribution to the collective creative property of the Terran <u>human speci</u>es: assimilate, disseminate, critique, *and surpass* as *you* see fit. We the authors, seek hereby to further neither <u>Our</u> monetary riches, nor <u>Our</u> public power, nor <u>Our</u> personal fame. What <u>we</u> want, money cannot buy. <u>We</u> hope, with *your* help, to build a better <u>us</u>, and to help to do <u>Our</u> "infinitesimal" *part* in building a better *universe* ['infinitesimal" differences can matter, as "strange attractor" nonlinear dynamics intimates]. More monetary wealth will not buy that betterment. More political power cannot impose it. More fame would mainly distract from it. <u>We</u> hope that *you* have chosen, or will choose, to build a better *you*. <u>We</u> hold that such a choice entails the profoundest consequences for one's life, as well as for the lives of others. <u>We</u> also hold that such choices belong to *you* alone. <u>We</u> wish to share, with *you*, the forthcoming *conceptual riches*. <u>We</u> will rejoice, <u>& we</u> will be compensated, if *you* teach <u>Us</u> in turn, help <u>Us</u> to correct <u>Our</u> errors, and thus to advance the common-wealth of *all* beyond this offering. <u>We</u> also request <u>Our</u> readers' forgiveness in the areas of <u>Our</u> many shortcomings, some of which, though determined to strive ceaselessly to overcome them, <u>we</u> may never, in a lifetime, overcome. We the authors, are not accessible publicly, but endeavor to provide public transmittal of <u>Our</u> research product to *you* via <u>Our</u> websites, as well as by other means. <u>We</u> want not that <u>Our</u> existences, let alone <u>Our</u> egos, should be an impediment to that great reverberating propagation of new cognitions, and of emerging *new kinds* of cognition, of which <u>Our</u> writings are, at best, an incomplete, imperfect, transitory, and transitional manifestation. <u>We</u> therefore happily forego personal credit for <u>Our</u> research product, and, by thus renouncing in advance the [already remote] possibility of any notoriety resulting from <u>Our</u> wous, hope also, and

(0) a <u>dialectical progression</u> of <u>dialectical-ideographic languages</u>; a <u>dialectical mathematics</u>; or mathematics for <u>dialectic</u>, for mathematical «mimesis»/'memesis' of the 'meta-monadic' «aufheben» '''<u>dialectic</u> of Nature-as-Totality''';

(1) *a progression* of calcul<u>i</u> for '<u>qualo</u>-<u>quantitative change</u>', encompassing an <u>explicit</u>, <u>ide</u>ographical arithmetic for the *dimensional unit*[ie]<u>s</u>, or metrological "«*monad<u>s</u>*»", of classical "*dimensional analysis*", and, thereby, 'semantifying' the "meaningless" singularit<u>ies</u> [division-by-zero-induced, finite-time "infinite" value<u>s</u>] of *especially* the "<u>un</u>solvable" [partly due to those very singularit<u>ies</u>] <u>nonlinear</u> integrodifferential equation<u>s</u>, and of their <u>gen</u>eral-solution-function<u>s</u>, <u>partly</u> via their

metrological 're-<u>qualification</u>' using the new, <u>explicit</u> 'metrical unit qualifier meta-numerals' starting with the R L, 'dimensional arithmetic', a no-longer-syncopated, but

now fully 'calculative', fully ''algorithmic''', fully ideographical-arithmetical 'dimensional calculus', concretizing & operationalizing a trans-Platonian, demystified version of Plato's

#### «arithmoi monadikoi» & of Diophantus's H ;

(2) a progression of alternative, 'onto-logical', contra-Boolean algebras, grounding a universal algorithmic-heuristic dialectical method [cf. Marx], of «arché»-discovery, & of systematic, dialectical presentation of the fruits of such discovery;

(3) a progression of *ideographical*, 'onto-dynamical' "symbolic logic<u>s</u>", mapping the state-space/control-parameter-space, or 'state/control <u>meta</u>-space', ''<u>meta</u>-dynamics''' of the typically <u>mon</u>linear, '<u>meta</u>-finite', [<u>self</u>-lconversion-singularity '<u>self-bifurcations</u>';

(4) *a progression* of mathematics for modeling the history of mathematical <u>ideas</u> as well as a [psycho]historical-dialectical algebra and arithmetic for modeling the ''<u>meta-evolution</u>''' of the sciences <u>gene</u>rally; a '<u>qualo-fractal'</u> scale of <u>ideographies</u> for the [psycho]history of <u>ideas</u>; scale of <u>ideographies</u> for the '<u>'meta-dynamical'''</u> logic of conceptual self-innovation and self-development, including a '''philosophical algebra''' or <u>trans-Leibnizian</u>, <u>dialectical</u> «characteristica universalis»; an arithmetic and algebra of innovative conception or of the creative conceptual process;

(5) a rules-system for an ideographical language of gualitative, [ideo-][physio-]ontological self-escalation in concretely self-transcending [meta-][super<sup>n</sup>-]systems;

(6) a <u>gen</u>eric algorithm for the 'meta' operation regress; for a <u>trans</u>-Hegelian, 'autopoiesic', '<u>meta-</u>«monad»-ic' version of the «aufheben» operation; and for a "dynamical", 'temporalized', <u>dia</u>chronic, ''<u>meta-evolutionary</u>'' version of the Russellian/Gödelian "logical type," '<u>gualo-fractal</u>';

(7) a map for a 'meta-fractal' [including 'qualo-fractal'], 'contra-Cantorian' theory of totalities, of 'meta-frinte' arithmetics, and of the "foundations" of mathematics;

(8) an arithmetic, algebra, geometry, & analysis built upon certain "<u>non-standard natural numbers</u>", i.e., upon the 'Gödelian <u>meta-natural meta-numbers</u>", a space of <u>non-Musean</u> "hypernumbers", 'of 2nd degree', 'made up out of "standard", '1st degree', 'first-order natural numbers", 'instancing' those "<u>non-standard models</u> of 1st order Peano arithmetic" implied by the 1st-order conjunction of Gödel's completeness theorem & first incompleteness theorem, as by the Löwenheim-Skolem theorem, yielding thereby an '<u>ontologically dynamical</u>', 'de-Parmenideanized', 'de-idealisticized' actualization of Plato's ''arithmetic of <u>dialectics</u>''', his ''assemblages of «<u>idea</u>»-«monads» or of «<u>eide</u>» units''' -- his «arithmoi <u>eide</u>tikoj».

These texts, in addition to that of 'ideogramic', 'pictogramic', and 'phonogramic' symbolization, draw also upon the power of <u>neo-mythological</u>, allegorical, and mythopoeic — that is, of '''psychohistorical''' — symbolization to aid in the conveyance of their most urgent messages. Thus, <u>everything</u> about the Foundation is symbolic. Not just the <u>ideographies</u>. <u>Everything</u>. We leave it to <u>our</u> readers to decide for themselves what about the Foundation is '''meta-fiction''', versus what is real, as a test of their discernment. <u>Dialectical ideography</u> is, we believe, a humble but potent seed. As with the several <u>non-Euclidean</u> geometries that arose from out of the failed attempts to prove the absoluteness of Euclid's geometry, these <u>trans</u>-Parmenidean, 'contra-Boolean', and 'contra-Cantorian', '''onto-logical'' and 'onto-dynamical arithmetics', and their algebras of dialectics, may bear fruit for <u>humanity</u> only if germinated through the intra- and inter-personal dialogue, and dialectic, of assimilation, critique, refutation, & supersession. The taking to heart of the <u>ideas</u> "''graphed''', <u>'pictogramically'</u>, 'detogramically', and marratively ['phonogramically'], herein, can produce profound transformation within the very social self-identity of the person so taking. Panic in response to perceptions of the early signs of such transformation, by some of the perceivers of such transformation, may elicit, from those perceivers, a violent reaction. In particular, the intimation of the '<u>meta-human'</u> --



-- implications of the 'cumulum' of <u>human[oid] [meta-]evolution</u> is profoundly disturbing to some. We therefore lodge this 'Omni-Copyright' statement above together with this countervailing caveat: we recommend that you disseminate the <u>ideas</u> of <u>our</u> websites' texts, and/or related <u>ideas</u> of <u>your own</u> discovery, with careful judgment. Give the friends of <u>humanity</u> a head start vis-à-vis their adversaries. The '<u>meta-system</u>', that is, the <u>multitude</u> of <u>systems</u>, of <u>dialectical ideography</u>, glossed herein, continue to <u>evolve</u> and to ''<u>meta-evolve</u>''' rapidly in <u>our</u> research. They burgeon beneath <u>Our</u> feet. <u>Dialectics</u> should inculcate humility. "Perfection" is **not** a final ''<u>meta-state</u>''' that can be <u>finally</u> manifested. It is, on the contrary, an open-ended, '<u>'m</u>exhaustible'' [cf. Gödel] asymptotic process, moving from greater to lesser imperfection. We realize that conceptual 'homeomorphic defect' is inscapable for cognizing beings such as ourselves. Even at best, we must always be <u>parrly</u> wrong. Even at best, one cannot be finally, completely, and wholly right. One 's mental constructs cannot ever be the whole truth, and nothing but the truth. But one may be right enough for one's time, for one's noment, for one's note, and for one's <u>part</u>; right enough to help one's contemporaries to <u>live</u> through, & beyond, one's time, that they thus, potentially, might enjoy the privilege, the pain notwithstanding, of a vital ['life-ful'] & willing participation in the succeeding epoch of imperfection.

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Key Quote. A key quote, for this text, from the posthumously-published writings of Leibniz --

"For if praise is given to the men who have determined the number of regular bodies – which is of no use, except in so far as it is pleasant to contemplate – and if it is thought to be an exercise worthy of a mathematical genius to have brought to light the more elegant properties of a conchoid or cissoid, or some other figure which rarely has any use, *how much better will it be to bring under mathematical laws human reasoning, which is the most excellent and useful thing that we have.*"

[Leibniz, "Of the Mathematical Determination of Syllogistic Forms", 1690?, in Leibniz: Logical Papers, transl. G. H. R. Parkinson, NY: Oxford U. Pr., 1966, 2002, p. 105, emphases by F.E.D.].

In **o**<u>ur</u> view, the task is **not** so much to subsume dialectical reason **under** "mathematical laws", imposing those "laws", **externally**, upon the pattern<u>s</u> of classic, successful, dialectical human reasoning. The task is, instead, to let the mathematical rule<u>s</u> emerge from close observation of those actual pattern<u>s</u>, and, thereby, to successfully encode the essential pattern<u>s</u> of the best known case<u>s</u> of human – dialectical -- reasoning in a transparent dialectical-mathematical algorithm, one that can enable the user<u>s</u> of that algorithm to marshal the pattern<u>s</u> of those best case<u>s</u> -- of their "best practice<u>s</u>" of human thought-praxis -- to the case<u>s</u> of thought with which they are engaged.

#### **Dedication**.

To Karl Marx -- who wrote, to Joseph Dietzgen, in mid-December of 1875 C.E./B.U.E.\*, that, once he had finished with

his <u>dialectical</u>, immanent critique of capitalist\*\* political-economics, he planned to write on the subject of <u>dialectics</u> --

with our regrets that Marx did not live long enough to have even gotten started on fulfilling that signal self-assignment.

\*Noted in M. Rubel and M. Manale, <u>Marx Without Myth</u>: A Chronological Study of His Life and Work, Basil Blackwell, Oxford, **1975**, p. **300**. Note also p. **233** in that text, which notes Marx's letter of **9** May **1868**, in which Marx informs Joseph Dietzgen that he wants to write a book on dialectics, declaring that "the true laws of dialectics are to be found already in Hegel, in a mystic form, however. The problem is to divest them of this form." Marx had written already to Engels, ~**17** years earlier, on **16** January **1858**, that "If ever the time comes when such work is again possible, I should very much like to write 2 or 3 printers sheets making accessible to the common reader the *rational* aspect of the method which Hegel not only discovered but mystified." See <u>Collected Works</u>, vol. **40**, International Publishers, **1983**, p. **249**. 'B.U.E.' is o<u>ur</u> abbreviation for the phrase 'Before Unification Era', which, per F.<u>E.D</u>. prediction<u>s</u>, or 'symbolic pre-construction<u>s</u>', with 'U.E.' for 'Unification <u>E</u>ra', and hence also with 'B.U.E.', are the era-designations "natural" once *Earth* achieves the level of human-social organization which w<u>e</u> term that of a <u>self-governing 'politically-economicallydemocratic <u>planetary polis</u>'. For more regarding *that* predicted *future* human-social formation, see the commentar<u>ies</u>, on the example 'dialectical <u>meta</u>-model' of the historical dialectic of human-social formation(<u>s</u>), in the sequel.</u>

**\*\***It shouldn't need to be said that, by affirming the <u>actual</u> work of Karl Marx, we thereby implicitly reject the [proto-] state-capitalist, police-state, dictatorial, ideological, mass-murderous abominations of the many Marx[ST, pseudo-Marxian imposters -- Leninoid, Trotskyoid, Stalinoid, Mao-oid,..., Castro-oid, Il-oid, Un-oid,... ad nauseam. It should go without saying. However, such is the remaining delusive ideological force of the "antagonistic cooperation" between, especially, the remaining state-bureaucratic ruling class of <u>pseudo</u>-Marxian, state-capitalist China, and/in collusion with the 'descendence phase', 'humanocidal', "people are pollution" ruling class of the "West", that *it does not go without saying*. It remains necessary to remind our readers of, and to co-affirm, with Marx, Marx's own, regularly neglected disclaimer: "If anything is certain, it is that I myself am not a Marxist."

#### <u>Preface</u>.

This book -- now in its third edition, edition 2 -- about our 'Universal Algorithmic-Heuristic Categorial-Combinatoric <u>Ideographical Dialectical Method</u>', is authored by F.<u>E.D</u>.'s <u>co</u>-founder, Karl Seldon, and constitutes the third and final part of our suite of three methodological texts, all available at <u>dialectics.info</u>.

These texts culminate in the <u>present</u> book. It sets forth, in a users' manual format, the methodology that we use for the application of  $our_{NQ}$  'arithmetics for <u>dialectics</u>'.

**Those** arithmetics form the second axioms-systems-category of arithmetics in our 'meta-systematic dialectical, axioms-systems-categories-progression', our 'dialectical-categorial progression method of presentation' for our arithmetics for dialectics.

**They** are also the first <u>EXplicitly dialectical ideographies</u> in that progression of <u>axioms</u>-systems-categories/-<u>ideographies</u> for and of <u>our dialectical-ideographical mathematical languages</u>.

These 'mathematics of <u>dialectics languages</u>' were originally discovered and developed by Karl Seldon.

Since F.<u>E.D</u>.'s founding, this 'mathematics of <u>dialectics</u>' has seen ongoing development by the F.<u>E.D</u>. research collective as a whole, with the direction of Karl Seldon.

The two preceding parts of this suite of texts are entitled, respectively, 'Hegel's ''Algorithm''' for <u>Dialectic</u>', by Hermes de Nemores, and 'Marx's <u>Dialectic</u>al Method', by Aoristos Dyosphainthos.

--<u>E.D</u>. Editor<u>s</u>, Special Council for *the <u>Encyclopedia</u>*, <u>for Foundation <u>Encyclopedia Dialectica</u> [F.<u>E.D</u>.], Terminious, California, updated **04** July **2022** C.E./B.U.E.</u>

#### Introduction.

**Dialectic and Arithmetic**. Many are those who would be surprised -- even scandalized! -- to learn that <u>dialectics</u> is about "'number<u>s</u>''; that <u>dialectics</u> is '''<u>arithmetical</u>'''. But this realization is a key to the '*Universal Algorithmic-Heuristic* <u>*Dialectical Method*' that this text describes. For Plato, <u>dialectic</u> comprised the "<u>arithmetic</u>" of the eternal, mystic relations of <u>in</u>clusion & <u>ex</u>clusion of the "transcendent" «<u>eide</u>» -- of his <u>arithmoi</u> <u>eide</u>tikoi». Marxian <u>dialectic</u> too is algorithmic as well as heuristic, & <u>can</u> be <u>ide</u>ographical/geometrical/<u>pict</u>ographical; mathematical, algebraic, &, at root, <u>arithmetical</u>.</u>

<u>Marxian "Economic" Value and Modern, Abstract Number</u>. By "'number<u>s</u>''' I do *not* mean "number<u>s</u>" as per the kind of view<u>s</u> that number-<u>*ide*as</u> have orbited under the human-<u>*phen*</u>omic, "'psychohistorical''' impact of the human praxis of ''*exchange-value exchange*''' [cf. Marx], and of the "historically-<u>*speci*</u>fic" *«mentalité»* of *modern*, capitalist humanity, which that praxis breeds, even if largely <u>un</u>consciously so. The latter *«mentalité»* has emerged over the eon<u>s</u>, first, feebly, in <u>commodity</u> barter; later still, in the <u>monies</u>-mediated circulation of commodit<u>ies</u>. That emergence was soon joined by stirrings of what Marx called the "antediluvian form<u>s</u>" of <u>non</u>-production, *circulation* <u>capital</u>', i.e., of *mercantile* <u>capital</u>, and *usurer<u>s</u>' <u>capital</u> – but also by <i>chattel slavery-based*, *'latifundial'*, *agricultural <u>productive</u> capital</u>. Finally, this emergence was consummated by capital-value in its modern, <i>wage-labor-based*, <u>industrial-productive</u> form, as the ongoing "circulation and [expanding] re-<u>production</u> of the total social <u>capital</u>" of the world market [cf. Marx]. By "'number<u>s</u>''' I do *not* mean "number" as *modern*, "<u>abstract</u> number"; as "pure", <u>'un</u>qualified <u>quant</u>ity' [cf. Jacob Klein], i.e., as, albeit mostly <u>un</u>consciously, rooted in the, "'psycho-historical''', *«arché»* of the capitalist *«mentalité»* that Marx named the "Elementary...Form of [Commodity-]Value", the category also forming the deepest premise/*«arché»* of his works.

I mean a kind of "'concrete number'", concrete in a degree of concreteness such as has scarcely been extant, at least mathematically, since the Dark Age<u>s</u> *cum* Renaissance estrangement from the ancient '«arithmo<u>i</u>» theory'. The latter, earlier theory pervaded the *«mentalité»*, the 'human <u>phen</u>ome', of classical antiquity, arising psychohistorically from its still [mostly] <u>pre</u>-capitalist, direct-consumption *"use-value"-productive* form<u>s</u> of "'human-societal self-re-<u>production</u> "'. By "'number'", I mean *«arithmos»*; the kind of "number" that reflected the *«mentalité»* of *ancient* humanity; the *ancient* <u>Mediterranean</u> branch of 'the human <u>phen</u>ome' e<u>speci</u>ally.

""Number": Quantitative versus Qualitative. Any "natural" number as modernly conceived is "made of" abstract and, paradoxically, of *absolutely* "*identical*", :: *in*distinguishable *units* [one or more of them], each called '1'. The kind of --"<u>dialectical</u>" -- "numbers" that I reference herein are also *made of units*, but of <u>qualitative units</u> [cf. Diophantus's  $\mu^{o}$ ]. Hence, each of their composite "'numeral" symbols we center upon the 'symbolic element' 'q', which stands, here generically, for any category-definitive "quality"'-in-general. The other key 'symbolic element' for the 'meta-numeral' symbols of o<u>ur</u> '<u>dialectical</u> numbers' is a subscript, <u>generically</u> '**n**'. Thereby, the composite of the two, ' $\mathbf{q}_{n}$ ', where **n** is a "natural number", denotes a specific order-quality, signing the qualitative 'order-place' of that 'dialectical numeral' in the generic ordinal-number progression of such 'dialectical [meta-]numerals'. Thus, the modern "natural numbers" are not, in the <u>qualitative</u>, <u>ord</u>inal "arithmetic" of the  $\{\underline{q}_n\}$ , "<u>abstractly</u> negated" [Hegel]. Instead, the  $\{n\}$  are '*«aufheben»*conserved', and -"internalized", and -"elevated" to become the 'q' of these new, 'dialectical numbers', or 'dialectors' ['dialectical vectors'] albeit, directly, their **n** part figures in a "demoted" [cf. Hegel], subordinated, <u>subsumed</u>, '<u>subscriptal</u>' role. The <u>gen</u>eric '**q**<sub>n</sub>' symbol, as a whole, is used -- is *interpreted for*; is assigned to -- or is applied to represent, for each specific value of **n**, a different specific ordinal category -- the **n**th ontological category in some specific, well-ordered categorial series or progression, one that helps to disclose the detailed ontic content of a *speci*fic **D**omain of discourse. Note that, in <u>this text</u>, we steer clear of some of the technicalit<u>ies</u> inherent in the ' $\underline{\mathbf{q}}_{n}$ ' symbolism, and in its axiomatic "arithmetical" details, cleaving instead to the "algebraic" level, which we see as more user-accessible intuitively. The concept of an 'ontological category', as well as that of the ''units'' that are implicit in a typical 'ontological category', each such unit sharing the defining <u>q</u>uality of that 'ontic category', are "primitives" or "<u>un</u>defined terms" of the axiom<u>s</u>-system<u>s</u>, the 'rule<u>s</u>-system<u>s</u>', that govern the various known variant<u>s</u> of the  $\{\underline{q}_n\}$ . Similarly, "line" and "point" are "undefined terms" of Euclid's geometrical axiomatic system. Such "undefined terms" are described, to a degree, informally, but never *specified* exhaustively and precisely. Attempts to fully define all such terms impend potentially endless regresses.

<sup>\*[&</sup>quot;One reason that unintended interpretations [K.S. – i.e., "Nonstandard Models"] are possible is that each axiomatic system contains undefined terms. Formerly, it was thought that the axioms "defined" these terms implicitly. But the axioms do not suffice. Hence the concept of undefined terms must be altered in some as yet unforeseeable way." -- from p. 272, in Morris Kline, <u>Mathematics</u>: The Loss of Certainty, Oxford University Press, New York, 1980.].

«Arithmos» as "'Number "' and as Category. But what have "categories "' to do with "numbers"? An "ontic category", or 'kind-of-beings category', is, *implicitly*, *precisely*, a 'kind-«*arithmos*»', a 'kind-number' -- referencing 'a[n indefinite, uncertain] count or "number" of units/«monads», all of a given kind'. Despite the "individual differences' the qualitative differences, in detail -- among such, ontic, units, they all share at least one single defining quality. We thus sign them all, *im*plicitly, by one ontic category symbol, the one *ex*plicitly denoting that *single* defining *quality*. A 'kind-of-things' «arithmos», as an ontic category, is like the proverbial "forest"; its units like the "trees" of that forest. These new, 'dialectical-ontological kind-numbers' are "numbers" more in the ancient, 'qualo-quantitative', «arithmos» sense. That sense arose in the era dominated by exo-human Nature-produced, plus humans-refined, use-values, and was supported by that use-value focused social praxis, before the emergence of the cognitive dominance of "the exchange value" [cf. Marx]. That sense was supported far more so then than it is supported today, in the *modern*, law-of-valueshaped, "pure", *abstract-quant*ity-only meme. Yet I am not advocating some ""neo-primitivist"" "return" to the ancient number concept, or to its *«mentalité»*, or to the social conditions that spawned that *«mentalité»*. But, in a way, I am advocating for a *partial* return of some aspects of that number concept, and of that human *«mentalité»*, but only at a higher level, and in a way which "[«aufheben»] assimilates all of the wealth of subsequent development" [cf. Marx, "Economic-Philosophic Manuscripts"]; all of the wealth of 'human-phenomic' advances subsequent to the self-induced demise of classical civilization. The meaning of the ancient term «arithmos», "'number", can be reconstructed, and translated, for the modern mind. It meant, and it now again means, for us, 'indefinite number', the unknown-in-detail, and typically everchanging count of the constituents -- of the individuals, of the elements, of the units, or of the *«monads»* [to use, again, the ancient Greek term] -- all of one given kind or quality, that implicitly "populate", for our minds, a category standing for that *aualitative* "kind": for the "extension" of that "intension" or *quality*. It means a count of at least two, or more, units, or *«monads»*, both/all of the same kind. One unit of a kind is still unit *quality*, *not* units *quantity*, and thus does *not* an «arithmos» -- a ""number"" -- make, per the ancient view. Because such a ""number" is usually, to our knowledge, *in*definite, for us, *un*certain as to its exact *quant*ity, *what remains* is a representation of the *quality* shared by every one of its "[logical] individuals"; every unit, every «monad» of that number, of that number's kind, despite their qualitative "individual differences" in detail. What remains is that *defining quality*, defining a *whole* "kind-of-beings" «arithmos» as a *category*. As a "hol" ontological category, a category itself is a kind of unit in its own right; is a kind of «aufheben» 'meta-unit' to those units, deeper within it, within its 'implicitude'. We hold that these «monads» are the real subjects/agents of [natural] history, though, of course, not involving self-aware subjects until the late advent of the human[oid]-societal «monads»; of "hol" human societies as «monads» and as agents of self-change-and-other-change.

Dialectics as a General Theory of Categories/«Arithmoi». So, yes, dialectics, by being about ontological or kind categories/«arithmoi», and the «aufheben» relations/processes of such categories, is about the [indefinite] ""numbers" of the different major "kinds" [cf. Plato]. It is thus about 'qualitative numbers', and is thus formulateable as an "arithmetic" in the same sense that still partly informed the famous ancient-to-modern transitional treatise by the Diophantus of Alexandria, *circa* **250** C.E., entitled "«*Arithmêtikê*»", with its crude, "syncopated" symbol µ° standing for the <u>gene</u>ric, *qual*itative «monad» or «<u>µo</u>vaç». <u>Directly</u>, such an "arithmetic" is about categor<u>ies</u> as units; is about their <u>qual</u>ities. Indirectly, such an "arithmetic" is about the changing and typically unknown quantities of units/«monads»/-"elements ""/" individuals "/" holons " [cf. Arthur Koestler] which such categories ' names collectively connote, as the units of/within those categories-as-units. Those deeper units are the implicit content to which the names of, and ideographical symbols for, those ontic categories/«arithmoi»/"" numbers" refer. Again, such a category thereby becomes a 'category-[as-]unit', a category-qua-unit, an «aufheben» 'meta-unit-ization' of those/its own "internal", implicit, deeper units. Dialectic [«dialektikê techne»], as presented herein, is 'a «techne» [for] dealing with kinds [«arithmoi»]', i.e., with ontic «arithmoi» -- with ontic categories and their inherent categorial progressions or "series". Dialectic is thus also an '*«arithmo<u>i</u>-techne»*\*'; an '*«arithme-techne»*\*', or an '*«arithmê-tikê»*\*', for working with, even for '<u>qual</u>itatively calculating with', or 'non-quantitatively computing with' [as impossible as that may sound to modern ears], such «arithmoi»/categories/dialectic 'numbers'. Dialectic [«dialektikê techne»] is also a «techne» of/for dialogue, including a technology and discipline of self-critical, 'discoverential' thought as 'self-dialogue' -- 'self-questionings eliciting self-answerings' [cf. [Plato's] Socrates's «elenchus» dialectical "dialogue-ic" method, in relation to Zeno's method of negative, "indirect proof", by deduction to propositional contradiction, as well as in relation to Medieval European "dialectic"]. Such thought can too turn outward, be shared with others, via spoken or written dialectic as a pedagogically-advantaged technology/method, for 'ideo-systematic', 'ideo-taxonomic' *presentation* of the fruitions of such disciplined thinking, starting from the simplest, most abstract *«arithmos»* of a given **Domain**, and advancing, *«arithmos»-by-«arithmos», category-by-category, step-by-step*, until the most complex/thoughtconcrete, most determinations-rich «arithmos»/category of that **Domain** has been evoked. In our terms, what I am presenting here is a method of 'categorial analysis' -- a method of 'categorial **Domain** analysis'.

\*[These ""neologisms"" are meant to be taken more *mnemonically* than *etymologically*].

<u>Dialectic</u> is an exhaustive, categorial-<u>combinatoric</u> analysis-method for teasing-out the full potential ontological content of a typical subject-matter <u>Domain</u>. Such a <u>Domain</u> is analyzed into its constituent categor<u>ies</u> from its <u>user</u>'s viewpoint, *"for"* and *per* this method's <u>user</u>. It starts as a <u>fairly</u> well-<u>ord</u>ered, heuristic *way of <u>discovery</u>* of those constituent categor<u>ies</u>, for that <u>user</u>, guiding that <u>user</u> to their 'starting category' or '*«arché»*-category' [cf. the deductive *«archai»* found by Aristotle's "dialectical method"]. It finishes as an *exactly-<u>ord</u>ered way of <u>presentation</u> of those categorial discover<u>ies</u>/findings.* 

To the extent that categories are universal to human cognition, this categorial-combinatoric method is a universal method.

If categor<u>ies</u> are universal to human cognition, then so are number<u>s</u>, in the sense we have asserted, i.e., as «*arithmoi*». In that sense, dialectic is '*a universal theory of* «*arithmoi*»'. Hence we <u>emphasize</u> plurality throughout this text, so as to <u>underscore</u> an ancient Pythagorean point: our world is made up of «*arithmoi*». Singleton, «*sui generis*», <u>absolutely</u> unique «*monads*» are rare, albeit any unit of a given kind-«*arithmos*» is only <u>similar</u> to, never "*identical*" to, every other.

The  $\mathbf{N}_{\mathbf{N}}^{\mathbf{Q}}$  axiom<u>s</u>-system<u>s</u>, that undergird the 'algorithmicity' of 'the  $\mathbf{N}_{\mathbf{N}}^{\mathbf{Q}}$  dialectical method', occupy a '''sweet-spot''' in the modern human mathematical '''<u>phen</u>ome'''. They represent **both** '<u>contra</u>-Boolean' arithmetics for '<u>contra</u>-Boolean' algebraic dialectical logics, and finitary '''<u>non</u>-standard models''' for standard "first order" Peano "<u>N</u>atural" numbers arithmetic. The  $\mathbf{N}_{\mathbf{Q}}^{\mathbf{Q}}$  arithmetics are also the simplest 'arithmetics' for dialectic' that we have so far been able to devise, that also preserve the features of dialectic that we consider to be 'essence-ial' to dialectic.

<u>A Mathematics of Meanings</u>. The  $\mathbf{N}_{\mathbf{N}}^{\mathbf{Q}}$  algebras are algebras of/for <u>meaning</u> and of/for <u>meanings</u>. Their algebraic  $\mathbf{X}_{\mathbf{S}}$ ,

their symbols to be solved for, are solved by discovering/finding their <u>meanings</u>. Those <u>meanings</u> are **not** restricted to the narrow confines of abstract numbers, of quantities without qualification -- of the '<u>un</u>qualified quantifiers' that standard algebras solve-for. The  $\mathbb{N}^{Q}$  algebras' <u>meanings</u> are about qualities, albeit qualities without quantification -- <u>un</u>quantifiable <u>arithmetical</u> qualifiers. They thus portend, from the quality-side, richer <u>ideographical languages</u> able to express qualifiers that are also quantified, quantifiers that are also qualified to the qualitiers'.

**Examples**. A multitudinous accumulation of more <u>specific</u>, more concrete examples of <u>dialectic</u>, examples that we have analyzed using mainly the  $\{\underline{q}_n\}$  method, i.e., 'The  $\sqrt{Q}$  Method', of '<u>dialectic</u>al categorial analysis' -- via a combination of '<u>dialectic</u>al <u>ideography</u>' and '<u>dialectic</u>al <u>pictography</u>' -- has been constructed, over the years since <u>our</u> foundation, by Foundation <u>Encyclopedia Dialectica</u> [F.<u>E.D.</u>]. That accumulation has also been made public -- published, voluminously -- by the Foundation to-date, over the past twenty years, via <u>our</u> letters, <u>our</u> websites, and <u>our</u> blogs, as well as via <u>our</u> books, and has been offered to the public largely free of charge. That accumulation should offer you, the reader, as a potential <u>user</u> of 'The  $\sqrt{Q}$  Method' on your own account, abundant <u>inductive</u> confirmation of, and confidence in, the

universality of this <u>dialectic</u>al method. Some of those classic examples of dialectic will be re-iterated herein, often with improvement( $\underline{s}$ ). Other examples of dialectic herein will be new, published for the first time in this book.

<u>Strategy of Exposition</u>. The body of this book presents four <u>specific variants</u> of 'The Q Method', i.e., of '<u>dialectical</u>

categorial analysis', in the following systematic order: (1) the <u>dyad</u>ic method for <u>systematic</u> dialectic<u>s</u>, (2) the <u>triad</u>ic method for <u>systematic</u> dialectic<u>s</u>, (3) the <u>dyad</u>ic method for <u>historical</u> dialectic<u>s</u>, and (4) the <u>triad</u>ic method for <u>historical</u> dialectic<u>s</u>. The section<u>s</u> of that body that address each of those variant<u>s</u> are presented via a format of 'repetition with <u>telling</u> variation'. That is, each of the four section<u>s</u> repeats the content of the other three section<u>s</u> as far as is accurate. The content of each section that departs from repeating that of the other section<u>s</u> represents the 'essence-ial' <u>distinctness</u> of the nature of the <u>speci</u>fic method variant addressed <u>speci</u>fically by that section. The content of each section that <u>does</u> repeat that of the other section<u>s</u> represents the <u>gene</u>ric essence of our theory of dialectic<u>s</u>-in-<u>gen</u>eral and of dialectic<u>s</u> as a whole. <u>Note</u>: W<u>e</u> surround o<u>ur</u> own neologism<u>s</u> with single quote mark<u>s</u>, exact rendering<u>s</u> of other<u>s</u>' word<u>s</u> by double quote mark<u>s</u>, and o<u>ur</u> improvisation<u>s</u> on other<u>s</u>' word<u>s</u> by triple quote mark<u>s</u>. We use 'angle-brackets', '«...»', to enclose non-English words. W<u>e emphasize</u> pluralit<u>ies</u> throughout.

<u>**Glossary-Index**</u>. You may find use for the index/'book master-key' at the end of this book also as a glossary. This index contains square-bracketed brief definitions, as to their relevance to *this* text, of the key terms, key names, key texts' titles, and key ideographical symbols that it lists, immediately to the right of each such entry listed, of course with these entries in alphabetical order, and also with the page numbers in this text where those entries are invoked and/or addressed. An analytical Table of Pictograms is also provided as part of the back-matter of this book.

#### **Some Notes on Notation.** For more information regarding the definitions, and the '*ide*ographical etymology', of the <u>special</u> arithmetical and algebraical/*ideogramic* symbols employed herein, please utilize the following links --

 $http://www.dialectics.info/dialectics/Glossary_Encyclopedia_Dialectica, \%20 Notational_Conventions, \%20 Ideogramic_and_Phonogramic, 22 JAN 2014.jpg Notational_Conventions, \%20 Ideogramic_and_Phonogramic, \%20 Ideogramic, \%20 Ideogramic,$ 

- http://www.dialectics.info/dialectics/Glossary\_files/Glossary\_Encyclopedia\_Dialectica,%20Notational\_Conventions,%20Ideogramic,22JAN2014.jpg http://www.dialectics.info/dialectics/Glossary\_files/Glossary,E.\_D.\_Notation\_Definition,Signs\_of\_Assignment\_or\_Interpretation,07JUL2015.jpg
- http://www.dialectics.info/dialectics/Glossary\_Eiles/Glossary,E\_D\_Notation\_Definition,Categorial\_Progression\_Arrow\_Signs,12APR2015.jpg
- http://www.dialectics.info/dialectics/Glossary\_files/Glossary,E.\_D.\_Notation\_Definition,Dialectical\_Negation-Opposition\_Signs,04APR2015.jpg
- http://www.dialectics.info/dialectics/Glossary\_Eiles/Glossary,E.\_D.\_Notation\_Definition,Qualitative\_Inequality\_Relation\_Sign,04APR2015.jpg
- http://www.dialectics.info/dialectics/Glossary\_files/Glossary\_E\_D\_Notation\_Definitions\_\_Signs\_for\_some\_species\_of\_Non-Identicality'\_07MAY2015.jpg http://www.dialectics.info/dialectics/Glossary\_files/Glossary\_E\_D\_Notation\_Definition,Categorial\_Addition\_Signs,14APR2015.jpg
- http://www.dialectics.info/dialectics/Glossary\_files/Glossary\_E\_D\_Notation\_Definition, Categorial\_MULTIPLICATION\_Signs,09MAY2015.jpg

 $http://www.dialectics.info/dialectics/Glossary\_files/Glossary\_E\_D\_Notation\_Definition, Propositional\_Status\_Signs, 14APR2015.jpg$ 

-- and please note also the general bulleted notational commentaries below --

- To distinguish the "we" of Foundation Encyclopedia Dialectica [F.E.D.] from the "editorial we", and from the universal human ""we "", we often employ "we "" or "we ", echoing the pattern of the character-string 'F.E.D.', to signify the former.
- We, sometimes, use color-differences, via color-coded ""illuminations", of "<u>phonogramic</u>" texts, and also of mathematical --"<u>ide</u>ogramic" -- variables, etc., as well as of "<u>pictogramic</u>", "geometric" diagrams, to convey both <u>qual</u>itative differences, and to convey the 'ordinalities' of those gualitative differences, e.g., the order of manifestation of the different ontological kinds of the given **Domain**, **D**, at issue -- the inter-relationships and interconnections among the qualities so expressed/represented.
- We use the sign ' $\equiv$ ' in a symbols-complex, e.g.,  $\underline{\mathbf{x}} \equiv \underline{\mathbf{q}}_{\mathbf{x}}$ , to state that, e.g.,  $\underline{\mathbf{x}}$  and  $\underline{\mathbf{q}}_{\mathbf{x}}$  are identical by definition, vs. the sign '|==', or '=-|', in, e.g.,  $\underline{\mathbf{g}}_{zx}$  |-=  $\underline{\mathbf{g}}_{w}$ , or  $\underline{\mathbf{g}}_{w}$  =-|  $\underline{\mathbf{g}}_{zx}$ , to assert that a known <u>uni</u>vocal '''constant''', e.g., ' $\underline{\mathbf{g}}_{w}$ ', solves for/defines, e.g., the  $\underline{bi} \text{-vocal' ```algebraic'``-}\underline{un} \text{known '}\underline{\mathbf{g}_{zx}}, \text{ or '}\underline{\partial} |=\equiv \text{'}, \text{ or '}\underline{\partial} \equiv -|\text{'}, \text{ in, e.g., } \underline{\mathbf{g}_{zyx}} \underline{\partial} |=\equiv \underline{\mathbf{g}_{wx}}, \text{ or } \underline{\mathbf{g}_{wy}} \underline{\partial} \equiv -|\underline{\mathbf{g}_{zyx}}, \text{ for } \underline{partial} \text{ solution} \underline{s},$ and ' $\mathbf{I}_{\mathbf{z}}$ ' in a symbols-complex, e.g.,  $\mathbf{\underline{q}}_{\mathbf{z}} \otimes \mathbf{\underline{q}}_{\mathbf{x}}$   $\mathbf{I}_{\mathbf{z}} = \mathbf{\underline{q}}_{\mathbf{x}} \oplus \mathbf{\underline{q}}_{\mathbf{zx}}$  to assert that, e.g., ' $\mathbf{\underline{q}}_{\mathbf{z}} \otimes \mathbf{\underline{q}}_{\mathbf{x}}$ ' equals ' $\mathbf{\underline{q}}_{\mathbf{x}} \oplus \mathbf{\underline{q}}_{\mathbf{zx}}$ ' per axiom.
- We use '<u>un-underscored</u>', **bold**, characters -- e.g., 'X' -- as mathematical <u>ide</u>ograms to represent "purely" <u>quant</u>itative variables and constants in <u>general</u>, e.g., "Natural Numbers" values, whose space is  $\mathbb{N} \equiv \{1, 2, 3, ...\}$ , or "Whole Numbers" values, whose space is  $W \equiv \{0, 1, 2, 3, ...\}$ , etc., or for values drawn from the space Z, or from the space Q, or from the space R. The *part*ial differential sign 'ô' takes an "infinitesimal" part of its operands, vs. our 'ô', meant as taking a finite *qual*itative *part*.
- We use <u>underscored</u>, **bold** characters -- e.g., ' $\mathbf{x}$ ', or ' $\mathbf{g}_{\mathbf{x}}$ ' -- as mathematical <u>ide</u>ograms to represent ontological categories, and to represent "purely" qualitative variables and constants in general, that are qualitatively different from, i.e., ontologically different from, and *qual*itatively *un*equal to, '\frac{1}{2}', other *such* variables and constants.
- We use <u>underscored</u>, **bold** "*phon*ic"/*phon*etic letters, with an <u>omicron exponent</u>, ", [in deference to Diophantus], as parts of a mathematical <u>ide</u>ography, to represent "<u>impure</u>", i.e., <u>qualo-quant</u>itative or <u>quant</u>itative, value<u>s</u> -- e.g.,  $\mathbf{u}_{\mathbf{k}}(\tau) \times \underline{\mathbf{u}}_{\mathbf{k}}^{\circ}$ , or  $\mu_{\mathbf{k}}(\tau) \times \underline{\mu}^{\circ}_{\underline{\Sigma}_{u},\mathbf{u},\mathbf{u}^{\circ}_{n}} \times \underline{\mu}^{\circ}_{\mathbf{k}}$ , wherein  $\mathbf{k}, \mathbf{n} \in \mathbb{N}$  -- as mathematical <u>*ide*</u>ogram<u>s</u>, to express '<u>quantifiable</u>' and, in fact, '<u>quantified</u>'

<u>qual</u>itative value<u>s</u>. Such value<u>s</u> include <u>quant</u>ifiable ontological category '<u>u</u>nit <u>qual</u>ifier<u>s</u>', <u>u</u><sup>o</sup><sub>k</sub>, denoting the representative <u>u</u>nit of the **k**th kind/ontological category in a given categorial progression, whose " $\frac{quant}{r}$  if ier", **u**<sub>L</sub>( $\tau$ ), states the typical/expected/predicted "population" count of the <u>units</u> of the kth ontological category/kind for <u>Domain</u> D in <u>its</u> epoch  $\tau$ . Such values also include <u>quantifiable</u> and in fact <u>quantified</u> [by  $\mu_k(\tau)$  <u>metrological</u> <u>unit quantifiers</u>] <u>metrological</u> <u>unit qualifiers</u>, [ $\mu^{\circ}_{\mu}$ ], combining

as  $\mu_{\mathbf{k}}(\tau)\underline{\mu}_{\mathbf{k}}^{o}$ , and  $\frac{\partial \mu}{\partial \mathbf{k}}$ , and  $\frac{\partial \mu}{\partial \mathbf{k}}$ , denoting, e.g., a **k**th dynamical 'state-variable <u>*qual*</u>ifier', or a **k**th dynamical

'control parameter <u>qual</u>ifier', etc. All **3** then combine as  ${}^{\mu}_{\mathbf{k}}(\tau) \otimes \underline{\mu}^{\circ}_{\mathbf{k}} \otimes \underline{\mu}^{\circ}_{\underline{\boldsymbol{\nu}}_{n}}{}^{\prime}_{\mathbf{n}} = {}^{\mu}_{\mathbf{k}}(\tau) \underline{\mu}^{\circ}_{\mathbf{k}} \otimes \underline{\boldsymbol{\nu}}_{\underline{\boldsymbol{\nu}}_{n}}{}^{\prime}_{\mathbf{n}}$ . By  $\underline{\mu}^{\circ}_{\mathbf{k}}$ , e.g., two

distinct state-variables that happen to require the same "physical units" are kept from "amalgamatively" adding together. Such a <u>gen</u>eric '<u>metrological qual</u>ifier' as '(1) $\underline{\mu}^{\circ}_{\underline{\Sigma}_{n}u_{n}\underline{u}^{\circ}_{n}}$ ', may denote, e.g., '1 sec.', '1 gm.', '1 cm.', or a more compound/composite

"physical unit" or "dimension". I.e., if one assigns 'sec. (-)  $\mu_{\underline{u}_1}^{\circ}$ , and 'gm. (-)  $\mu_{\underline{u}_2}^{\circ}$ , and 'cm. (-)  $\mu_{\underline{u}_3}^{\circ}$ , the unit for acceleration is then 'cm./sec.<sup>2</sup> (—)  $\mu_{+1\underline{u}_{3}}^{o} \oplus -2\underline{u}_{1}^{o}$ '. Such 'symbol-complex<u>es</u>' as, e.g., ' $u_{n}(\tau)\underline{u}_{n}^{o}$ ' and ' $u_{n}(\tau+1)\underline{u}_{n}^{o}$ ', may be <u>quant</u>itatively different, <u>quant</u>itatively <u>un</u>equal, but are <u>qual</u>itatively equal, as both pertain to the same <u>kind</u>, e.g., to the **n**th category's <u>units</u>. Or, instead, like ' $3\underline{u}_{\ell}^{o}$ ' vs. ' $3\underline{u}_{k}^{o}$ ', they may be <u>qual</u>itatively <u>different</u>, <u>qual</u>itatively <u>un</u>equal, if  $\ell \neq k$ , because

- they pertain to different order-kinds, e.g., to different kinds of ontological-categorial  $\underline{u}$ nits' <u>qualifiers</u> -- e.g., to ' $\underline{u}^{o}_{k}$ ', vs. ' $\underline{u}^{o}_{k}$ ' -even though they share "the same" 'arithmetical <u>quantifier</u>', **3**, so that, overall,  $3\underline{u}_{\ell}^{o}$   $\ddagger$  ' $3\underline{u}_{\kappa}^{o}$ .
- We use the sign 's '[UZZZ] in place of 'hers', 'his', or 'its' when the gender of the agent with ownership/inherence is unclear.

#### A "Principle of Manuscript Illumination" & Interweaving Ordinalities'.

Many surviving medieval manuscripts, as well as some manuscripts surviving from occidental late antiquity, including some secular manuscripts, as well as many theological-ideological manuscripts, exhibit color emphasis of their lettering [see, for example, John Ruskin, "The Distinction Between Illumination and Painting", **1854**], together with colored decorative borders, ornaments, and miniature pictorials.

The intent of these "illuminations" was, evidently, to convey emphasis, and to attract, and to sensuously reward, reader attention.

Modern, electronic, digital, "word processing" technology, as well as modern printing technology, has profoundly deepened the potential for "illumination" of "modern manuscripts", via the coloring of texts, as well as of illustrations, and via other elements of text emphasis, at relatively far less cost, in labor-time, and in currency, than was possible either for the ancients, or for the "medievals". This potential may have been rarely actualized, in the modern epoch, still due to cost, but also due to lack of any perceived compelling motive, or purpose, for so doing.

We have chosen, for our <u>Encyclopedia Dialectica</u> style conventions, and for our related "modern manuscripts", to sometimes color-code our texts, for reasons which are far from being mainly cosmetic, or ornamental -- yes, for the medieval reasons, again, but also for technical, that is, "dialectical-logical", reasons, and for the purpose of intensifying certain subliminal as well as liminal impacts of our public communications.

We typically employ textual color-coding -- color-coding of our ''<u>phonogramic</u>''' symbols -- in addition to the color coding of our ''<u>ideogramic</u>''' symbols, as of our ''<u>ideogramic</u>''' symbols, to highlight, mostly subliminally, but also liminally, those kaleidoscopically '<u>interweaving ordinalities</u>' that actively constitute our «kosmos», in its multifoliate, 'multi-<u>chromatic</u>', ongoing ontological progress[ion], including those interwoven '<u>ideo-ordinalities</u>' that actively constitute humanities' partial mental modeling/reproduction of *it*, from within *it*, as of *it*.

Because this color-coding of, e.g., words -- of '*phonogramic symbols*' -- as well as of *ideograms* and *pictograms*, *is*, after all, a form of *symbolic emphasis*, our *Encyclopedia Dialectica* editors determine it "locally", determining it for each locus in a text(+) module where such emphasis is to be applied. Thus, e.g., the same character, the same word, or the same <u>dialectical-mathematical</u> *ideographical symbol*, or the same figure, may *not* exhibit the same color-coding in each of its occurrences therein, including herein.

We apply '*ordinality* color-coding emphasis' using the following standard *spectrum* -- ('1st-*ness*') reddish; ('2nd-*ness*') orange; ('3rd-*ness*') yellowish, ('4th-*ness*') green, ('5th-*ness*') blue, ('6th-*ness*') 'indigoish', ('7th-*ness*') violet, ('8th-*ness*') '''bright pink''', ('9th-*ness*') '''bright orange''', ('10th-*ness*') yellowish-orange, ('11th-*ness*') '''bright green''', ('12th-*ness*') '''bright blue'''.

To understand the present handbook, it is <u>not</u> necessary to <u>consciously</u> know about this '<u>E.D.</u> color-language', and <u>its</u> 'principled illumination' of <u>manuscripts</u>. But de-coding <u>this</u> 'color-language' will deepen its <u>reception</u>.

Key «Arithmoi» [Kind Numbers] Color-Coded per their 'Ordinalities' in Our Texts.

• '1st-ness', '2nd-ness', '3rd-ness', '4th-ness', '5th-ness', '6th-ness', '7th-ness', '8th-ness', '9th-ness', '10th-ness', '11th-ness', '12th-ness', ...

- suffix 's' signifies implied indefinite quantity of ≥ 2 units, as does orange colored text generally;
- Magenta-colored text & images denote perspectives, insights & idea-objects of "the dialectical operations phase of human cognitive development";
- [things] Past, [things] Present, [things] Future;
- [things] Below, [things] Here/Between, [things] Above;
- [things] Left, [things] Middle, [things] Right;

VERTICAL <u>DIALECTIC</u>: Ultimate Units, «Species»-Categories of Units, «Gene»-Categories of «Species» Units, Super-«Gene» Categories of «Gene» Units, ....

• 'HORIZONTAL <u>DIALECTIC</u>': '«Arché» Category', 'First <u>Contra</u>-Category', 'First <u>Uni</u>-Category', ...;

<u>Annihilatory</u> Opposites, <u>Complementary</u> Opposites, <u>Supplementary</u> Opposites;

• <u>Synchronics</u>, <u>Diachronics</u>, <u>Diachronico-Synchronics</u>;

<u>'Pictogramies</u>', <u>'Ideogramies</u>', <u>'Phonogramies</u>';

• ```<u>Con</u>volute<u>s</u>```, ```<u>E</u>volute<u>s</u>```, '<u>Co</u>volute<u>s</u>';

Systematic Dialectics, Historical Dialectics, Meta-Systematic ['Diachronico-Synchronic'] Dialectics, Psychohistorical Dialectics;

- [Primitive+] Arts, Mythologies, Religions, Philosophies, Sciences[, "Psychohistories"];
- [Standard Number-Kinds:] "Maturals", N; ""Wholes", W; Integers, Z; Rationals, Q; Reals, R; Complex Numbers, C; Quaternions, H;...
- [<u>Meta-Number Kinds</u>] "1st <u>Order Ordinal Naturals</u>", N; <u>Ordinal Qualifiers</u>, NQ; <u>Quantifiable Qualifiers</u>, NU; Metrological <u>Qualifiers</u>, NM;...
- Commodities, Monies, Capitals[, 'Generalized Equities'];
- Commodities, Monies, Circulations, «Kapitals», Commodity-«Kapitals», Money-«Kapitals», «Kapitals»-Circulations[, 'Generalized Equities'];
- <u>Elementary</u> Value-Form, <u>Extended</u> Value-Form, <u>General</u> Value-Form, <u>Money</u> Value-Form, «<u>Kapital</u>» Value-Form,...;
- bands, camps, villages, chiefdoms, city-states, empires, ..., nation-states, democratic planetary poleis, multi-planetary federations,

• pre-nuclear particles, proto-nuclear sub-atomic particles, atoms, molecules, prokaryotes; eukaryotes; meta-biota; social biota; human societies, ...

<u>Encyclopedia Dialectica</u> Standard <u>Ordinal Spectral Color-Coding</u> <u>for the 'Ordinalities</u>' of <u>Dialectic</u>al Categorial <u>Progressions</u>, for <u>any</u> **1**st <u>Dozen</u> 'Categorogram<u>s</u>'

| 'Categorogram' <mark>Ord</mark> inal # | <u>Gen</u> eric NQ<br>'Categorogram<br><u>Meta-Numerals</u> '<br>Full Sequence | Color<br>Code-<br>Value | Color<br>Value<br>Standard<br>Descriptor | <u>Gen</u> eric <u>Q</u> 'Categorogram'<br>Color-Coding<br>for the 'Self-Hybridg' Sequence<br>for the ' <u>Dyad</u> ic Seldon Function' |
|--|--|-------------------------|--|---|
| <b>1</b> st                            | ۲<br>۱   |                         | reddish                                  | ር<br><b>1</b>   |
| 2nd                                    | □<br>」1+1 = □<br>」2  |                         | orange                                   | ⊑_=⊑_<br>_1+1 = <mark>□</mark> 2  |
| 3rd                                    | □= □ <mark>3</mark>  |                         | yellowish                                | ⊑ <mark>2+2</mark> = ⊑ <mark>4</mark>   |
| 4th                                    | □ <mark>_2+2</mark> = □ <sub>4</sub>   |                         | green                                    | ⊑_=⊑_8  |
| 5th                                    | □<br>= □   |                         | blue                                     | ፲<br>16   |
| 6th                                    | ⊑= ⊑_6   |                         | indigoish                                | ፲<br>ី <b>32</b>  |
| 7th                                    | ⊑ <b>7</b>   |                         | violet                                   | 卫<br><b>64</b>  |
| 8th                                    | ⊑ <mark>4+4</mark> = ⊑_8   |                         | bright<br>pink                           | <b>日</b><br>128   |
| 9th                                    | □<br>8+1 = □9  |                         | bright<br>orange                         | 日<br>」256   |
| <b>10</b> th                           | בָּ <mark>8+2</mark> = ב <mark>ו 10</mark>                                     |                         | dark<br>yellow                           | 日<br>1 <mark>512</mark>   |
| <b>11</b> th                           | □<br>. <mark>8+3</mark> = □. <mark>11</mark>                                   |                         | bright<br>green                          | <mark>ቼ 1024</mark>   |
| <b>12</b> th                           | ☐, <mark>8+4</mark> = ☐, <mark>12</mark>                                       |                         | bright<br>blue                           | ີ <mark>12048</mark>  |

In this text, w<u>e</u> have tended to apply textual color-coding only for the living example<u>s</u> of dialectic offered in each of the four main sub-section<u>s</u>. The more abstract passage<u>s</u> of description of the method w<u>e</u> have left in the traditional monochrome/black.



Dialectograms holding to this "curvaceous" mouth are typically annotated, <u>Ideogramically</u>, with 'aldectors' of the interpreted / applied  ${}_{NQ}$  arithmetic for dialectics, as interpreted for / applied to ''Systematic Dialectics''' to the written &/ or oral presentation, lasting for a 'micro-historical time/duration', of broadly ''synchronic''' ontological categories-progressions, in a dialectical-systematic order -- employing 'categorograms' -- 'categorysymbols -- of the general form  $\{\hat{Q}_{\mu}, \hat{Q}_{\mu}, \hat{Q}_{\mu}, \dots, \hat{Q}_{\mu}\}$ , wherein  $\alpha, \beta, \gamma, \dots$ , abbreviate the names of the categories.

**Quotation:** "A [categorial] structure of unity" in which differences are merely implicit is simpler than one in which these differences are explicitly [cvoked]; and one in which both unity and differences are explicit is yet more complex still. Similarly, the first sort of [categorial] structure is the most abstract, while the other structures are successively more [though-]concrete. ...Since a category of unity-indifference on one level can itself prove to be a category of simple unity from a higher level perspective, thereby initiating another dialectical progression from unity through difference to unity-in-difference, we can construct a systematic theory [by means of] categories...by employing the dialectical method. In this sort of theory we move in step-by-step fashion from [more] simple and abstract categories to those that are [more] complex and [thought-]concrete, with dialectical logic providing the warnt for each transition. ...If dialectical logic is rigorously adhered to, the move from one category to the next is not ad hoc. The linear progression from a category of immediate unity to one of difference...to a category of unity-in-difference is not a formal schema, imposed ...externally. ... In this manner the object realm of experience...[con be] reconstructed in thought."\*

Reference: \*Tony Smith, The Logic of Marx's Capital: Replies to Hegelian Criticisms, SUNY Press, Albany, NY, 1990, pp. 6-8.

#### SUMMARY -- Notes on the Encyclopedia Dialectica DIA chronic "Pictogramic" Notation.

Pictorial Notational Conventions for 'Diachronic Dialectic', i.e., '[Psycho] Historical Dialectic', for 'Vertical Dialectic' & Horizontal Dialectic' (aufheben) 'meta-«monad»-izations' & 'meta-«monad»-izations', for '[meta-]modeling' historical categorial progressions, including families-of-systems-progressions --Again, by the word 'dia-gram-mar', we mean a '' grammar''' of/for diagrams.

Again, '<u>Dialectic</u>al diagrammar' is a '<u>pict</u>o-grammar' for 'dialectical phono-ideo-PICTO-gramy'.

Left-to-right progression of «species» "diamonds" often intends a 'Horizontal Dialectic' «aufheben» process, a process of 'meta-«monad»-ization'. The "'diamond'" at left denotes an 'ideo-unit', or 'ideo-«monad»' in the diachronic context -- e.g., an 'ideo-unity', an [ideo-]ontological ''category''', or a ''family of systems'' ", itself grasped as a unit, though it implicitly also already "contains" its own units, but is, in its own right, also a '[sub-][w]hol[e] not[e]ation, or hol-note, at some 'gualo-fractal' dialectical, «aufheben» level/scale of a dialectical, «aufheben» 'meta-monadology' -- per this dialectical-pictographic 'hofistic note ation'. The 'genericized' 3+-phonogram character-string, 'Xx...x.', denotes the name of that [sub-]hol, generically. The horizontal dialectic arrow sig

denotes «autokinesis» for the [psycho] historical succession of «arithmoi»; i.e., of categories', or systems'; primarily historically-ordered, the chronologically-ordered [self-[induced]]progress[ion](s), e.g.,... 'slaveisms' -> 'serfisms' -> 'wageisms' in the history of class societies.

'Dialectogram' for the Core Of 'VERTICAL Dialectic'. An idea-«genos» "'d unit is a summarizing relative a 'meta-unit', or «<u>Genos</u>» Xx...x o-meta-«monad»'. meta-]unit for a potentially large ession-«arithn vaufhebens of historically-specific «species» relative «species» units units mds 2 to N-1. Xx...x Xx...x unit #1. species ••• } «species» unit #N. 

locus of ['N-adic'] VERTICAL me onad»-ization ': pictogram for same

Xx...x.

The diagram marks a synchronic relation, of more generic [above] to more specific [below], "[meta-]monadizations', or '[meta-]unit-ifications', of «ειδο»/«ιδεας»/memes. It depicts the 'static-ized' results of a process of abstraction, or of '«gene»-ralization', or of the '«gene»-ration' of a relatively more '«gene»-ral', or relative «genos», or '«gen»-us', 'idea-unit', or 'idea-«monad»', from a given «arithmos», or multiplicity, of idea-«species» units/«monads». That is, the image/'dia-gram' at left is a pictorial model/depiction of the results of a vertical process of ictive '«gene»-ralization', or of '«gene»-ration', of a single new 'idea-«genos» unit, via reflected mental experience of an «arithmos» of many related 'idea-«species»' units.

That diagram is the '«gene»-ric' 'dialectical diagram' -- the [relative] idea-«genos»/idea-«species» systematics «aufheben» diagram, for 'Diachronic [Psycho]Historical Dialectic', for <u>dia</u>chronic [ideo-]meta-<u>monad</u>ology'. It is, in its <u>up</u>ward direction, a <u>sum</u>mary of the 'cumulum'/results of the historical succession for a given value of an epoch parameter, t. Its downward direction gives more details of the [her/his]story that constituted that 'cumulum'.



#### Commentary on Our 'DIACHRONIC Pictography for Historical Dialectic'.

"Angular", "diamond-shaped" enclosures are employed, in Encyclopedia Dialectica notation, to depict historical processes. They do so via ontological category-symbols, at a level of specificity where reconstruction of the past history, &/or 'pre-construction' of hypothesized future-history, of a dialectical, typically «aufheben» "meta-monadic', [macro-]historical, self-driven progression of [idee ][physio-]ontology, is found, dialecticallymathematically modelable by, e.g., a Seldon function-generated progression of ontological category-symbols.

This "angular" motif is thus meant by us to sign a modeled historical progression of, e.g., relative «species» 'category-unit symbols', for categories / «arithmoi»/ "numbers" / "local populations of [logical-]individuals apprehended from the perspective of their "diachronicity", i.e., of their actual monads' or units' or holons' selfgenerated, self-driven, immanently-driven historical successions. We are thus visualizing the invisible. We are thus often "mathematically" depicting "external" physical processes; constructing 'geometrical' pictographical models of movements that typically proceed "outside" of the human individual, i.e., of the embodied uman consciousnesses that may perceive these outer event[itie]s'. However, historical movements "of ideas"-of the "memes" of the "human phenome' -- may also be captured by such dialectical-historical 'meta-models'.

'Dialectograms' holding to this "angular" motif are typically annotated, 'ideogramically', with 'dialectors' of the interpreted / applied NQ arithmetic for dialectics, as interpreted for / applied to "Historical Dialectics"; to the, e.g., Seldonian 'meta-modeling', by symbols, of [macro-]historical, "'extended-diachronic" ontic category progressions, reconstructing their units' actual chronological order of appearance, using 'category-symbols' of the general form  $\{\hat{a}_{\alpha}, \hat{a}_{\beta}, \hat{a}_{\gamma}, ..., \hat{a}_{\Omega}\}$ , wherein  $\alpha, \beta, \gamma, ..., each denote a name of a distinct 'ontologic' category.$ 

"Let me once again recapitulate the dialectic relation in its full complexity. The wholes which it relates are each, in one aspect, self-contained and self-dependent, and, in another, mutually implicated and inseparably interrelated. Essentially the relation is serial, each successive whole being a fuller and more adequate realization of the systemic principle governing the entire series. So each is related to its predecessors as their fulfillment, requiring and incorporating the prior forms while actualizing potentialities of which they were incapable. For this reason, while the subsequent involves the antecedent it also supersedes and, in some sense, negates its forebears. Each whole, then, is a grade [F.E.D.: i.e., a gualo-fractal scale], a developmental stage, within the whole series, but also a distinct relatively self-subsistent phase standing in contrast and opposition to its neighbor. Yet because this opposition is resolved in the higher phase (which preserves the contrast while it supersedes it), the entire series remains continuous and coherent."\*

Corrence: \*Errol E. Harris, Formal Transcendental, and Dialectical Thinking: Logic and Reality, SUNY Press, Albany, NY, 1987, p. 256.

The Universality of the «Aufheben» Operation and <u>The Dialectic</u> WITHIN the «Aufheben» Operation Itself.

# Key Terms Throughout.

«<u>Monad</u>» = [<u>Oual</u>itative] <u>UNIT</u>. '<u>Physi</u>[c]o-«Monad<u>s</u>»' are the physical agents, or '''[proto-]<u>subjects</u>''' -- the fecund '''energizing principles''' -- which enact/conduct Cosmological '<u>Meta</u>-Evolutions'/ 'Ontological <u>Self-Revolutions</u>'.

<u>«Arithmos»</u> = <u>Assemblage</u> of Units; "<u>NUMBER</u>" of [<u>Qualitative</u>] Units, e.g., the content connoted by a single-«<u>Speci</u>es»-«Arithmos»/Category, i.e., by a <u>'Kind</u>-Category', or '[[<u>Ide</u>o-]<u>Phys</u>i[c]o-]<u>Ontological</u> Category'.

<u>«Arché»</u> = Beginning; [governing] <u>SOURCE</u>; Foundation; <u>Ultimate</u> [<u>Presently-Known</u>] Ancestor; [ever-Present] [Deep-Past] Origin; <u>Ultimate</u> [e.g., <u>physical</u>] Premise.

 $\frac{Meta}{Monad} \rightarrow -ization' \equiv \underline{COALESCENCE} \text{ of } [a \text{ portion of}] \text{ the } Units, or & Monads, of a Predecessor & Arithmos, into a <u>Multiplicity</u> of '<u>Meta</u><sup>1</sup>-Units', or '<u>Meta</u><sup>1</sup>-& Monads, '<u>each one</u> made up out of a [typically] heterogeneous <u>multiplicity</u> of the Units, or of the & Monads, of that Predecessor & Arithmos, thereby yielding a Successor & Arithmos, to that Predecessor & Arithmos, which is also its <u>next</u>, nearest '<u>Self-Hybrid Meta</u>-& Arithmos, i.e., an & AUFHEBEN Process. Names a Primary Universal <u>Dialectical Process</u>, i.e., an & AUFHEBEN Process. \\$ 





#### <u>Commentary</u> on 'Dialectogram' --'<u>The Dialectic</u> within the «<u>Aufheben</u>» Process/Relation'.

The three aspects of the «Aufheben» concept, as depicted in the 'dialectogram' immediately preceding this 'text-image' module, are three moments within the integral unity of the «Aufheben» concept. Determinate negation, the first-presented moment of «Aufheben», is not "abstract negation", operating upon a content to yield nothing, nothingness -- no content. Determinate negation changes the valence of given determinations, or qualitative attributes, of the content so negated, e.g., of the category so negated, but it yields a substantial something, not nothing. It typically yields a content which is still determinations-rich, albeit qualitatively changed, or even a determinations-richer, determinations-enriched, more complex content than that which prevailed prior to that determinate negation. Thus there are also already the seeds, the hints, of a conservation within this only-determinate negation. In determinate negation, not everything is negated, not every determination is even altered at all. Determinate negation is not only negation. Determinate negation is also, because it is determinate, the opposite of "negation": conservation. In the fruition of its <u>self</u>-reflexion/<u>self</u>-critique/<u>immanent</u> critique,  $\underline{q}_{nn}$ , via  $\underline{n} \otimes \underline{n}$ ,  $\underline{n}$  <u>self</u>-reveals a <u>lacking</u> in its modeling of <u>«Aufheben»</u> as a whole. Thus, The negation determination of n is thereby itself negated, evoking its opposite, at first missed, conservation aspect. The categorial content that the moment of determinate negation yields is also a qualitatively different -- typically, also a qualitatively opposite -- categorial content. The moment of conservation is characterized by a qualitative determination which is opposite to the determination that characterizes the moment of determinate negation. Conserving means retaining and preserving most or much of the content that was determinately negated. The determinate negation is a partial 're-positing', via a 'de-posit-tioning'-and- 're-posittioning', of the originally-posited content, of its original 'posit-tion', in the "space" stating its complexity and determinateness. The determinate negation is thus a movement or self-movement of that content to a higher position in that representational "space" As such a movement, it conserves what it moves, it retains the core of the original content, but raises its complexity, i.e., its unified, integrated determinations-richness, by increasing its explicit, actualized potentiality and fuller [self-]inclusiveness. Thus the unity of the opposing moments of determinate negation and conservation is the movement of elevation; elevation into, or creating, a higher qualo-fractal' level or scale. Elevation includes, actualizes, & integrates both of the earlier-presented moments of «Aufheben».

**Ouotation:** "...it is hardly surprising that all attempts to formalize Hegel's logic have failed. Perhaps the most valiant has been that of Michael Kosok, but it is unsuccessful partly because of faulty interpretation of the logical procedure, giving insufficient attention to the implications of *Aufheben*, and partly because, even were his interpretation correct, no effective algorithm emerges from the attempted symbolization."

"Not Wittgenstein nor Russell, therefore, but Hegel provides the model for a logic adequate to science and rational thinking: that is, a dialectical scale of categories which are themselves the principles of structure and the essential form both of the natural and the intellectual world."

"It does not follow, however, that mathematics is irrelevant or inapplicable in such cases, but (as Hegel strove to demonstrate) the fundamental principles implicit in the type of mathematics used differ from the presuppositions of formal logic..."\*

Reference: Errol E. Harris, Formal, Transcendental, and Dialectical Thinking: Logic and Reality, SUNY Press, Albany, NY, 1987, \*pp. 154-155.

# An 'HOListic Notation'.

|         | The conventional notation of modern mathematics, including of contemporary mathematics, is <u>not</u> an ' <u>HOL</u> istic notation'. It is an ' <u>atom</u> istic notation'.   |
|---------|--|
|         | Its "notes" e.g., its "variables", as well as its "constants", its monies-like, capitals-like, "purely"- <u>quant</u> itative <u>values</u> are<br>conceived as if existing in mutual <u>ex</u> ternality, as <u>arbitrary</u> , <u>un</u> connected, gas-like ' <u>a-toms</u> ', merely aggregated, <u>not</u> in any way as<br>inter <u>connected</u> "internally": <u>not</u> as <u>ing</u> redient in any " <u>org</u> anic", or even " <u>hol</u> omorphic"", ' <u>meta-org</u> anic', totality. They are<br>conceived such that <u>no</u> whole, other than a <u>linear</u> superposition of mutually-alien[ated] parts, without any whole, of absolutely<br>isolated, <u>indivisible</u> 'exo-projected', 'modern ego-like points', floating 'voidly', in eternal mutual <u>in</u> difference, and separately<br><u>self</u> -subsistent. <u>The location of</u> any such "variable", or "constant", in a cosmos, in an " <u>ord</u> er", or in an ' <u>ord</u> inality' in a<br><u>totality</u> that is <u>not</u> even admitted to exist thus cannot be, for the «mentalités» behind such a conventional notation, an issue.  |
|         | For a <u>dialectic</u> al «mentalité», & for a mathematics of and for <u>dialectics</u> , matters are a bit different. Each <u>value</u> , to be aptly known,<br>must be known in its <u>location</u> within the whole, both <u>dia</u> chronically & <u>syn</u> chronically; in terms of its <u>dia</u> chronic <u>location</u> in the<br>'historical <u>ord</u> inality' of time, & of its <u>syn</u> chronic <u>location</u> in the 'systematic <u>ord</u> inality' of a universal taxonomy.  |
|         | A "purely"- <u>quant</u> itative variable-value in the notation of contemporary mathematics may typically be given as just X. If <u>its</u> "time-<br>dependence" is to be made <u>explicit</u> , it might be notated instead as X(t), for "continuous" <u>t</u> ime, e.g., $t \in \mathbb{R}$ , or as $X_{\tau}$ , for a "discrete" " <u>discontinuous</u> ", <u>t</u> ime-variable, e.g., $\tau \in \mathbb{N}$ , W, or Z. If X(t) encompasses <u>multi</u> -dimensional e.g., 3-D ' <u>phys</u> ical-spatial' variability, then it might be notated as X(t), e.g., as a " <u>vector</u> "-valued "function of time". But <u>its</u> 'locus in the spatio-temporal hol' is supposedly arbitrary, ' <u>un</u> noted', <u>&amp; un</u> noticed, <u>unless</u> as a <u>point</u> -value in, e.g., a <u>phys</u> ical space-time, modeled by a "vector field", per a [ <u>non</u> -linear] <u>part</u> ial[ <u>integro-]differential</u> equation, with a <u>gen</u> eral <u>solution</u> of the form <u>f</u> (t, x, y, z).   |
|         | For a 'holistic notation', apt for explicitly dialectical mathematics, a mathematics of dialectics, matters are much the contrary<br>Its [quanto-]qualitative variables, its knowns & unknowns alike, are surrounded by 'dialectic diacritical marks', that tell us/ 're-<br>mind'us of its part in the 'muse-ic' of the cosmological whole. If such a variable is formulated as a singular category/system, its<br>"note" might be this: $n & g [synchronic dialectics], or this: n & g [diachronic dialectics]; if as a 'cumulum' of such, then the"overscore(s)" disappear(s), & its "note" might be this: n & g [ginchronic dialectics], or this: n & g [diachronic dialectics]; if as a 'cumulum' of such, then the"overscore(s)" disappear(s), & its "note" might be this: n & g [ginchronic dialectics], or the ginchronic dialectics]; if as a 'cumulum' of such, then the"overscore(s)" disappear(s), & its "note" might be this: n & g [ginchronic dialectics], or this: n & g [ginchronic dialectics], or this: note" for the ginchronic dialectics]; if as a 'cumulum' of such, then the "overscore(s)" disappear(s), & its "note" might be this: n & g [ginchronic dialectics], or : "ginchronic dialectics]; if as a 'cumulum' of such, then the "overscore(s)" disappear(s), & its "note" might be this: n & g = g = g = g = g = g = g = g = g = g$ |
| W<br>ty | $\frac{b}{2}$ will typically dispense with the <b>n</b> , <b>u</b> , and <b>D</b> 'dialectical diacritical mark <u>s</u> ' in the main body of this text, for greater pographical convenience and simplicity. However, many of the 'dialectogram <u>s</u> ' and other diagram <u>s</u> and 'text-image <u>s</u> '  |

included herein utilize the "full regalia" 'holistic notation' that includes these 'dialectical diacritical marks'.

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#### T<u>He</u> <u>Q</u> <u>Dialectical Method</u>.

**T<u>He</u> <u>NQ</u>** *Method as Applied fOr SYSTEMATIC Dialectic*. By "'systematic dialectic", w<u>e</u> mean a pedagogicallyadvantaged *method of <u>present</u>ation* for the rationally comprehensible and comprehended content of a given "universe of discourse", or <u>Domain</u>, by means of iterated 'categorial self-extension<u>s</u>'. Such method<u>s</u> move in an '<u>ide</u>o-systematic', '<u>ide</u>o-taxonomic' manner, by means of <u>present</u>ing a progression of ser<u>ies</u> of ontological categor<u>ies</u>, starting from the simplest, most abstract category that still represents that "universe of discourse", and iteratively adding further categor<u>ies</u>, of increasing complexity, by way of critiquing the <u>in</u>completeness<u>es</u> of the 'categor<u>ies</u>-sum' or 'categor<u>ies</u>-series' so far <u>present</u>ed, in term<u>s</u> of its having achieved any encompassing explanation of the *totality* of that "universe of discourse". Such a method finishes, after <u>present</u>ing an often large but always <u>finite</u> number of categorial-increments/incrementalcategor<u>ies</u>, with the most complex, most determination<u>s</u>-rich, most 'thought-concrete' and most comprehensive category for that "universe of discourse". In such a "'categorial progression'", or categorial series of ser<u>ies</u>, the incremental categor<u>ies</u> derive from categor<u>ies</u> already <u>present</u>ed by evoking from them counter-example categor<u>ies</u> [cf. Lakatos], that refute their <u>implicit claim of completeness of comprehension</u> for the given <u>Domain</u>, using the categor<u>ies</u> already evoked, such that successor categor<u>ies qual</u>itatively oppose predecessor categor<u>ies</u>, and such that successor categor<u>ies</u> are opposite<u>s</u> to, and/or are reconciliation<u>s</u> of the opposition<u>s</u> between, opposing pair<u>s</u> of predecessor categor<u>ies</u> [cf. Tony Smith].

<u>Dyadic Versions of The NQ Method as Applied for SYSTEMATIC Dialectic</u>. The variant of o<u>ur</u> Method, detailed in this section, is, by <u>us</u>, called '<u>dyadic</u>' as it expands from the starting category-symbol by 'escalating <u>self</u>-involution', i.e., by raising that symbol to increasing powers of "the <u>dyad</u>"; of the number **2**. But, herein, we will **not** describe o<u>ur</u> '<u>dyadic</u>' algorithmic-heuristic method' by that '''squaring''' approach, but by what we see as a less technical, more intuitive one.

**Finding Your** *Starting Category* **for Your** *Systematic <u>Presentation</u> of a/the <u>Present</u> of a Given <u>D</u><i>omain*. Given that you have determined the subject-matter area -- which w<u>e</u> call the "'<u>D</u>*omain*"' -- for your planned <u>present</u> ation, make sure that you have also become, by intensive study, fully familiar with and "immersed in" that <u>D</u>*omain*. You are then ready to leverage that familiarity to discover and choose your starting category for that <u>D</u>*omain* as the starting point for your dialectical <u>present</u> ation/explanation of that <u>D</u>*omain*.

You can detect that starting category, heuristically and intuitively, as follows. Write down the most developed, most complex, most 'thought-concrete' category of that **D**omain that you are able articulate, based upon your familiarity with and immersion in the existing knowledge of that **D**omain. For simplicity, suppose that the distinguishable determinations or **g***ualities* that are <u>combined</u> in that determinations-richest category can be abbreviated, e.g., using the first letters of the names of those determinations, or "'factors'", as **A**, **B**, **C**, **D**, **E**, **F**, and **G**. Then, in applied NQ notation, the composite 'category-symbol' for this **g***ualities*-richest category will be **g**<sub>/ABCDEFG</sub>. Ideally, this single 'category-symbol' should combine, in its "subscript", "denominator", or 'determinator', a distinct <u>character</u> for each <u>character</u> istic that is a <u>character</u> istic per your definition for this **D***omain*, and that may be a <u>character</u> istic that distinguishes this **D***omain* from all other **D***omains*. The next step in starting-category discovery, after forming that key 'category-symbol', is to engage an intuitive process of '<u>qual</u> itative factorization'/'progressive factor elimination', i.e., of 'factor *cancellation/<u>abstraction</u>', starting with the most complex factor/epithet/determination in that entire 'ABCDEFG* 

O<u>ur</u> account, herein, will, by leveraging simplicity of exposition, exaggerate the smooth <u>ord</u>erliness of this process of <u>ord</u>ered determinations elimination, cancellation or <u>abstraction</u>, beyond what is typical, for the sake of clearer algorithm revelation; for the sake of idealizing and better communicating the  $\mathbb{NQ}$  "recipe" for starting-category discovery. This formal procedure is actually only a *proxy* for the typical actual process of starting category discovery for a "'difficult'" **Domain** -- one whose optimal starting category is **not** obvious. Essentially, once you have worked out what, for you, should be the top-level categor<u>ies</u> for a given such **Domain**, and ordered those categor<u>ies</u>, consecutively, from most complex to least complex, your starting category will become immediately obvious to you. It will be the least complex of those categor<u>ies</u> per your systematic, most complex to least complex 'ordinalization' of them.

Suppose, therefore, that **G** is the most complex determination or "'factor" in  $\underline{\mathbf{g}}_{/ABCDEFG}$ . Then, conceptually, semantically, enact the intuitive operation  $\mathbf{G} \times \underline{\mathbf{g}}_{/ABCDEFG} = \underline{\mathbf{g}}_{/ABCDEFG}$ , which means "<u>abstracting</u>" determination **G** from category  $\underline{\mathbf{g}}_{/ABCDEFG}$ , thus leaving category  $\underline{\mathbf{g}}_{/ABCDEF}$ , a different, *more <u>abstract</u>*, simpler, less determination<u>s</u>-rich, less 'thought-concrete' remainder-category in its place.

Next, take time to conceptually comprehend, and even to name, this "new" category. Then extract, by 'categorial factorcancellation'/<u>*abstraction*</u>, *its* most complex remaining component category/determination. And so on, until only *a single* subscript character/category-<u>*qual*</u>ity-determination/epithet remains, e.g., the **A** in  $\mathbf{q}_{/A}$ . The resulting/remaining category, that is symbolized by  $\mathbf{q}_{/A}$ , will then be, in the normal course of this *method of <u>discovery</u>* phase, your optimal startingcategory for your *method of <u>present</u>ation* phase of this method. It will be the "place" from which to start <u>present</u>ation of your systematically-<u>ord</u>ered, taxonomically-<u>ord</u>ered, *combinatorically-<u>ord</u>ered and exhaustive categorial progression comprehension, <u>present</u>ation, and rational explanation of your given <u>Domain</u>, or "'[sub-]totality".* 

More <u>specifically</u>, suppose the <u>ord</u>er of rising "factor" complexity for the **D**omain that you are analyzing is A, B, C, D, E, F, and G. Then, symbolically, the full "recipe" for this "algebraic" example of the application of this "*method of* [*«arché»*] <u>discovery</u>" is the following "descent into abstraction/simplicity" [cf. Marx, <u>Grundrisse</u>, Nicolaus, Intro., p. **100**] --

- **0**. Construct the most-complex, most-composite category of your <u>**D**</u>*omain* that you can articulate, e.g.,  $\underline{\mathbf{g}}_{\text{ABCDEFG}}$ ;
- **1**. "Factor-out" the most complex component-category/determination/epithet of composite category  $\underline{\mathbf{g}}_{/ABCDEFG}$  -- ((=) ×  $\underline{\mathbf{g}}_{/ABCDEFG}$  =  $\underline{\mathbf{g}}_{/ABCDEFF}$ ; comprehend, and name-coin, if previously <u>un</u>recognized/<u>un</u>named, category  $\underline{\mathbf{g}}_{/ABCDEFF}$ ;
- **2**. "'Factor-out'''/abstract the most complex component-category/determination of composite category  $\underline{\mathbf{q}}_{/ABCDEF}$  -- (F) ×  $\underline{\mathbf{q}}_{/ABCDEF}$  =  $\underline{\mathbf{q}}_{/ABCDE}$ ; comprehend, and name-coin, if previously <u>un</u>recognized, the category  $\underline{\mathbf{q}}_{/ABCDE}$ ;
- **3**. "'Factor-out'''/abstract the most complex component-category/determination of composite category  $\underline{\mathbf{g}}_{/ABCDE}$  -- (E) ×  $\underline{\mathbf{g}}_{/ABCDE}$  =  $\underline{\mathbf{g}}_{/ABCD}$ ; comprehend, and name-coin, if previously <u>un</u>recognized, the category  $\underline{\mathbf{g}}_{/ABCD}$ ;
- **4**. "'Factor-out'''/abstract the most complex component-category/determination of composite category  $\underline{\mathbf{g}}_{/ABCD}$  --  $(\textcircled{P}) \times \underline{\mathbf{g}}_{/ABC} = \underline{\mathbf{g}}_{/ABC}$ ; comprehend, and name-coin, if previously <u>un</u>recognized, the category  $\underline{\mathbf{g}}_{/ABC}$ ;
- **5**. "'Factor-out'''/abstract the most complex component-category/determination of composite category  $\underline{\mathbf{q}}_{/ABC}$  -- ((=) ×  $\underline{\mathbf{q}}_{/ABC}$  =  $\underline{\mathbf{q}}_{/AB}$ ; comprehend, and name-coin, if previously <u>un</u>recognized, the category  $\underline{\mathbf{q}}_{/AB}$ ;
- **6**. "'Factor-out'''/abstract the most complex component-category/determination of composite category  $\mathbf{q}_{AB}$  -- (**B**) ×  $\mathbf{q}_{AB}$  =  $\mathbf{q}_{A}$ ; comprehend, and name-coin, if previously <u>un</u>recognized, the category  $\mathbf{q}_{A}$ .

**7**. Choose category  $\underline{\mathbf{q}}_{/A}$  as your *starting-category*, or *«arché»-category*, for the *"method of <u>presentation</u>" second phase of this <u>dialectic</u> al method, the phase of the '[<i>re*-]ascent into complexity' [cf. Marx, <u>Grundrisse</u>, Nicolaus, Intro., p. 100]. This time, this ascent is to arrive, *not* back, again, to a complex but *"chaotic* conception of the whole" [cf. Marx, <u>Grundrisse</u>, *ibid.*], but to a "well-<u>ord</u>ered" and rationally-*comprehended* complexity; an <u>explained</u> complexity.

In this way, by following this "recipe", i.e., by "factoring-out" or "<u>cancelling</u>-out", i.e., by "'<u>abstracting</u>'", the more complex categorial factors or determinations, you can successfully "whittle-down" to your optimal starting category. You can do so by starting this first, '*method of <u>discovery</u> of the «arché»*' phase [cf. Marx, <u>Grundrisse</u>, Introduction, *ibid.*; cf. Aristotle's "<u>dialectical</u>" method for the finding of the deductive «archai»] from your most composite, most complex category, albeit at first <u>un</u>comprehended, e.g., from **g**<sub>(ABCDEFG</sub>, and then "whittling it down" to a single, simplest categorial remainder, **g**<sub>(A</sub>.

That remaining determination or category, <u>A</u> or  $\underline{\mathbf{q}}_{/A}$ , should serve as your starting-category for the next, second phase of this method, its *``method of presentation ```* "half". Finding that simplest category, e.g., the category denoted by ' $\underline{\mathbf{q}}_{/A}$ ', concludes the first phase, the *``method of <u>inquiry</u> `` or <i>``method of «arché» <u>discovery</u> ``` "half"*, of this 'algorithmic-heuristic categorial-combinatoric ideographical <u>dialectic</u>al method', as applied for *systematic <u>dialectics</u>.* 

The remaining, "'remainder'" category, e.g.,  $\mathbf{g}_{/A}$ , to  $\mathbf{q}_{ual}$  if y as your pedagogically optimal starting-category or «*arché*»*category*, should be the simplest, most abstract category/determination <u>of</u> your <u>Domain</u>. It should be one that -- once combined with other, more complex categor<u>ies</u>/determination<u>s</u>, taken together -- <u>re</u>constitutes, but now in a ""well-<u>ord</u>ered" and comprehended form, the most-complex, most-composite category, known to you, of your <u>Domain</u>, e.g.,  $\mathbf{g}_{/ABCDEFG}$ . That was the category that, in its "chaotic" and as yet <u>un</u>comprehended form, served as your starting point for your application of the "*method of «arché» discovery*" phase of this overall method.

That is, this remaining category, to be your correct starting category for the other and next, "'*method of <u>presentation</u>*" "half" of your application of this method, should be the least <u>explicit</u>, simpl<u>est</u> and most abstract category about the **Domain**, that you can find, *that still "'contains"*, *for your mind, the full <u>implicit content of your Domain</u> -- the least <u>explicit category that still implicitly contains</u>, implies, or entails the total content/"totality", of that Domain. An analogy, to this 'epitomeous' nature of «<i>arché*» categor<u>*ies*</u>, is experienced with many popular piece<u>s</u> of [rock] music, and with many classical piece<u>s</u> as well, the first few note<u>s</u> of which "'condense" the felt-quality/emotional atmosphere of the entire piece, and, thereby, immediately [re]call to listener<u>s</u>' mind<u>s</u>, in a flash, the whole piece, and even its title.

A possible problem for this first phase is that, despite your "immersion" in the study of this **D**omain, clarity as to the fuller meanings of, e.g., the **<u>q</u>**ualitative determinations **G**, **F**, **E**, **D**, etc., may not yet be yours at the outset of this «arché»-discovery phase. You may have to "[*re*]iterate" this "recipe" a few times, thereby progressively sharpening an initially still too "vague" and/or "chaotic" [cf. Marx, <u>Grundrisse</u>, Intro., *ibid.*, p. **100**] conception of the spectrum of component categor<u>ies</u> or component determinations of the **D**omain, that are combined in your "most complex", most-composite category, e.g., **<u>q</u>**<sub>(ABCDEFG)</sub>, reiterating again and again until a clear-enough derivation of your best starting-category is achieved.

Sometimes, on the <u>contra</u>ry, you may find yourself confronting a **Domain** of familiar human experience which is already so well-comprehended colloquially and "ambiently", within the prevailing 'human <u>phen</u>ome', that your correct starting-category will be <u>im</u>mediately obvious to you. E.g., the category of the <u>phon</u>etic character, or "letter", may be your most obvious starting-category for a systematic-<u>dialectical **presentation**</u> of the <u>**present Domain**</u> of Written English, that of the "bit" for the **<u>Domain</u>** of Modern 'Computerware', that of "addition" for the **<u>Domain</u>** of elementary, standard-arithmetical operations, etc.

However, **D**omains for which identification of an «arché»-category comes off so easily are often **D**omains for which systematic <u>presentations</u> may add little of new educational value, or of new scientific discovery. So-far popularly-mysterious and/or scientifically not fully comprehended **D**omains, e.g., <u>present</u>ly, those of "Dark Matter" and "Dark Energy" in physics/cosmology, are often those for which this method can bear the greatest fruit for popular understanding, for scientific advance, and for the defeat of <u>present</u>ly-prevailing, but science-corrupting ideologies.

Karl Marx described the categorial-critique character of his dialectical, immanent examination of the ideology of classical capitalist political economy in a letter, dated 22 February 1858, to Ferdinand Lassalle, the founder of a workers' socialist party in Germany, as follows: "Now let me tell you how my political economy is getting on. ... The work I am presently concerned with is a *Critique of Economic Categories* or, IF YOU LIKE, a critical exposé of the system of the bourgeois economy. It is at once an exposé and, by the same token, a critique of the system." [*Marx, Engels, Collected Works, vol.* 40, p. 270.].

The diagram posted below, in its Left-Hand Side [LHS], illustrates this method of starting-category discovery, as Marx described it in the [posthumously published] "Introduction" to his <u>Grundrisse</u> ["Foundation" [of the Critique of Political Economy]]. It does so for this classic example of Marx's systematic-<u>dialectical</u> method of <u>presentation / explanation</u> of the [then and now still-] <u>present</u> capitalist system, in his <u>Capital</u>, vol. I, *et seqq.*, as illustrated on the Right-Hand Side [RHS] of that diagram.

That <u>presentation</u> starts with a category that had, to o<u>ur</u> knowledge, never before been considered, fully and directly, as such, in previous texts on political economy; with an abstract, abstruse category that Marx discovered, and named the "*Elementary...Form of Value*". Here w<u>e</u> epitomize that «*arché*» by the "'algebraic'" formula 'c<sub>1</sub>C<sub>1</sub>  $\doteq$  c<sub>2</sub>C<sub>2</sub> *despite* C<sub>1</sub>  $\ddagger$  C<sub>2</sub>'\*. This asserts that, at least momentaneously, <u>quant</u>ity c<sub>1</sub> of Commodity 1 exchanges [' $\doteq$ '], and is thus "equal", in the sense of exchanges, to <u>quant</u>ity c<sub>2</sub> of Commodity 2. This <u>despite</u> that Commodity 1 is <u>qual</u>itatively <u>un</u>equal [' $\ddagger$ '] to Commodity 2. This formula says that, e.g., if Commodity 1 is "apple<u>s</u>" & Commodity 2 is "orange<u>s</u>", then c<sub>2</sub>/c<sub>1</sub> is the "'unit price'' of (1 ea.) apple *in terms of oranges serving* as concrete, 'protoic' "money-commodity". The diagram below instantiates the <u>gen</u>eric 'heuristic algorithm', stated above, for finding an «*arché*», for this <u>specific</u> case, of finding the «*arché*» for Marx's systematic-<u>dialectic</u> exposition of the *world market system of capitals* **Domain**.

In that example, the 'symbols-complex'  $\mathbf{M} \doteq \mathbf{C} \begin{pmatrix} \mathbf{L} \\ \mathbf{O} \end{pmatrix}$  ...  $\mathbf{P}_{\cdots}$  ( $\mathbf{C} + \mathbf{c}$ )  $\doteq (\mathbf{M} + \mathbf{m})$  is  $[\mathbf{O}_{\underline{u}\underline{r}} \text{ version of the}]$  Marxian '<u>process</u>-

algebra', or 'human-agental praxis-algebra', for the exchange ['='] of ''capital-Money''', or of "Money-Capital" for the Commodities needed for the next round of capital[ist]-production, at some scale of aggregation, anywhere in the range from the scale of an individual industrial plant, all the way up to the ultimate scale of the total social capital of the world market economy as a totality, covering all of the scales in-between those two extreme scales. Those Commodities are, in turn, broken out into Labor-Power Commodities, the wages-price of the work-force needed to complete that round of production, and Other Commodities -- Machinery, Raw Materials, Auxiliary Materials, Electric Power, and Fuel, etc., etc., all also Commodities -- also needed for that next round of capital-[re-]production. All of those "producer Commodities" are then, in each round of production, over time [...], absorbed into, integrated as, and applied in the **P**roduction Process. After the time [...] required for the completion of that **P**roduction Process, its output is sent to market, e.g., in the form of "finished" Commodities. But an increment of "value added", as a result of their surplus "sociallynecessary abstract labor-time" [Marx], has been added to that work-in-process by the wagéd workers. This "surplus", over and above the mere replacement of the value of their wages, accrues to the commodity-products assemblages/«arithmoi». Quantitatively, this surplus is of monetary-value of c, which, when/if those, e.g., "finished" Commodities are all sold at prices set, under, e.g., 'mid-cycle' competitive conditions, typically becomes **m**. Both **m** and **c** denote the same *quant*ity of gross surplus-value, which, per Marx, is the source and substance of capitalist gross profit. However, they represent that same *quant*ity of gross surplus-value in two *qual*itatively different forms, c connoting a commodities form, and m connoting a monetary form. Thus, |c| = |m|, in "value" terms, but c and m represent the same quantity of economic "value" in the forms of two distinct assemblages/«arithmoi» of qualitatively different kinds of physical objects; an "assemblage" or «arithmos» of commodity units versus one of, e.g., paper currency units.

Commentary on Marxian 'Dialectical-Methodological Dialectogram-Diagram' Below. The 'dialectogram-diagram' on the next page is our visualization of the procedure of Marx's systematic dialectical method, as he recounts it in the "Introduction to the Critique of Political Economy" opening of his «grundrisse» ["foundation"] manuscript, in the section marked "(3) THE METHOD OF POLITICAL ECONOMY", as follows\*\*: "When we consider a given country politico-economically, we begin with its population, its distribution among classes, town and country, the coast, the different branches of production, export and import, annual production and consumption, commodity prices, etc. It seems correct to begin with the real and the concrete, with the real precondition, thus to begin, in economics, with e.g. the population, which is the foundation and the subject of the entire social act of production. *However, on closer examination this proves false.* The population is *an abstraction* if I leave out, for example, the classes of which it is composed. These classes in turn are an empty phrase if I am not familiar with the elements on which they rest. E.g. wage labour, capital, etc. These latter in turn presuppose exchange, division of labour, prices, etc. For example, capital is nothing without wage labour, without value, money, price etc. Thus, if I were to begin with the population, this would be *a chaotic* conception of the whole, and I would then ... move analytically towards ever more simple concepts, from the imagined concrete towards ever thinner abstractions until I arrived at the simplest determinations. From there the journey would have to be retraced until I finally arrived at the population again, but this time not as the chaotic conception of a whole, but as a rich totality of many determinations and relations. The former is the path historically followed by economics at the time of its origins. ... the economic systems...ascended from...simple relations...to the level of the state, exchange between nations and the world market. The latter is obviously the scientifically correct method. The [thought-]concrete is concrete because it is the concentration of many determinations, hence unity of the diverse. It appears in the process of thinking, therefore, as a process of concentration, as a result, not as a point of departure. ... Along the first path the full conception was evaporated to yield an abstract determination; along the second, the abstract determinations lead towards a reproduction of the concrete by way of thought...".

<sup>\*[</sup>The assertion ' $\underline{C_1} \notin \underline{C_2}$ ' means that  $\underline{C}$  ommodity **1** is <u>**non**-quant</u> itatively <u>**un**</u> equal to, or '<u>qual</u> itatively <u>**un**</u> equal to' or 'ontologically different from', at the

<sup>&</sup>quot;"species"" level of abstraction, <u>C</u>ommodity **2**, even if their exchange-value is <u>equal</u>, i.e., even if  $c_1$  of the former will swap for  $c_1$  of the latter. I.e., "apples" would still be <u>qual</u> itatively <u>different</u> from "oranges" even were, e.g., **5** kg. of apples and **5** kg. of oranges both valued at US\$**25.00**].

<sup>\*\* [</sup>K. Marx, Grundrisse: Foundations of the Critique of Political Economy, transl. by M. Nicolaus, Penguin [Middlesex: 1973], pp. 100-101, emphases added].



Note that, in the expression<u>s</u> of Marx's 'process notation', below, the 'Marxian process-algebra' symbol<u>s</u> **M**, **C**, and **P** are '<u>qualo-quant</u>itative' value variable<u>s</u>. They are '<u>quanto-qualifiers</u>'. That is, they all stand for the same <u>quant</u>ity of economic value, but in three form<u>s</u> that differ <u>qual</u>itatively. Thus **M** stands for the same <u>quant</u>ity of value as do **C** and **P**\*, but also for that value <u>quant</u>ity in the <u>qual</u>itative form of **M**oney unit<u>s</u>. The symbol **C** stands for that same <u>quant</u>ity of value, but in the <u>qual</u>itative form of **Commodit**<u>ies</u> unit<u>s</u>. The symbol **P** stands for that same <u>quant</u>ity of value, but in the <u>qual</u>itative form of an industrial **P**roduction Process\*. [Page refs. below are to <u>Capital</u>, NW, **1967**].

**0**. Complex category for the Capital<u>s</u>-System, e.g.,  $\underline{\mathbf{q}}_{/CMLOPcm}$ , or  $\mathbf{M} \neq C \langle \begin{array}{c} \mathbf{L} \\ \mathbf{O} \\ \mathbf{$ 

[see <u>Capital</u>, vol. II., p. **74**, and p. **47**. See also <u>Capital</u>, vol. II., Part III: the 'category-symbol'  $\underline{\mathbf{g}}_{/CMLOPcm}$  denotes the category of the ""Reproduction and Circulation of the Total Social Capital", whose representative "production cycle" unit is here also rendered in o<u>ur</u> L version of Marx's 'process/praxis notation', as ' $\mathbf{M} \stackrel{\ell}{=} C \left( \begin{array}{c} \dots P \dots (C + c) \stackrel{\ell}{=} (\mathbf{M} + \mathbf{m})' \right].$ 

**1**. "'Factor-out'' the most complex determinations of  $\underline{\mathbf{g}}_{/CMLOPcm}$ , namely, the gross profit elements:

(m) × (e) ×  $\underline{\mathbf{q}}_{\text{CMLOP}em} = \underline{\mathbf{q}}_{\text{CMLOP}}$ ; comprehend category  $\underline{\mathbf{q}}_{\text{CMLOP}}$  as  $\mathbf{M} \neq \mathbf{C} \langle \begin{bmatrix} \mathbf{L} \\ \mathbf{O} \end{bmatrix} \dots \mathbf{P} \dots \mathbf{C} \neq \mathbf{M};$ 

- 2. "Factor-out" the most <u>specific</u> remaining determinations of  $\underline{\mathbf{g}}_{/CMLOP}$ , namely, the Production details:  $(\underline{\mathbf{I}}) \times (\underline{\mathbf{\Theta}}) \times \underline{\mathbf{g}}_{/CML\ThetaP} = \underline{\mathbf{g}}_{/CMP}$ ; comprehend the category  $\underline{\mathbf{g}}_{/CMP}$  as  $\mathbf{M} \Leftarrow \mathbf{C} \dots \mathbf{P} \dots \mathbf{C} \Leftarrow \mathbf{M}$ ; [see <u>Capital</u>, vol. II., p. 23].
- 3. "'Factor-out'' the most complex remaining '''factor ''' of <u>**q**</u><sub>/CMP</sub>, namely, that of the Production Process itself: (₽) × <u>**q**</u><sub>/CMP</sub> = <u>**q**<sub>/CM</sub>; comprehend the category <u>**q**</u><sub>/CM</sub> as M ≤ C ≤ M, and consider the *inverted <u>ord</u>*er of the Ms and C in that process-/human praxis-expression, to C ≤ M ≤ C, the resulting new <u>ord</u>ering making "consumer" [e.g., "garage sale"] sense -- selling Commodit<u>ies</u> that you have, but do *not*/no longer want, for Mon<u>ies</u>, e.g., with which to buy <u>other</u> Commodit<u>ies</u>, that you do now want, i.e., engaging in the "'Mon<u>ies</u>-mediated circulation<u>s</u> of Commodit<u>ies</u>"'. [see <u>Capital</u>, vol. I., pp. 155, 150, 105].
  </u>
- 4. "Factor-out" the most complex remaining determination of category  $\underline{\mathbf{q}}_{/CM}$ , namely, the Mon<u>ies</u> 'quantoqualifier: (M) ×  $\underline{\mathbf{q}}_{/CM}$  =  $\underline{\mathbf{q}}_{/C}$ ; comprehend  $\underline{\mathbf{q}}_{/C}$  as  $\mathbf{C} \neq \mathbf{C}$ . [see <u>Capital</u>, vol. I., pp. 105, 65, 62, 55, 49, 48].

This last step yields the starting category of Marx's <u>dialectic</u>al, immanent critique of the ideology-vitiated science of capitalist political economy, which, as w<u>e</u> noted above, Marx named the "'Elementary...Form of [Commodity[-Capital]][Exchange]-]Value", which we first meet, after some preliminary definition<u>s</u> and description<u>s</u>, in Vol. **I**, Part **I**, Chapter *I*., Sec. 3. *A*. of Marx's treatise entitled <u>Capital</u>: A Critique of Political Economy.

**5**. Marx chose category ' $\underline{\mathbf{g}}_{/C}$ ', or  $\mathbf{C} \neq \mathbf{C}$ , as the *starting-category*, or *«arché»-category*, for the *"method of presentation "* second phase of his <u>dialectic</u>al method, the '[re-]ascent into complexity' [cf. Marx, <u>Grundrisse</u>, *ibid.*], aimed, this time, *not* at arriving back at a complex but "<u>chaotic</u> conception of the whole" [cf. Marx, <u>Grundrisse</u>, *ibid.*], but at <u>comprehended</u> complexity; at <u>explained</u> complexity, as summarized on the RHS of the diagram above, and as carried out in detail by Marx in volumes **I** and **II** [at least] of his [at least] four volume treatise, <u>Capital</u>.

<sup>\*[</sup>Assuming that all 'surplus-*labor-time*' "added", hence all "'surplus-*value*-added", accrues "'during "' the second of the two sets of '...' ellipsis dots: '...'.].

**Expanding Your** <u>Presentation</u> of that <u>Present</u> of Your <u>Domain</u> from Your Starting Category. Once you have found your starting category for the <u>Domain</u> that you wish to <u>present</u>, and to <u>explain</u>, e.g., for yourself, and for others, the next step in this method is to reflect upon that starting category, in relation to its <u>Domain</u> as a whole. Indeed, the next step is to "'reflect'" that starting category *upon itself* as you have constructed it within your own mind. That starting category should be the category of that <u>Domain</u> that is the simplest, the <u>least explicit</u>, and the most <u>implicit</u> representation of that <u>Domain</u> as a whole that you can presently discover.

Thus, "'reflect"' that category upon itself, in your own mind; confront that category with itself *within* your own mental construction thereof. To do so begins a <u>self</u>-critique or *immanent* critique of the [*in*]adequacy of that first category as an <u>explicit representation/explication of your **D**omain as a whole. This should elicit, *first*, from out of the implicit content of that starting category, a counter-example category [cf. Lakatos], one that "falsifies" that starting category as being any kind of *full* 'explicitization' of the total ontological content of your **D**omain. That second, 'counter-category' exhibits the *in*adequacy of that first category, typically by being of an *other*, even of an extreme *opposite qual*ity to the preeminent *qual*ity of that starting category, in some (of its) dimension(<u>s</u>) or determination(<u>s</u>), but also by being a *supplementary* quality to the quality of that starting category. Yet that 'counter-category' should still be one that inheres *within* your **D**omain. It should also be the consecutively *next* more complex category of that **D**omain.</u>

Let's name your starting category, <u>gen</u>erically, by the 'symbol-name', or 'algebraic-name'  $\underline{\mathbf{q}}_{A}$ , wherein **A** represents an abbreviation of the name of the key, preeminent <u>**q**ual</u>ity, feature, facet or attribute that all of the unit<u>s</u> that are <u>implicit</u> in ontological category, or "kind-of-being" category,  $\underline{\mathbf{q}}_{A}$ , share. E.g., **A** might be the first letter of the name of that shared <u>**q**ual</u>ity. Indeed, the 'algebra-name'  $\underline{\mathbf{q}}_{A}$  "means": "all of those thin<u>gs</u>/unit<u>s</u> that share <u>**q**ual</u>ity <u>A</u>".

Identifying starting category  $\underline{\mathbf{q}}_{\mathbf{A}}$  is "step **0**" of your sought systematic-dialectical <u>presentation</u>.

Next, to start step **1** of that <u>presentation</u>, perform the "purely" <u>qual</u>itative computation  $\underline{\mathbf{q}}_{A} \otimes \underline{\mathbf{q}}_{A}$  or " $\underline{\mathbf{q}}_{A}$  squared";  $\underline{\mathbf{q}}_{A}^{2}$ . <u>Note</u>: W<u>e</u> have dispensed with the '<sub>1</sub>' in ' $\underline{\mathbf{q}}_{A}$ ', as w<u>e</u> are no longer leveraging connotative parallel<u>s</u> with the "cancellingout" of <u>qual</u>itative factors by mimicking "purely" <u>quant</u>itative fractions and their multiplication/division operations.

This "<u>self</u>-squared" [cf. Mandelbrot] "product", of  $\underline{\mathbf{q}}_{A}$  with itself --  $\underline{\mathbf{q}}_{A}$ 's "<u>self</u>-multiplication" -- signifies the "selfconfrontation" and the "self-reflexive" <u>self</u>-critique, or *«aufheben» immanent* critique, of category  $\underline{\mathbf{q}}_{A}$ , as being a category sufficient to encompass, <u>explicitly</u>, and to explain, all of the unit<u>s</u>-content of the <u>Domain</u> that you wish to <u>present</u>, and to <u>explain</u>. <u>Note</u>: W<u>e gene</u>rically and algebraically abbreviate the word <u>Domain</u> by D.

What category comes to your mind as having a key, preeminent  $\underline{\mathbf{q}}$  uality that is opposite to and/or supplementary to  $\underline{\mathbf{q}}$  uality  $\mathbf{A}$ , and which thus stakes a strong counter-claim to any claim of the  $\mathbf{D}$  sufficiency of  $\underline{\mathbf{q}}$  uality/category  $\mathbf{A}$  alone?

By o<u>*ur*</u> rule<u>s</u> for 'ontological-categorial multiplication' in the  ${}_{NQ}$  arithmetic, the operation  $\underline{\mathbf{q}}_{A} \otimes \underline{\mathbf{q}}_{A}$ , or  $\underline{\mathbf{q}}_{A}^{2}$ , will yield  $\underline{\mathbf{q}}_{A}$  again, <u>plus</u> an 'ontological-categorial <u>increment</u>', denoted  $\underline{\Delta \mathbf{q}}_{A}$ :  $\underline{\mathbf{q}}_{A} \otimes \underline{\mathbf{q}}_{A} \equiv \underline{\mathbf{q}}_{A} \oplus \underline{\Delta \mathbf{q}}_{A} \equiv \underline{\mathbf{q}}_{A} \oplus \underline{\Delta \mathbf{q}}_{A} \equiv \underline{\mathbf{q}}_{A} \oplus \underline{\Delta \mathbf{q}}_{A} \equiv \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{A}$ . This 'categorial <u>increment</u>', or '<u>increment</u>al category' symbol,  $\underline{\Delta \mathbf{q}}_{A} \equiv \underline{\mathbf{q}}_{AA}$ , represents that '<u>contra</u>-category', or '<u>counter</u>-category', or '<u>counter</u>-category' [cf. Lakatos] to category/«arithmos»  $\underline{\mathbf{q}}_{A}$ .

The unit<u>s</u> <u>implicit</u> in category  $\underline{\Delta \mathbf{q}}_{A}$  should *supplement* and/or *oppose*, in  $\underline{\mathbf{q}}_{ual}$  ity, the unit<u>s</u> <u>implicit</u> in category  $\underline{\mathbf{q}}_{A}$ , but still inhere <u>within</u> <u>**D**omain</u> **D**, i.e., while still also "residing" in **D**. But, as initially symbolized by  $\underline{\Delta \mathbf{q}}_{A}$ , this category is still an [algebraic and semantic] <u>un</u>known that, yes, is expected to meet certain <u>generic</u> criteria, as stated above, but whose <u>specific</u> identity within the <u>context</u> of <u>**D**omain</u> **D** is typically yet to be determined by you.

Completion of step **1** of your <u>presentation</u> means making a compelling and cogent argument for the <u>specific</u> identity of category  $\underline{\Delta q}_A$  or  $\underline{q}_{AA}$  within <u>Domain</u> D, that is, to "<u>solve for</u>"/<u>define</u>  $\underline{\Delta q}_A \equiv \underline{q}_{AA}$ . Often, category  $\underline{\Delta q}_A$  can be "solved"'/defined as the <u>Domain</u> D category whose units are '<u>meta</u>-units' of the units of category  $\underline{q}_A$ . E.g., as that category whose units are such that each <u>unit</u> of category  $\underline{\Delta q}_A$  is made up out of a hetero<u>gen</u>eous <u>multi</u>plicity of units of category  $\underline{q}_A$ , i.e., such that each <u>unit</u> of category  $\underline{\Delta q}_A$  is a <u>presently</u>-existing, <u>dialectic</u>al, or <u>aufheben</u>, <u>meta-unit-icity</u>' of some of the units of category  $\underline{q}_A$  -- of  $\underline{q}_A$  units that are <u>already</u> embedded within each one of the higher, already <u>presently</u>-existing  $\underline{\Delta q}_A \equiv \underline{q}_{AA}$  units, although this 'embedded-ness' was **not** <u>explicitly</u> noticed/called to attention in step **0**.

For example, in 'the *systematic* dialectic of <u>**present**</u> Nature', some atom<u>s</u> are <u>**presently**</u> embedded in the higher [more inclusive] organizational 'content-structure<u>s</u>' known as molecule<u>s</u>, while other atom<u>s</u> are <u>**presently**</u> free of that higher level of organization.

Each typical, <u>present</u> molecule unit resulted, in 'the *historical* dialectic of Nature', via a <u>past</u> process, from a naturalhistorical <u>self</u>-«aufheben» 'self-<u>meta</u>-unit-ization' <u>process</u> of some formerly 'molecularly'-<u>un</u>bound atom unit<u>s</u>. Each typical <u>present</u> molecule or molecular unit is <u>presently</u> made up out of a hetero<u>gen</u>eous <u>multiplicity</u> of <u>present</u> atom unit<u>s</u> that are, <u>presently</u>, embedded inside that <u>present</u> molecule unit. Regarding the typically '''supplementary''' character of the ''opposition''' between, e.g., category  $\underline{\mathbf{Q}}_{A}$  versus category  $\underline{\Delta \mathbf{Q}}_{A} \equiv \underline{\mathbf{Q}}_{AA}$ , see the 'dialectogram' image next page below, and its commentarial 'text-image', further below.

For another example, some <u>phon</u>etic letter unit<u>s</u> are found, in <u>present</u>-day text<u>s</u>, e.g., to be listed <u>out</u>side of word unit<u>s</u>, as "free-standing" <u>phon</u>etic character unit<u>s</u>, e.g., used <u>ord</u>inally rather than <u>phon</u>ically, in outlines, but also in passwords, serial numbers, etc. But, in the multitude of case<u>s</u>, <u>present</u>-day text<u>s</u> exhibit myriad other instance<u>s</u>, of <u>phon</u>etic letter unit<u>s</u> that **are** bound up in word unit<u>s</u>, each typical word <u>unit</u> being made up out of a hetero<u>gen</u>eous <u>multip</u>licity of letter unit<u>s</u>. Each typical, <u>present</u>-day word unit is, thereby, an «aufheben» '<u>meta</u>-unit-icity' of multiple, distinct <u>phon</u>etic letter unit<u>s</u>. Notice that the <u>relation</u> between word-bound and word-<u>un</u>bound phonetic-letter unit<u>s</u> in such text<u>s</u> is a <u>present</u> «aufheben» "[micro-]historical"", or extended-temporal, <u>process</u>-of-<u>gen</u>esis.



The  ${}_{NQ}$  arithmetic<u>s</u>/algebra<u>s</u>, hence also the  ${}_{NQ}$  dialectical method, are fitted primarily to model sequence<u>s</u>, progression<u>s</u>, succession<u>s</u>, ser<u>ies</u>, "'scale<u>s</u>'' [cf. Errol E. Harris], or '<u>qual</u>o-fractal tower<u>s</u>' of ontological categor<u>ies</u> that are <u>supplementary</u> opposites to their predecessor ontological categor<u>ies</u>, in the inherent, immanent 'ordinality' of such categor<u>ies</u>.

## <u>Commentary on</u> <u>Annihilatory</u> vs. <u>Complementary</u> «Species» of oppositions.

Though the following 'self-observable' and 'other-observable' fact of contemporary human cognition is not often made explicit in contemporary external discourse, and in contemporary internal self-reflection [from what we can tell via external observation and inference], there is no single (species) of (under the general category of "opposition(s)".

In our usage, per our presently prevailing 'human phenome', '"opposition''' comes in multiple kinds -- in multiple conceptual/semantic 'ideo-ontological «species»'.

Most contemporary persons, per our observations, can, by querying them on the matter, be brought readily to recognize two of these three «species» -- the «species» that we call ''complementary opposites''', like the proverbial "yin" and/versus "yang", and the «species» that we call 'annihilatory opposites', like our modernly widely known physical ontological categories of mutually-annihilatory "[koino-]matter" [st. Alfvin] and/versus "anti-matter", or the one-sidedly annihilatory categories of fatal disease viruses and/versus the hosts that they infect, and, typically, also annihilate.

However, Seldon recognized, and now we too recognize, a third category of oppositions, which he, and now we, have termed 'supplementary opposites'. We find this, ''supplementary''', kind of opposition -- though, to our knowledge, not under the adjective 'supplementary' -- figuring prominently in Marx's accounts of past Terran human history, and in Marx's accounts of predicted future Terran human history. It is the kind of oppositeness exhibited by feudalisms &/vs. capitalisms, & predicted to be exhibited by global capitalism &/vs. global socialism. This kind of opposition combines a dialectical, «aufheben» moment of ''containment''' & ''conservation''' of features of the former, preceding opposite in the historical constitution of the lat[t]er, succeeding opposite, with partial determinate negations & elevations of that predecessor opposite's features up into its successor.

Our category of 'supplementary oppositions' thus shares/combines aspects of both 'complementary oppositions' & 'annihilatory oppositions'. 'Supplementary opposition' is like 'complementary opposition' in that the ''supplement''' contains & continues aspects of the ''precedent''', which support it internally. 'Supplementary opposition' is like 'annihilatory opposition' in that aspects of the ''precedent''' are not included & continued in the ''supplement'''. In that sense, it is a ''dialectical synthesis''' category for the presently more familiar two categories of 'annihilatory opposites' and/versus '''complementary opposites'''.

Quotation: "The Pythagoreans, misunderstanding their Egyptian teachers, placed the host/parasite duality of good and evil (hence also of health and sickness) on the same footing as the quite different class of benign, self-complementary duals of finite/infinite, male/female, et al. And later philosophers, both oriental and occidental (e.g. Carl Jung), have repeated that fundamental error stemming from inaccurate perception that failed to make the basic distinction between two radically different kinds of opposites: those which are wave-like and mutually self-completing; and the later, pathological variety, ..., where one of the pair parasitizes on the other and, attacking it, attempts to destroy it permanently. The grip of the ancient error in the human mind is evidenced by the fact that this fundamental distinction was taught in no university philosophy course of the twentieth century as of 1983. Indeed, Jung's confused "coincidence of opposites" continues to be parroted". [pp. **136-137**]\*.

Reference: \*Charles Musès, Destiny and Control in Human Systems: Studies in the Interactive Connectedness of Time (Chronotopology), Kluwer-Nijhoff, Boston (1985).

You may also encounter cases in which **not** the **slightest** hint of '**«aufheben**» <u>meta</u>-unit-icity' may be evident, and 'category symbol algebraic <u>un</u>known'  $\Delta \mathbf{q}_A$  may best be '''solved'''/defined as indicating a category whose units/-«monads» are in various other ways <u>qual</u>itative opposites of, and/or '<u>qual</u>itative disparates' of, and/or are simply 'other to', the units of category  $\mathbf{q}_A$ .

In any case, there must be a "determinate" [cf. Hegel] "'negativity'', a '<u>not</u>-ness', to  $\underline{\Delta \mathbf{q}}_{\mathbf{A}}$  relative to  $\underline{\mathbf{q}}_{\mathbf{A}}$ :  $\underline{\Delta \mathbf{q}}_{\mathbf{A}}$  must be a specific, determinate case of '<u>not</u>- $\underline{\mathbf{q}}_{\mathbf{A}}$ ', but **not** any "abstract negation"-derived "nothingness" [cf. Hegel].

What category comes to your mind, when you think of category  $\underline{\mathbf{q}}_{A}$  "in" your **D**, and think about the shortfall( $\underline{s}$ ) of the <u>implicit units</u> of  $\underline{\mathbf{q}}_{A}$  relative to those of **D** as a whole, in terms of all of the kinds of units that are <u>implicitly</u> "in" **D**, and those units that are "in"  $\underline{\mathbf{q}}_{A}$  -- that "belong to", or "inhere in",  $\underline{\mathbf{q}}_{A}$  -- *vis-a-vis* those units that are <u>implicitly</u> "in" **D** but *not* in  $\underline{\mathbf{q}}_{A}$ ?

Once you have decided what  $\underline{\Delta \mathbf{q}}_{A}$  means to you in the context of your **D**; once you have found an <u>explicit category</u> of **D**, call it  $\underline{\mathbf{q}}_{B}$  -- whether or not this category has been recognized as such, and named, in known-to-you previous discourse -- that fulfills this role of '<u>im</u>mediate supplement' to category  $\underline{\mathbf{q}}_{A}$ , then you have completed your <u>presentation</u> shorthand for your step **1** '<u>qual</u>itative approximation' of the <u>present</u> nature of <u>Domain</u> **D**. You have '''solved for''' the meaning/-definition [cf. Plato's Socrates] of  $\underline{\Delta \mathbf{q}}_{A} \equiv \underline{\mathbf{q}}_{AA}$ .

This solution/definition can be expressed, symbolically, by ' $\Delta \mathbf{q}_A \mid = \mathbf{q}_B$ ', wherein the sign ' $\mid =$ ' signifies <u>assertion</u> [' $\mid =$ '] [cf. Russell/Frege] of a <u>definition</u> [' $\equiv$ '] [cf. [Plato's] Socrates] for the initially <u>un</u>known meaning of algebraic 'category-symbol' As  $\mathbf{q}_A = \mathbf{q}_A$ 

### $\underline{\Delta \mathbf{q}}_{\mathbf{A}} \equiv \underline{\mathbf{q}}_{\mathbf{A}\mathbf{A}'}$

#### Your <u>presentation</u> state has now progressed from ' $\underline{\mathbf{D}} \approx \underline{\mathbf{q}}_{A}$ ', or ' $\underline{\mathbf{D}}_{\mathbf{0}} = \underline{\mathbf{q}}_{A}$ ', to ' $\underline{\mathbf{D}} \approx \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B}$ ', or to ' $\underline{\mathbf{D}}_{\mathbf{1}} = \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B}$ '.

**Note**: The ' $\oplus$ ' sign *herein* signs an '''addition''' operation which is '<u>*non*</u>-amalgamative" [cf. Charles Musès] for <u>*un*</u>like<u>s</u>, i.e., for hetero<u>geneous</u>, <u>*qual*</u>itatively <u>*different*</u> "kind<u>s</u>-symbol<u>s</u>"/'ontic category-symbol<u>s</u>', which thus do *not* '''collapse''' into a single 'category-symbol' at their own level. This is <u>*un*</u>like familiar addition, in which, e.g., the '3' & the '4' of '3 + 4' <u>*do*</u> '''collapse''' into a single value, '7'. However, the ' $\oplus$ ' operation *is* "[hyper-]*amalgamative*" for <u>*likes*</u>; for multiple, thus redundant, cop*ies* of the <u>same</u> 'category-symbol'. I.e., by axiom ['**II**'], for any 'ontic category-symbol' **<u>g</u>**<sub>A</sub>: **<u>g</u><sub>A</sub> \oplus <b><u>g</u>**<sub>A</sub>' does *not* equal "**2g**<sub>A</sub>", per axiom. This also indicates the '*qual*itativity', or '<u>*unquant*</u>ifiability', of **<u>g</u>**<sub>A</sub>. W<u>*e*</u> describe this latter <u>*character*</u>istic of <sub>NQ</sub> 'category-*character*-symbol<u>s</u>' by the name '''additive idempotency'''.

For you to take the next step in your <u>presentation</u> modeling -- step **2** of this *method of <u>presentation</u> -- then apply '\otimes', the <i>«aufheben»-critique* operation, using category  $\underline{\mathbf{q}}_{B}$ , to the fruits of step **1** of your categorial progression exposition of <u>Domain</u> D so far, namely, to ()  $\underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B}$  (), i.e., first to category  $\underline{\mathbf{q}}_{A}$  and then to category  $\underline{\mathbf{q}}_{B}$ , then "'sum" [' $\oplus$ '] the results --  $\underline{\mathbf{q}}_{B} \otimes$  ()  $\underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B}$  (), i.e., first to category  $\underline{\mathbf{q}}_{A}$  and then to signify enclosed categorial content consisting of "purely" <u>qual</u>itative [categorial] values in their more <u>syn</u>chronic, "'SYSTEMATIC-<u>dialectic</u>" interpretations.

Result:  $()() \mathbf{g}_{B} \otimes \mathbf{g}_{A}() \oplus () \mathbf{g}_{B} \otimes \mathbf{g}_{B}() () = ()() \mathbf{g}_{A} \oplus \mathbf{g}_{BA}() \oplus () \mathbf{g}_{B} \oplus \Delta \mathbf{g}_{B}() ()$ . When, per axiom, you *re-<u>ord</u>er*, commutatively, these 'category-symbols', in <u>ord</u>er of rising complexity, this result becomes  $() \mathbf{g}_{A} \oplus \mathbf{g}_{B} \oplus \mathbf{g}_{BA} \oplus \Delta \mathbf{g}_{B}()$ , or  $() \mathbf{g}_{A} \oplus \mathbf{g}_{B} \oplus \mathbf{g}_{BA} \oplus \mathbf{g}_{BB} \oplus \mathbf{g}_{BA} \oplus \mathbf{g}_{BB}()$ . What these two, equivalent 'symbol-complex<u>es</u>' signify, thus what ' $\mathbf{g}_{B} \otimes () \mathbf{g}_{A} \oplus \mathbf{g}_{B}()$ ' also signifies, is the *critique* of  $() \mathbf{g}_{A} \oplus \mathbf{g}_{B}()$  by  $\mathbf{g}_{B}$ , comprised of (a) the <u>mutual</u> critique of  $\mathbf{g}_{B}$  and  $\mathbf{g}_{A}$ , whose fruition is denoted by  $\mathbf{g}_{BA}$ , or  $\mathbf{g}_{AB}$ , '''plus''' of (b) the <u>self</u>-critique or <u>immanent</u> critique of  $\mathbf{g}_{B}$ , whose fruition is noted  $\mathbf{g}_{BB}$ . Both components are by way of *critiquing*  $() \mathbf{g}_{A} \oplus \mathbf{g}_{B}()$  in terms of the [<u>in</u>]adequacy of  $() \mathbf{g}_{A} \oplus \mathbf{g}_{B}()$  to categorially comprehend <u>all</u> of <u>**D***omain* **D**.</u>

For the '<u>dyad</u>ic' version of this method, as well as for its '<u>triad</u>ic' version, the 'category-symbol' ' $\mathbf{g}_{BA}$ ', and, similarly, the 'category-symbol' ' $\mathbf{g}_{AB}$ ', are expected to represent unit<u>ies</u> or '''synthes<u>es</u>''' of the first two, opposite categor<u>ies</u>,  $\mathbf{g}_{A}$  and/versus  $\mathbf{g}_{B}$ . That is, ' $\mathbf{g}_{BA}$ ' or ' $\mathbf{g}_{AB}$ ' represent '<u>uni</u>-categor<u>ies</u>' that '''contain''', and <u>confine</u>, and <u>reconcile</u>, within themsel<u>ves</u>, the opposition [' $\sim$ '], ' $\mathbf{g}_{B} \sim \mathbf{g}_{A}$ ', between categor<u>ies</u> ' $\mathbf{g}_{B}$ ' and ' $\mathbf{g}_{A}$ ' as <u>separate</u> categor<u>ies</u>; between the 'starting category' and its 'first <u>contra</u>-category'.

For the 'dyadic' version of this method, but *not* for the 'triadic' version, the 'category-symbol' ' $\Delta \underline{q}_{B}$ ' or ' $\underline{q}_{BB}$ ' is expected to represent the 'second <u>contra</u>-category' of this categorial progression, by way of representing the <u>self</u>-critique, or the <u>immanent</u> critique, of the second category in this categorial progression, which is also known as its 'first <u>contra</u>-category', namely, category  $\underline{q}_{B}$ . In the 'dyadic' version of this method, opposition, <u>contra</u>riety, "<u>contra</u>diction" continually arises anew, at ever <u>higher</u> levels, at ever <u>more complex</u> 'qualo-fractal' scales, "'outflanking'" and superseding the most recent '<u>synthesis category</u>', or '<u>uni</u>-category', by way of the ''<u>self</u>-action''' of, i.e., by way of the, [algebraically] <u>non</u>linear [not nonlinear in the integrodifferential equation sense], '''<u>self</u>-reflexion''' [<u>self</u>-waufheben» <u>self</u>-critique] of the preceding '<u>contra</u>-category'. These ' $\underline{\otimes}$ ' [<u>self</u>-]confrontations aim to 'tease-out' <u>im</u>plicit, latent content of their operands/multiplicands into '<u>ex</u>plicitude'.

<sup>\*[</sup>I am narrating, from here forward -- in this '<u>dyadic</u> method version' sub<sup>1</sup>-section – by using a procedure, based upon a theorem by Foundation member Miguel Detonacciones, which substantially curtails the computational time and effort required to obtain the result of "squaring" a <u>non</u>-amalgamative sum, '<u>qual</u>itative superposition', or 'consecuum-cumulum', of 'category-symbols' -- symbols also termed, by us, 'categorograms', or 'categorial <u>ideograms'</u>.].

Category  $\underline{\mathbf{q}}_{BB}$  is the categorial fruition of the <u>self</u>-critique of category  $\underline{\mathbf{q}}_{B}$  within the "'sum", <u>'qual</u>itative superposition', or *not-<u>yet</u>*-mutually-interacting/mutually-multiplying, 'co-presence' of categor<u>ies</u>  $\underline{\mathbf{q}}_{A}$  and  $\underline{\mathbf{q}}_{B}$  -- ()  $\underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B}$ (). This preinteraction 'co-presence' signifies their <u>im</u>plicit 'co-assertion' as constituting, together, a COMPLETE <u>presentation</u> and *explanation* of the ontic categorial content, and, thereby, also of the <u>im</u>plicit '<u>unit</u>ic' or '«*monad*»-*ic*' ontological content, that constitutes <u>**D**omain</u> **D**. Such a '<u>qual</u>itative superposition' of two+, "<u>non</u>-amalgamatively "summed-up", solved 'category-symbol<u>s</u>', is an oft difficult-to-construct *subjective* construct for each user of a given dialectical <u>**D**omain</u>-model, and may vary markedly, within limit<u>s</u>, inside the mind<u>s</u> of individual user<u>s</u>, per our [*self*-]observation-based inference<u>s</u>.

So, again, as with our earlier <u>self</u>-critique of  $\underline{\mathbf{g}}_{A} - \underline{\mathbf{g}}_{A} \otimes \underline{\mathbf{q}}_{A} = \underline{\mathbf{q}}_{A}^{2} = \underline{\mathbf{q}}_{A} \oplus \underline{\Delta}\underline{\mathbf{q}}_{A} = \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{AA}$  -- at the next more concrete, more complex level, that containing  $\underline{\mathbf{g}}_{B}$ , we include  $\underline{\mathbf{g}}_{B} \otimes \underline{\mathbf{q}}_{B} = \underline{\mathbf{g}}_{B}^{2} = \underline{\mathbf{g}}_{B} \oplus \underline{\Delta}\underline{\mathbf{q}}_{B} = \underline{\mathbf{g}}_{B} \oplus \underline{\mathbf{g}}_{BB}$ . This is the  $\underline{\mathbf{g}}_{B}$  aspect of the critique of the whole step  $\mathbf{1}, \underline{\mathbf{D}} \approx (\underline{\mathbf{g}}_{A} \oplus \underline{\mathbf{q}}_{B})$  state of your <u>presentation</u>, a critique "'named''' ' $\underline{\mathbf{g}}_{B} \otimes (\underline{\mathbf{g}}_{A} \oplus \underline{\mathbf{q}}_{B})$ '. Thereby,  $\underline{\mathbf{g}}_{BB}$  represents, along with category  $\underline{\mathbf{g}}_{BA}$ , potentially the consecutive next, <u>increment</u>al, next more-complex ontic categor<u>ies</u> needed to explicate, more fully, the ontological unit<u>s</u> content -- the 'kind<u>s</u>-of-beings' content -- of <u>Domain</u> D.

Suppose that you are able to identify/define category  $\underline{\mathbf{g}}_{BA}$  in a <u>uni</u>vocal way, with, or as, say, **C**, as abbreviation for the name of the preeminent <u>qual</u>ity that <u>uni</u>vocally <u>character</u>izes the '<u>bi</u>-vocal'  $\underline{\mathbf{g}}_{BA}$  categorial ''<u>syn</u>thesis'' of  $\underline{\mathbf{g}}_{A}$  and  $\underline{\mathbf{g}}_{B}$ . You have thereby "solved for"/defined [']- $\equiv$ '] a meaning for former ''algebraic <u>un</u>known'' category  $\underline{\mathbf{g}}_{BA}$ :  $\underline{\mathbf{g}}_{BA}$  ]- $\equiv$   $\underline{\mathbf{g}}_{C}$ . Suppose further that you are able to identify/define category  $\underline{\mathbf{g}}_{BB}$  in a <u>uni</u>vocal way, with, or as, say, **D**, as abbreviation for the name of the preeminent <u>qual</u>ity that <u>uni</u>vocally <u>character</u>izes the new, second  $\underline{\mathbf{g}}_{BB}$  categorial ''<u>anti</u>thesis''. You

have then "solved for"/defined a meaning for former 'algebraic <u>unknown'</u> category-symbol  $\underline{\mathbf{q}}_{BB}$ :  $\underline{\mathbf{q}}_{BB}$   $\mathbf{=} \underline{\mathbf{q}}_{D}$ .

Then, if you "'add"' these **2** new solution<u>s</u>/definition<u>s</u> to the step **1** 'consecuum-cumulum', named  $\underline{D}_1$ , you will have completed step **2** of your model <u>presentation</u> of <u>D</u>omain **D**, by having arrived at a higher <u>presentation</u>-state than that of step **1**, for which ' $\underline{D} \approx () \underline{q}_A \oplus \underline{q}_B ()$ '. I.e., you'll have found the more 'thought-concrete', more complete ' $\underline{D} \approx () \underline{q}_A \oplus \underline{q}_B \oplus \underline{q}_C \oplus \underline{q}_B ()$ ', or ' $\underline{D}_2 = () \underline{q}_A \oplus \underline{q}_B \oplus \underline{q}_C \oplus \underline{q}_D ()$ ', which now shows **4** determination<u>s</u> instead of just **2**.

The latter is a shorthand for your step **2** categorial progression, categor<u>ies</u> progression, or categorial <u>series</u> exposition/-'ontological *categorial analysis*' of the ontological content of <u>**D**</u>*omain* **D**. From here on, this method's procedure is just a matter of, repeatedly, taking the most-advanced, most-complex 'category-symbol' evoked at the end of the <u>present</u>, latest stage/step of your <u>presentation</u> -- for step **2**, for example, that 'category-symbol' is <u>**q**</u><sub>D</sub> -- and using that symbol to model a critique of the state of <u>presentation</u> of that <u>present</u> step, by applying it, here <u>**q**</u><sub>D</sub>, via the ' $\otimes$ ' *«aufheben»* operation, to *all* of the 'category-symbol<u>s</u>' for all of the *other* categor<u>*ies*</u> evoked so far, and, finally, to 'category-symbol' <u>**q**</u><sub>D</sub> *itself* as well. For step **2**, this means ' $\otimes$ '-applying <u>**q**</u><sub>D</sub> to () <u>**q**</u><sub>A</sub>  $\oplus$  <u>**q**</u><sub>B</sub>  $\oplus$  <u>**q**</u><sub>C</sub>  $\oplus$  <u>**q**</u><sub>D</sub>(), to launch systematic-dialectical <u>present</u>ation step **3**.

After that procedure, your next move, per this method, is to "solve for" the new 'category-symbols' thereby <u>gene</u>rated. For step **3**, since there are **4** 'category-symbols' inherited from step **2**, there will be **4** additional, new 'category symbols' to "solve for" after you apply the step **3** self-critique procedure. For step  $n \ge 1$ , if that step has inherited **m** 'category-symbols' from step n - 1, then there will be another **m** additional 'category-symbols' <u>gene</u>rated by the step **n** critique procedure, for a new total of **2m** 'category-symbols', which then, next, are to be inherited, *from* step **n**, *by* step **n** + **1**.

"Solving for" each such new increment of initially "'algebraic-<u>un</u>known" 'category-symbol<u>s</u>' is simply a matter of defining those 'category-symbol<u>s</u>' in term<u>s</u> of kind<u>s</u> of unit<u>s</u> that you can find as existing in the <u>present</u> of the <u>Domain</u> that you are <u>present</u>ing and explicating. Then use existing name<u>s</u> for the already-recognized categor<u>ies</u> that comprehend those unit<u>s</u>, or, if needed, e.g., if no already-existing, apt name<u>s</u> for one or more of those categor<u>ies</u> are known to you, then create new name<u>s</u> that aptly "'christen" (that)(those) new categor(y)(<u>ies</u>).

If you continue iterating this step-wise process, a step will arrive for which you will *not* be able to "solve for"/define (a) categor(y)(ies) for some (or even for all) of the incremental new 'category-symbol( $\underline{s}$ )' *gene*rated by the critique of that step.

This may be because the collective, human-<u>*phen*</u>omic, "'meme<u>s</u>-pool" insight<u>s</u> upon which you draw for such solutionrecognition have **not yet** progressed to the degree necessary to discern the <u>**D**</u>omain-ontology aptly signed by (this)(these) 'category-symbol(<u>s</u>)', even though that ontology is/was actually <u>present</u> in the <u>present</u> that you are <u>present</u>ing.

Or, it may be because nothing corresponding to (this)(those) 'category-symbol(<u>s</u>)' is wholly extant in that <u>present</u>. In the latter event, it may be time to identify the final solvable/definable ''algebraic-<u>un</u>known''' 'category-symbol' of your categorial progression <u>presentation</u>, and to conclude your <u>presentation</u> with your solution/definition for that 'category-symbol'. If the <u>present</u>ly-<u>un</u>solvable/<u>'un</u>definable' 'category-symbol(<u>s</u>)' intimate(<u>s</u>), to your mind, probable future ontology that you expect to arise in a *future-present* of your <u>Domain</u>, then, if you feel it appropriate, you may want to add a '''coda''' to your <u>presentation</u>, stating your resulting prediction hypothes<u>es</u> about one or more such *future-present*(<u>s</u>). These **2** eventualities are addressed in more detail, respectively, in the next **2** sub<sup>2</sup>-sections of this sub<sup>1</sup>-section.

Let us now work through step **3** for our <u>gene</u>ric example. This will help to further clarify and intimate what the further iteration<u>s</u> of this procedure, e.g., for step<u>s</u> also iteratively beyond step **3**, <u>gen</u>erically and algorithmically involve.

To <u>self</u>-critique the step **2** state of your <u>presentation</u>, means to get from the  $\underline{\mathbf{D}} \approx (\mathbf{D} \mathbf{g}_A \oplus \mathbf{g}_B \oplus \mathbf{g}_C \oplus \mathbf{g}_D)$  'qualitative approximation' of your ontological explication of <u>Domain</u> **D**, to its next, [possibly] fuller, richer, more apt, more fitting, more adequate stage. You can do so by performing the mind-act denoted ' $\mathbf{g}_D \otimes (\mathbf{D} \mathbf{g}_A \oplus \mathbf{g}_B \oplus \mathbf{g}_C \oplus \mathbf{g}_D)$ ', and by, next, solving-for/defining the **4** <u>new</u> "'algebraic <u>unknowns</u>"'/ category-symbol' term<u>s</u> so <u>gene</u>rated. By so doing, you get ---

#### $\underline{\mathbf{q}}_{\mathrm{D}} \otimes (\underline{\mathbf{q}}_{\mathrm{A}} \oplus \underline{\mathbf{q}}_{\mathrm{B}} \oplus \underline{\mathbf{q}}_{\mathrm{C}} \oplus \underline{\mathbf{q}}_{\mathrm{D}}) = \underline{\mathbf{q}}_{\mathrm{A}} \oplus \underline{\mathbf{q}}_{\mathrm{B}} \oplus \underline{\mathbf{q}}_{\mathrm{C}} \oplus \underline{\mathbf{q}}_{\mathrm{D}} \oplus \underline{\mathbf{q}}_{\mathrm{DA}} \oplus \underline{\mathbf{q}}_{\mathrm{DB}} \oplus \underline{\mathbf{q}}_{\mathrm{DC}} \oplus \underline{\mathbf{q}}_{\mathrm{DD}}$

-- yielding four new, composite, algebraic, <u>*bi*</u>-vocal category-symbol<u>s</u>' --  $\underline{\mathbf{g}}_{DA}$ ,  $\underline{\mathbf{g}}_{DB}$ ,  $\underline{\mathbf{g}}_{DC}$ , and  $\underline{\mathbf{g}}_{DD}$  -- to "solve-for"/define. Suppose that you are able to identify each of these four new 'category-symbol<u>s</u>' with its own <u>*uni*</u>vocal, recognized, and already-named category, of known unit<u>s</u>, extant in the <u>*present*</u> of the <u>*Domain*</u> that your <u>*presentation*</u> is explicating, e.g. --

$$\underline{\mathbf{q}}_{\mathrm{DA}} \mid = \underline{\mathbf{q}}_{\mathrm{E}}; \ \underline{\mathbf{q}}_{\mathrm{DB}} \mid = \underline{\mathbf{q}}_{\mathrm{F}}; \ \underline{\mathbf{q}}_{\mathrm{DC}} \mid = \underline{\mathbf{q}}_{\mathrm{G}}; \ \underline{\mathbf{q}}_{\mathrm{DD}} \mid = \underline{\mathbf{q}}_{\mathrm{H}}.$$

If so, then you have achieved the step **3** state of **D** qualitative-approximation by your categorial progression *presentation*:

#### $\underline{\mathbf{D}} \approx (\mathbf{D} \underline{\mathbf{a}}_{A} \oplus \underline{\mathbf{a}}_{B} \oplus \underline{\mathbf{a}}_{C} \oplus \underline{\mathbf{a}}_{D} \oplus \underline{\mathbf{a}}_{E} \oplus \underline{\mathbf{a}}_{F} \oplus \underline{\mathbf{a}}_{G} \oplus \underline{\mathbf{a}}_{H}(\mathbf{I}), \text{ or } \underline{\mathbf{D}}_{3} = (\mathbf{D} \underline{\mathbf{a}}_{A} \oplus \underline{\mathbf{a}}_{B} \oplus \underline{\mathbf{a}}_{C} \oplus \underline{\mathbf{a}}_{D} \oplus \underline{\mathbf{a}}_{E} \oplus \underline{\mathbf{a}}_{F} \oplus \underline{\mathbf{a}}_{G} \oplus \underline{\mathbf{a}}_{H}(\mathbf{I}).$

**Paradigmatic Example**. For example, suppose that  $w_{\underline{e}}$  have selected  $\underline{\mathbf{q}}_{C}$ , denoting the '<u>ideo-physio-ontic</u>' category of <u>C</u>ommodit<u>ies</u>, as the starting category for a <u>dialectic</u>al-mathematical model of the Marx's **1867+** systematic-<u>dialectic</u>al, categorial-progression explication of the  $\mathbf{D} =$  '''circulation value-form<u>s</u>''' phenomen<u>a</u> of the *then* <u>present</u>, and *still* <u>present</u>, capitalist economy, in volume<u>s</u> I and II of <u>Capital</u>: A Critique of Political Economy. Suppose further that w<u>e</u> have "solved for"/defined the further 'category-symbols' <u>gen</u>erated in that categorial series expansion, through step **2**, as:

step **0**,  $\underline{\mathbf{q}}_{C} = \underline{\mathbf{q}}_{C}^{\mathbf{1}} \equiv$  the category of <u>C</u>ommodit<u>ies</u><sup> $\alpha$ </sup> [ambiguous as to inclusion in any "Commodity-<u>Capital</u>"];

step **1**,  $\underline{\mathbf{q}}_{C} \otimes \underline{\mathbf{q}}_{C} = \underline{\mathbf{q}}_{C}^{2} = \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{CC}$ ; the new 'category-symbol' of which,  $\underline{\mathbf{q}}_{CC}$ , w<u>e</u> solve/define as --

 $\underline{\mathbf{q}}_{\mathrm{CC}} \models \underline{\mathbf{q}}_{\mathrm{M}} \equiv \text{ the category of } \underline{\mathbf{M}} \text{ on } \underline{ies}^{\beta} \text{ [ambiguous as to "`Money-} \underline{Capitals}''' inclusion], :: step \mathbf{1} \underline{\mathbf{D}} \approx () \underline{\mathbf{q}}_{\mathrm{C}} \oplus \underline{\mathbf{q}}_{\mathrm{M}}();$ 

step **2**,  $\underline{\mathbf{q}}_{\mathbf{M}} \otimes (\underline{\mathbf{q}}_{\mathbf{C}} \oplus \underline{\mathbf{q}}_{\mathbf{M}}) = \underline{\mathbf{q}}_{\mathbf{C}} \oplus \underline{\mathbf{q}}_{\mathbf{M}} \oplus \underline{\mathbf{q}}_{\mathbf{MC}} \oplus \underline{\mathbf{q}}_{\mathbf{MM}}$ , the new 'category-symbols' of which we solve as --

- $\underline{\mathbf{q}}_{MC} \models \underline{\mathbf{q}}_{R} \equiv \text{the category of } \underline{\mathbf{M}} \text{on} \underline{ies} \text{-mediated Ci} \underline{\mathbf{R}} \text{culations}^{\gamma} \text{ of } \underline{\mathbf{C}} \text{ommodit} \underline{ies} \text{ [ambiguous as to inclusion in any circulations} of "Commodity-Capitals", as mediated by "Money-Capitals"];}$
- $\underline{\mathbf{q}}_{MM} \models \underline{\mathbf{q}}_{K} \equiv$  the category of ' $\underline{\mathbf{K}}$ apital<u>s</u>'<sup> $\delta$ </sup> [<u>*im*</u>plicitly encompassing Commodity-Capital<u>s</u>, Money-Capital<u>s</u>, Productive Capital<u>s</u>, Fixed Capital Plant and Equipment, etc.];

so, for step **2**  $\therefore$  **D**  $\approx$  () **g**<sub>C</sub>  $\oplus$  **g**<sub>M</sub>  $\oplus$  **g**<sub>R</sub>  $\oplus$  **g**<sub>K</sub>().

If so, then our solution for step 3 looks like this --

### $\text{step } \textbf{3}, \underline{\textbf{q}}_{K} \otimes \textbf{()} \ \underline{\textbf{q}}_{C} \oplus \underline{\textbf{q}}_{M} \oplus \underline{\textbf{q}}_{R} \oplus \underline{\textbf{q}}_{K} (\textbf{)} = \underline{\textbf{q}}_{C} \oplus \underline{\textbf{q}}_{M} \oplus \underline{\textbf{q}}_{R} \oplus \underline{\textbf{q}}_{K} \oplus \underline{\textbf{q}}_{KC} \oplus \underline{\textbf{q}}_{KM} \oplus \underline{\textbf{q}}_{KR} \oplus \underline{\textbf{q}}_{KK}.$

We solve/define the four new category-symbols so generated as --

- $\underline{\mathbf{g}}_{\mathrm{KC}}$  |= the category of "Commodity-*Capitals*",<sup>8</sup> <u>specifically</u> & <u>explicitly</u> so; <u>Kapital's [«aufheben»-]</u> subsumption of  $\underline{\mathbf{g}}_{\mathrm{C}}$ ;
- $\underline{\mathbf{g}}_{\mathbf{K}\mathbf{M}}$  |= the category of "Money-*Capitals*"  $\overset{\boldsymbol{K}}{\overset{\boldsymbol{L}}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}}{\overset{\boldsymbol{L}}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}}{\overset{\boldsymbol{L}}{\overset{\boldsymbol{L}}}}}{\overset{\boldsymbol{L}}{\overset{$
- $\underline{\mathbf{g}}_{\mathbf{KR}} \stackrel{\underline{\partial}}{=} | \underline{\mathbf{g}}_{\mathbf{KMC}} \equiv \text{the category of the "$ *Circulations*of the Total Social*Capital*",<sup>n</sup>, in alternating forms of "Money-Capital" and "Commodity-Capital"; <u>K</u>apital's [*«aufheben»-* $]subsumption of <u><math>\mathbf{g}_{\mathbf{MC}}$  ]= <u> $\mathbf{g}_{\mathbf{p}}$ ;</u></u>
- $\underline{\mathbf{g}}_{\mathbf{K}\mathbf{K}} \models \underline{\mathbf{g}}_{\mathbf{E}} \equiv$  a category of a predicted <u>future</u>, <u>trans</u>-capitalist "social relation of production", arising via the <u>self</u>-critique, <u>in practice</u>, of the <u>capital</u> social relation of production itself, and which new social relation w<u>e</u> name 'Generalized Social <u>Equity</u>' [or "<u>Equitism</u>"']; <u>Kapital</u>'s <u>self</u>-subsumption<sup> $\theta$ </sup>;

#### so, for step **3** $\therefore$ **D** $\approx$ () **g**<sub>C</sub> $\oplus$ **g**<sub>M</sub> $\oplus$ **g**<sub>MC</sub> $\oplus$ **g**<sub>KC</sub> $\oplus$ **g**<sub>KM</sub> $\oplus$ **g**<sub>KMC</sub> $\oplus$ **g**<sub>E</sub> ().

Note that category  $\underline{\mathbf{q}}_{\mathbf{F}}$  is *not* fully part of this <u>**D**</u>*omain* of "capitalist circulation value-form<u>s</u>", at <u>present</u>, so that, per o<u>ur</u>

solution, category  $\underline{\mathbf{q}}_{KMC}$  is the 'finishing category' of <u>its presentation</u>. The explication of  $\underline{\mathbf{q}}_{KK}$   $|=\underline{\mathbf{q}}_{E}$  potentially belongs to a '''coda''', expositing an hypothesis predicting a *not yet* fully actualized, *not yet* fully experienced, but expected, by u<u>s</u>, potential <u>future</u> 'socio-ontological' category of '[human-]social relations of [human-societal self-re-]production', perhaps a *transitional category* to an <u>un</u>precedented new, higher [more inclusive] <u>Domain</u>, a category with "one foot <u>inside</u> & one foot <u>outside</u>", or with one foot within & one foot <u>beyond</u>, the capitalist system of social relations of [re]production <u>Domain</u>.

Note the <u>implicit ingredience</u>, in all of the above '<u>contra</u>-category' solutions, of a ''universal architectonic''' that we call '"universal architectonic is the revelation of already-existing, <u>synchronic relations</u> of effective '<u>de</u>-unitization' of, & <u>elevation</u> up into, & <u>conservation</u> of, the units of the '<u>contra</u>-categor<u>ies</u>' that are presented <u>earlier</u>, per their systematic <u>order</u>, <u>inside</u> the [thus <u>meta</u>-]units of the '<u>contra</u>-categor<u>ies</u>' that are presented <u>earlier</u>, per their systematic <u>order</u>, <u>inside</u> the [thus <u>meta</u>-]units of the '<u>contra</u>-categor<u>ies</u>' that are presented/evoked later, e.g. – \*  $\mathbf{g}_{CC}$  |=  $\mathbf{g}_{M}$ : <u>Money is '''made of Commodities'''</u>, i.e., <u>Money [meta</u><sup>1</sup>-]units are -- '<u>psych</u>ê-ically', '<u>meme</u>tically', or ''<u>'psych</u>ohistorically''', and  $\therefore$  also practically, but **not** simply <u>physically</u> – '''made of'''. <u>Commodity units</u>; are '''made up out of''' a hetero<u>gen</u>eous multiplicity of <u>Commodity-units</u>. <u>Money units</u> ''<u>contain</u>''' those <u>Commodity units</u>, i.e., ''<u>contain</u>''' the <u>warithmoi</u> of <u>Commodities</u> that different <u>quant</u>it<u>ies</u>/warithmoi</u> of <u>Money units</u> can <u>command</u> in exchange. Money '''is''', in essence, a <u>mental</u> '''price<u>s</u>-list''' for <u>all</u> such <u>Commodity units</u>. Thus, <u>Money units</u> are, <u>mentally</u>, '<u>waufhebens</u> <u>meta</u>-unit-icit<u>ies'</u> of <u>C</u>ommodity <u>units</u>. Ability to [legally] <u>command</u> [nearly] <u>all</u> '<u>C</u>ommoditi<u>es</u>' is the core of '''the use-value of <u>M</u>oney'''.

\*  $\mathbf{g}_{MM}$  |=  $\mathbf{g}_{K}$ : <u>K</u>apital is 'made of Mon<u>ies</u>', i.e., <u>K</u>apital [<u>meta</u><sup>2</sup>-]unit<u>s</u> are, '<u>psych</u>ê-ically', '<u>mem</u>etically', and : also practically, '*«aufheben»* <u>meta</u>-unit-icit<u>ies</u>' of <u>M</u>oney unit<u>s</u>. Each <u>K</u>apital unit is partly made up out of a "homo<u>gen</u>eous" multiplicity/*«arithmo<u>s</u>»* of <u>M</u>oney unit<u>s</u>, i.e., of the <u>multiple</u> <u>quantities</u> of recorded accounting unit<u>s</u> [e.g., written-down "unit<u>s</u> of account"] as well as physical, e.g., metal [e.g., coin] or paper <u>M</u>oney unit<u>s</u>, <u>present</u>ly recorded/recalled as profit<u>s</u>, e.g., as "retained" [net] earning<u>s</u>, from <u>past</u> accounting period<u>s</u>/"deal<u>s</u>"/venture<u>s</u>.

Thus this 'universal dialectical architectonic' of dialectical, «aufheben», <u>partial</u> 'chain-<u>containment</u>' [' $\square$ '], i.e., of '«aufheben», or dialectical, '<u>meta</u>-unit-icity', is evident here, in this '<u>psych</u>ê-ic',  $\approx$ synchronic, <u>present</u>ational, systematic/taxonomic sense. The relation ' $\mathbf{X} \square \mathbf{Y}$ ', means all typical units of  $\mathbf{Y}$  contain units of  $\mathbf{X}$ , but **not** all units of  $\mathbf{X}$  are contained in units of  $\mathbf{Y}$ :

$$\underline{\mathbf{C}} \sqsubseteq \underline{\mathbf{M}} \sqsubseteq \underline{\mathbf{K}} - \text{ or } - \underline{\mathbf{Commodities}} \vDash \underline{\mathbf{Monies}} \sqsubseteq \underline{\mathbf{Kapitals}}.$$

<sup>&</sup>lt;sup>α</sup>[see <u>Capital</u>, volume I, Part I, Chapter I., "Commodities".]. <sup>β</sup>[see <u>Capital</u>, volume I, Part I, Chapter I. D., "The Money-Form".].

<sup>&</sup>lt;sup>7</sup>[see <u>Capital</u>, volume I, Part I, Chapter III., "Money, or the Circulation of Commodities".].

<sup>&</sup>lt;sup>8</sup>[see <u>Capital</u>, volume I, Part II, "The Transformation of Money into Capital".]. <sup>8</sup>[see <u>Capital</u>, volume II, Part I, Chapter III., "The Circuit of Commodity-Capital".]. <sup>4</sup>[see <u>Capital</u>, volume II, Part I, Chapter I., "The Circuit of Money-Capital".]. <sup>n</sup>[see <u>Capital</u>, volume II, Part III, "The Reproduction and Circulation of the Aggregate Social Capital".]. <sup>9</sup>[see <u>Capital</u>, volume I, Part III, "The Reproduction and Circulation of the Aggregate Social Capital".]. <sup>9</sup>[see <u>Capital</u>, volume I, Part III, "The Circuit of Money-Capital".].

Part V, Chapter XXVII., "The Role of Credit in Capitalist Production".].

Of course, e.g.,  $\underline{D}_3 \approx (P_{\mathbf{A}} \oplus \underline{\mathbf{q}}_{\mathbf{M}} \oplus \underline{\mathbf{q}}_{\mathbf{MC}} \oplus \underline{\mathbf{q}}_{\mathbf{KC}} \oplus \underline{\mathbf{q}}_{\mathbf{KM}} \oplus \underline{\mathbf{q}}_{\mathbf{KMC}})$  is *not*, in itself, the *whole presentation* for **Domain D**. It is but an extremely terse "shorthand", a 'hyper-concise' outline, a horizontal, high-level "table" of contents, a 'horizontal list', of the socio-ontological-categorial contents' symbolic names; of the "kinds of social relations [of [soci[et]al [[self-]re-]production]" content, of this **D**. E.g., it took Marx the first **156** pages of <u>*Capital*</u>, *vol*. **I**, and much of the **523** pages of *vol*. **II**, to "flesh out" the 'categorial skeleton' of the **7** categories of "circulation value-form" "relations of production", explicit & "solved-for" in <u>dialectic</u> equation  $\underline{D}_3 \approx (P_{\mathbf{A}} \oplus \underline{\mathbf{q}}_{\mathbf{M}} \oplus \underline{\mathbf{q}}_{\mathbf{MC}} \oplus \underline{\mathbf{q}}_{\mathbf{K}} \oplus \underline{\mathbf{q}}_{\mathbf{K}C} \oplus \underline{\mathbf{q}}_{\mathbf{K}} \oplus \underline{\mathbf{q}}_{\mathbf{K}C} \oplus \underline{\mathbf{q}}_{\mathbf{K}} \oplus \underline{\mathbf{q}}_{\mathbf{K}C}$ 

Note that each of the **7** parts of the above <u>dialectical</u> equation RHS, beside its "solved-for", explicit, <u>specific</u> name, has also, for us, a <u>generic</u> name as well, via a nomenclature summarized per the text-image on the next page, below, viz. --

- <u>Gen</u>erically, <u>q</u> is, of course, called by us the '«arché»-category' or 'starting category' for this model of the 'capital[ist]-circulation value-forms' <u>D</u>omain.
- Category  $\underline{\mathbf{q}}_{CC} \models \underline{\mathbf{q}}_{M}$  is called its 'first <u>contra</u>-category', in o<u>ur</u>, 'supplementary opposition' sense of ''<u>contra</u>'''.
- Category **<u><b>g**</u><sub>MC</sub> is called by u<u>s</u> its 'first [<u>full</u>] <u>uni</u>-category'.
- Category  $\underline{\mathbf{q}}_{_{\mathbf{M}\mathbf{M}}} \models \underline{\mathbf{q}}_{_{\mathbf{K}}}$  is called by u<u>s</u> its 'second <u>contra</u>-category'.
- Category <u>**q**</u><sub>KC</sub> is called, by u<u>s</u>, its 'first <u>part</u>ial <u>uni</u>-category' because, of the categorial determination<u>s</u> extant in the step in which <u>**q**</u><sub>KC</sub> is evoked, namely C, M, and K, 'category-symbol' <u>**q**</u><sub>KC</sub> does *not* include M in its syntactic <u>uni</u>fication.
- Category <u>**q**</u><sub>KM</sub> is called, by u<u>s</u>, the <u>**D**omain</u>'s 'second <u>part</u>ial <u>uni</u>-category', because it does not include categorial determination **C** in its <u>uni</u>fication.
- Category  $\underline{\mathbf{g}}_{\mathbf{KMC}}$  is called, by us, its 'second <u>full</u> <u>uni</u>-category', because it includes C, M, and K in its subscript.
- Were it the case that category  $\underline{\mathbf{q}}_{\mathbf{K}\mathbf{K}} \models \underline{\mathbf{q}}_{\mathbf{E}}$ , per o<u>ur</u> solution here, inhered in the '<u>capital[ist]</u>-circulation value-forms' <u>**D**omain</u>, then it would be called, by us, the 'third <u>contra</u>-category' of that <u>**D**omain</u>.

You may be wondering, at this point, why step  $\mathbf{1}$ ,  $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_{\mathbf{1}}$ , is *not* just  $\underline{\mathbf{q}}_{B}$ , or, in o<u>*ur*</u> present example,  $\underline{\mathbf{q}}_{M}$ ; why step  $\mathbf{2}$ ,  $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_{\mathbf{2}}$ , is *not* just  $\underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{D}$ , or, in o<u>*ur*</u> present example,  $\underline{\mathbf{q}}_{MC} \oplus \underline{\mathbf{q}}_{K}$ ; why step  $\mathbf{3}$   $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_{\mathbf{3}}$ , is *not* just  $\underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{F} \oplus \underline{\mathbf{q}}_{G} \oplus \underline{\mathbf{q}}_{H}$ , or, in o<u>*ur*</u> present example, *not* just  $\underline{\mathbf{q}}_{KC} \oplus \underline{\mathbf{q}}_{KMC} \oplus \underline{\mathbf{q}}_{KK}$ . I.e., why do w<u>e</u> repeat all of the earlier <u>gene</u>rated 'category-symbols', and '''sum''' them together with the latest [self-]critique-<u>gene</u>rated 'category-symbols'?

 $W_{\underline{e}}$  do so because, potentially, and, usually, also actually, all of the previously <u>gen</u>erated categor<u>ies</u> are still co-<u>present</u>, as valid descriptions of parts of the <u>present</u> reality of the <u>Domain</u>, together with the latest [self-]critique-<u>gen</u>erated categor<u>ies</u>. This is what w<u>e</u> call an '<u>e</u>volute consecuum-cumulum' of categor<u>ies</u>. W<u>e</u> do so because, in such, the later-evoked categor<u>ies</u> do **not** absolutely "supersede", "cover-over", 'extinctize', or "erase", the earlier-evoked categor<u>ies</u>. On the contrary, in a '<u>con</u>volute consecuum', in each new step of <u>presentation</u>, all of the categor<u>ies</u> of all previous steps of the <u>presentation</u>, would be absent/erased/eliminated/excluded from <u>re</u>presentation in each next step, as "surpassed", as "obsolete", or as "extinct". However, to o<u>ur</u> lights, '<u>e</u>volute-tion', **not** '<u>con</u>volute-tion', provides more fitting models of typical <u>Domains</u>. The 'dialectogram' and commentary modules, on the page after the next page, further state this case.

In terms of o<u>ur</u> present sample solution, some <u>C</u>ommodit<u>ies</u>, part(<u>s</u>) of  $\underline{\mathbf{q}}_{C}$ , that are typically **not** "Commodity-<u>Capitals</u>" -e.g., "garage-sale" <u>C</u>ommodit<u>ies</u> -- still co-exist, in the capitalist <u>present</u>, next to/alongside <u>C</u>ommodit<u>ies</u> that **are** part of "Commodity-Capital(<u>s</u>)",  $\underline{\mathbf{q}}_{KC}$ . E.g., 'personal <u>Monies</u>'  $\underline{\mathbf{q}}_{M}$ ; consumption "revenue<u>s</u>", **not** part of "Money-<u>Capitals</u>", are still <u>present</u>, alongside <u>Monies</u> that **are** part of "Money-Capital(<u>s</u>)",  $\underline{\mathbf{q}}_{KM}$ . And 'Mon<u>ies</u>-mediated Ci<u>R</u>culation<u>s</u> of Commodit<u>ies</u>',  $\underline{\mathbf{q}}_{MC}$ , are still <u>present</u>, that may **not** be part of "'The <u>Circulation</u> of the Total Social <u>Capital</u>"' -- e.g., hobbyist<u>s</u>' inter-collector transaction<u>s</u> -- alongside those that **are**  $\underline{\mathbf{q}}_{KMC}$ .

# <u>Generic DIALECTICal Interpretations</u> of the <sub>N</sub>Q '<u>Meta</u>-Numbers', ≈<u>Syn</u>chronic & <u>Dia</u>chronic, <u>Dyad</u>ic & <u>Triad</u>ic, for the 1st 18.

| Ordinal<br>#. | ' <u>Dyad</u> ic pathway'<br>to <u>gen</u> eric ' <u>qual</u> ifier<br><u>meta</u> -numeral'. | " <u>Dyad</u> ic Seldon Function"<br><u>gene</u> ric <u>Dialectic</u> al Category<br>Name/Interpretation. | ' <u>Triad</u> ic Seldon Function'<br><u>gen</u> eric <u>Dialectic</u> al Category<br>Name/Interpretation. | ' <u>Driad</u> ic pathway'<br>to <u>gen</u> eric ' <u>qual</u> ifier<br><u>meta</u> -numeral'. |
|---------------|---|---|--|--|
| <b>1</b> st   | ۲<br>۱  | First Category/<br>«Arché» Category   | First Category/<br>«Arché» Category  | ۲<br>۱   |
| 2nd           | □<br>1+1 = □ <mark>2</mark>   | Second Category/<br>First Category  | Second Category/<br>First <u>Contra</u> -category  | ⊑= ⊑2  |
| 3rd           | ⊑<br><mark>2+1</mark> = ⊑3  | Third Category/<br>First [Full] <u>Uni</u> -Category  | Third Category/<br>First [Full] <u>Uni</u> -Category   | ⊈= ⊑3  |
| 4th           | ⊈ <mark>_2+2</mark> = ⊈_4   | Fourth Category/<br>Second <u>Contro</u> -Category  | Fourth Category/<br>First Partial <u>Contra</u> -Category  | ⊑ <b>3+1</b> = □_4   |
| 5th           | ⊑ <mark>4+1</mark> = ⊑ <mark>5</mark>   | Fifth Category/<br>First Partial Uni-Category   | Fifth Category/<br>Second Partial <u>Contro</u> -Category  | ੑ <mark>ੑੑੑੑੑ<sub>3+2</sub> = ੑ<sub>5</sub></mark>   |
| 6th           | [].<br>4+2 = [].6   | Sixth Category/<br>Second Partial <u>Uni</u> -Category  | Sixth Category/<br>Second Full <u>Contre</u> -Category   | ⊑<br><mark>3+3</mark> = ⊑_6  |
| 7th           | ⊑<br>4+3 = ⊑_7  | Seventh Category/<br>Second Full <u>Uni</u> -Category   | Seventh Category/<br>First Partial <u>Uni</u> -Category  | □<br>6+1 = □.7   |
| 8th           | ⊈_4+4 = ⊈ <mark>8</mark>  | Eighth Category/<br>Third <u>Canage</u> -Category   | Eighth Category/<br>Second Partial <u>Uni</u> -Category  | ⊑<br>6+2 = □_8   |
| 9th           | ⊑_=⊑ <mark>9</mark>   | Ninth Category/<br>Third Partial <u>Uni</u> Category  | Ninth Category/<br>Second Full <u>Dat</u> Category   | ⊑_= ⊑_ <mark>9</mark>  |
| <b>10</b> th  | ⊑ <mark>8+2</mark> = ⊑ <mark>10</mark>  | Teuth Category/<br>Fourth Partial <u>Uni</u> -Category  | Tenth Category/<br>Third Partial <u>Contra</u> -Category   | ⊑ <mark>9+1</mark> = ⊑ <mark>10</mark>   |
| <b>11</b> th  | ⊈ <mark>8+3</mark> = ⊈ <mark>11</mark>  | Eleventh Category/<br>Fifth Partial <u>Uni</u> -Category  | Eleventh Category/<br>Fourth Partial Contro-Category   | <sup>□</sup> <sub>0</sub> ; <sub>9+2</sub> = <sup>□</sup> , 11                                 |
| <b>12</b> th  | ⊈<br>⊎ <mark>8+4</mark> = ⊈   | Twelfth Category/<br>Sixth Partial Uni-Category   | Twelfth Category/<br>Fifth Partial Control - Category  | ⊑ <mark>9+3</mark> = ⊑ <mark>12</mark>   |
| <b>13</b> th  | [] <mark>8+5</mark> = [] <b>13</b>  | Thirteenth Category/<br>Seventh Partial <u>Uni</u> -Category  | Thirteenth Category/<br>Sixth Parnal Contra-Category   | <mark>Ձ,₀+4</mark> = Ա <b>13</b>   |
| <b>14</b> th  | □ <mark>8+6</mark> = □ <b>14</b>  | Fourteenth Category/<br>Eighth Pastial <u>Uni</u> -Category   | Fourteenth Category/<br>Seventh Partial <u>Contra</u> -Category  | ⊑<br>」 <mark>9+5</mark> = □,14   |
| <b>15</b> th  | <sup>□</sup> <sub>8+7</sub> = <sup>□</sup> <sub>15</sub>                                      | Fifteenth Category/<br>Third Full <u>Uni</u> -Category  | Fifteenth Category/<br>Lighth Partial Contra-Category  | ⊑_= ⊑_15   |
| <b>16</b> th  | ⊑. <mark>8+8</mark> = ⊑.16  | Sixteenth Category/<br>Fourth Full <u>Contra</u> -Category  | Sixteenth Category/<br>Ninth Partial Contra-Category   | ⊑_ <mark>9+7</mark> = ⊑_16   |
| <b>17</b> th  | L 16+1 <sup>=</sup> L 17  | Seventeenth Category/<br>Ninth Partial <u>Uni</u> -Category   | Seventeenth Category/<br>Tenth Partial <u>Contra</u> -Category   | <sup>□</sup> <sub>9+8</sub> = <sup>□</sup> <sub>17</sub>                                       |
| <b>18</b> th  | ີ <b>16</b> +2 <sup>=</sup> ີ 18  | Eighteenth Category/<br>Tenth Pastial <u>Uni</u> -Category  | Eighteenth Category/<br>Third Full <u>Contra</u> -Category   | □<br>= □18   |



w q<sub>-oc</sub> ⊢≡ w A\_system, each of whose terms consists of a 'Boolean co-factor', a function of epoch/step "'time'''-value, & which "'quantifies''' is 'ontological qualifier co-factor'. 'Boolean co-factor' function-values of 0 mean that the 'qualifier co-factor's' 'onto' is <u>absent/impossible</u> in that epoch/step. 'Boolean co-factor' function-values of 1 mean that this 'onto' is <u>present/Actualized</u> in that epoch/step.

| immanent [self-]critique of convoluteness: convolutes(convolutes) $\models$ convolutes $\neg \oplus e$ volutes; $3 \land \bigcirc V$  |
|---|
| mutual critique/ <u>syn</u> thesis: evolutes(convolutes) $\models$ convolutes $\neg \ominus \neg \neg \Box$ (covolutes); $3 \ominus \lor \lor \Rightarrow h = 3 \ominus \lor h = h = h = h = h = h = h = h = h = h$ |
| $\left(\begin{smallmatrix}3\\6\\c\right)_{a}^{3} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$  |

# <u>Commentary on the Dialectic of 'Volutenesses'</u>.

Our known universe, at its largest scale, is primarily "evolute", not "convolute". That is, earlier ontology generally remains present & visible, to some degree, even after new ontology irrupts from within it. The irruption of new ontology -- of new kinds of units or «monads» or "'holons'' -- does not completely obliterate, 'extinct', or extinguish the kinds of units or «monads» or "'holons'' that arose in earlier ontological irruptions. Our universe leans to the other side, that of "convolute-ness'', <u>mathin</u>, only at its smaller scales, locally, in the cores of the new-ontology-irruptive nucleation zones of its 'conversion-formations', where older kinds of ontological units rapidly expandedly reproduce, thereby reaching high degrees of physical-spatial concentration, density, & proximity for many such units. Moreover, even there, the resulting irruptions of the new ontological units, or "holons"', tend to be mixed & commingled among still-extant «monads», or "'holons"', of the immediate predecessor 'self-hybrid' ontological category ['onto'] at least.

For example, in terms of the ontologies of the media of entertainment presentation, "live theatre", popular since ancient times, did not completely disappear after the irruption of the radio drama and of motion picture versions of 'recorded theatre'. Motion pictures and radio broadcasting did not completely disappear after the advent of television broadcasting in the interview of interview and radio broadcasting did not completely disappear after the advent of services, despite the greater utility, in many ways, of the latter. Likewise, the primordial cosmic microwave background photons and the "sub-atomic" particles' cosmic rays, did not and have not completely disappeared from our cosmos, after the appearance 'atomic clouds' of Hydrogen and Helium gases, and of gases of other, higher atomic species, e.g., in the interstellar media of the galaxies. And the later advent of molecules in some of these 'atomic clouds' - rechristened "molecular clouds'' - did not completely elispe their content of as <u>yet-reim</u>bonded atoms; of atomic elements. The atomic content of such clouds has actually burgened, as <u>generation</u> after generation after generation after generation of stars have 'self-ejected' into and accumulated more and more 'nucleosynthesized', etc., higher atomic species in turn, often later giving birth to new stars, **a**, as their accumulation of higher atomic species newsel, as mers such clouds, birthed by the deaths of stars, **b**, in turn, often later giving birth to new stars, **b**, as their accumulation of higher atomic species newsel, merstellar/<u>planet</u>ary systems.

Later, the appearance of <u>'pre-euk</u>aryotic', <u>"pro</u>karyotic'' living cells -- at least on one planet of the billions of planets now observed or inferred to exist in our galaxy -- did not completely eclipse the presence of molecular species, <u>unorganized</u> into living cells, on and in that planet -- in its atmosphere, its oceans **a** lakes, **a** in its lithosphere: far from it! Nor did the irruption of <u>eukaryotic ['meta-prokaryotic'</u>] cellular life completely end the presence of <u>"prokaryotic"</u> cellular life on at least this one planet. Nor did the advent of <u>multi-[eukaryotic-]</u> cellular of <u>social plants</u> ['<u>meta-prokaryotic'</u>] cellular life of such plants ['<u>meta-prokaryotic'</u>] and <u>social plants</u> ['<u>met</u>

This 'gvoluteness' of 'cosmological <u>meta</u>-evolution' is captured by the ninth axiom of the  $Q_{Q}$  axiomg-system for <u>dialectic</u>al arithmetic, e.g., in the form of its 'doubleconservation "aufheben" evolute product rule'. An axiom stating that  $\mathbf{g}_{x} \times \mathbf{g}_{x} = [\mathbf{g}_{x}]^{2} = \mathbf{g}_{xx}$  would model 'convolute-tion'. The actual ninth, product-rule axiom, asserting that  $[\mathbf{g}_{x}]^{2} = \mathbf{g}_{x} + \mathbf{g}_{x}$  models 'gvolute-tion'. The  $Q_{Q}$  arithmetic for <u>dialectic</u>s is, in  $o_{U}$  interpretation, a 'possibility' arithmetic. The result  $\mathbf{g}_{x} + \mathbf{g}_{x}$  asserts, per that interpretation, only that  $\mathbf{g}_{x}$  and  $\mathbf{g}_{x}$  may coexist, in a given epoch, for a given Domain of application of this arithmetic, only possibility, or thereafter, in any subsequent epoch. But of course there are scales and Domains of ontology in which 'ontological extinctions' <u>do</u> occur, or in which certain <u>combinatorically possibile</u> ontological categories are, in <u>actuality</u>, empty from their epoch of inception, or become empty ever-after, starting from in some later epoch. The <u>Q</u> axioms-system of <u>'dialectical-lideographic</u> language' is <u>imadequate to state such actualities</u>, or such failures to actualize. But the '<u>dialectic</u>, per our solution of it, progresses to beyond that <u>second</u>, the <u>Q</u> system in the categorial-'system\_progression' *meta*-systematic <u>dialectic</u>' of the Seldonian arithmetics of adlatcic, end which expresses the immanent critique of the <u>Q</u> algifiers'. When the <u>quanifier</u> component of such a 'meta-mumeral' is **O** for a given epoch, this signifies extinction of all unity represented by that <u>meta</u>-numeral'. Thus, in that <u>third dialectical</u>-arithmetical language, '<u>covolution</u>', the <u>covolute dialectic</u>' of the <u>seldonian</u> arithmetic of the <u>Q</u> avinthetes. The preceded by that <u>'meta</u>-numeral'. Thus, in that <u>third dialectical</u>-arithmetical language, '<u>covolution</u>', the <u>covolute dialectic</u>' of the <u>seldonian</u> arithmetic of the seq arithmetic of the <u>seq</u> action <u>species</u> of 'volution' as a <u>s</u> *Second Marxian Example*. An observation that can be made about our preceding, 'first Marxian example', is the degree to which the [table of] contents of an *existing*, consciously dialectically-structured work can be reflected, reproduced, and even explained, by modeling it, "purely"-qualitatively, and 'dialectically-mathematically', via the  $\mathbb{N}^{Q}$  dialectical method.

In this 'second Marxian example', we have an opportunity to see the degree to which a minimally-outlined, projected but never-completed work, even if "outlined" mostly only as a mere list of the major categor<u>*ies*</u> to be treated in that projected work, can be outlined in much greater detail, and even explained, in term<u>s</u> of its dialectical 'content-structure', using the  $\mathbf{NQ}$  dialectical method. This is because the four volume<u>s</u> of Marx's <u>Capital</u> constitute only the first treatise of [at least] six planned treatise<u>s</u> for Marx's 'critique of capitalist political-economics entire'. In term<u>s</u> of that planned work, "Capital" itself was only the *«arché»-category*, and the treatise entitled <u>Capital</u> only the *«arché»*-treatise, of that projected work.

Marx announced his overall plan of presentation/exposition for his dialectical, immanent critique of capitalist-system 'political-economics' in the opening sentence of the famous Preface to his first major work on that critique, the book entitled <u>A Contribution to the Critique of Political Economy</u>. There, he wrote as follows: "I examine the system of bourgeois economy in the following order: capital, landed property, wage-labour, the State, foreign trade, world market."

Using the tools of the  $\mathbb{NQ}$  dialectical method, can we explain the inner, systematic dialectic among these six categor<u>ies</u>/treatise<u>s</u>? Moreover, can we "'reconstruct''' a more detailed outline of what Marx *probably* intended to cover in this series of six(+) treatise<u>s</u>? Let's give it a try, starting by applying our heuristic method for finding the «*arché*»-*category* for a given **D***omain* of discourse -- in this case, for the **D***omain* of discourse of the Marxian critique of political economy entire, **D** = *CPE* -- and then by building an  $\mathbb{NQ}$ , *dyad*ic-function-based equation-model for this planned system of treatise<u>s</u>.

#### Finding your «Arché»-Category.

O. The *intuitive* most-complex category of Marx's 'CPE <u>Domain</u> we denote by <u>**q**</u><sub>/MFSWLK</sub>. The determinations, or 'subscripted epithets', which are at play in this 'quest for the «arché»', are <sub>M</sub>, <sub>F</sub>, <sub>S</sub>, <sub>[W]</sub>, <sub>L</sub>, and <sub>K</sub>. As the ingredients of this highly-composite category-sign, <u>**q**</u><sub>/MFSWLK</sub>, the symbol <u>M</u>, or <u>**q**</u><sub>/M</sub>, stands for the category of the World <u>M</u>arket;

<u>F</u> or <u>g</u><sub>/F</sub> for the category of <u>F</u>oreign Trade; <u>S</u> or <u>g</u><sub>/S</sub> for the category of the [modern] Nation-<u>S</u>tate; <u>W</u> or <u>g</u><sub>/W</sub> =-| <u>g</u><sub>/KL</sub> for the category of the "social relation of production" named, and the social class defined by, <u>W</u>age-Labor; <u>L</u> or <u>g</u><sub>/L</sub> for the category of the "social relation of production" known as, & for the [waning] social class defined by owning of, [modern/*present*-day] <u>L</u>anded Property; and <u>K</u> or <u>g</u><sub>/K</sub> for the category of the "social relation of production" known as, and for the social class defined by, the owning of «<u>K</u>apital». Category <u>g</u><sub>/MFSWLK</sub> is thus that of the categorial relation of all "earlier"-*present*ed categor*ies*, with/to the World <u>M</u>arket category, *signing* the «*aufheben*» conservation, elevation, and assimilation of the *actual* content of those other categor*ies* by the *actual* world market.
1. "'Factor-out" the most complex epithet of intuited category <u>g</u><sub>/MFSWLK</sub>, namely, the World <u>M</u>arket determination:

 $(\textcircled{M}) \times \mathbf{g}_{/\mathsf{MFSWLK}} = \mathbf{g}_{/\mathsf{FSWLK}}.$  Comprehend category  $\mathbf{g}_{/\mathsf{FSWLK}}$  as that of the inter-relation of all of the "earlier"evoked and "earlier"-presented categor<u>ies</u> with the bi-lateral <u>F</u>oreign Trade category, *representing* the *«aufheben»* conservation, elevation, and assimilation of the *actual* content of those other categor<u>ies</u> by *actual* foreign trade;

**2**. "Factor-out" the most <u>specific</u> determination of  $\underline{\mathbf{q}}_{ISWLK}$ , namely, the bi-lateral <u>F</u>oreign Trade determination:

(E) × g<sub>/ESWLK</sub> = g<sub>/SWLK</sub>. Comprehend the category g<sub>/SWLK</sub> as that of the inter-relation of all of the "earlier"-evoked and "earlier"-*present*ed categor*ies* with the modern Nation-State category, *representing* the *«aufheben»* conservation, elevation, and assimilation of the *actual* content of those other/earlier-presented categor*ies* by *actual* Nation-States;
 3. "Factor-out" the most complex "factor " of g<sub>/SWLK</sub>, namely, that of the modern Nation-State --

(S) × <u>**q**</u><sub>/SLK</sub> = <u>**q**</u><sub>/LK</sub>. Comprehend the category <u>**q**</u><sub>/LK</sub> or <u>**q**</u><sub>/KL</sub> as denoting that of the inter-relation of the «<u>K</u>apital<u>s</u>» category with the <u>L</u>anded Propert<u>ies</u> category, whose *actual-content*-interaction <u>present</u>ly continually reproduces their *principal* joint product, the category of <u>W</u>age-Laborer<u>s</u>, <u>W</u>, because, per Marx, <u>**q**</u><sub>/W</sub> ≡-| <u>**q**</u><sub>/KL</sub>. We have thus dropped the '<sub>w</sub>' epithet from <u>**q**</u><sub>/WLK</sub>, yielding <u>**q**<sub>/LK</sub>, since the '<sub>w</sub>', *intuitively relevant* up to this step, turns out to be redundant;
 4. "'Factor-out'" the most complex determination of category <u>**q**</u><sub>/LK</sub>, the [modern] <u>L</u>anded Property determination:
</u>

 $(\mathbf{b}) \times \mathbf{g}_{/\mathbf{b}K} = \mathbf{g}_{/K}$ . Grasp  $\mathbf{g}_{/K}$  as denoting the *«arché»-category* for Marx's 'critique of political economy entire'.

Now, of course, in the above, w<u>e</u> have "stream-lined" the design of the culminant category-symbol,  $\mathbf{g}_{/MFSWLK}$ , to make the course of this heuristic method of «*arché*»-category discovery, instanced there, as straight-forward as w<u>e</u> can. The actual formation and grasp of  $\mathbf{g}_{/MFSWLK}$  as intuited culminant category, and of  $\mathbf{g}_{/K}$  as «*arché*»-category, might easily have originally taken -- e.g., might have taken Marx himself -- several iterations of honing from the culminant category pole to the «*arché*»-category pole of that discovery, and back again.

What we have thus found, above, is that, in the culminant order of the name<u>s</u> of the major categor<u>ies</u> of political economy, that also serve as title<u>s</u> for the individual treatise<u>s</u> planned by Marx to present his '<u>O</u>ritique of [capitalist] <u>C</u>olitical <u>E</u>conomy entire', i.e., of <u>Domain</u> D = 'OPE' -- namely, [multi-lateral] World <u>M</u>arket, ['inter-Nation-al', <u>bilateral</u>] <u>F</u>oreign Trade, The [nation-] <u>State</u>, <u>W</u>age-Labor, <u>L</u>anded Property, and «<u>K</u>apital» -- the category of «<u>K</u>apital» itself is the least complex, the least 'thought-concrete', the least rich in determination<u>s</u> of them all, and, thus, in term<u>s</u> of the systematic order of Marx's 'trans-Hegelian' ''systematic-dialectical'' <u>present</u>ation of the broad <u>present</u> 'content-structure' of this, <u>CPE</u>, <u>Domain</u>, should be <u>present</u> d first. Of course, the «<u>K</u>apital» category is itself a complex or composite of multiple '''factor<u>s</u>''', or determination<u>s</u>, at sub-«<u>K</u>apital» category is out of view when that category itself is, "by virtue of the form of simplicity into which it has withdrawn" [Hegel, <u>Science of Logic</u>, Sec. **3**, Chapter **3**, Miller, p. **840**], made the «arché»-category in Marx's higher-scale dialectic of his critique of political economy overall, per this method.

Marx's *systematic* ordering of the six categor<u>ies</u> opposes the *historical* order of first appearance of the actualit<u>ies</u> to which those categor<u>ies</u> refer. The latter, *historical* order would control the order-of-exposition for a treatise on the "*'historical* dialectic" of the "social relations of production", which has culminated, historically, so far, in the "capital-relation[-of-production]". But Marx is quite clear, at the end of the introductory section of the <u>Grundrisse</u>, that this work is to be a work of *''systematic* dialectic"' for the *contemporary* ["modern"] capitalist system, in which the <u>systematic</u>, taxonomic ordering of the key categor<u>ies</u>, **not** their <u>historical</u> ordering, must control the order of his <u>present</u> ation --

"Capital is the all-dominating economic power of bourgeois society. It must form the starting point as well as the finishing point, and must be dealt with before landed property. After both have been examined in particular, their interrelation must be examined. It would therefore be unfeasible and wrong to let the economic categories follow one another in the same sequence as that in which they were historically decisive. Their sequence is determined, rather, by their relation to one another in modern bourgeois society, which is precisely the opposite of that which seems to be their natural order or which corresponds to historical development. The point is not the historic position of the economic relations in the succession of different forms of society. Even less is it their sequence 'in the idea' (Proudhon) (a muddy notion of historic movement). Rather, their order within modern bourgeois society." [*Grundrisse*, *ibid.*, pp. **107-108**].

<u>**Presentation of Solutions</u></u>. Suppose, then, that w\_{\underline{e}} have selected sign \underline{\mathbf{K}} \equiv \underline{\mathbf{g}}\_{\mathbf{K}}, standing for the '<u>ideo-physio-ontological</u>' content of the present «***arithmos***» of «***monads***» of -- the category representing the "individual capital" units of -- that which w\_{\underline{e}} here call «<u>K</u>apital<u>s</u>», as the starting category for a <u>dialectical</u>-mathematical model of Marx's 'critique of [capitalist] political economy entire'. Suppose further that w\_{\underline{e}} have "solved for"/defined the further 'category-symbol<u>s</u>' <u>gene</u>rated in that categorial series expansion, up to presentation step <b>2**, as below. W<u>e</u> give o<u>ur</u> solution<u>s</u> first, their justification<u>s</u> second.</u>

step **0**,  $\underline{\mathbf{q}}_{1}$  (-]  $\underline{\mathbf{q}}_{K} = \underline{\mathbf{q}}_{K}^{2^{\mathbf{0}}} = \underline{\mathbf{q}}_{K}^{\mathbf{1}} \equiv$  the «<u>K</u>apital<u>s</u>» category [as yet '<u>un</u>explicit' as to its interrelation<u>s</u> with any  $\underline{\mathbf{L}}, \underline{\mathbf{W}}, \underline{\mathbf{S}}, \underline{\mathbf{F}}, \text{ or } \underline{\mathbf{M}} \text{ categories}$ ];

step  $\mathbf{1}, \mathbf{\underline{q}}_{K} \otimes \mathbf{\underline{q}}_{K} = \mathbf{\underline{q}}_{K}^{2^{1}} = \mathbf{\underline{q}}_{K}^{2} = \mathbf{\underline{q}}_{K} \oplus \mathbf{\underline{q}}_{KK}$ ; the new 'category-symbol' of which, namely  $\mathbf{\underline{q}}_{KK}$ , w<u>e</u> solve/define as --  $\mathbf{\underline{q}}_{2}$  (-]  $\mathbf{\underline{q}}_{KK}$  |=  $\mathbf{\underline{q}}_{L}$  = the category of [modern]  $\mathbf{\underline{L}}$  and ed Propert<u>ies</u> [as yet '<u>un</u>explicit' as to its interrelations with any  $\mathbf{\underline{W}}, \mathbf{\underline{S}}, \mathbf{\underline{F}}, \text{ or } \mathbf{\underline{M}} \text{ categor}_{ies}$ ],  $\therefore$  for step  $\mathbf{1}, \mathbf{\underline{D}} \approx (\mathbf{\underline{q}}_{K} \oplus \mathbf{\underline{q}}_{L})$ ;

step 2,  $\mathbf{q}_{L} \otimes (\mathbf{p}_{K} \oplus \mathbf{q}_{L}^{(\cdot)}) = \mathbf{q}_{K} \oplus \mathbf{q}_{L} \oplus \mathbf{q}_{LK} \oplus \mathbf{q}_{LL}$ , the two new 'category-symbols' of which we solve as --  $\mathbf{q}_{3}$  (--]  $\mathbf{q}_{W} \equiv -| \mathbf{q}_{LK} \equiv$  the category of <u>W</u>age-Labors [as yet '<u>un</u>explicit' as to its interrelations with any <u>S</u>, <u>F</u>, or <u>M</u> categories];  $\mathbf{q}_{4}$  (--]  $\mathbf{q}_{S} \equiv -| \mathbf{q}_{LL} \equiv$  the category of [Nation-]<u>S</u>tates [<u>im</u>plicitly encompassing all units of <u>L</u> anded Properties instantiated within the borders, and, in their 'meta-unit-ic' unity, forming the total territory of, each <u>N</u>ation-State unit, also including the «<u>K</u>apital» & of <u>M</u>age-Labor units '''contained''' within each <u>L</u> unit].
So, for step 2  $\therefore$ ,  $\underline{\mathbf{D}} \approx (\mathbf{a}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{S})$ . O<u>*ur*</u> solutions</u> for step 2 being as just given, then o<u>*ur*</u> solutions for step 3 look like this -- step 3,  $\underline{\mathbf{q}}_{S} \otimes (\mathbf{a}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{S}) = \underline{\mathbf{q}}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{S} \oplus \underline{\mathbf{q}}_{SK} \oplus \underline{\mathbf{q}}_{SL} \oplus \underline{\mathbf{q}}_{SW} \oplus \underline{\mathbf{q}}_{SS}$ .

W<u>e</u> solve/define the four new/incremental 'category-symbol<u>s</u>' of the above, **8**-category, categorial series as --  $\mathbf{q}_{5}$  (--]  $\mathbf{q}_{SK}$  |-= the Nation-States units in relation to their internal «Kapitals» units;  $\mathbf{q}_{6}$  (--]  $\mathbf{q}_{SL}$  |-= the Nation-States units in relation to their internal Landed Properties units;  $\mathbf{q}_{7}$  (--]  $\mathbf{q}_{SW}$   $\partial =$ -|  $\mathbf{q}_{SLK} \equiv$  the Nation-States units in relation to their internal Wage-Labor units;  $\mathbf{q}_{8}$  (--]  $\mathbf{q}_{F} \equiv$ -|  $\mathbf{q}_{SS} \equiv$  Foreign Trade units category, with each <u>bi</u>-lateral trading <u>pair</u> of Nation-States as such a unit.

So, for step  $\mathbf{3} \therefore \mathbf{\underline{D}} \approx (\mathbf{0} \ \mathbf{\underline{q}}_{K} \oplus \mathbf{\underline{q}}_{L} \oplus \mathbf{\underline{q}}_{W} \oplus \mathbf{\underline{q}}_{S} \oplus \mathbf{\underline{q}}_{SK} \oplus \mathbf{\underline{q}}_{SL} \oplus \mathbf{\underline{q}}_{SW} \oplus \mathbf{\underline{q}}_{F} (\mathbf{)}.$ 

If so, then o<u>*ur*</u> solution for step **4** looks like this -step **4**,  $\underline{\mathbf{q}}_{F} \otimes (\mathbf{0} \ \underline{\mathbf{q}}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{S} \oplus \underline{\mathbf{q}}_{SK} \oplus \underline{\mathbf{q}}_{SL} \oplus \underline{\mathbf{q}}_{SW} \oplus \underline{\mathbf{q}}_{F} (\mathbf{)} =$ 

$$( {}^{\flat} \underline{\mathbf{q}}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{S} \oplus \underline{\mathbf{q}}_{SK} \oplus \underline{\mathbf{q}}_{SL} \oplus \underline{\mathbf{q}}_{SW} \oplus \underline{\mathbf{q}}_{F} \oplus \underline{\mathbf{q}}_{FK} \oplus \underline{\mathbf{q}}_{FL} \oplus \underline{\mathbf{q}}_{FW} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FSK} \oplus \underline{\mathbf{q}}_{FSL} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FF} ( ) )$$

We solve/define the 8 new/incremental 'category-symbols' of the above, 16-category, categorial series as --

 $\underline{\mathbf{q}}_{\mathbf{q}}$  (-]  $\underline{\mathbf{q}}_{\mathbf{F}\mathbf{K}}$  |= Bi-lateral <u>F</u>oreign Trade units in relation to «<u>K</u>apital» units;

 $\mathbf{q}_{10}$  (-]  $\mathbf{q}_{11}$  |= Bi-lateral <u>F</u>oreign Trade units in relation to <u>L</u>anded Property units;

 $\underline{\mathbf{q}}_{11}$  (-]  $\underline{\mathbf{q}}_{\text{EW}}$   $\underline{\partial} \equiv -| \underline{\mathbf{q}}_{\text{ETK}} \equiv \text{Bi-lateral } \underline{\mathbf{F}}_{\text{oreign Trade units}}$  in relation to  $\underline{\mathbf{W}}_{\text{age-Labor units}}$ ;

 $\mathbf{q}_{12}$  (-]  $\mathbf{q}_{rs}$  |= Bi-lateral Foreign Trade units in relation to the State units;

 $\mathbf{\underline{q}}_{13}$  (-]  $\mathbf{\underline{q}}_{\text{ESK}}$  |= relation of bilateral <u>F</u>oreign Trade units to the <u>S</u>tate/«<u>K</u>apital» units 'relationship;

 $\mathbf{g}_{\mathbf{14}} \leftarrow \mathbf{g}_{\mathbf{FSL}} \models = \text{ relation of bilateral } \mathbf{\underline{F}} \text{ oreign Trade units} \text{ to the } \mathbf{\underline{S}} \text{ tate/} \mathbf{\underline{L}} \text{ anded Property units} \text{ 'relationship;}$ 

 $\underline{\mathbf{q}}_{15}$  (-]  $\underline{\mathbf{q}}_{\text{FSW}}$   $\underline{\partial}$ =-|  $\underline{\mathbf{q}}_{\text{FSLK}}$  = relation of bi-lateral <u>F</u>oreign Trade **units** to the <u>State/Wage-Labor **units**</u> ' relationship;

 $\mathbf{q}_{16}$  (-]  $\mathbf{q}_{M} \equiv | \mathbf{q}_{FF} \equiv$  the category with World <u>Market units</u> defined as multi-laterally-traded *world market commodities*, one **unit** for each kind of commodity traded between pairs of Nation-States in their bi-lateral <u>F</u>oreign Trade **units** relations.

For step **4** ... --

$$\underline{\mathbf{D}}_{4} = (\underline{\mathbf{D}}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{S} \oplus \underline{\mathbf{q}}_{SK} \oplus \underline{\mathbf{q}}_{SL} \oplus \underline{\mathbf{q}}_{SW} \oplus \underline{\mathbf{q}}_{F} \oplus \underline{\mathbf{q}}_{FK} \oplus \underline{\mathbf{q}}_{FL} \oplus \underline{\mathbf{q}}_{FW} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FSK} \oplus \underline{\mathbf{q}}_{FSL} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{M} (\underline{\mathbf{D}}_{F}) \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FS} \oplus \underline{\mathbf{q}}_{FSW} \oplus \underline{\mathbf{q}}_{FSW}$$

The 'dialectogram' on the next page illustrates our step 4 solution-equation, above.

Note that, in the "'dialectical mathematical model'" stated above, the «<u>gen</u>os»-categor<u>ies</u> of «<u>K</u>apital<u>s</u>»,  $\underline{\mathbf{g}}_{K}$ , of <u>L</u>anded Propert<u>ies</u>,  $\underline{\mathbf{g}}_{L}$ , of the <u>units</u> of <u>W</u>age-Labor,  $\underline{\mathbf{g}}_{W}$ , and of Nation-<u>S</u>tate<u>s</u>,  $\underline{\mathbf{g}}_{S}$  as <u>units</u> are all initially addressed separately,  $\underline{\mathbf{g}}_{K}$ in step 0,  $\underline{\mathbf{g}}_{L}$  in step 1, and  $\underline{\mathbf{g}}_{W}$  and  $\underline{\mathbf{g}}_{S}$  in step 2. The separate, «speci<u>es</u>»-categor<u>ies</u> for the interrelation<u>s</u> between the Nation-<u>S</u>tate<u>s</u> category and the «<u>K</u>apital<u>s</u>» category,  $\underline{\mathbf{g}}_{SK}$ , the <u>L</u>anded Propert<u>ies</u> category,  $\underline{\mathbf{g}}_{SL}$ , and the <u>W</u>age Labor <u>units</u> category,  $\underline{\mathbf{g}}_{SW}$  arrive separately, in presentation-step 3. Likewise, the "pure" «<u>gen</u>os»-categor<u>ies</u> for the interrelation<u>s</u> among the <u>F</u>oreign Trade category <u>units</u> and various combination<u>s</u> of the other categor<u>ies</u> unit<u>s</u> extant as of step 3 --

## $\underline{\mathbf{Q}}_{\mathrm{FK}} \oplus \underline{\mathbf{Q}}_{\mathrm{FL}} \oplus \underline{\mathbf{Q}}_{\mathrm{FW}} \oplus \underline{\mathbf{Q}}_{\mathrm{FS}} \oplus \underline{\mathbf{Q}}_{\mathrm{FSK}} \oplus \underline{\mathbf{Q}}_{\mathrm{FSL}} \oplus \underline{\mathbf{Q}}_{\mathrm{FSW}}$

-- arrive for separate scrutiny in presentation-step **4**. The separate, «speci<u>es</u>»-categor<u>ies</u> for the interrelation<u>s</u> between the World <u>M</u>arket category and various combination<u>s</u> of the other categor<u>ies</u> extant as of step **4**, do **not** arrive until step **5**. A peculiarity of this model is that the multiple sub-«speci<u>es</u>»-categor<u>ies</u> for the interrelation of the first **2** categor<u>ies</u>,  $\underline{\mathbf{g}}_{LK}$ , is identified with its principal sub-«<u>speci</u>es» only, i.e., with the <u>W</u>age-Labor category as a «<u>gen</u>os»-category in its own right.



#### The General Expository Strategy of Marx's Taxonomic, Systematic [-Dialectical] Categorial Progression Presentations.

Marx's expository strategy, as *planned* for his overall, six(+)-treatise critique of capitalist political-economics entire, and as largely carried out in the *partially*-completed implementation of that plan for the first of those six(+) planned treatises, i.e., in Marx's four-volume treatise entitled *Capital* -- whose second through fourth volumes were edited and published by Engels, or by others, after Marx's death -- is one which has several potential pedagogical advantages.

The first such advantage is that it arranges the content of the critique in "'systematic" order, from the simplest concept or category, category-by-category, step-by-step, to consecutively more "composite", more complex, more determination<u>s</u>-rich, more 'thought-concrete', and <u>explicitly more **D**omain</u>-comprehensive concepts or categor<u>ies</u>. The hearer and/or reader of such a presentation has a better chance to grow in understanding of that content, when the simpler/easier concepts come first. The presentees may have a better chance for understanding, that way, than, for example, in the way of prevailing, standard mathematics teaching. Per that "standard", e.g., a theorem is presented immediately in its fully-elaborated complexity, with no account given of the, often protracted, stages of development that led to that, *so-far*-final, "full regalia" form of the theorem, and of its proof(<u>s</u>). This may be one of the causes as to why mathematics is, today, one of the most reviled and neglected fields of knowledge among our general population.

A second advantage is that Marx, by dividing his account into six distinct foc<u>i</u>, ordered in rising complexity, can focus the presentee<u>s</u>' attention<u>s</u> on just one key topic at a time, for topic<u>s</u> that are designed to be adequately separable, for a first approximation exposition of their content, separate from the highly-related content of the rest of the foc<u>i</u>. Indeed, the subsequent foc<u>i</u> are more "'complex'" than their presentational predecessor foc<u>i</u> in major part because the former foc<u>i</u> «*aufheben*»-"'contain"" the latter foc<u>i</u>, as we shall see in the sequel.

This technique is related to the <u>gen</u>eral scientific procedure<u>s</u> of "idealization", of "factorial" experimental design, and to the mathematical practice<u>s</u> of mathematical model "sensitivity analysis", plus of the "partial differentiation" of multiple-[quasi-]independent-variable-dependent solution-function<u>s</u>, etc., e.g., those that form "partial differential equation<u>s</u>".

Maximilien Rubel aptly describes Marx's procedure, with special reference to Marx's  $\underline{\mathbf{F}}$  oreign Trade and World  $\underline{\mathbf{M}}$  arket categor<u>ies</u>, and to their corresponding planned treatises, as follows --

"Marx committed himself to treating the problems of foreign trade and the world market in separate works by his choice of a principle of abstraction. With this principle as his basis he developed a method of research similar to that of the physicist observing "physical phenomena where they occur in their most typical form and most free from disturbing influence" [quoted from *Capital*, vol. I]. Thus, in order to account for the formation [and *expanded* self-reproduction -- K.S.] of capital, Marx supposed a perfect equality between the price and value of a[ny] commodity "in order that the phenomena may be observed in their purity and our observations not interfered with by disturbing circumstances that have nothing to do with the process in question." [quoted from *Capital*, vol. I]. Furthermore, to explain accumulation through the transformation of surplus value into [new/additional/incremental] capital, Marx's method demands that foreign trade be excluded from the analysis: "In order to examine the object of our investigation in its integrity, free from all disturbing subsidiary circumstances, we must treat the whole commercial world as one nation and assume that the capitalist mode of production has been established everywhere and become dominant in all branches of production." [quoted from *Capital*, vol. I]." [Maximilien Rubel, *Rubel on Marx*: *Five Essays*, Cambridge University Press, **1981**, p. **225**].

In a letter [Marx to Engels, **02** April **1858**; see <u>Collected Works</u>, vol. **40**, pp. **296-304**], Marx reiterated the method described above in relation to the exclusion of the <u>systematic</u> treatment of his <u>W</u>age Labor and <u>L</u>anded Property categor<u>ies</u> in his treatise on the «<u>K</u>apital<u>s</u>» category -- "1. *Capital. First Section. Capital in general.* (Throughout this section we assume wages as always equal to their minimum. The movement of wages themselves and the rise and fall of the minimum will be analyzed in the study on wage labor. Moreover, landed property is given as = 0; in other words, landed property as a particular economic relation does not yet concern us here. *Only by employing this procedure can we avoid constantly speaking of the entire set of relations when treating one of them.*) [*emphasis* added by K.S.]."

The 'systematic-dialectical content-structure', or '*«aufheben»* content-structure', of the "dialectically organized whole" of Marx's planned system of treatises, can be seen, in <u>gen</u>eral terms, by the ways in which the '''zenith''' category, the World <u>Market [category]</u>, <u>conceptually</u> includes, and, in terms of the actual content to which it refers, <u>physically</u> includes [in both cases, *«aufheben»-"*contains"] all of the capitals, all of the landed properties, all of the wage workers, all of the nation-states, and all of their bilateral trade, that is the conceptual and actual content referenced by the five categories to be presented earlier than the World <u>Market category</u>, in Marx's dialectical, systematic ordering of their presentation.

In another of Marx's *'methodological asides'*, in <u>Capital</u>, volume I, Marx wrote, as the opening paragraph of Part VI, "WAGES", Chapter XX, "TIME-WAGES" -- intimating his planned treatise on <u>W</u>age Labor -- the following --

"Wages themselves again take many forms, a fact not recognized in the ordinary economic treatises which, exclusively interested in the material side of the question, neglect every difference of form. An exposition of all these forms however, belongs to the special study of wage labor, not therefore to this work." [*Capital* I, New World, **1973**, p. **543**].

-- and elsewhere in the same volume --

"The category of wage labor does not yet really exist at this stage in our exposition." [quoted in <u>Rubel on Marx</u>, ibid., p. 225n.].

Similarly, in <u>*Capital*</u>, volume II, Marx wrote -- intimating his category of, and his planned treatise on, bilateral <u>F</u>oreign Trade -- the following --

"It can therefore only create confusion to include foreign commerce in the analysis of the value of products produced annually without bringing in any new elements of the problem or of its solution. For this reason we must disregard it entirely." [quoted in <u>Rubel on Marx</u>, *ibid.*, p. **226**].

Finally, in <u>Capital</u>, volume III, Marx wrote, in the opening paragraph of Part VI, "TRANSFORMATION OF SURPLUS-PROFIT INTO GROUND-RENT", Chapter XXXVII, "INTRODUCTION" -- intimating his category of, and his planned treatise on, <u>L</u>anded Property -- the following --

"The analysis of landed property in its various historical forms is beyond the scope of this work. We shall be concerned with it only in so far as a portion of the surplus-value produced by capital falls to the share of the landowner." [*Capital* III, New World, **1967**, p. **614**].

## Justifications of Solutions.

**1**.  $\underline{\mathbf{q}}_{\mathbf{1}}$  (--]  $\underline{\mathbf{q}}_{\mathbf{K}} \equiv \underline{\mathbf{K}} \equiv \langle arché \rangle$ -category of  $\langle \underline{\mathbf{K}} apital \underline{s} \rangle$  unit<u>s</u> [as yet '<u>un</u>explicit' as to its interrelation<u>s</u> with any  $\underline{\mathbf{L}}, \underline{\mathbf{W}}, \underline{\mathbf{S}}, \underline{\mathbf{F}}, \text{ or } \underline{\mathbf{M}} \text{ categor} \underline{ies}$ ]: In the <u>Grundrisse</u>, Marx makes clear his reason<u>s</u> for naming his capital concept -- the capital category -- as the category, and as the name, of the **1**st of his **6** planned treatises, per his systematic/taxonomic ordering, as follows --

"Capital is the all-dominating economic power of bourgeois society. It must form the starting point as well as the finishing point, and must be dealt with before landed property. After both have been examined in particular, their interrelation must be examined. It would therefore be unfeasible and wrong to let the economic categories follow one another in the same sequence as that in which they were historically decisive. Their sequence is determined, rather, by their relation to one another in modern bourgeois society, which is precisely the opposite of that which seems to be their natural order or which corresponds to historical development. The point is not the historic position of the economic relations in the succession of different forms of society. Even less is it their sequence 'in the idea' (Proudhon) (a muddy notion of historic movement). Rather, their order within modern bourgeois society." [*Ibid.*, pp. **107-108**]. The dialectic of Marx's critique is a  $\approx$ *synchronic* dialectic, *not* a *diachronic*, *historical* dialectic.

"The exact development of the concept of capital [is] necessary, since it [is] the fundamental concept of modern economics, just as capital itself, whose abstract, reflected image [is] its concept [*dessen abstraktes Gegenbild sein Begriff*], [is] the foundation of bourgeois society. The sharp formulation of the basic presuppositions of the relation must bring out all the *contradictions* of bourgeois production, as well as the *boundary* where it *drives beyond itself*." [*Ibid.*, p. **331**, *emphases added* by K.S.].

The capital category is the simplest category of, and relative to, the other **5** of the **6** so-ordered by Marx. However, as we have seen, its 'internity', hidden from "view" at the scale of that listing of the **6** categor<u>ies</u>, with it taken as their **1**st, starting-category, or «*arché*»-category, is itself a rich, complex composite of lower-scale determination<u>s</u>. This was partly captured in our first Marxian example, above, and was elaborated to only <u>part</u>ial completion, in the **4** <u>volumes</u> of Marx's «<u>Das Kapital</u>». Even those **4** thick volume<u>s</u> did **not** complete the expo. of Marx's «<u>K</u>apital» category. Those **4** volume<u>s</u> still leave out, per Marx's several outline<u>s</u> of content<u>s</u> for that category/treatise in the <u>Grundrisse</u>, and in his **1861-1863** manuscript<u>s</u>, Marx's «<u>K</u>apital<u>s</u>» sub-categor<u>ies</u> of *Results of the Immediate Process of Production* and *the Formal versus Real Subsumption of Labor Under Capital*, of the <u>Competition</u> of *Capitals*, of <u>Share</u> Capitals, and of Marx's *Theories of <u>Productive</u> and <u>Unproductive Labor</u>.\** 

## **2**. $\underline{\mathbf{q}}_{\mathbf{z}}$ (-] $\underline{\mathbf{q}}_{\mathbf{k}\mathbf{k}}$ |- $\equiv \underline{\mathbf{q}}_{\mathbf{k}} \equiv \underline{\mathbf{L}} \equiv$ the category of $\underline{\mathbf{L}}$ and ed Propert<u>ies</u> units:

In the <u>*Grundrisse*</u>, Marx makes clear his reason<u>s</u> for designating his, critical, "<u>L</u>anded Property" category, and term, as the category, and name, of the **2**nd of his **6** planned treatise<u>s</u>, per his systematic-taxonomic ordering, as follows:

"...capital, not only as something which produces itself (positing prices materially in industry etc., developing forces of production), but at the same time as a creator of values, has to posit a value or form of wealth specifically distinct from capital. This is *ground rent*. This is the only value created by capital which is distinct from itself, from its own production. By its nature [i.e., in every *present* of the epoch of capital, and therefore also *synchronically*, e.g., systematically, taxonomically, as part of the capital-relation's own self-reproduction -- K.S.] as well as historically, capital is the *creator* of modern landed property, of ground rent; just as its action therefore appears also as the dissolution of the old form of property in land. The new arises through the action of capital on the old. Capital is this -- in one regard -- as creator of modern agriculture. The inner construction of modern society, or, capital in the totality of its relations, is therefore posited in the economic relations of modern landed property... Capital arises out of circulation...and, developed as a whole, it posits landed property as its precondition as well as its [K.S.: "antithesis"; its *dialectical*] opposite." [*Ibid.*, pp. **275-278**].

In a letter to Engels, written during the period in which the <u>Grundrisse</u> was composed, Marx states again the point, made above in his <u>Grundrisse</u> notes to himself, regarding the <u>historical</u>-dialectical as well as <u>systematic</u>-dialectical content of the planned transition from the «<u>K</u>apital» category/treatise, to the <u>L</u>anded Property category/treatise --

"At the same time, the transition from capital to landed property is historical since the modern form of landed property is a product of the action of capital on feudal, etc., landed property." [Marx to Engels, **02** April **1858**].

<sup>\* [</sup>See <u>Grundrisse</u>, ibid., pp. 264, 275; see also <u>Rubel on Marx</u>: Five Essays, Cambridge University Press, 1981, p. 215; <u>Collected Works</u>: Volume 33, International Publishers, New York, 1991, p. 347. ].

Also in the <u>*Grundrisse*</u>, Marx had expanded upon the theme of the epochal difference between the old, e.g., feudal form<u>s</u> of landed property, and modern epoch -- capitalist epoch -- landed property:

"Within the system of bourgeois society, therefore, capital derives immediately from value. Historically other systems arise which serve as the material basis for a less perfect development of value. Since in the latter exchange value plays only a secondary role, subordinate to use value, not capital but the landed property relationship appears as their real basis. Modern landed property, by contrast, cannot be understood without capital as its prerequisite because it cannot exist without capital, and historically it indeed appears as an adequate form, produced by capital for its own ends, of the earlier historical manifestation of landed property." [*Rubel on Marx*, *ibid.*, p. **210**].

The conceptual-logical *necessity* of the '*ideo*-meta-genealogical' relation of <u>L</u> anded Property to «<u>K</u> apital», noted, above, in the first quote of this section, by the words "[capital] as a creator of values, *has to* posit a value or form of wealth specifically distinct from capital. This is *ground rent* [modern landed property].", may *not* be clear. It should always be kept in mind, that the <u>*Grundrisse*</u> is a rough draft, written by Marx for "self-clarification", not at all for publication, and that he therefore often addresses conceptual issues in a kind of personal idiom, or private shorthand, in a kind of *sotto voce* aside to himself. However, in other <u>*Grundrisse*</u> passages, Marx does make clear the practical, 'praxical', economic grounds of this *necessity* --

"...if within one society the modern relations of production, i.e. capital, are developed to its totality, and this society then seizes hold of a new territory, as e.g. the colonies, then it finds, or rather its representative, the capitalist, finds, that his capital ceases to be capital without wage labor, and that one of the presuppositions of the latter is not only landed property in general, but modern landed property; landed property which, as capitalized rent, is expensive, and which, as such excludes the direct use of the soil by individuals. Hence Wakefield's theory of colonies, followed in practice by the English government in Australia [K.S.: Marx expands upon this in the final chapter of *Capital*, vol. I.]. Landed property is here artificially made more expensive in order to transform workers into wage workers, to make capital act as capital, and thus to make the new colony *productive*; to develop wealth in it, instead of using it, as in America, for the momentary deliverance of the wage laborers." [*Ibid.*, p. **276**].

Marx also addresses, in the <u>*Grundrisse*</u>, ways that the category of <u>L</u>anded Property may be more complex, more 'thought-concrete', more determinations-rich, given its history, than Marx's «*arché*»-category of «<u>K</u>apital» itself --

"It is therefore precisely in the development of landed property that the gradual victory and formation of capital can be studied.... The relation between the industrial capitalist and the proprietor of land appears to be a relation lying outside that of landed property. But, as a relation between the modern farmer and the landowner, it appears posited as an immanent relation of landed property itself; and the [latter], as now existing merely in its relation to capital. The history of landed property, which would demonstrate the gradual transformation of the feudal landlord into the landowner, of the hereditary, semi-tributary and often unfree tenant for life into the modern farmer, and of the resident serfs, bondsmen and villeins who belonged to the property into agricultural day-laborers, would indeed be the history of the formation of modern capital. It would include within it the connection with urban capital, trade, etc. But we are dealing here with developed bourgeois society [K.S.: Le., with a *synchronic*, systematic-dialectic method of *present* ation of modern/*present* capitalism], which is already moving on its own foundation." [*Ibid.*, pp. **252-253**].

An upshot of the textual evidence presented above regarding Marx's view may come as a surprise to many readers, who might have expected Marx to name <u>W</u>age Labor, as the immediate 'antithesis-category', to «<u>K</u>apital» as 'thesis-category'. Instead, Marx asserts that the category of modern <u>L</u>anded Property, as social class, and as social relation of production, is the immediate dialectical opposite to the category «<u>K</u>apital» as social class and as social relation of production. Marx asserts that, <u>present</u>ly, the "capital-relation", necessarily, just to continue, to achieve its own 'self-re-production', also reproduces the modern <u>L</u>anded property relation of production. Also, <u>historically</u>, the "capital-relation" both gave birth to the *modern* landed property/ground-rent relation of production, but also found an opposition in it. Systematically, <u>present</u>ly, <u>L</u>anded Property is a 'supplementary opposite' to «<u>K</u>apital».

There is even a hint, in the passage from the *Grundrisse*, quoted above, that, in winning its long class war against the feudal ruling class, and in subordinating that former ruling class, and its feudal landed property, to capital, that the resulting new, capitalist ruling class may have *«aufheben»-conserved*, in the form of *modern* Landed Property, some fallen elements of its former enemy and rival class; may have *preserved*, albeit in subdued form, some of the, old, "royal", ruling class, e.g., as owners of *modern* Landed Property, and even as owners whose familial ancestors may have also been owners of *feudal* landed property.

The '<sub>KK</sub>' double subscript here connotes, for u<u>s</u>, that this first 'self-hybrid' category, '<sub>L</sub>', 'uni-vocalizing' bi-vocal '<sub>KK</sub>', is one of <u>qualitatively</u>, 'socio-ontologically' different unit<u>s</u> to the '<sub>K</sub>' unit<u>s</u>, and which are also '<u>meta</u>-unit<u>s</u>' to the '<sub>K</sub>', «<u>K</u>apital<u>s</u>», unit<u>s</u>. They are so in the sense that each one of those '<sub>KK</sub>' '<u>meta</u>-unit<u>s</u>' is typically made up out of a heterogeneous multiple of '<sub>K</sub>' unit<u>s</u>. The solution that fulfills this description, for u<u>s</u>, defines these '<u>meta</u>-unit<u>s</u>' as unit<u>s</u> of <u>L</u>anded Property ownership, which may typically ''contain'' the whole physical plant<u>s</u> of one or more "individual capital(<u>s</u>)". Or, <u>some</u> of these '<u>meta</u>-unit<u>s</u>' may also, or even only, contain part<u>s</u> of the physical plant<u>s</u> of individual capital<u>s</u> that are multi-local, i.e., that have their physical plant<u>s</u>, all under a unified individual capital ownership, but distributed geographically across more than one unit of <u>L</u>anded Property ownership, to which some to all of those capital unit<u>s</u> pay "ground rent". Thus, each <u>typical L</u>anded Property unit is a 'meta-unit' to the «<u>Kapital</u>» unit<u>s</u>, each such <u>L</u>anded Property unit made up out of a heterogeneous multiplicity of «<u>Kapital</u>» unit<u>s</u>. Case<u>s</u> of such 'meta-unit-icity', or 'meta-«**monad**»-icity' – <u>asyn</u>chronic «**aufheben**» relation<u>s</u> -- are quite common in <u>speci</u>men<u>s</u> of systematic dialectic in o<u>ur</u> experience. However, w<u>e</u> have no explicit <u>textual</u> evidence that this «**aufheben**» 'meta-unit-icity' was, in <u>gen</u>eral, or even in just this <u>speci</u> al case, a conscious part of Marx's view of his systematic dialectic of his <u>OPE Domain</u>.

## **3**. $\underline{\mathbf{q}}_{\mathbf{3}}$ (-] $\underline{\mathbf{q}}_{\mathbf{1}\mathbf{K}}$ |-= $\underline{\mathbf{q}}_{\mathbf{W}} \equiv \underline{\mathbf{W}} \equiv$ the category of $\underline{\mathbf{W}}$ age Labor units:

In the <u>Grundrisse</u>, Marx makes clear his reasons for designating his, critical, "<u>Wage Labor</u>" category, and term, as the ontic category, and name/source, of the **3**rd of his **6** planned treatises, per his systematic/taxonomic ordering --

"The question is now, how does the transition from landed property to wage labor come about? ... Historically, this transition is beyond dispute. It is already given in the fact that [K.S.: modern] landed property is the product of capital. We therefore always find that, wherever [K.S.: the older form of, e.g., feudal] landed property is transformed into money rent through the reaction of capital upon the older forms of landed property...and where, therefore, at the same time agriculture, driven by capital, transforms itself into industrial agronomy, there the cottiers, serfs, bondsmen, tenants for life, cottagers, etc. become day laborers, wage laborers, i.e. that *wage labor* in its totality is initially created by the action of capital on landed property, and then, as soon as the latter has been produced as a form, by the proprietor of the land himself [K.S.: thus continually, daily <u>reproducing the rural wage-labor-relation or capital-relation in the present epoch.</u>]."\*

In the same letter to Engels cited above, written during the period in which the <u>Grundrisse</u> was composed, Marx expanded upon his view that the transition from the <u>L</u>anded Property category/treatise, to the category/treatise on <u>W</u>age Labor is both <u>dia</u>chronic, <u>historical-dialectical</u> & conceptual/logical, or  $\approx$ <u>syn</u>chronic/<u>systematic</u>-dialectical --

"Likewise, the transition from landed property to wage labor is not only [K.S: systematic-]dialectical but historical [-dialectical -- K.S.], since the final product of modern landed property is the generalization of wage labor, which then appears as the basis of the whole... ." [Marx to Engels, **02** April **1858**; see also <u>Collected Works</u>, vol. **40**, pp. **296-304**]. Marx, thus, clearly, in his letter( $\underline{s}$ ), and in his <u>Grundrisse</u> notes, on his six(+) treatise plan, described Wage Labor as the joint product of «Kapital» and modern Landed Property. He clearly means this in an historical sense, as part of the transition from, e.g., feudal society to modern, i.e., capitalist, society. But we hold that he also means it in a more modern sense, that is, in a <u>present</u>, systematic sense, that is, in a *continually <u>reproduced</u>* sense. Expensive Landed Property excludes most workers from access to land; from a life as independent subsistence farmers. «Kapital» alike excludes most workers from ownership access to expensive, non-agricultural/industrial means of production. «Kapital» also gives them but a single option to subsist, i.e., via selling ["alienating"] their labor-power to «Kapital» in return for wages. In most of o<u>ur</u> models, a category-symbol like **g**<sub>LK</sub> would signify "conversions" of K units into L units. That would mean, in this, *CPE*, context, the *«aufheben»* uplift/elevation of units of the, *«arché»*, K level/-scale of abstractness, up into units of the more "grounded", more concrete L level/scale. Thus, **g**<sub>LK</sub> would cover

<u>exceptional</u> case<u>s</u> in which a unit of <u>L</u> anded Property contained *only one* unit of individual capital physical plant, as well as case<u>s</u> of the conversion of landed property itself into capital, e.g., into a capital asset [cf. REIT<u>s</u>], and even case<u>s</u> in which the capitalist(<u>s</u>) owning that individual capital also owned that unit of <u>L</u> anded Property upon which that individual capital was "fixed". The ontological «<u>species</u>», or *kind* of being, represented by such a symbol may have multiple <u>sub-«species</u>», one of which may be pre-eminent, and so may tend to monopolize the meaning of the symbol for the univocal quality/determination solution. In this case, per o<u>ur</u> solution, echoing Marx, <u>W</u> age-Labor, <u>W</u>, is that pre-eminent <u>sub-«species</u>», among other <u>sub-«species</u>», as a 'synthesis category' of categor<u>ies L</u> and <u>W</u>.

<sup>\*[</sup>Grundrisse, ibid., p. 276].

But we see here a solution that, in detail, should embrace at least three sub-categories of the  $\underline{\mathbf{g}}_{\mathbf{k}\mathbf{k}} \propto \underline{\mathbf{species}} \sim -i$ ts Wage-Labor sub-«species», its 'single-«Kapital»-unit-per-Landed Property-unit' sub-«species», and also its sub-sub-«species» wherein the Landed-Property unit is also owned by the capitalist(s) who own(s) the single individual capital unit whose fixed capital + occupies that Landed Property ownership-unit.

The upshot of the first three solution-justifications, above, taken together, is that the Landed Property category, not the Wage Labor category, is the immediate dialectical, categorial opposite to the «Kapital» category. That is, L, not W, is the '[first] antithesis-category', to K as 'thesis-category', or «arché»-category. The Wage Labor category is the 'synthesiscategory' in relation to that 'thesis category', K, and to its 'antithesis-category', L, and is thus a dialectical, categorial 'supplementary opposite' to **both**. I.e., using ' $\sim$ ' to sign systematic-dialectical,  $\approx$ synchronic, categorial, 'supplementary <u>opposition</u>', we have, in addition to  $\underline{W} \sim \underline{K}$ , also ' $\underline{W} \sim \underline{L}$ ', and ' $\underline{L} \sim \underline{K}$ '. Indeed, ' $\underline{W} \sim \underline{L}$ ;  $\underline{K}$ ', or ' $\underline{L} \sim \underline{W} \sim \underline{K}$ '.

The 'dialectogram' below describes some systematic-dialectical inter-relations of this first triad of categories of the Marxian critique of capitalist political economy entire, partly '*picto*gramically', or *picto*rially, and partly '*ideo*gramically', or mathematically, and also partly 'phonogramically' -- i.e., narratively.

1st Triad, Systematic Dialectic, Marx's Critique of Political Economy Entire --'«arché»-category'; 1st 'contra-category'; 1st full 'uni-category'.



ideology-vitiated science of the "Classical Political Economy" of Adam Smith, David Ricardo, etc., was the treatise on Marx's critique of the category Capital What we have today, in the four thick volumes of Marx's [& Engels's!] Capital, including the huge fourth volume, is but a part of what Marx's original plan demanded for this initial treatise. Marx argued that the Capital treatise must constitute the first or «arché» treatise in his systematic, dialectical method of presentation of the Capitals system, not because this category came first historically, treatise's category. Units of landed property are off but because it comes first systematically, as the dominant category of modern society.

modern or capitalist form of landed property, the 'modernly' continually reproduced form of property in land that first arose from the interaction of emergent capital with feudal landed property, forms the object of Marx's planned second treatise, taking modern Landed Property as a 'contra-category' to the first meta-units to capital units, grounding many capitals.

Classical Political Economy's category of contemporary Wage-Labor, with the Wage-Labor class grasped as the joint product of a continually reproduced interaction between the class of «Kapital» and the class of Landed Property -- e.g., in England, by their original uprooting of the feudal retainers from the land -- & by their continuing exclusion of the majority of the modern population, the working class, from ownership access to means of production, on the land, or otherwise, thus enforcing the Workers' condition of "self-alienation" - 'self-selling' for wages.

**4**.  $\underline{\mathbf{q}}_{\mathbf{4}}$  (-]  $\underline{\mathbf{q}}_{\mathbf{LL}}$  |=  $\underline{\mathbf{q}}_{\mathbf{S}} \equiv \underline{\mathbf{S}} \equiv$  the category of Nation- $\underline{\mathbf{S}}$  tate unit<u>s</u>: In an earlier notebook, written a dozen years before

the period of the composition of the <u>*Grundrisse*</u> notebook<u>s</u>, the latter being from **1857**-**1858**, Marx noted down an outline that might have served him, later, as raw material for the outline-of-content<u>s</u> of his planned fourth treatise, on the capitalist Nation-<u>S</u>tate as modern socio-political-economic formation, had he lived long enough to write it --

"1. The *history of the genesis of the modern state* or the *French Revolution*. The *presumptuous exaggeration of the political* [e.g., of the '*polis*-itical' -- K.S.] *element*, confounded with the state in antiquity. The revolutionaries opposed to bourgeois society. Bisection of each individual into a bourgeois and a political being.

2. *Proclamation of the rights of man* and the *state constitution*. Individual freedom and public power. *Liberty, civil equality,* and unity. Popular sovereignty.

3. The *state* and *bourgeois society*.

- 4. The representative state and the Charter. The representative constitutional state; the representative democratic state.
- 5. Separation of powers. Legislative power and executive power.

6. Legislative power and legislative bodies. Political clubs.

7. *Executive power*. Centralization and hierarchy. Centralization and political civilization. Federalism and industrialism. [K.S.: Nation-]*State administration* and *local administration*.

8. *Judicial power* and *law*.

9. The *nation* and the *people*.

10. Political parties.

11. *Suffrage*, the struggle for the *abolition* [K.S.: *«aufheben»*] of the state and [of] bourgeois society." [*Rubel on Marx*, *ibid.*, p. **224**].

The '<sub>LL</sub>' double subscript here connotes, for u<u>s</u>, that this 'self-hybrid' category's 'uni-vocalization' of bi-vocal '<sub>LL</sub>', is a category of <u>qual</u>itatively, '<u>socio</u>-ontologically' differing unit<u>s</u> to the '<sub>L</sub>' unit<u>s</u>, and which are also '<u>meta</u>-unit<u>s</u>' to the '<sub>L</sub>', <u>L</u>anded Property, unit<u>s</u>. They are so in the sense that each one of those '<sub>LL</sub>' '<u>meta</u>-unit<u>s</u>' is, <u>typically</u>, made up out of a heterogeneous multiplicity of '<sub>L</sub>' unit<u>s</u>. That is, the solution that "fills this bill", for u<u>s</u>, defines each of these '<u>meta</u>-unit<u>s</u>' as a Nation-<u>S</u>tate unit, one which «*aufheben*» '''contains''' the totality of the contiguous unit<u>s</u> of <u>L</u>anded Property that, together, constitute the sovereign territory of that Nation-<u>S</u>tate unit, for all <u>typical</u> Nation-<u>S</u>tate unit<u>s</u> that are "all in one piece" [e.g., <u>un</u>like Pakistan while it was divided into geographically <u>dis</u>connected, "West" & "East" part<u>s</u>].

Each typical Nation- $\underline{S}$  tate unit is a 'meta-unit' to its  $\underline{L}$  and ed Property unit<u>s</u>, each such Nation- $\underline{S}$  tate unit being made up out of the heterogeneous multiplicity of contiguous  $\underline{L}$  and ed Property unit<u>s</u> that constitute the *sovereign territory* of that Nation- $\underline{S}$  tate.

This means that the  $\underline{\mathbf{g}}_{s}$  category must include, inside its 'meta-unit<u>s</u>', all of the  $\underline{\mathbf{g}}_{L}$  category and sub-category unit<u>s</u>, and also including some of the  $\underline{\mathbf{g}}_{L-\underline{type}}$  unit<u>s</u> from certain sub-categor<u>ies</u> of the  $\underline{\mathbf{g}}_{L\underline{k}}$  category already mentioned, as well as unit<u>s</u> of category  $\underline{\mathbf{g}}_{L}$  proper. It must also include government-owned unit<u>s</u> of <u>L</u>anded Property, whether or not they "<u>present</u>ly" "contain" multiple or even single individual capital unit<u>s</u>. To fully [*re*-]constitute the full national territory, the <u>L</u> unit<u>s</u> must even include unit<u>s</u> of <u>L</u>anded Property that are <u>present</u>ly "<u>un</u>improved", e.g., wilderness unit<u>s</u>, or, e.g., worker-owned residential property unit<u>s</u> – <u>present</u>ly vacant of any unit<u>s</u> of <u>K</u>apital», and that are thus <u>present</u>ly "'null'" unit<u>s</u> of <u>L</u>anded Property, "empty [set]" <u>L</u> unit<u>s</u>, in term<u>s</u> of any <u>present</u> «<u>K</u>apital» unit<u>s</u> occupancy whatsoever, at the given <u>present</u> time within the modern epoch, but <u>possibly</u> having been occupied by «<u>K</u>apital» unit<u>s</u> in the capitalist epoch's <u>past</u>, and, <u>potentially</u>, to be [*re*-]occupied by «<u>K</u>apital» unit<u>s</u> sometime in the remaining capitalist epoch part of the <u>future</u>. That is, such <u>L</u> unit<u>s</u> of category <u>L</u> in that sense, of an as yet <u>un</u>realized <u>potential</u>, in the capitalist <u>future</u>, to "house", and to be exploited by, later «<u>K</u>apital» unit<u>s</u>.

Again, «*aufheben*» *relations* that exhibit this, '<sub>LL</sub>', kind of 'meta-unit-icity', or of 'meta-«*monad*»-icity', are quite common in cases of <u>systematic</u> dialectic in o<u>ur</u> experience. Such «*aufheben*» *relations* are typically <u>gen</u>erated by their counterparts in the 'meta-«*monad*»-*ization'* «*aufheben*» *processes* of <u>historical</u> dialectic. But again, we have no explicit *textual* evidence that this «*aufheben*» relation was, in <u>gen</u>eral, or in this particular case, a conscious part of Marx's view of his <u>CPE systematic</u> dialectic.

- 5.  $\underline{\mathbf{q}}_{5}$  (--]  $\underline{\mathbf{q}}_{sK} \equiv$  the category of relation<u>s</u>/reproduced interaction<u>s</u> between Nation-<u>State</u> unit<u>s</u> and <u>«Kapitals</u>» unit<u>s</u>: Example<u>s</u> include regulation of <u>«Kapital»</u> unit<u>s</u> by governmental bureaucrac<u>ies</u>, often involving "regulatory capture", and lobbying of the national legislature by <u>«Kapital»</u> unit<u>s</u>, as well as other form<u>s</u> of bribery thereby.
- 6.  $\underline{\mathbf{q}}_{6}$  (-]  $\underline{\mathbf{q}}_{sL} \equiv$  the category of relation<u>s</u>/reproduced interaction<u>s</u> of Nation-<u>State</u> unit<u>s</u> with <u>L</u>anded Propert<u>ies</u> unit<u>s</u>: Example<u>s</u> include regulation of "private" land use by governmental bureaucrac<u>ies</u> per environmental law<u>s</u>, and leasing of government-owned <u>L</u>anded Property to "<u>K</u>apital»-ist" enterprise unit<u>s</u> for their privately-profitable use.
- 7.  $\mathbf{g}_{7}$  (-]  $\mathbf{g}_{SKL} \partial = \mathbf{g}_{SW} \equiv$  the category of relations/reproduced interactions of Nation-State units & Wage Labor units: Examples include regulation of Wage-Labor working conditions by governmental bureaucracies per national occupational health and safety laws, outlawing of child labor, governmental funding of unemployment insurance benefits, and income taxation of wages by national governments.
- 8. <u>**q**</u><sub>8</sub> (-] <u>**q**</u><sub>SS</sub> |-≡ <u>**q**</u><sub>F</sub> ≡ <u>**F**</u> ≡ the category of <u>*bi*</u>-lateral, Nation-<u>S</u>tate/Nation-<u>S</u>tate, 'inter-Nation-al', 'inter-<u>S</u>tate' <u>**F**</u>oreign Trade relation-unit<u>s</u>. A passage in volume I of Marx's four volume treatise entitled <u>*Capital*</u> -- the only one of his six(+) planned treatise<u>s</u> that we have extant in an at least partly fleshed-out form -- makes clear why Marx's treatise on the «<u>K</u>apital<u>s</u>» category should *not* and does *not* encompass the complexity of the <u>**F**oreign Trade category's determination<u>s</u>, implying the need for a distinct treatise on <u>**F**oreign Trade [<u>*Rubel on Marx*</u>, *ibid.*, p. 225]:
  </u></u>

"In order to examine the object of our investigation in its integrity, free from all disturbing subsidiary circumstances, we must treat the whole commercial world as one nation and assume that the capitalist mode of production has been established everywhere and become dominant in all branches of production."

In a passage in the **4**th volume of Marx's treatise on the «<u>K</u>apital<u>s</u>» category, entitled <u>Theories of Surplus Value</u>, Marx makes clear the <u>centrality</u> of the <u>F</u>oreign Trade category [and the World <u>Market category</u>] to his critique of capitalist 'political-economics' entire --

"...Only foreign trade, the development of a market to a world market, transforms money into world money and *abstract labor* into social labor. Abstract wealth, value, money -- hence abstract labor develops in proportion to the development of concrete labor into a totality of different modes of labor which encompasses the world market. Capitalist production is founded on...*value* or the development of the labor contained in the product as social labor. But this is only [possible] on the basis of foreign trade and the world market." [*Rubel on Marx*, *ibid.*, p. **203**]

The 's' double subscript here connotes, for us, that this third 'self-hybrid' category, 'F', one that 'uni-vocalizes' the bi-vocal 's', is a category of <u>qual</u>itatively, socio-ontologically different units to the 's' units, and is one whose 'ss' units are also '<u>meta</u>-units' to their 's', Nation-State, units. They are so, per o<u>ur</u> solution, in the sense that each one of those, 'ss', '<u>meta</u>-units' is typically made up out of a heterogeneous multiplicity of exactly <u>two</u> 's' units. The solution that fits, for us, defines each of these '<u>meta</u>-units' as a Nation-State-to-Nation-State, or <u>bi</u>-lateral trading pair as <u>unit</u>, one which "aufheben" ''contains''' each of the two Nation-State units that make up that inter-trading pair-unit. Each typical bi-lateral Foreign Trade unit is thus a 'meta-unit' to its two constituent Nation-State units, each such Foreign Trade unit being made up out of the heterogeneous multiplicity of exactly those two Nation-State units.

Again, «aufheben» relations exhibiting this, 'ss', kind of 'meta-unit-icity', or of 'meta-«monad»-icity', are quite

common in case<u>s</u> of <u>systematic</u> dialectic in o<u>ur</u> experience. Such <u>«aufheben»</u> relation<u>s</u> are typically first <u>gen</u>erated by their counterpart<u>s</u> in the 'meta-<u>«monad</u>»-ization' <u>«aufheben»</u> processes of an <u>historical</u> dialectic. But again, w<u>e</u> have no textual evidence that this <u>«aufheben</u>» relation was, in <u>gen</u>eral, or in this particular case, a conscious part of Marx's view of his <u>CPE systematic</u> dialectic.

- 9.  $\underline{\mathbf{q}}_{\mathbf{g}}$  (--]  $\underline{\mathbf{q}}_{\mathbf{FK}}$  = the category of relation<u>s</u>/reproduced-interaction<u>s</u> between <u>F</u>oreign Trade unit<u>s</u> and <u>«K</u>apital<u>s</u>» unit<u>s</u>: Example<u>s</u> include the impact<u>s</u> of competition via import<u>s</u> from a trade-partnered foreign nation-state's <u>«K</u>apital<u>s</u>» unit<u>s</u> upon a given nation-state's domestic <u>«K</u>apital<u>s</u>» unit<u>s</u>, e.g., on their 'profitabilit<u>ies</u>', and vice versa.
- **10**.  $\underline{\mathbf{q}}_{10}$  (-]  $\underline{\mathbf{q}}_{FL} \equiv$  the category of relation<u>s</u>/reproduced-interaction<u>s</u> of <u>F</u>oreign Trade unit<u>s</u> with <u>L</u>anded Propert<u>ies</u> unit<u>s</u>: Example<u>s</u> include impact<u>s</u> of import<u>s</u> of agricultural produce grown on foreign-nation <u>L</u>anded Property unit<u>s</u> upon a given nation's domestic, agriculturally productive <u>L</u>anded Property unit<u>s</u>, e.g., upon that nation's agricultural produce production and price<u>s</u> in its home market, and *vice versa*, as well as upon the prevailing price<u>s</u> of unit<u>s</u> of land in that nation.
- **11**.  $\mathbf{q}_{\mathbf{11}}$  (-]  $\mathbf{q}_{\mathbf{FLK}} \partial \mathbf{b} = \mathbf{q}_{\mathbf{FW}} \equiv$  the category of relation<u>s</u>/interaction<u>s</u> of <u>F</u>oreign Trades unit<u>s</u> with <u>W</u>age Labor unit<u>s</u>: Example<u>s</u> include action<u>s</u> by trade union<u>s</u>, promoting the adoption of trade polic<u>ies</u> and practice<u>s</u> favoring the interest<u>s</u> of, e.g., <u>some</u> sub-class<u>es</u> of wage worker<u>s</u> [e.g., those polic<u>ies</u> called "protectionist"] and worker<u>s</u> '-union<u>s</u>-sponsored re-training program<u>s</u>, for wage worker<u>s</u> displaced by the impact of, e.g., less-expensive/more-competitive foreign import<u>s</u>.
- **12.**  $\underline{\mathbf{q}}_{12}$  (-]  $\underline{\mathbf{q}}_{FS} \equiv$  the category of relation<u>s</u>/reproduced-interaction<u>s</u> of <u>F</u>oreign Trade unit<u>s</u> with Nation-<u>S</u>tate unit<u>s</u>: An example is the impact<u>s</u> of bi-lateral 'inter-Nation-<u>S</u>tate' trading relationship<u>s</u> on Nation-<u>S</u>tate<u>s</u> that are excluded from those relationship<u>s</u>, e.g., tariff barrier<u>s</u> that are reduced between the bi-lateral trading pair but *not* for other Nation-<u>S</u>tate<u>s</u>, outside of that bi-lateral relationship. Also, changes to the national law<u>s</u> and cultural characteristic<u>s</u> of each of a trading pair of nation-state<u>s</u>, induced by their foreign trade relationship.
- **13.**  $\underline{\mathbf{q}}_{13}$  (-]  $\underline{\mathbf{q}}_{FSK} \equiv$  the category of relations of <u>F</u>oreign Trade to the Nation-<u>S</u>tate/«<u>K</u>apital<u>s</u>» relation: Examples include cases where national governments sacrifice the interests of certain-sector home «<u>K</u>apital» units in order to retain the <u>overall</u> benefits of a treaty-based bi-lateral trading relationship with a foreign Nation-<u>S</u>tate, or opposite cases in which certain "protectionist" sectoral home «<u>K</u>apital» units lobby for, e.g., tariffs that may successfully block the benefits, e.g. to home consumers, of lower-priced foreign imports.
- **14.**  $\underline{\mathbf{q}}_{14}$  (-]  $\underline{\mathbf{q}}_{FSL} \equiv$  the category of relations of the <u>F</u>oreign Trade relation to the Nation-<u>S</u>tate/<u>L</u>anded Propert<u>ies</u>» relation: Examples include adoptions of protective tariffs on agricultural products to shield home <u>L</u>anded growers from competition from the foreign, bi-lateral trading partner's agricultural products, e.g., to restrict produce imports therefrom. Also, the imposition of bi-lateral trading partner, foreign Nation-<u>S</u>tate land-use-restricting environmental laws, as a result of a negotiated trade treaty requiring environmental regulatory parity between the two, <u>bi</u>-lateral, trading-partner Nation-<u>S</u>tates.
- **15**.  $\underline{\mathbf{q}}_{15}$  (-]  $\underline{\mathbf{q}}_{FSLK} \partial \stackrel{[]}{=} \underline{\mathbf{q}}_{FSW} \equiv$  the category of the relation of <u>F</u>oreign Trade to the Nation-<u>S</u>tate/<u>W</u>age Labor relation: Example<u>s</u> include campaign<u>s</u> by labor to recall, or to vote out of office in next national election<u>s</u>, elected office holder<u>s</u> seen by worker<u>s</u> to have bungled bi-lateral trade relation<u>s</u> to the detriment of wage worker<u>s</u>' interest<u>s</u>, in the eye<u>s</u> of many wage worker<u>s</u>. Also, union(<u>s</u>)-led national strike<u>s</u> against bi-lateral trade polic<u>ies</u> of their nation-state that many wage worker<u>s</u> see as inimical to their livelihood<u>s</u>.

**16**.  $\underline{\mathbf{q}}_{16}$  (-]  $\underline{\mathbf{q}}_{FF}$  |-=  $\underline{\mathbf{q}}_{M} \equiv \underline{\mathbf{M}} \equiv$  the category of <u>multi</u>-laterally-traded, World <u>Market</u>, "world commodity" unit<u>s</u>: In the <u>Grundrisse</u>, Marx makes clear his view that the world market is the very **root** of the capitalist system:

"...[the] world market [forms -- K.S.] the final section where production is given as a totality along with all of its elements, but where, simultaneously, all contradictions are activated [*zum Prozess kommen*]. The world market thus represents both the essential condition and the foundation of the whole. Crises, in turn, are the general sign that the existing situation is to be surpassed and they are also the impulsion towards a new historical form." [*Rubel on Marx*, *ibid.*, p. **209**; see also *Grundrisse*, *ibid.*, pp. **227-228**].

"The tendency to create the world market is directly given in the concept of capital itself." [Grundrisse, Ibid., p. 408].

"The barrier to <u>capital</u> is that this entire development proceeds in a <u>contradictory</u> way, and that the working-out of <u>the productive forces</u>, of <u>general wealth</u> etc., <u>knowledge</u> etc., appears in such a way that <u>the working</u> <u>individual alienates himself</u> [sich entäussert] [Le., <u>sells herself or himself for a wage -- K.S.</u>]; relates to the <u>conditions</u> brought out of him by his <u>labor</u> as those <u>not of his own</u> but of an <u>alien wealth</u> and of <u>his own poverty</u>."

"But this *antithetical form* is itself fleeting, and produces the real conditions of its own [K.S.: <u>self-</u>]*suspension* [K.S.: I.e., of its own 'self-«*aufheben*»-*ation*']."

"The result is: the tendentially and potentially *general development of <u>the forces of production</u> -- of <i>wealth* as such -- as a *basis*; likewise, *the <u>universality</u> of intercourse*, hence the <u>world market</u> as a <u>basis</u>."

"[This] *basis* as the *possibility* of *the universal development of the individual*, and *the <u>real</u> development of the individuals* from this *basis* as a *constant suspension* [K.S.: I.e., a constant '«*aufheben*»-*ation*'] of its *barrier*, which is recognized as a *barrier*, *not* taken for a *sacred limit*. Not an *ideal* or *imagined universality* of *the individual*, but *the universality of his <u>real</u> and <u>ideal</u> relations."* 

"Hence also the grasping of his own history as a process, and the recognition of nature (equally present as practical power over nature) as his <u>real</u> body. The process of development itself posited and known as the presupposition of the same."

For this, however, necessary above all [that] *the full development of <u>the forces of production</u> has become <i>the condition of production*; and <u>not</u> that specific *conditions of production* are posited as a *limit* to *the <u>development</u> of <u>the productive forces</u>." [<i>Ibid.*, pp. **541-542**, *emphases added* by K.S.].

The **M** category is that of, *not* units of kinds of commodities traded only *locally* or nationally, but of kinds of commodities, as the units of this category, that are traded *globally*, that are 'World Market Commodities'. Such commodity-kinds are those traded within many if not all of the bi-lateral trading relationships that are addressed by the one-Nation- $\underline{S}$ tate-to-another-Nation- $\underline{S}$ tate, 's', 'inter-Nation[- $\underline{S}$ tate]-al', ''inter- $\underline{S}$ tate'''  $\underline{F}$ oreign Trade relationunits. The ' $_{\rm FF}$ ' double subscript here connotes, for us, ' $_{\rm M}$ ', the fourth 'self-hybrid' category, one that 'uni-vocalizes' the bi-vocal ' $_{\rm FF}$ '. It is a category of <u>qual</u>itatively, <u>socio</u>-ontologically different units to the ' $_{\rm F}$ ' units. These ' $_{\rm FF}$ ' units are also <u>meta-units</u> to the <u>'</u>, <u>F</u>oreign Trade, units, in a <u>special</u> sense -- in the <u>special</u> sense that each one of these  $\frac{1}{FF}$ ,  $\frac{1}{meta}$ -units' is typically made up of a heterogeneous multiplicity of the 'commodity-kind' <u>sub</u>-units of the 'F' units, not simply from the bi-lateral <u>F</u>oreign Trade units themselves that directly make up category <u>F</u>. The defining solution that fits, for us, defines each of these 'meta-sub-units' as a kind of commodity that enters into world-wide trade, a kind of commodity in which a *specific* world Market is maintained. Of course, this *«arithmos»* of kinds of commodities changes, in its detailed units-content, in both the qualities/kinds of its units, and in their quantity, as the capitalist system, and its World <u>M</u>arket, evolves. But the  ${}_{FF}$   $|={}_{M}$  category, and the World <u>M</u>arket itself, remains *present*, throughout the modern, capitalist epoch. Each typical World Market unit is thus a 'meta-sub-unit' to its Foreign Trade, commodity sub-units, organized into commodity-kinds, each such 'meta-sub-unit' being made up out of the heterogeneous multiplicity of the Foreign Traded, bi-laterally traded commodity units, sorted by kinds. The descriptors included in these world-commodity-kind sub-market units include, per Marx, the price-movements of these world commodities-kinds, e.g., in response to seasonal conditions, and in response to the business "cycle".

Marx provides, in the <u>Grundrisse</u>, a passage containing a rough draft for a taxonomy of the various World <u>M</u>arket "world commodity kinds" that were extant/in-existence at the time of its writing [<u>Grundrisse</u>, *ibid.*, pp. **280-281**.], and he there also designates this passage as belonging to his planned expose of the World <u>M</u>arket [<u>Grundrisse</u>, *ibid.*, p. **280**].

Again, using ' $\sim$ ' as the relation-sign for '<u>dialectical</u>, supplementary, «aufheben»-based <u>opposition</u>', the upshot of the solution<u>s</u> posited, above, for Marx's second triad of 'self-hybrid contra-categor<u>ies</u>', as well as for their 'mere-hybrid categor<u>ies</u>', taken together with o<u>ur</u> solution<u>s</u> for the first triad of Marx's categor<u>ies</u>, is not only that '<u>L</u> ~ <u>K</u>', and '<u>W</u> ~ <u>L</u>', and, indeed, that '<u>W</u> ~ <u>L</u>; <u>K</u>', or '<u>L</u> ~ <u>W</u> ~ <u>K</u>', but also that '<u>S</u> ~ <u>W</u>', and '<u>F</u> ~ <u>S</u>', and, '<u>M</u> ~ <u>F</u>; <u>S</u>', or '<u>F</u> ~ <u>M</u> ~ <u>S</u>', as well as that, overall, '<u>K</u> ~ <u>L</u> ~ <u>W</u> ~ <u>S</u> ~ <u>F</u> ~ <u>M</u>'. Every subsequent, more complex, more inclusive category stands for, not an ''<u>abstract</u> negation''' of its predecessor categor(y)(<u>ies</u>), leaving only "nothingness", but for a '<u>determinate</u> negation' -- a negation of only <u>some</u> of the determination<u>s</u> -- of every other category in the 'categorial consecuum-cumulum' for the given <u>D</u>omain, every pair involving a 'not-ness'. That is why we sometimes write, e.g. --

 $\underline{\mathbf{q}}_{\mathrm{K}} \oplus \underline{\mathbf{q}}_{\mathrm{L}} \oplus \underline{\mathbf{q}}_{\mathrm{W}} \oplus \underline{\mathbf{q}}_{\mathrm{S}} \oplus \underline{\mathbf{q}}_{\mathrm{SK}} \oplus \underline{\mathbf{q}}_{\mathrm{SL}} \oplus \underline{\mathbf{q}}_{\mathrm{SW}} \oplus \underline{\mathbf{q}}_{\mathrm{F}} \oplus \underline{\mathbf{q}}_{\mathrm{FK}} \oplus \underline{\mathbf{q}}_{\mathrm{FW}} \oplus \underline{\mathbf{q}}_{\mathrm{FS}} \oplus \underline{\mathbf{q}}_{\mathrm{FSK}} \oplus \underline{\mathbf{q}}_{\mathrm{FSL}} \oplus \underline{\mathbf{q}}_{\mathrm{FSW}} \oplus \underline{\mathbf{q}}_{\mathrm{M}} - \text{instead as } - \text{instead$ 

 $\underline{\mathbf{q}}_{\mathrm{K}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{L}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{W}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{SK}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{SK}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{SW}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{F}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FK}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FW}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FW}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FSK}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FSK}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FSW}} \xrightarrow{\mathbf{\Phi}} \underline{\mathbf{q}}_{\mathrm{FW}} \xrightarrow{\mathbf{\Phi}} \underbrace{\mathbf{q}}_{\mathrm{FW}} \xrightarrow{\mathbf{q}}_{\mathrm{FW}} \xrightarrow{\mathbf{q$ 

-- using the 'oppositional <u>sum</u>' sign, '-+ ', to emphasize the oppositional aspect of the category-symbols' categories.

The 'dialectogram' below describes some systematic-dialectical interrelation<u>s</u>, per o<u>ur</u> solution<u>s</u>, of this second triad of '<u>self</u>-hybrid contra-categor<u>ies</u>' of the Marxian critique of political economy entire, partly '<u>pict</u>ogramically', or <u>pict</u>orially, and partly '<u>ide</u>ogramically', or mathematically, and also partly '<u>phon</u>ogramically', ''<u>phon</u>etically''' -- i.e., narratively.



The *fourth treatise* of Marx's planned <u>dialectical</u>, immanent critique of the ideology-vitiated science of the "Classical Political Economy" of Adam Smith, David Ricardo, etc., was to be the treatise on Marx's critique of the category of the Capital-ist nation-State. We see each unit of the nation-State category, **S** each individual nation-State - as a <u>meta-unit</u> of <u>units</u> of the Landed Property category, **L**. Each nation-State unit <u>unifies</u> all of the Landed Property units that are contiguously "contained" in their national territory. Each **S** unit thus "contains a heterogeneous multiplicity of Landed Property units, as its <u>sub</u>-units.

Marx's planned fifth realise was to carry forward his critique of Classical Political Economy to its postnation-State systematic category, of 'Inter-nationg' trade, and, in particular, to the category of 'between-two-nationg' or "bi-lateral", international commerce. Each unit of this <u>E category</u> is a bilateral trade relation, between a pair of "nation-States - between one nation-State and one other 'nation-State. We thus see each <u>E unit as a meta-S unit</u>, each one made of a heterogeneous multiple of **2 S** units.

Marx's planned sixth treatise was to carry forward his critique of Classical Political Economy to its culmination, in the category that comprehends the human-social totality of the self-reproduction of the modern Capital-ist world-system, namely, the category of the contemporary World-Market. We take the units of this category, M. to be <u>meta-units</u> of sub-units of category E. Each World Market unit represents a <u>specific World-Market[cd] commodity kind</u>. Each such unit "contains" a heterogeneous multiplicity of the bilateral trading pairs units of F that 'ex-/im-port' that unit's <u>specific</u> world-trade[d] <u>kind</u>. Note again the <u>implicit ingredience</u>, in all the above <u>'contra</u>-category' solution<u>s</u>, of a <u>'''universal architectonic</u>''' that w<u>e</u> call <u>'</u>*aufheben* <u>meta</u>-unit-icity'. It means the revelation of already-existing, <u>>syn</u>chronic relation<u>s</u> of effective, relative, partial <u>'de</u>-unitization' of, & <u>elevation</u> of, & <u>conservation</u> of the unit<u>s</u> of the <u>'contra</u>-categor<u>ies</u>' that are <u>present</u>ed earlier, per their systematic <u>ord</u>er, <u>inside</u> the [thus <u>meta-</u>]unit<u>s</u> of the <u>'contra</u>-categor<u>ies</u>' that are <u>present</u>ed/evoked later, e.g.:

\*  $\underline{\mathbf{g}}_{\mathbf{L}} \equiv -| \underline{\mathbf{g}}_{\mathbf{K}\mathbf{K}}$ : Each unit of the Landed Propert<u>ies</u> category "contains", typically, multiple unit<u>s</u> of, e.g., industrial «<u>K</u>apital<u>s</u>». I.e., each typical owned tract of land is rented to the physical plant<u>s</u> of the multiple individual «<u>K</u>apital» unit<u>s</u> that each occupy, and that are "grounded" by, a part of that tract of land. The part of that tract of land which is occupied by a given individual «<u>K</u>apital»'s physical plant is, e.g., leased to that «<u>K</u>apital» unit by the owner of that tract of land. Thus, in general, each such unit of <u>L</u>anded Property is a 'meta-unit' to the <u>multiple units</u> of «<u>K</u>apital» that it partially or wholly "contains". Each such unit of <u>L</u>anded Property is an «*aufheben*» 'meta-unit' to those, its unit<u>s</u> of «<u>K</u>apital». Each typical <u>L</u>anded Property unit is made of a heterogeneous multiplicity of individual «<u>K</u>apital», physical plant unit<u>s</u>.

\*  $\underline{\mathbf{q}}_{s} \equiv | \underline{\mathbf{q}}_{LL}$ : Each Nation-<u>S</u>tate unit, each unit of the [Nation-]<u>S</u>tate<u>s</u> category, as a territorial entity, is made up out of the totality of the <u>L</u>anded Property unit<u>s</u> that, together, constitute the sovereign territory of that Nation-<u>S</u>tate. Each Nation-<u>S</u>tate unit is thus made up out of a heterogeneous multiplicity of <u>L</u>anded Property unit<u>s</u>. Each typical Nation-<u>S</u>tate unit is thus also an *«aufheben»* 'meta-unit' of/to the multitude/*«arithmos»* of <u>L</u>anded Property unit<u>s</u> that it '''contains'''.

\*  $\mathbf{g}_{\mathbf{F}} \equiv -| \mathbf{g}_{ss}$ : Each inter-Nation-<u>S</u>tate<u>s</u>, <u>bi</u>-lateral trading <u>pair</u> of Nation-<u>S</u>tate<u>s</u> forms one unit of the, <u>bi</u>-lateral, <u>F</u>oreign Trade category. Each such unit is thus made up out of a heterogeneous multiplicity of <u>exactly two</u> unit<u>s</u> of the Nation-<u>S</u>tate<u>s</u> category. I.e., each <u>bi</u>-lateral <u>F</u>oreign Trade unit is thus also an <u>aufheben</u> 'meta-unit' of the <u>pair</u> of Nation-<u>S</u>tate unit<u>s</u> that it ''contains''', for all of the kind<u>s</u> of commodit<u>ies</u> included/traded in that bi-lateral trading relationship.

\*  $\mathbf{g}_{\mathbf{M}} \equiv | \mathbf{g}_{\mathbf{FF}}$ : Each <u>multi</u>laterally-traded, <u>speci</u>al-commodity-<u>kind</u>, World <u>sub-M</u>arket unit, each unit of the "World <u>M</u>arket" category, is made up out of the <u>bi</u>-lateral <u>F</u>oreign Trade trading units of that <u>speci</u>al commodity-<u>kind</u>, from all of the <u>bi</u>-laterally-trading pairs of Nation-<u>S</u>tates that trade between themsel<u>ves</u> in that <u>speci</u>al world-market commodity-<u>kind</u>. Thus each World <u>M</u>arket commodity-<u>kind</u> unit is made up out of the heterogeneous multiplicity of the units of <u>bi</u>-lateral <u>F</u>oreign Trade, in that <u>kind</u>-of-commodity, traded between Nation-<u>S</u>tates <u>'unit</u>-ed' as inter-trading, <u>bi</u>-lateral nation-state <u>pair</u> units. Each World <u>M</u>arket category <u>kind</u>-of-commodity unit is thus also an <u>aufheben</u> meta-unit' of/to the multitude/<u>arithmos</u> of <u>bi</u>-lateral <u>F</u>oreign Trades units, trading in that World <u>M</u>arket commodity-<u>kind</u>, traded by <u>bi</u>-lateral trading pairs of Nation-<u>S</u>tates as the units of the category/<u>arithmos</u> of the <u>F</u>oreign Trade carried on between them.

It is of course true that the 16-category 'dialectical equation', or 'unity, 4-times-self-involuted, equals diversity equation':

$$\underline{\mathbf{D}}_{4} = \underline{\mathbf{q}_{K}}^{2^{4}} \partial | = \mathbf{(} \partial \underline{\mathbf{q}_{K}} \oplus \underline{\mathbf{q}_{L}} \oplus \underline{\mathbf{q}_{W}} \oplus \underline{\mathbf{q}_{S}} \oplus \underline{\mathbf{q}_{SK}} \oplus \underline{\mathbf{q}_{SU}} \oplus \underline{\mathbf{q}_{FW}} \oplus \underline{\mathbf{q}_{FK}} \oplus \underline{\mathbf{q}_{FW}} \oplus \underline{\mathbf{q}_{FS}} \oplus \underline{\mathbf{q}_{FSK}} \oplus \underline{\mathbf{q}_{FSL}} \oplus \underline{\mathbf{q}_{FSW}} \oplus \underline{\mathbf{q}_{M}} \langle \mathbf{(} \mathbf{\mathbf{p}_{SW}} \oplus \underline{\mathbf{q}_{SW}} \oplus \underline{\mathbf{q}_{SW}} \oplus \underline{\mathbf{q}_{SW}} \oplus \underline{\mathbf{q}_{FK}} \oplus \underline{\mathbf{q}_{FW}} \oplus \underline{\mathbf{q}_{FSW}} \oplus \underline{\mathbf{q}_{FSW}} \oplus \underline{\mathbf{q}_{SW}} \oplus \underline{\mathbf{q}_{SW}} \otimes \underline{\mathbf{q}_{SW}} \oplus \underline{\mathbf{q}_{SW}}$$

is *not*, <u>in itself</u>, the <u>whole present</u>ation for <u>D</u>omain D = CPE.

It is only an extremely terse "shorthand", a 'hyper-concise' outline, a kind of 'horizontal list', of the <u>socio</u>-ontologicalcategorial content<u>s</u>' symbolic name<u>s</u>; of the symbol<u>s</u> of the "kind<u>s</u> of social relation<u>s</u> [<u>social relations</u> of [societal self-re-]production]" content, that exist for this **Domain**, **D** = CPE.

For example, it took Marx [and Engels] the **~807** page<u>s</u> of <u>Capital</u>, vol. I, plus the **~546** page<u>s</u> of <u>Capital</u>, vol. II, plus the **~948** page<u>s</u> of <u>Capital</u>, vol. III, plus the **~1,804** page<u>s</u> of <u>Capital</u>, vol. IV [entitled <u>Theories of Surplus-Value</u>] -- a total of **~4,105** page<u>s</u> -- to "flesh out" just [most of] the *first* category, the category named "capital", from the "capital, landed property, wage-labour, the State, foreign trade, world market" 'categorial skeleton' of Marx's planned exposition and explication of <u>Domain</u> D = CPE entire.

Note that each of the sixteen category-parts of the above 'dialectical equation', or 'unity, self-involuted, equals diversity' equation, besides its "solved-for", explicit, **D**omain-specific name, has also, for us, its own generic name as well, viz. --

- <u>Gen</u>erically, <u>**q**</u><sub>1</sub> (-] <u>**q**</u><sub>K</sub> is, of course, called the '«*arché*»-category' or 'starting category' for this dialectical model of the contemporary 'capitalist system entire' <u>**D**</u>*omain*.
- 2. Category  $\underline{\mathbf{q}}_{\mathbf{r}}$  (-]  $\underline{\mathbf{q}}_{\mathbf{k}\mathbf{k}}$  |-=  $\underline{\mathbf{q}}_{\mathbf{r}}$  is named 'first <u>contra</u>-category', in o<u>ur</u>, 'supplementary opposition' sense of ''<u>contra</u>'''.
- 3. Category  $\underline{\mathbf{q}}_{\mathbf{3}}$  (-]  $\underline{\mathbf{q}}_{W} \equiv -|\underline{\mathbf{q}}_{LK} \equiv \underline{\mathbf{q}}_{KL}$  is this dialectical model's, and the *«arché»*-category's, 'first [*full*] *uni*-category'.
- Category <u>**q**</u><sub>4</sub> (−] <u>**q**</u><sub>LL</sub> |= <u>**q**</u><sub>s</sub> is called the «*arché*»-category's 'second <u>contra</u>-category', and is a 'supplementary <u>contra</u>-category' to <u>**q**</u><sub>r</sub> as well.
- 5. Category <u>**q**</u><sub>5</sub> (-] <u>**q**</u><sub>SK</sub> is called its 'first <u>part</u>ial <u>uni</u>-category'; "partial" because, among the pre-F 'self-hybrid' categorial determination<u>s</u> extant in the <u>s</u>tep in which <u>**q**</u><sub>SK</sub> is evoked, namely K, L and S, <u>**q**</u><sub>SK</sub> does *not* include L in its <u>uni</u>fication.
- Category <u>**q**</u><sub>6</sub> (-] <u>**q**</u><sub>SL</sub> is called the <u>**D**</u>*omain*'s 'second <u>part</u>ial <u>uni</u>-category'; "partial" because, of the pre-F 'self-hybrid' categorial determinations extant in the <u>s</u>tep in which <u>**q**</u><sub>SL</sub> is evoked, namely K, L and S, <u>**q**</u><sub>SL</sub> does *not* include categorial determination K in its <u>uni</u>fication.
- 7. Category  $\underline{\mathbf{q}}_{7}$  (-]  $\underline{\mathbf{q}}_{SW} \underline{\partial} = | \underline{\mathbf{q}}_{SLK}$  is called its 'second <u>*full uni*</u>-category'; "full", because, of the pre-F 'self-hybrid' epithet<u>s</u>/determination<u>s/qual</u>itie<u>s</u> in the <u>s</u>tep in which  $\underline{\mathbf{q}}_{SLK}$  evokes, namely K, L & S, category-symbol  $\underline{\mathbf{q}}_{SLK}$  includes them <u>all</u> in its <u>uni</u>fication.
- 8. Category  $\underline{\mathbf{q}}_{\mathbf{g}}$  (-]  $\underline{\mathbf{q}}_{SS}$  |=  $\underline{\mathbf{q}}_{F}$  is called the *«arché»*-category's 'third *contra*-category', and is an *«aufheben»*-related 'supplementary *contra*-category' to  $\underline{\mathbf{q}}_{s}$  as well.
- 9. Category <u>**q**</u><sub>**g**</sub> (—] <u>**q**</u><sub>**FK**</sub> is called its 'third <u>*part*</u> ial <u>*uni*</u>-category'; "partial" because, of the pre-**M** 'self-hybrid' categorial epithet<u>s</u> extant in the <u>**s**</u> tep in which <u>**q**</u><sub>**FK**</sub> is evoked, namely **K**, **L**, **S** & **F**, <u>**q**</u><sub>**FK**</sub> does *not* include **L** or **S** in its <u>*uni*</u> fication.
- Category <u>**q**</u><sub>10</sub> (-] <u>**q**</u><sub>FL</sub> is called its 'fourth <u>part</u>ial <u>uni</u>-category'; "partial" because, of the pre-**M** 'self-hybrid' categorial epithet<u>s</u> extant in the <u>s</u>tep in which <u>**q**</u><sub>FL</sub> is evoked, namely K, L, S & F, <u>**q**</u><sub>FL</sub> does *not* include K or S in its <u>uni</u>fication.
- 11. Category  $\underline{\mathbf{q}}_{11}$  (-)  $\underline{\mathbf{q}}_{FW} \underline{\partial} \equiv -| \underline{\mathbf{q}}_{FLK}$  is called its 'fifth <u>part</u>ial <u>uni</u>-category'; "partial" because, of the pre-M 'self-hybrid' categorial determinations extant in the <u>s</u>tep in which  $\underline{\mathbf{q}}_{FLK}$  is evoked, namely K, L, S and F,  $\underline{\mathbf{q}}_{FLK}$  does *not* include S.
- Category <u>**q**</u><sub>12</sub> (-] <u>**q**</u><sub>FS</sub> is called its 'sixth <u>part</u>ial <u>uni</u>-category'; "partial" because, of the pre-**M** 'self-hybrid' categorial epithet<u>s</u> extant in the <u>s</u>tep in which <u>**q**</u><sub>FS</sub> is evoked, namely K, L, S & F, <u>**q**</u><sub>FS</sub> does *not* include K or L in its <u>uni</u>fication.
- 13. Category  $\mathbf{q}_{13}$  (-]  $\mathbf{g}_{FSK}$  is called its 'seventh <u>part</u>ial <u>uni</u>-category'; "partial" because, among the pre-**M** 'self-hybrid' epithet<u>s</u> extant in the <u>s</u>tep in which  $\mathbf{g}_{FSK}$  is evoked, namely **K**, **L**, **S** & **F**,  $\mathbf{g}_{FSK}$  does *not* include **L** in its <u>uni</u>fication.
- 14. Category  $\mathbf{q}_{14}$  (-]  $\mathbf{g}_{FSL}$  is called its 'eighth <u>part</u>ial <u>uni</u>-category'; "partial" because, of the pre-**M** 'self-hybrid' epithet<u>s</u> extant in the <u>s</u>tep in which  $\mathbf{g}_{FSL}$  is evoked, namely **K**, **L**, **S** and **F**,  $\mathbf{g}_{FSL}$  does **not** include **K** in its <u>uni</u>fication.
- 15. Category  $\underline{\mathbf{q}}_{15}$  (--]  $\underline{\mathbf{q}}_{FSW} \underline{\partial} \equiv -| \underline{\mathbf{q}}_{FSLK}$  is called its 'third <u>full</u> <u>uni</u>-category'; "full" because, among the pre-M 'self-hybrid' categorial determinations extant in the <u>s</u>tep in which  $\underline{\mathbf{q}}_{FSLK}$  is evoked, namely K, L, S and F,  $\underline{\mathbf{q}}_{FSLK}$  includes them <u>all</u>.
- 16. Category  $\underline{\mathbf{q}}_{16}$  (--]  $\underline{\mathbf{g}}_{FF}$  |-=  $\underline{\mathbf{g}}_{M}$  is called the *«arché»*-category's 'fourth <u>contra</u>-category', and is a 'supplementary <u>contra</u>-category to  $\underline{\mathbf{q}}_{F}$  as well.

You may be wondering, at this point, why step  $\mathbf{1}$ ,  $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_1$ , is *not* just  $\underline{\mathbf{q}}_L$ ; why step  $\mathbf{2}$ ,  $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_2$ , is *not* just  $\underline{\mathbf{q}}_W \oplus \underline{\mathbf{q}}_S$ ; why step  $\mathbf{3}$ ,  $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_3$ , is *not* just  $\underline{\mathbf{q}}_{SK} \oplus \underline{\mathbf{q}}_{SL} \oplus \underline{\mathbf{q}}_{SW} \oplus \underline{\mathbf{q}}_F$ ; or, why step  $\mathbf{4}$ ,  $\underline{\mathbf{D}}$ , or  $\underline{\mathbf{D}}_4$ , is *not* just --

# $\underline{\mathbf{Q}}_{\mathrm{FK}} \oplus \underline{\mathbf{Q}}_{\mathrm{FL}} \oplus \underline{\mathbf{Q}}_{\mathrm{FW}} \oplus \underline{\mathbf{Q}}_{\mathrm{FS}} \oplus \underline{\mathbf{Q}}_{\mathrm{FSK}} \oplus \underline{\mathbf{Q}}_{\mathrm{FSL}} \oplus \underline{\mathbf{Q}}_{\mathrm{FSW}} \oplus \underline{\mathbf{Q}}_{\mathrm{M}}.$

I.e., why do w<u>e</u> repeat the sum of all earlier-<u>gen</u>erated 'category-symbols', summed together with the sum of the latest-<u>gen</u>erated 'category-symbols'?

 $W_{\underline{e}}$  do so because, <u>potentially</u> -- &, usually, *also <u>actually</u>* -- all of the previously <u>gene</u>rated categor<u>ies</u> are still co-<u>present</u>, as valid descriptions of parts of the <u>present</u> reality of the <u>Domain</u>, together with the latest critique-evoked categor<u>ies</u>.

This is what w<u>e</u> call an '<u>e</u>volute consecuum-cumulum' of categor<u>ies</u>, in which the later-evoked categor<u>ies</u> do **not** <u>absolutely</u> "supersede", "cover-over", 'extinctize', or "erase", the earlier-evoked categor<u>ies</u>.

In a '<u>con</u>volute consecuum', in each new <u>s</u>tep of <u>presentation</u>, all of the categor<u>ies</u> of all previous step<u>s</u> of the <u>presentation</u>, <u>would be</u> absent, erased, eliminated, excluded from <u>representation</u> in each next <u>s</u>tep, as "surpassed", "obsolete", or "extinct".

However, to our lights, 'evolute-tion', not 'convolute-tion', provides more fitting models of typical Domains.

In term<u>s</u> of o<u>ur</u> present example's solution<u>s</u>, the individual <u>K</u>apital<u>s</u> unit<u>s</u>, implicit in category  $\mathbf{g}_{\mathbf{K}}$ , still palpably co-exist, in the capitalist <u>present</u>, next to/alongside the unit<u>s</u> of <u>L</u>anded Property, implicit in category  $\mathbf{g}_{\mathbf{L}}$ . And the unit<u>s</u> of <u>L</u>anded Propert<u>ies</u> and of individual <u>K</u>apital<u>s</u>, implicit in categor<u>ies</u>  $\mathbf{g}_{\mathbf{L}}$  and  $\mathbf{g}_{\mathbf{K}}$ , respectively, still co-exist, in the capitalist <u>present</u>, with the unit<u>s</u> of <u>M</u>age Labor[er]<u>s</u>, sold to <u>K</u>apital<u>s</u> unit<u>s</u>, and with the Nation-<u>S</u>tate<u>s</u> unit<u>s</u>, implicit in categor<u>ies</u>  $\mathbf{g}_{\mathbf{W}}$  and  $\mathbf{g}_{\mathbf{s}}$ , respectively. Finally, the commodity-kind unit<u>s</u> of <u>bi</u>-lateral <u>F</u>oreign Trade<u>s</u>, and the unit<u>s</u> that are the World-<u>M</u>arket-Traded "world commodit<u>ies</u>", implicit in categor<u>ies</u>  $\mathbf{g}_{\mathbf{F}}$  and  $\mathbf{g}_{\mathbf{M}}$ , respectively, continue to co-exist, in our <u>present</u>, with and alongside the unit<u>s</u> implicit in categor<u>ies</u>  $\mathbf{g}_{\mathbf{K}}$ ,  $\mathbf{g}_{\mathbf{I}}$ ,  $\mathbf{g}_{\mathbf{W}}$ , and  $\mathbf{g}_{\mathbf{S}}$ .

However, some "'attrition" in the category of '<u>L</u>anded Property', as a separate social class category, and as a separate "social relation of production" category, is noteworthy, especially within Nation-<u>S</u>tate<u>s</u> unit<u>s</u> such as the United State<u>s</u> of America, whose capitalist institution<u>s</u> did **not** arise out of a class struggle between an emergent industrial capitalist ruling class and an entrenched feudal landed aristocracy as ruling class. The emergence of industrial capitalism in the U.S. did, however, involve a "Civil War" class struggle between a "Northern" proto-industrial-capitalist ruling class and a slaveholding, landed-property-owning, plantation agriculture-based ruling class in the "Southern" state<u>s</u> of the United State<u>s</u>, the latter ruling class in some way<u>s</u> resembling the ancient Roman slave-holding, *'latifundial'* ruling class.

Note that the *'universal dialectical architectonic*' of dialectical, *«aufheben» <u>part</u>ial 'chain-<u>containment</u>' ['\Box'], i.e., of <i>'«aufheben»*, or dialectical, *'<u>meta</u>-unit-icity', is in evidence here, in its <i>«*synchronic, or *<u>present</u>ational, systematic/-* taxonomic mode. The *'<u>partial</u>-containment'* relation-sign expression, ' $\underline{X} \sqsubseteq \underline{Y}$ ', signifies that *all* unit<u>s</u> of  $\underline{Y}$  contain unit<u>s</u> of  $\underline{X}$ , but that *not all* unit<u>s</u> of  $\underline{X}$  are contained in unit<u>s</u> of  $\underline{Y}$  --

 $\underline{\mathbf{K}} \ \sqsubseteq \ |^{*} \underline{\mathbf{L}} \ |^{\sqsubseteq} \underline{\mathbf{S}} \ |^{\sqsubseteq} \underline{\mathbf{F}} \ |^{\sqsubseteq} \underline{\mathbf{M}} \ -- \ \mathrm{or} \ --$ 

<u>Kapitals</u> ⊏ I\* <u>Landed Properties</u> I⊏ <u>Nation-States</u> I⊏ <u>Bilateral Foreign Tradings</u> I⊏ <u>World-Commodities</u> <u>Markets</u>.

<sup>\*[</sup>The K | → | L relationship, in its '*aufheben*»-containment' dimension, for this dialectic, constitutes an exceptional case. All terrestrial units of the <u>Kapitals</u> category are contained in terrestrial units of the <u>Landed Properties</u> category, but there can be units of, e.g., state-owned wilderness lands, that do *not* [']'] contain any units of the <u>Kapitals</u> category. Hence we use, for the {K, L} pair, *not* the ' □ ' relation-sign, but its opposite ' □ | '. The '*partial*-containment' relation-sign expression, 'X □ □ Y', thus signifies that *not all* units of Y contain units of X, but that *all* units of X are contained in units of Y.]

<u>One further 'self-involution</u>'? Marx's inaugural outline, and his second outline, in the <u>Grundrisse</u>, for his planned, sixtreatise 'critique of political economy entire' are extracted below. Keeping in mind that the <u>Grundrisse</u> is a "rough draft" [«rohentwurf»], never intended for publication, they contain some final elements that may suggest the need for at least one further treatise to be added to Marx's explicitly planned six. The probable 'content-structure' of this additional treatise is 'pre-constructed' in considerable detail, below, by one <u>further</u> 'self-iteration' of o<u>ur</u> dialectical model for this <u>Domain</u>, i.e., via presentation <u>s</u>tep 5. First, let's view these 2, consecutive, "rough draft" <u>outlines of planned contents</u> for D = CPE.

The first <u>Grundrisse</u> outline of contents for Marx's planned <u>**D**omain</u> D = CPE treatises states the following --

"The order obviously has to be: (1) the general, abstract determinations which obtain in more or less all forms of society, but in the above-explained sense. (2) The categories which make up the inner structure of bourgeois society and on which the fundamental classes rest. *Capital, wage labour, landed property*. Their inter-relation. Town and country. The three great social classes. Exchange between them. Circulation. Credit system (private). (3) Concentration ["synthesis"] of bourgeois society in the form of *the state*. Viewed in relation to itself. The 'unproductive' classes. Taxes. State debt. Public credit. The population. The colonies. Emigration. (4) The international relation of production. International division of labour. *International exchange*. Export and import. Rate of exchange. (5) The *world market* and *crises*." [*Grundrisse, ibid.*, p. **108**, *emphases added* by K.S.]

The second <u>*Grundrisse*</u> outline of contents for Marx's planned D = CPE treatises states the following --

" $\langle I. (1)$  General concept of *capital*. – (2) Particularity of capital: circulating capital, fixed capital. (Capital as the necessaries of life, as raw material, as instrument of labour.) (3) Capital as money. II. (1) *Quantity of capital*. *Accumulation*. (2) *Capital as measured by itself. Profit. Interest. Value of capital*: i.e. capital as distinct from itself as interest and profit. (3) The circulation of capitals. ( $\alpha$ ). Exchange of capital and capital. Exchange of capital with revenue. Capital and *prices*. ( $\beta$ ) *Competition of capitals*. ( $\gamma$ ) *Concentration of capitals*. III. Capital as credit. IV. Capital as share capital. V. *Capital as money market*. VI. Capital as source of wealth. The capitalist." "After capital, *landed property* would be dealt with."

"After that, *wage labour*. All three presupposed, the *movement of prices*, as circulation now defined in its inner totality. On the other side, the three classes, as production posited in its three basic forms and presuppositions of circulation." "Then *the state* (State and bourgeois society. – Taxes, or the existence of the unproductive classes. – The state debt. – Population. – The state externally: colonies.

*External trade*. Rate of exchange. Money as international coin. -"

"Finally the world market. <u>Encroachment of bourgeois society over the state</u>. <u>Crises</u>. <u>Dissolution</u> of the mode of production and form of society based on exchange value. <u>Real</u> positing of individual labour as social and vice versa.)" [Grundrisse, ibid., p. **264**, underline and **bold**-italic emphases and paragraphs partitionings added by K.S.]

The terms "Crises" and "Dissolution ... " were not included, as category names or as treatise titles, in Marx's statement of his planned order of subject matter for his dialectical, immanent critique of capitalist-system 'political-economics' in the opening sentence of the Preface to his **1859** A Contribution to the Critique of Political Economy. Nevertheless, the persistence of these terms, and of the themes that they name, in his Grundrisse outlines, and in its tangential asides, suggests, to us, that at least one further 'self-iteration' of our prospective dialectical model of this system of planned treatises may be in order. Perhaps Marx intended the topics of "Crises" and of the "Dissolution" of the [capitalist] "society based on exchange value" to be addressed still within his planned treatise on the World Market, as naming phenomena intrinsic to the [capitalist] world market. However, it seems more natural to us to formulate these topics under at least one further treatise. Given that, in our model of this systematic dialectic, the World <u>M</u>arket category,  $\underline{\mathbf{q}}_{M}$ , corresponds to <u>gen</u>eric  $\mathbf{Q}_{\mathbf{M}}$  'meta-number'  $\mathbf{q}_{\mathbf{16}}$ , then the algebraic 'category-symbol'  $\mathbf{q}_{\mathbf{32}}$  (—]  $\mathbf{\underline{q}}_{\mathbf{M}}$ , connoting the self-critique of category  $\underline{\mathbf{q}}_{\mathbf{M}}$  as constituting the "final word" -- or the 'final category' -- addressing all of the remaining immanent phenomen<u>a</u> of the <u>present</u>/"modern" capitalist system, might be solved as  $\underline{\mathbf{q}}_{R} \equiv -|\underline{\mathbf{q}}_{MM}$ , with  $\underline{\mathbf{q}}_{R} \equiv \underline{\mathbf{R}}$  denoting the category of "World" Crises, World Wars, and World Revolution'. True, Marx might not have included the determination "World Wars" in his category name or treatise title for that, seventh, *«buch»*, unless he had lived longer, and/or been influenced by Engels's perceptions of an impending "World War I". The two following pages of 'solution specification' text images illustrate this approach, in the form of a *pro forma* table of contents, spanning the 6 treatises, plus 1. This further 'self-iteration' of our dialectical model would, besides ending with, per o<u>ur</u> solution, the category-symbol  $\underline{\mathbf{g}}_{32}$  (-]  $\underline{\mathbf{g}}_{R} \equiv -| \underline{\mathbf{g}}_{MM}$ , also analyze the relations of the World Market category's units to the units of each previously *present*ed **D** = *CPE* category –

 $\underline{\mathbf{q}}_{\mathrm{MK}} \oplus \underline{\mathbf{q}}_{\mathrm{ML}} \oplus \underline{\mathbf{q}}_{\mathrm{MW}} \oplus \underline{\mathbf{q}}_{\mathrm{MS}} \oplus \underline{\mathbf{q}}_{\mathrm{MSK}} \oplus \underline{\mathbf{q}}_{\mathrm{MSW}} \oplus \underline{\mathbf{q}}_{\mathrm{MFW}} \oplus \underline{\mathbf{q}}_{\mathrm{MFK}} \oplus \underline{\mathbf{q}}_{\mathrm{MFU}} \oplus \underline{\mathbf{q}}_{\mathrm{MFW}} \oplus \underline{\mathbf{q}}_{\mathrm{MFS}} \oplus \underline{\mathbf{q}}_{\mathrm{MFSK}} \oplus \underline{\mathbf{q}}_{\mathrm{MFSL}} \oplus \underline{\mathbf{q}}_{\mathrm{MFSW}}.$ 

| <u>Presentational</u> , Systematic, ≈ <u>Syn</u> chronic <u>Dialectic</u> of Marx's<br>" <u>Critique of <b>Political Economy</b>" [CPE] Overall</u> [page 1 of 2].   |
|--|
| Pro forma Table Of Contents [TOC] for 'dialectical meta-model' of Marx's CPE Entire, to step s CPE = 5   |
| $\sum_{h=1}^{CPE} = \left( \sum_{h=1}^{2} \left( \frac{\mathcal{K}_{apitab}}{\mathcal{CPE}} \right)^{2^{5}} \right)^{2^{5}}$ $\sum_{CPE}^{2} = 5 \left( \sum_{h=1}^{2} \left( \frac{\mathcal{K}_{apitab}}{\mathcal{CPE}} \right)^{2^{5}} \right)^{2^{5}}$ $CPE = Marxian "Critique of Political Economy".$   |
| Treatise $1 - \cdots \underline{Of} \ll \underline{Kapitab} - in-General''' [ \longleftrightarrow_{\mathbf{K}}^{2} = \frac{2}{\mathbf{K}} \underbrace{E}_{1}^{2}].$  |
| Treatise 2 – " <u>Of Landed Property</u> " [←∋ 🍕 = L <sub>CPE</sub> ←∋¶ <sub>2</sub> ].  |
| Treatise 3 – " <u>Of Wage-Labor</u> " [↔ 💱 w = Ŵ E→ 및 ].   |
| <b>Treatise 4</b> – " <u>Of The [Nation-]State</u> " [ $\leftrightarrow$ $\circ$ $s$ = $\circ$ $s$ $\mapsto$ $t_4$ ].<br>PART I. THE NATION-STATE IN GENERAL<br>PART II. THE NATION-STATE IN RELATION TO KAPITAL [ $\leftrightarrow$ $\circ$ $s$ $t_5$ ]<br>PART III. THE NATION-STATE IN RELATION TO LANDED PROPERTY [ $\leftrightarrow$ $\circ$ $t_5$ ]<br>PART III. THE NATION-STATE IN RELATION TO LANDED PROPERTY [ $\leftrightarrow$ $\circ$ $t_5$ ]   |
| PART IV. THE NATION-STATE IN RELATION TO WAGE-LABOR $\begin{bmatrix} \leftarrow 3 \\ \leftarrow 3 \\ \end{bmatrix}_{SW}^{CWE} \begin{bmatrix} \leftarrow 3 \\ \hline 3 \\ \end{bmatrix}_{7}^{CWE}$   |
| Treatise 5 – <u>Of Foreign Inter-Nation-State</u> Trade [+++ 20] = 20 [++++++++]   |
| PART I. FOREIGN TRADE IN GENERAL   |
| PART II. FOREIGN TRADE IN RELATION TO KAPITAL $\begin{bmatrix} \leftarrow 3 & \downarrow \\ \downarrow \end{bmatrix}_{FK} \begin{bmatrix} \leftarrow 3 & \downarrow \\ \downarrow \end{bmatrix}_{FK} \begin{bmatrix} \leftarrow 3 & \downarrow \\ \downarrow \end{bmatrix}_{FK}$   |
| PART III. FOREIGN TRADE IN RELATION TO LANDED PROPERTY $\begin{bmatrix} \leftarrow \rightarrow \\ \downarrow \downarrow$   |
| PART IV. FOREIGN TRADE IN RELATION TO WAGE-LABOR $\begin{bmatrix} \leftarrow \rightarrow & \uparrow & \leftarrow \rightarrow & \downarrow &$   |
| PART V. FOREIGN TRADE IN RELATION TO THE STATE [ C-> 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10   |
| PART VI. RELATION OF FOREIGH TRADE TO THE STATE/KAPITAL RELATIONSHIP $\begin{bmatrix} \leftarrow \rightarrow & 2 \\ \leftarrow \rightarrow & 5 \\ \leftarrow \rightarrow & 5 \\ \leftarrow & 5 \\$ |
|  |
| PART VIII. RELATION OF FOREIGH TRADE TO THE STATE/WAGE-LABOR RELATIONSHIP $\begin{bmatrix} \leftarrow \rightarrow & \downarrow &$  |

| <b><u>Present</u>ational, Systematic, ≈<u>Syn</u>chronic <u>Dialectic</u> of Marx's<br/>"<u>Critique of <b>Political Economy</b>" [CPE] Overall</u> [page 2 of 2].</b>   |
|--|
| Pro forma Table Of Contents [TOC] for 'dialectical meta-model' of Marx's CPE Entire, to step $s_{CPE} = 5 - 5$   |
| $2 + \int_{\mathbf{S}_{CPE}}^{CPE} = 5 \left( \int_{\mathbf{M}}^{2} \left( \frac{\mathcal{K}_{apitab}}{\mathcal{M}_{CPE}} \right)^{2^{5}} \right)^{2^{5}} = taxonomy \ level \ 2 \ for \ (\underline{gen}os) \ \underline{h}umanity;$<br>$h \ CPE = Marxian \ (\underline{Critique of Political Economy})^{2^{5}}.$  |
| Treatise 6 – <u>Of The World Market</u> [↔ 🎇 = 🅅 CPE [→ –]   |
| PART I. THE WORLD MARKET IN GENERAL<br>PART II. THE WORLD MARKET IN RELATION TO KAPITAL $\begin{bmatrix} \leftarrow \rightarrow & 2 \\ \leftarrow \rightarrow & 2$ |
|  |
|  |
|  |
| PART VI. WORLD MARKET RELATION TO THE NATION-STATE/KAPITAL RELATIONSHIP $\begin{bmatrix} \longleftrightarrow & & & & & \\ & & & & & & \\ & & & & & &$  |
| PART VII. WORLD MARKET RELATION TO THE STATE/LANDED PROPERTY RELATION $\begin{bmatrix} \leftarrow \rightarrow & \swarrow & \leftarrow \rightarrow & \downarrow \\ MSL & \leftarrow \rightarrow & \downarrow \\ MSL & \leftarrow \\ MSL & \vdash $   |
|  |
| PART IX. THE WORLD MARKET IN RELATION TO FOREIGN TRADE [ + 2 ] + 2 ]   |
| PART X. THE WORLD MARKET RELATION TO THE FOREIGN TRADE/KAPITAL RELATION $\begin{bmatrix} \longleftrightarrow & & & & & \\ & & & & & & \\ & & & & & &$  |
| PART XI. WORLD MARKET RELATION TO FOREIGN TRADE/LANDED PROPERTY RELATION [ C 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   |
| PART XII. WORLD MARKET RELATION TO THE FOREIGN TRADE/WAGE-LABOR RELATION $\begin{bmatrix} \leftarrow \rightarrow & \uparrow & \downarrow & \downarrow$  |
| PART XIII. WORLD MARKET RELATION TO THE FOREIGN TRADE/STATE RELATION $\begin{bmatrix} \leftarrow 3 & \downarrow \\ \downarrow$   |
| PART XIV. WORLD MARKET RELATION TO THE FOREIGN TRADE/STATE/KAPITAL RELATION  |
|  |
|  |
| <b>Treatise 7</b> – <u>Of World Crises, World Wars, &amp; World Revolution</u> $\begin{bmatrix} \mathbf{C} \rightarrow \mathbf{I} \\ \mathbf{R} \end{bmatrix} \begin{bmatrix} \mathbf{C} \rightarrow \mathbf{I} \\ \mathbf{I}_{32} \end{bmatrix}$ .  |

More apt still might be to solve the final term of a first further 'self-iteration' as  $\mathbf{q}_{32}$  (-]  $\mathbf{q}_{C} \equiv |\mathbf{g}_{MM}$ , with  $\mathbf{q}_{C} \equiv \underline{C}$  noting the category of '*World* <u>Crises</u>', in whose, **7**th, treatise the impact on and relation of the World <u>M</u>arket to each previously presented  $\mathbf{D} = CPPE$  category would also be addressed, and then to conduct yet a further 'self-iteration', ending in category  $\mathbf{q}_{64}$  (-]  $\mathbf{q}_{R} \equiv |\mathbf{q}_{CC}$ , with  $\mathbf{q}_{R} \equiv \underline{R}$  denoting the category of/treatise on '*World* <u>Revolution against</u> [from <u>within</u>] Capitalism'.

The unit<u>s</u> of the  $\mathbf{q}_{32}$  (-]  $\mathbf{q}_C \equiv | \mathbf{q}_{MM}$  category, and of its, **7**th, treatise, might then be the historical series of the timeperiod<u>s</u> of *interruption* in the World <u>M</u>arket that are called "world market <u>Crises</u>" and, later, "depression<u>s</u>" or "[great] recession<u>s</u>". That is, the focus of this **7**th treatise, (-)  $\mathbf{q}_C \equiv \mathbf{C}$  [-)  $\mathbf{q}_{32}$ , would be a detailed analysis of each of the world market cris<u>es</u>/*breakdowns* that had been manifested by the capitalist system up to the time of the drafting of this treatise. This, so as to uncover the detailed "dynamical law" of such cris<u>es</u>, and, with it, a theory explaining the phenomen<u>a</u> of capitalist cris<u>es in detail</u>. Such might include mathematical model<u>s</u> thereof, with some degree of predictive capability.

The <u>C</u>risis unit<u>s</u> would be the, albeit relatively short[er], historical interval<u>s</u>, intervening between each progressing stage of the world market, that world market exhibiting '<u>qualo-quant</u>itative' expansion, as well as substantial re-organization, after each such global crisis *breakdown/interruption*. Conversely, the historical interval <u>units</u>, interspersed among/between the <u>C</u>risis unit<u>s</u>, might be viewed as *interrupting* the progression of ever-worsening capitalist, world market cris<u>es</u>, and might thus serve as the better unit<u>s</u> of analysis for the World <u>M</u>arket treatise, treatise **6**, (—)  $\mathbf{q}_{M} \equiv \underline{\mathbf{M}}$  [—)  $\mathbf{q}_{16}$ .

The **8**th treatise, corresponding to the  $\mathbf{g}_{64}$  (-]  $\mathbf{g}_{R} \equiv | \mathbf{g}_{CC}$  category, might then be a detailed analysis of each of the attempted, but so far failed, anti-capitalist revolution<u>s</u>, manifested by the capitalist system up to the time of the drafting of this treatise, in order to learn the lesson<u>s</u> of their failure<u>s</u>, and to hone strategy and tactic<u>s</u> for the next attempt. It might do so, also, to uncover the detailed "dynamical law" of such anti-capital, anti-wage-labor, anti-alienation revolution<u>s</u>, and, with it, a theory explaining the phenomen<u>a</u> of anti-capitalist revolution *in detail*. This theory might perhaps even include mathematical model<u>s</u> of anti-capitalist revolution<u>s</u> of the past, with some degree of predictive capability for those of the expected future. This **8**th treatise would also analyze the impact of past <u>Crises</u> on, and their relation to, each previously presented  $\mathbf{D} = CPE$  category –

 $\underline{\mathbf{g}}_{CK} \oplus \underline{\mathbf{g}}_{CL} \oplus \underline{\mathbf{g}}_{CW} \oplus \underline{\mathbf{g}}_{CS} \oplus \underline{\mathbf{g}}_{CSK} \oplus \underline{\mathbf{g}}_{CSL} \oplus \underline{\mathbf{g}}_{CSW} \oplus \underline{\mathbf{g}}_{CF} \oplus \underline{\mathbf{g}}_{CFK} \oplus \underline{\mathbf{g}}_{CFL} \oplus \underline{\mathbf{g}}_{CFW} \oplus \underline{\mathbf{g}}_{CFS} \oplus \underline{\mathbf{g}}_{CFSL} \oplus \underline{\mathbf{g}}_{CFSL} \oplus \underline{\mathbf{g}}_{CFSW} \oplus \underline{\mathbf$ 

It might be argued that this **8**th treatise, corresponding to category  $\underline{\mathbf{a}}_{R} \equiv -|\underline{\mathbf{a}}_{CC}$ , perhaps with the partial exceptions of, e.g., the Paris Commune of 1871, and aspects of the pan-European revolutionary uprisings of 1848, should address those phenomena that are **not** part of the **present**/modern capitalist system, per se, at all, but go to a mathematical-symbolic, and an 'ideo-ontological', 'pre-construction', or prediction-hypothesis, regarding that system's future self-induced transition to out of and to beyond itself. This would mean a focus on expected *future* phenomena of *successful* revolution within the world capitalist system, *expected* to create a transition to its global higher successor system, which we name 'political-<u>economic democracy</u>'. If that argument were to be accepted, then the category  $\underline{\mathbf{q}}_{R} \equiv -|\underline{\mathbf{q}}_{CC}$  treatise would constitute a kind of coda to the preceding seven treatises, addressing speculations and hypotheses, guided by the fruits of the systematic presentation of the present/modern capitalist system, in those seven treatises, about the future self-induced demise of the capitalist system, and about the *future* transition to its historical successor system, 'political-economic democracy'. The latter approach might also entail a further such *coda*, corresponding to category  $\underline{\mathbf{g}}_{128}$  (—]  $\underline{\mathbf{g}}_{D} \equiv | \underline{\mathbf{g}}_{RR}$ , with  $\underline{\mathbf{g}}_{D} \equiv \underline{\mathbf{D}}$ denoting the category of/treatise on real, true, i.e., 'Political-ECONOMIC', Democracy', as the higher successor system to the capitalist system. Imagine that Marx had lived to progress far deeper into the writing of his critique of capitalistsystem 'political-economics' entire, and had hit upon, and adopted, this *nine* treatises approach -- or this 7 treatises plus 2 *codas* approach -- to completing his exposition/explanation of his  $\mathbf{D} = CPE$  **Domain**. Then he might have, in this final coda, at last arrived to the context within which he could set forth -- systematically, not fragmentarily -- his scientific expectations as to the "social forces of production", "social relations of production", and social, political, legal, esthetic, and scientific superstructures of his envisioned successor to capitalism, that we call 'political-economic democracy'.

These speculations aside, it may be useful to scrutinize a key passage of the <u>*Grundrisse*</u>, wherein Marx sketches out his view of the interconnection between the phenomenon of capitalist crisis and the predicted revolutionary transition to out of and beyond the capitalist system, perhaps prefiguring the more extensive account that might have formed key content of the  $\underline{q}_{16}$  (-]  $\underline{q}_{M}$  treatise, of a possible  $\underline{q}_{22}$  (-]  $\underline{q}_{C}$  treatise, and/or of a possible  $\underline{q}_{64}$  (-]  $\underline{q}_{R}$  treatise --

"...*the development of the productive forces* brought about by the historical development of *capital itself*, when it reaches a certain stage, *suspends* [""«*aufhebens*,"" -- K.S.] the *self-realization* of *capital itself*, instead of *positing* it."

"Beyond a certain point, the development of the powers of production becomes a <u>barrier</u> for capital [i.e., a barrier for capital's essence, namely <u>profitability</u> -- K.S.]; hence the capital relation a <u>barrier</u> for the development of the productive powers of labor."

"When it has reached this point, *capital*, i.e. *wage-labor*, enters into the same relation towards the development of *social wealth* and of *the forces of production* as the *guild system*, *serfdom*, *slavery*, and is stripped off as a *fetter*."

*"The last <u>form of servitude</u> assumed by human activity*, that of *wage labor* on one side, *capital* on the other, is thereby cast off like a skin, and this casting-off is itself the result of *the mode of production corresponding to capital*; the material and mental conditions of the [K.S. -- *«aufheben»-]negation* of *wage labor* and of *capital*, themselves already the [*«aufheben»-]negation* of *wage labor* of *the result of its* [i.e., of capital's: K.S.: <u>self-re-</u>] production process."

"The growing incompatibility between the productive development of society and its hitherto existing relations of production [i.e., the capital-relation-of-production -- K.S.] expresses itself in bitter contradictions, crises, spasms."

"The *violent destruction of capital* [thereby reducing the profit-rate ratios' capital-value investment *denominator*, *thus raising the rate of profit ratio as a whole* toward a level attractive for renewed investment and continued capitalist operation, even despite a relatively reduced mass of profit in the *numerator* -- K.S.], *not* by relations *external* to it, but rather *as a condition of its self-preservation* [via restoration/raising to a profit-rate sufficiently attractive for renewed investment and, thus, continued capitalist operation -- K.S.], is the most striking form in which *advice is given it to be gone* and to give room to *a higher state of social production* [i.e., Marx sees recurring, worsening capitalist cris<u>es</u> – depression<u>s</u>, "great recession<u>s</u>", etc. -- as the eventual driver of the revolutionary transition to what we call 'Political-<u>ECONOMIC DEMOCRACY</u>: K.S.]..."

"Hence the <u>highest</u> development of <u>productive power</u> together with the <u>greatest</u> expansion of existing <u>wealth</u> will coincide with <u>depreciation</u> of <u>capital</u> [<u>suddenly</u>, due to depression-crisis-induced capital 'de-value-ation', after a prolonged period of pre-crisis, partially-hidden, <u>gradual</u> technological obsolescence depreciation, or productive-force-growth-induced depreciation, of fixed-capital plant and equipment, in the period prior to the open, overt outbreak of that depression-crisis -- K.S.], <u>degradation</u> of the <u>labor</u>er, and <u>a most straitened exhaustion of his vital</u> <u>powers</u>."

"These <u>contradictions</u> lead to <u>explosions</u>, <u>cataclysms</u>, <u>crises</u>, in which, by <u>momentaneous</u> <u>suspension</u> of <u>all labor</u> and <u>annihilation</u> of a great portion of <u>capital</u> the latter is <u>violently reduced</u> [e.g., by crisis-induced reduction of the [fixed] capital-value investment <u>denominator</u> of the capitalist return on investment ratio, <u>thereby elevating that profit-rate ratio</u> as a whole, even despite a reduced profits value <u>numerator</u>, e.g., a <u>net profits numerator</u> also typically reduced, by crisis-enforced, 'netted-out' write-offs of 'techno-depreciated', technologically-obsolescent fixed capital plant and equipment -- K.S.] to the point where it can go on fully employing its productive powers without committing suicide."

"Yet these *regularly <u>recurring</u> catastrophes* lead to their *repetition on a <u>higher scale</u>* and finally to *its violent* overthrow." [*Ibid.*, pp. **749-750**; **bold**, shadowed, *italic*, <u>underscored</u>, *and colored emphases added* by K.S.].

When Marx and Engels participated, personally and signally, in the European continent-wide revolutionary uprisings of **1848**, Europe was ruled largely by *violently-repressive* monarchical police states. Marx and Engels thus saw no way forward for humanity's *evolution* other than by way of *violent revolution*. But the progress of capitalist representative democracy during Marx's lifetime led him later to revise his views regarding the necessity of *violent* revolution for the supercession of capitalism --

"Someday the worker must seize political power in order to build up the new organization of labor; he must overthrow the old politics which sustain the old institutions, if he is not to lose Heaven on Earth, like the old Christians who neglected and despised politics. But we have not asserted that the ways to achieve that goal are everywhere the same."

"You know that the institutions, mores, and traditions of various countries must be taken into consideration, and we do not deny that there are countries -- such as America, England, and if I were more familiar with your institutions, I would perhaps also add Holland -- where the workers can attain their goal by peaceful means." [Marx, 8 Sep. 1872, Amsterdam, Address after the Fifth Congress of the International Working Men's Association ["First International"]].

The key to the "institutions, mores, and traditions" that make possible a relatively <u>peaceful</u> transition to what w<u>e</u> name '*political-<u>economic democracy</u>*' is, according to Marx, the advancement of capitalist representative democracy to the point of universal suffrage -- to the right of the "propertyless" working-class majority to vote in national & local election<u>s</u>: "...the first step in the revolution by the working class, is to raise the proletariat to the position of ruling class, to win the battle of democracy." [Marx and Engels, **1848**, *The Communist Manifesto*]; "But universal suffrage is the equivalent of political power for the working class of England, where the proletariat forms the large majority of the population, where, in a long though underground civil war, it has gained a clear consciousness of its position as a class, and where even the rural districts know no longer any peasants, but only landlords, industrial capitalists (farmers) and hired labourers. The carrying of universal suffrage in England would therefore be a far more socialistic measure than anything which has been honoured with that name on the continent. Its inevitable result, here, is *political supremacy of the working class.*" [Marx, **1852**, commenting on the Chartist movement].

Even without any real right to vote for the election of *competing* candidates for the offices of government, the working majority class of the "Soviet" Union, and of much of Eastern Europe, were able to end the Stalinist '*proto*-state-capitalist' dictatorships there, *circa* **1989**, initially with relatively miniscule violence. A background of *years* of unseen, secret, silent social consensus-building, e.g., via «*samizdat*» clandestine self-publishing and circulation of manuscripts, helped to prepare the ground for this largely *non*-violent transition. Violence erupted only when the -- Rockefeller faction "owned" -- University of Chicago "social shock therapy" social torture specialists arrived, and, seeking a replay of the Weimar Republic, imposed hyperinflation, plus even deeper poverty, upon, e.g., the Russian people, and also empowered the Russian mafia, and the Russian "kleptocracy", as a new, hybrid, state-capitalist/private-capitalist ruling class.

Perhaps the, *circa* **1989**, initially non-violent overthrow of Stalinist, police-state national <u>proto</u>-state-capitalism<u>s</u>, in Russia, and in Eastern Europe at large, can provide a partial model for a future, possibly and hopefully non-violent overthrow of the increasingly <u>state</u>-capitalist, increasingly dictatorial, increasingly "people are pollution"-ideologies-propagating, hence increasingly 'humanocidal' national-capitalist ruling classes of the U.S., of the U.K., of France, and of Germany, as well as of China, etc., and for a many-nation-states transition, if not, initially, a fully global transition, to 'Political-Economic <u>Democracy</u>', e.g., attained via the constitutional and legislative adoption of 'Generalized Equity'.\*

### Finding Your Finishing Category for Your Systematic <u>Presentation</u> of that <u>Present</u> of Your <u>Domain</u>.

If you continue to  $[\underline{re}]$  iterate' the **s**tep-wise, 'self-reflexive procedure',  $[\underline{self}]$  critique-procedure, and solution-procedure, described above, you will eventually reach a **s**tep for which you will **not** be able to "solve for", or define, some, or even all, of the new 'category-symbols' <u>gene</u>rated by the  $[\underline{self}]$  critique(s) of that **s**tep.

This may be because the collective, human-<u>phen</u>omic, "'meme<u>s</u>-pool" insight<u>s</u> upon which you draw for such solutionrecognition have **not yet** progressed to the degree necessary to discern the <u>Domain</u>-ontology signed by these 'categorysymbol<u>s</u>', even though that ontology is actually <u>present</u> in the <u>present</u> that your are <u>present</u>ing. Or, your inability to solve-for a given 'category-symbol' may be because nothing corresponding to that symbol is [fully] extant in that <u>present</u>. In the latter event, it is time to identify the final solvable, definable 'category-symbol' of your categorial progression <u>presentation</u>, & to conclude your <u>presentation</u> with your statement of your solution/definition for that 'category-symbol'.

However, your inability to solve-for/define a given 'category-symbol' could be because the solution( $\underline{s}$ ) to that 'category-symbol', or to those 'category-symbols', reside <u>outside</u> of the <u>Domain</u> that you are <u>present</u>ing. This may be the case in the <u>weaker</u> sense of residing <u>outside</u> the <u>present</u> state of that <u>Domain</u>, but not outside some or all of that <u>Domain</u>'s future-<u>presents</u> that are expected by you. Or, it may be the case in the <u>stronger</u> sense that the solution( $\underline{s}$ )/definition(s) to that 'category-symbol', or to those 'category-symbols', transcend that <u>Domain</u> altogether, and, e.g., inaugurate a new, higher ontological <u>Domain</u>.

In the case of o<u>ur</u> initial example, o<u>ur</u> solution/definition for 'category-symbol'  $\mathbf{Q}_{KK} \equiv | \mathbf{Q}_{E}$ , connoting the <u>self</u>-critique of "<u>K</u>apital" -- of "the capital-relation" [Marx] as the dominating "social relation of production" [Marx] of modern society -- places it outside of the '**D** = capitalist circulation value-form<u>s</u>' <u>**D**omain</u> altogether; and as outside of it in the <u>stronger</u> sense, as transcending the form of society centered upon capital, i.e., upon "the capital-relation". Therefore, the finishing category of that **D**'s categorial progression is <u>**Q**KK</u> or <u>**Q**E.</u>

<sup>\*[</sup>The 'dialectogram' below, together with its commentary, can serve as a brief introduction to what we mean by the term 'Political-ECONOMIC DEMOCRACY'. For more information regarding F.<u>E.D</u>.'s drafts of its proposed constitutional amendments and supporting legislation for 'Political-Economic Democracy', via a 'Generalized Equity social relation of [societal self-re-]production', and via an 'Equitist Reform/Revolution', see the www.dialectics.info, Applications page(+)].

# <u>The Dialectic of Social Equity.</u>



*Commentary on the 'Dialectogram' above*. The 'dialectogram' above highlights the historical and systematic dialectic of three newly-recognized human rights, which are also newly-recognized, all-citizens property rights, within the F.E.D. 'Generalized Equity' proposal for a 'Political-Economic Democracy' successor-system to the capitalist system, which is *neither* one of global[*ist*], state-capitalist nation-state systems *nor* an anarchist-localist system. The first proposed new constitutional social equity <u>species</u>, named 'Citizen Externality Equity' in the 'dialectogram' above, is a <u>social property</u> right, an all-citizens property right, in the form of a *collective property right*, exercised via voting. The second *species* of social equity, named 'Citizen Birthright Equity' above, as a supplementary opposite to the first, is by way of social property, converted for all citizens into personal property, but under moral hazard mitigating constraints. The third species of social equity, named 'Citizen Stewardship Equity' above, represents means of production social property that is designed by and rented back to each qualifying citizen collective, and whose construction is funded, initially, via a 'Social Bank', in competition with other 'Social Banks', forming -- using those means of production -- competing socialized producers' cooperatives, each individual member of which holds what Marx called a [human] right of *"individual property"* in their ownership of their individual membership in that cooperative, and in the benefits accruing thereby. We see the urgency of the transition to this 'Equitist' successor system to the capitalist system as follows. The next step in the evolution of democracy is, we hold, that from present, dying 'political-only democracy' to 'Political-Economic Democracy'. The urgent need for this next step arises in the context of a degree of ruling-class concentration of capital wealth ownership that impends a "buying out" of 'political-only' democratic institutions, thus circumventing the crucial "checks-and-balances" and "countervailing powers" among the 3 branches of "political-only" governance. If we fail at this next step, then, soon, nothing of democracy can survive, not even 'political-only democracy'. This is because the owners of the core, most-concentrated capital wealth – fixed capital plant & equipment, & the loan capital that finances fixed capital fabrication -- feel that their system, capitalism, has betrayed them; threatens to dethrone them, due to its inherent incentives to accelerated growth of what Marx called "the social-[re-]productive forces". The very concentration of fixed capital ownership in their hands makes them the most vulnerable to the 'technodepreciation' of fixed capital that productive force growth induces. This manifests as declining fixed capital ROI profitability, as, recurrently, the still-unamortized historical/original value of newly-obsoleted fixed capital charges-off/subtracts from current-period gross profits. E.g., every engineer, working in 's garage on fusion, cold or hot, threatens to collapse the capital-value of the oil industry, and thereby to overthrow the core ruling class of 'descendence-phase capitalism'.

## F.<u>E.D</u>. Endorses Equitism -- The 'Equitist Reform/Social Revolution'.

"Citizen Externality Equity". This new Human Right empowers citizens, within their Rule of Law, to protect themselves & their families from the increasingly deadly pollution "Externalities", & other "External Costs", produced, in ever-greater abundance, by 'ultra-deep-pocketed', oligopolistic corporations, which prostitute the bureaucratic "external" regulatory agencies charged with restricting these "Externalitys", & whose 'ultra-deep-pocketed', oligopolistic corporations, which prostitute the bureaucratic "external" regulatory agencies charged with restricting these "Externalitys", & whose 'ultra-deep-pockets' increasingly preclude civil-society-based, citizen widdle/working-class meager-wages/-salar(es-financed groups from prevailing, in civil litigation, contra these poisoners, especially given the increasing prostitution of the judiciary by these oligopolist. This new Right establishes a new regime, of "grass roots regulation". This new Right arises, per the principles of "Equitable jurisprudence", because, in suffering the "Externality" damages forced upon them by these corporate entities, citizens, in effect, buy, "in kind", a special class of "Equity" ownership in those entities, the Right to Elect "Public Directors" in these "special Equities" gives such citizen, residing in a locality impacted by an operating unit of these entities, the Right to Elect "Public Directors", to convene as second boards of directors, or appointed local management committees, the annual operating plans of all such entities, buy and the capital-equity-Elected boards of directors, or appointed local management committees, the Right to losity of these units. If these negotiations deadlock, a special, citizen elected, citizen recallable "Tribunal for Externality Equity", will decide the dispute, with the losing side paying the costs of the litigation. Base-elected, base-recalable "Associations of Public Directors", a the local operating units' Public Directors" and level management formunas society's physical plant, providing "

"Citizen Birthright Equity". This new Constitutional Right provides for an absolutely-portable & comprehensive social safety net, in the form of a "social trust fund", attached to each newly-born citizen, from birth, with plebiscite-decided/legislated use-limitationg, designed to mitigate potential ""moral hazardg" of such provision.

"Citizen Stewardship Equity". This new Human Right enables citizens to mount "collective entrepreneurship", via a new kind of "socialized venture capital", whereby self-organized citizen candidate-producers' cooperatives submit their proposed business plans to [competing] local "social banks" -- also organized as "Citizen Stewardship" producers' co-opg -- which, if their business plans meet the legislated standards, & if one or more of the competing "social banks" is willing to underwrite them, receive the means of production called for in their business plans via that "social bank", means which the new co-op holds in <u>Stewardship</u>, not in local ownership, & for which it pays a monthy "social rent", that helps fund, e.g., the "Citizen Birthright Equity" trust funds. These new co-ops then launch into competition with other such co-ops, & with remaining capitalist firms that, e.g., produce in the same service/product category, and also compete for additional producers/Citizen Stewards/workers.

The full, final approximation for that **D**, per o<u>ur</u> solution, is  $\underline{D}_3 = (\underline{D} \oplus \underline{\mathbf{q}}_M \oplus \underline{\mathbf{q}}_{MC} \oplus \underline{\mathbf{q}}_{KC} \oplus \underline{\mathbf{q}}_{KM} \oplus \underline{\mathbf{q}}_{KMC} \oplus$ thus, via  $( \bullet)^* \equiv (\underline{\mathbf{q}}_{\mathbf{n}})^*$ . This latter symbol actually requires using axiom<u>s</u>-system<u>s</u> category  $\underline{\mathbf{Q}}_{\mathbf{n}}$ , built upon the "<u>Whole</u>" *numbers* " number-space,  $W \equiv \{0, 1, 2, 3, ...\}$ , in the <u>dialectical categorial progression/axioms</u>-systems-progression denoted by  $\underline{W}_{2^{S^{\uparrow}}}$ . This, instead of using, as usual,  $\underline{NQ}$ , built upon the less-advanced, less 'thought-concrete', less 'thought-complex' "<u>Natural numbers</u>" number-space,  $\mathbb{N} \equiv \{1, 2, 3, ...\}$ , in the systematic <u>dialectic</u> of the axiom<u>s</u>system<u>s</u>-categor<u>ies</u> categorial progression of the [<u>present</u>ly-]"standard" arithmetic<u>s</u>, denoted by  $\mathbb{N}^{2^{s_{\mathcal{T}}}}$ . Note that both <u>dialectics</u> are expressed in the "algebraic" language of the  $\mathbf{NQ}$  "meta-numbers" system of arithmetic, which is part of  $N_{-}^{2^{s_{p}}}$  -- i.e., is the second dialectical axiom<u>s</u>-system<u>s</u> category in that <u>dyad</u>ic categorial/axiom<u>s</u>-system<u>s</u> progression. The 'dialectogram' exhibited on the next page illustrates the interconnection between systematic dialectic and historical dialectic, for the *specific* example that we have pursued in this sub-section. That 'dialectogram' juxtaposes an image of the, multi-epochal, [psycho] historical dialectic of 'the [human-] social relations of [human-societal self-expanding self-re-] production ' [cf. Marx], spread out across its depiction of left-to-right, past-to-present history, with an image of the intermediate level of the [table-of-]contents of Marx's *asynchronic*, systematic-dialectical presentation of the [broadly] present capitalist system, in his treatise «Das Kapital» -- the level of our example, immediately above. It thereby 'co-depicts', on its RHS, the systematic dialectic of our present example and/together-with, on its LHS, the diachronic, historical dialectic of the social *relations of production*. The latter encompasses more social relations epochs of human history than just the latest epoch, that of "the capital-relation", which is the focus of our present example, and/as of Marx's «Das Kapital» table of contents. The *dia*chronic, *historical* dialectic depicted encompasses a starting model-epoch of the Appropriation, in "raw" form, of 'exo-human' Nature's products, e.g., via "hunting and gathering", foraging and scavenging. This is followed by a modelepoch adding direct production, circulation/diffusion, and consumption of no-longer "raw" -- of at least somewhat "refined", human-labor-improved -- "use-values" ["Goods/Gifts"]. This is followed by a model-epoch adding 'stillmoneyless' Commodity *barter*, followed by a model-epoch adding Monies and the monies-mediated ciRculations of commodities. This is followed by a model-epoch of the "antediluvian" [Marx] forms of «Kapital» -- e.g., of usurers' capital, & "antediluvian" merchants' or mercantile capital, as well as ancient [and Southern U.S. modern] 'latifundial'/plantation slave-labor-based *agricultural productive capital*. The historical *past* part of this 'dialectogram' includes the modern predominance of wage-labor-based *industrial productive* «Kapital», only in its right-most, tallest 'qualo-fractal tower'.

This 'dialectogram' also incorporates a prediction-hypothesis expecting a <u>future</u> epoch rooted in a new,  $\mathbf{g}_{KK} \mid = \mathbf{g}_{S}$ , ""Social Property"'-centered "'[*human-]social relation of* [*human-societal self-re-]production*". Only 'self-hybrid' categor<u>ies</u> are depicted in this 'dialectogram'. 'Mere hybrid categories' are elided, via ellipsis dots.

Commentary on the 'Dialectogram' posted below. In the 'dialectogram' below, we depict the «arché» units, or «arché» «monads», together with the 'metan"-units' or *meta*<sup>**n**</sup>-«monads»' that *aufheben*-contain' them, to varying degrees, **n**. The degrees of containment are *implicitly* referenced by the *category-symbols*', both 'algebraic/'ideogramic' and 'geometric/pictogramic', that are the symbols directly represented in the 'dialectogram'. These 'meta-unit-izations' are depicted/'visuallymetaphorized' by way of depicting the 'pictogramic' symbols for earlier/lower categories as contained inside the 'pictogramic' symbols for later/higher categories. That is, the "enclosures" which 'pictively' represent categories, whether those enclosures be diamond-shaped, for historical dialectic, or 'circularoid', for systematic dialectic, are depicted with the 'category-enclosures' for one or more "layers" or levels of earlier/lower/lesser 'category-enclosures' "tre-entering" them -- nested inside them. The units or «monads» implicit in those later/higher 'category-enclosures' represent the 'self-hybrid', «aufheben» 'meta-unit-izations' or 'meta-«monad»izations' of [some of the] units/«monads» implicit in one or more 'qualo-fractal' scales of earlier/lower 'category-enclosures'. The 'circularoid category enclosures' depicting the systematic dialectic of Marx's «Das Kapital» contain the 'circularoid category enclosures' for category G [""Goody/Gifts" -- use-values improved/refined for human use, over and above their "raw" natural source "resources", by human labor] and for category A [Appropriations of Nature-produced "raw" objects directly, e.g., as predations, without any substantial refinement by human labor] which are given with dotted lines, because Marx does not treat them extensively in «Das Kapital», to the scale which would surface them in his table of contents, though they are implicitly presupposed throughout his present ation. It is also crucial to remember, in using this 'dialectogram', that the 'ideogramic' [and the 'pictogramic'] 'category-symbols' in it, e.g., **q**, **g**, and **q**, stand for "social relations of production" [Marx], as well as for the human subjects -- for the human persons -who "personify" [Marx]/recurrently re-create/enact/"reproduce" [Marx] those social relations [of [societal [re-]]production], i.e., who compete, who incessantly and daily remake/re-enact/""re-legislate"", "voting with their feet", these 'praxes 'of exchange and their "law of value". In Marx's 'praxis algebra', they look like C-M-C' and M-C-M'. They, thereby, incessantly reproduce the political-economic phenomena and processes described by the "laws" [Marx] of exchange-value exchange, phenomen<u>a</u> and processes that maintain the actuality of these categories, e.g., of <u>C</u> and <u>M</u>, <u>present</u>ly, in the sense of the <u>broad</u>, epochal <u>present</u> of the <u>present</u> capitalrelation-of-production-centered and -dominated epoch. These human persons, so constrained to so act, are thereby the "personifications" [Marx] of the corresponding "social relations of production" categories, again, e.g., C and M and K. These "relations" are thus also 'actional', "dynamical" -- they are not mere "static things", and not fully tangibly graspable, though they are human memes and meanings, collectively projected onto objects, artefacts, products of human labor, e.g., onto coins and paper money-bills, used in the practice of these "relations". Thus too, the 'pictively' elided 'category-symbol' **a**<sub>MC</sub> stands for a 'synthesis category' in the sense of a dynamical, 'process-synthesis' -- an 'actional' synthesis; a 'movemental synthesis' -- named the 'Monies-mediated circulations of Commodities', that is re-enacted every day, 'continuingly', by we, its personifications, in the *present* that we daily reproduce, thereby, each day, *making that present present-again* for another day.



It is the "law of the tendency of the rate of profit [on capital] to fall" that is the upshot and crux of this entire dialectic of/within the capitals-relation-of-production. The abstract *core*-essence of this law, which Marx set forth especially in the Grundrisse and in Capital, volume 3, is illuminating in this regard, but this unintended, typically-unconscious, "law", or self-constrained pattern, of human social praxis, when the "historical specificity" of that human praxis is 'the 'capitalpraxis', needs to be placed into the context of *the competition of capitals*, a level of concreteness, near to the "surface of society" [Marx], that Marx's writings on his critique of capitalist political economy never reached before his untimely death. The abstract *core*-essence of this law can be expressed via Marx's *value* "rate of profit" ratio, s'/(c + v), when " $\underline{v}$ ariable capital" [wages-cost]  $\mathbf{v}$ , hence "surplus-labor"-derived "['=net-] $\underline{s}$ urplus-value",  $\mathbf{s}$ , grows more slowly than "constant capital" c [reflecting depreciation costs of fixed capital as well as raw materials flow-through costs], because the "social forces of production" are growing, thus algebraically causing the ratio as a whole to decline in magnitude. More revealingly, this core ratio can be expressed, by multiplying numerator and denominator through by (1/v), as (s'/v)/((c/v) + 1), which makes explicit the dependence of the Marxian value "rate of profit" on Marx's "organic composition of capital", (c/v) -"*dead* labor costs (c) divided by *living* labor [wages] costs (v)" – when (c/v) grows faster than Marx's "*labor* [net]<u>exploitation rate</u>" value<u>s</u>-ratio, (s'/v). The latter ratio, "at" its asymptotic limit of "complete automation", v = 0, has an "infinity singularity", (s'/0)/((c/0) + 1), which might be, informally, construed as " $\infty/\infty$ ", and which, if its <u>value</u> <u>quantifiers</u>, via o<u>ur</u>  $_{\mathbf{Q}}\mu$  'arithmetic for <u>dialectics</u>', are 'metrologically re-<u>qualified</u>', becomes '**m**/**m** = **(** ', our "full zero" value. Profit-rate fall is the deep cause, per Marx, of Crises, which, in turn, potentiate the social-revolutionary transition beyond capitalism, to what we call 'political-economic democracy'. Beyond abstract-core 'algebraic causes', i.e., for more concrete, 'psychohistorical-material causes', the relevant "surface of society" ratio is an 'accountingperiod-ic' ROI or "Return On Investment", or "rate of [profit] Return On fixed capital Invested" ratio, of the form  $ROI_{\tau}$  =  $(\mathbf{p}_{\tau} + \Delta \mathbf{p}_{\tau} - \mathbf{d}_0(\tau) - \mathbf{d}_{\tau}(\mathbf{I}_0 + \Delta \mathbf{I}_{\tau}))/(\mathbf{I}_0 + \Delta \mathbf{I}_{\tau} - \mathbf{d}_0(\tau) - \mathbf{d}_{\tau}(\mathbf{I}_0 + \Delta \mathbf{I}_{\tau}))$ . For accounting period  $\tau$ ,  $\mathbf{p}_{\tau}$  is for monetary [partial-]net ['] profit, attributed to Investment  $I_0$ ,  $\Delta p'_{\tau}$  for the added profit attributed to the *new/replacement* Investment,  $\Delta I_{\tau}$ ,  $d_0(\tau)$  for the technological <u>obsolescence</u> <u>depreciation</u> [technodepreciation] write-off on <u>old/[partially-or-totally-]obsolescent</u> Investment(<u>s</u>),  $I_0$ , and  $d_{\tau}(I_0 + \Delta I_{\tau})$  for the "wear and tear" depreciation expense for the old,  $I_0$ , and the  $\Delta I_{\tau}$  new/replacement Investments. Unfortunately, this, within competitive conditions, and with the growth of social productivity/of the social-reproductive self-force, falling profit rate metric does not explicitly exhibit a category of its own at the level-of-discourse of those several 'meta-models' of Marx's "critique of political economy" that we have presented herein.

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In the 'dialectogramic' illustration above, note that the sequence of primary "social relations of production" exhibits, once again – albeit in a less '<u>phys</u>ical/tangible', more mental/'<u>meme</u>-etic' manner as their <u>historical</u> sequence advances -- the 'universal dialectical architectonic' of dialectical, «aufheben» 'chain-<u>containment</u>' [' $\square$ '], i.e., of '<u>meta</u>-genealogy' and «aufheben», dialectical, '<u>meta</u>-unit-ization'. The '<u>partial</u>-containment' relation-sign expression, '**X**  $\square$  **Y**', signifies that all units of **Y** contain units of **X**, but that not <u>all</u> units of **X** are contained in units of **Y** --

## <u>A</u> I⊑ <u>G</u> I⊑ <u>C</u> I⊑ <u>M</u> I⊑ <u>K</u> -- or --

Human Raw Appropriations of exo-human Nature's Products I Goods/Gifts I Barterable Commodities I Monies I Kapitals.

The illustration below describes Marx's view of the "<u>surface of society</u>" for 'capital-praxis'-centered societ<u>ies</u>, and their capitalists' profit-rate metric, in relation to the 'theorizable' <u>core</u> of such societ<u>ies</u>, and to their abstract profit-rate metric/- "law", via Marx's immanent critique of capitalist classical political economy's own labor value theory.



The diagram above depicts the "core" of the "sphere" of capitalist political economy, and its central "law" – *that growth of the social forces of production, beyond a certain level of productive force growth, as expressed in the expansion of the value of mechanized means of production/"fixed capital", causes the rate of profit on capital to fall. It so depicts in relation to the "surface of society" of capitalist society, and <u>its profit-rate metric, whose fluctuations</u> drive, and are driven by, the capitalist "business cycle". It does so by way of three concentric, mediating sub-sphere layers. The most abstract layer, closest to the "core" is named "the production<u>s</u>-process of capital<u>s</u>", also the title of volume I of Marx's <u>Capital</u>. Next closest to that "core" is the layer, more determinate/somewhat less abstract, that is named "the circulation<u>s</u>-process of capital<u>s</u>", also the title of volume II of Marx's <u>Capital</u>. Closest to "the surface of society" is the still-less-abstract/still-more-concrete/complex layer, that w<u>e</u> name "the process of <u>re</u>production of capital<u>s</u> as a whole", that name being our interpretation of Engels's title for volume III of Marx's <i>Capital* in relation to Marx's draft titles for volume III.

### Finding Your Ontological-Categorial *Prediction-Hypothesis* for the *<u>Future</u> of Your <u>D</u>omain.*

If the *present*ly-*un*solvable/'*un*definable' 'category-symbol(<u>s</u>)' intimate(s), to your mind, probable <u>future</u> ontology that you expect will arise in a *future-present* of your <u>Domain</u>, then, if you feel it to be appropriate, you may want to add a '''coda''' to your <u>presentation</u>, expressing your resulting prediction hypothesis, or prediction hypothes<u>es</u>, about one or more such *future-present*(<u>s</u>) of your <u>Domain</u>, **D**, that you expect.

Or, if your expected *future* solution/definition for a *present*ly-*un*solvable/*'un*definable category-symbol', to your mind, *transcends* that **D***omain*, you may want to characterize, in such a '''coda''', the new, higher **D***omain* which that *present*ly-*un*solvable/*'un*definable' 'category-symbol', per your hypothesis or hypothesis.

Marx remarked upon this phenomenon, of [approximately-]*syn*chronic, *systematic* <u>dialectic</u> -- of the 'embeddedness' of such systematic,  $\approx$ *syn*chronic <u>dialectic</u>, in 'extendedly' *dia*chronic or *historical* <u>dialectic</u> -- in the *Grundrisse*.

There, he described how a[n] [approximately-]<u>syn</u>chronic, <u>systematic</u>-dialectical **present**ation of the human-social **present** can point <u>back</u>, toward a <u>**past**</u> historical human-social formation, and toward a <u>**past**</u>-predominating human-social relation of production, or even toward a ' $\approx$ <u>syn</u>chronic, <u>systematic</u>-dialectical <u>**present**</u> of that <u>**past**</u> formation/relation -- i.e., can *point <u>back</u>*, toward its historical <u>**predecessor**</u> human-social **<u><b>Domain**</u> -- from its <u>**present**</u>, historical <u>**successor**</u> **<u><b>Domain**</u>.

He also described, there, how, likewise, a[n] [approximately-]<u>syn</u>chronic, systematic-<u>dialectical presentation</u> of an historically <u>present</u>, [virtually-]<u>syn</u>chronic human-social-relations <u>Domain</u> can, <u>cognitively</u>, "spill over", i.e., into <u>extended</u>, impended '<u>dia</u>chronicity'. It can supply an <u>intimation</u> of, e.g., the starting category for a '<u>future</u>-≈<u>syn</u>chronic, <u>systematic-dialectical</u> <u>present-ation</u>' of a possible or likely <u>future-present</u>. That '<u>present-ation</u>' might be for an historical <u>successor</u> human-social-relation<u>s</u>-<u>of</u>-<u>production</u> <u>Domain</u> to that <u>present</u> '[human-]<u>social-relations</u>-of-[human-societal-self-re-]<u>production</u>' <u>Domain</u>.

Marx wrote about this phenomenon, in the Grundrisse, as follows --

"...much more important for us is that our <u>method</u> indicates the points where *historical* investigation must enter in, or where bourgeois economy as a merely *historical* form of the production process *points beyond itself to <u>earlier</u> historical* modes of production. In order to develop the laws of bourgeois economy, therefore, it is <u>not</u> necessary to write the *real history of the relations of production*. But the correct observation and deduction of these laws, *as having themselves become in history*, always leads to primary equations -- like the empirical numbers e.g. in natural science -- which *point towards a past* lying *behind* this system. These *indications* [*Andeutung*], together with a correct grasp of the <u>present</u>, then also offer the key to the understanding of the <u>past</u> -- a work in its own right which, it is hoped, we shall be able to undertake as well."

"This correct view likewise leads at the same time to points at which the *suspension* [i.e., the '*«aufheben»-ation' --* K.S.] of the *present* form of production relations gives signs of its *becoming -- foreshadowings of the <u>future</u>*."

"Just as, *on one side* the pre-bourgeois phases appear as *merely historical*, i.e. *suspended* [i.e., '*«aufheben»-ated' --* K.S.] presuppositions, so do the *contemporary* conditions of production likewise appear as engaged in *suspending themselves* [i.e., in *'«aufheben»-ating themselves*' -- K.S.] and hence in positing the *historic presuppositions* for *a <u>new</u> state of society." [K. Marx, <u>Grundrisse</u>: Foundations of the Critique of Political Economy, transl. by M. Nicolaus, Penguin [Middlesex: 1973], pp. 460-461, <u><i>emphases* added</u>].

What we are addressing here is a phenomenon of 'categorial prediction', or of 'algorithmically-heuristically, algebraically guided' promptings of '<u>future</u>-prediction hypotheses'. Viability for such a method of 'prediction-hypothesis formation' requires that we assume (1) that the 'erosic force' of 'categorial combinatorics', and of the '«monadic» combinatorics' which undergirds 'categorial combinatorics', will continue for at least one further 'self-iteration' of the final 'categorial consecuum-cumulum' which we solve as wholly representing the <u>present</u>, i.e., for at least one further 'self-involution' of the «arché» category-symbol, and (2) that at least some of the merely-hybrid and/or 'self-hybrid' algebraic ontological category-symbols, arising in that consecutive next 'self-iteration', will represent, algebraically -- i.e., will be validly solvable by us -- as categories with new ontological content, rather than as 'empty categories'. Of course, we also have to suppose that we have the capability to solve/define algebraic-<u>un</u>known category-symbols aptly symbolizing <u>future</u> realit<u>ies</u>, that reside beyond our entire <u>past-to-present</u> experience. In o<u>ur</u> experience, achieving such capability can often be a "tall order". In the <u>NQ</u> dialectical method, such predictions are **not** highly-detailed, nor are they even <u>quant</u>itative predictions; new-category, new <u>kind-of-being</u> predictions; ontological predictions.

<u>Triadic Versions of The</u> <u>Q</u> <u>Method as Applied for SYSTEMATIC Dialectic</u>. The version of o<u>ur</u> method set forth in detail in this section is called, by u<u>s</u>, '<u>triadic</u>' because it extends, categorially, from the starting category's symbol, by raising that starting 'category-symbol' to escalating, consecutive whole number power<u>s</u> of "the <u>triad</u>"; of the number **3**. Herein, w<u>e</u> will mostly **not** describe o<u>ur</u> '<u>triadic</u> algorithmic-heuristic method' via the power<u>s</u> of **3** approach. W<u>e</u> sidestep that approach herein because it involves a higher-arithmetic operation\* that w<u>e</u> expect will be <u>un</u>familiar to many reader<u>s</u>.

Finding Your Starting Category for Your Systematic <u>Presentation</u> of a/the <u>Present</u> of a Given <u>D</u>omain. The '<u>qual</u>itative factorization' procedure, the *method of discovery* of a starting category for a given <u>D</u>omain, that w<u>e</u> presented, above, for the <u>dyadic</u> version of this method, is essentially the same for the <u>triadic</u> version.

**Expanding Your** <u>Presentation</u> of that <u>Present</u> of Your <u>Domain from Your Starting Category</u>. Once you have found your starting category for the <u>Domain</u> that you wish to <u>present</u>, and to <u>explain</u>, the next step in this triadic method version is to reflect upon that starting category in relation to its <u>Domain</u> as a whole. Indeed, the next step is to form, or, i.e., to "'embody'' that starting category in your own mind, and then to ''*reflect*'' that category *upon itself*, <u>twice</u>, that is, to mentally "cube" that starting category; to raise it to the power **3**. This <u>double</u> ''*reflecting*''' of your 'mind-embodied' category upon itself, as a <u>double self</u>-critique or '*immanent* re-critique' of the [<u>m</u>]adequacy of that first category to be a full, <u>explicit model of that <u>Domain</u> as a whole, is related to Hegel's concept of "the negation of the negation". Let us again denote the <u>gene</u>ric starting category by  $\mathbf{g}_A$ . If  $\mathbf{g}_A$  is, **not** an '''<u>abstract</u> negator''' [cf. Hegel], a '''nilpotent''' operator, that, once applied to  $\mathbf{g}_A$  itself, leaves only "abstract, content-less nothingness" in its place, but is, on the contrary [cf. Hegel], a '''<u>determinate</u> negator'''; a 'determination(<u>s</u>)-negator' of *itself*, that changes only *some* of the <u>speci</u>fic "determinate] negation operator for  $\mathbf{g}_A$  itself. Then  $\mathbf{g}_A \otimes \mathbf{g}_A \otimes \mathbf{g}_A^{-1} \approx \mathbf{g}_A^{-1}$  or of the [<u>self-</u>]*«aufheben*» of the [<u>self-</u>]*«aufheben*» of the [<u>self-</u>]*critique*' of  $\mathbf{g}_A$ . - in ideogram<u>s</u>,  $\mathbf{g}_A \otimes \mathbf{g}_A \otimes \mathbf{g}_A = \mathbf{v}_A(\mathbf{v}_A(\mathbf{v}_A))$  -- or of the 'immanent [<u>self-</u>]*critique* of the immanent [<u>self-</u>]*critique*' of  $\mathbf{g}_A$ .</u>

Thus note that, if we were to apply the interpretation of "the negation of the negation" that fits the '<u>dyad</u>ic method', to this '<u>triad</u>ic method', the <u>triad</u>ic would be seen as involving a "*negation* of the negation of the negation", or 'negation<sup>3</sup>.

Step **0** of the '<u>triad</u>ic method' is to identify that <u>qual</u>ifying starting category for the given <u>**D**</u>omain:  $\underline{\mathbf{q}}_{\mathbf{A}}$ . Step **1** is to "cube" the symbol denoting that starting category -- to enact "negation of the negation", of  $\underline{\mathbf{q}}_{\mathbf{A}}$ , by  $\underline{\mathbf{q}}_{\mathbf{A}}$ .

In  $\mathbf{g}_{A}^{3} = \mathbf{g}_{A} \otimes (\mathcal{g}_{A} \otimes \mathbf{g}_{A}) = \mathbf{g}_{A} \otimes (\mathcal{g}_{A} \oplus \mathbf{g}_{AA}) = \mathbf{g}_{A} \otimes (\mathcal{g}_{A} \oplus \mathbf{g}_{A})$ , the 'parenthesized' pair elicits, *first*, from out of the <u>implicit</u> content of that starting category,  $\mathbf{g}_{A}$ , a 'counter-example category',  $\mathbf{g}_{B}$ . In your mind, category  $\mathbf{g}_{B}$  should be one that instantiates, for you, the <u>in</u>adequacy of that first category,  $\mathbf{g}_{A}$ . It should do so by being of an <u>other</u>, an [often extreme] opposite preeminent <u>qual</u>ity, call it '**B**', opposite to the preeminent <u>qual</u>ity of the starting category,  $\mathbf{g}_{A}$ , i.e., to that of <u>A</u>. But  $\mathbf{g}_{B}$  should also represent a <u>qual</u>ity that still inheres within your <u>Domain</u>, **D**. That  $\mathbf{g}_{B}$  net result is the fruition of the "first [self-]negation" of  $\mathbf{g}_{A}$ . Your resulting "new" category,  $\mathbf{g}_{B}$ , should also be the consecutive <u>next</u> more complex category of your <u>Domain</u>. Computing the "second [self-]negation" by  $\mathbf{g}_{A}$  is the completion of your step 1 --  $\mathbf{g}_{A} \otimes (\mathcal{G}_{A} \oplus \mathbf{g}_{B}) = (\mathcal{G}_{A} \oplus \mathbf{g}_{A}) \oplus (\mathcal{G}_{A} \oplus \mathbf{g}_{B}) \oplus (\mathcal{G}_{A} \oplus \mathbf{g}_{A}) \oplus (\mathcal{G}_{A} \oplus \mathbf{g}$ 

In that <u>tri</u>adic "sum" or 'consecuum-cumulum' of 'category-symbol<u>s</u>', category  $\underline{\mathbf{g}}_{AB} \equiv \underline{\mathbf{g}}_{BA} \models \underline{\mathbf{g}}_{C}$  stands for *to-be-"fleshed-out"* combination(<u>s</u>), unification(<u>s</u>), reconciliation(<u>s</u>), hybridization(<u>s</u>), or '<u>syn</u>thesis categor<u>ies</u>', for category  $\underline{\mathbf{g}}_{B}$ with/vs. category  $\underline{\mathbf{g}}_{A}$ . The state of your <u>presentation</u> has now progressed from the  $\mathbf{1} (= \mathbf{3}^{\mathbf{0}})$  term of your step  $\mathbf{0}$ 's ' $\underline{\mathbf{D}} \approx \underline{\mathbf{g}}_{A}$ ', or ' $\underline{\mathbf{D}}_{0} = \underline{\mathbf{g}}_{A}$ ', to the  $\mathbf{3} (= \mathbf{3}^{\mathbf{1}})$  term<u>s</u> of your step  $\mathbf{1}$ 's ' $\underline{\mathbf{D}} \approx \underline{\mathbf{g}}_{A} \oplus \underline{\mathbf{g}}_{B} \oplus \underline{\mathbf{g}}_{C}$ ', or ' $\underline{\mathbf{D}}_{1} = \underline{\mathbf{g}}_{A} \oplus \underline{\mathbf{g}}_{B} \oplus \underline{\mathbf{g}}_{C}$ '.

<sup>\*[</sup>That operation, known to us as 'meta-exponentiation', is the 8th category in our dyadic systematic dialectic of the **D**omain of the arithmetical operations of the standard arithmetics, involving exponents raised, in their turn, to [meta-]exponents of their own.].

To take the next step in your <u>presentation</u> preparation, i.e., step **2** of your <u>presentation</u> rehearsal, <u>first</u> apply the ' $\otimes$ ' critique operation, using category  $\underline{\mathbf{g}}_{C}$ , the most advanced, most complex category of step **1**, to the full fruits of step **1** of your categorial progression exposition of <u>Domain</u> D so far, namely, to ()  $\underline{\mathbf{g}}_{A} \oplus \underline{\mathbf{g}}_{B} \oplus \underline{\mathbf{g}}_{C}$ (). I.e., apply  $\underline{\mathbf{g}}_{C}$  to categor<u>ies</u>  $\underline{\mathbf{g}}_{A}$ , and  $\underline{\mathbf{g}}_{B}$ , and to  $\underline{\mathbf{g}}_{C}$  itself. Then, "sum" [' $\oplus$ '] the results of those 'categorial multiplications' [' $\otimes$ '], as per what follows:  $\underline{\mathbf{g}}_{C} \otimes (\mathbf{Q}_{A} \oplus \underline{\mathbf{g}}_{B} \oplus \underline{\mathbf{g}}_{C} (\mathbf{Q}) = (\mathbf{Q}_{C} \otimes \underline{\mathbf{g}}_{A} (\mathbf{Q}) \oplus (\mathbf{Q}_{C} \otimes \underline{\mathbf{g}}_{B} (\mathbf{Q}) \oplus (\mathbf{Q}_{C} \otimes \underline{\mathbf{g}}_{C} (\mathbf{Q})) - \text{ which equals the "sum" ['<math>\oplus$ '] --

 $( \circ ( \circ \mathbf{g}_A \oplus \mathbf{g}_{CA} \circ ) \oplus ( \circ \mathbf{g}_B \oplus \mathbf{g}_{CB} \circ ) \oplus ( \circ \mathbf{g}_C \oplus \mathbf{g}_{CC} \circ ) \circ ) = ( \circ \mathbf{g}_A \oplus \mathbf{g}_B \oplus \mathbf{g}_C \oplus \mathbf{g}_{CA} \oplus \mathbf{g}_{CB} \oplus \mathbf{g}_{CC} \circ )$ . Suppose too that you can <u>uni</u>vocally "solve for' at least **1** of the **3** "new" <u>'bi</u>-vocal' terms thereby "'added''', namely, for the term --  $\mathbf{g}_{CC} = \mathbf{g}_F$ . Then, complete this abbreviated algorithm for "cubing" the step **1** 'cumulum',  $( \circ \mathbf{g}_A \oplus \mathbf{g}_B \oplus \mathbf{g}_C \circ )$ , by again applying the ' $\otimes$ ' immanent, dialectical critique operation, but now using category  $\mathbf{g}_F$ , the most advanced category of  $\mathbf{g}_C \otimes ( \circ \mathbf{g}_A \oplus \mathbf{g}_B \oplus \mathbf{g}_C \circ )$ , to, again, that step **1** 'cumulum'/'''sum''' --

$$\underline{\mathbf{a}}_{\mathrm{F}} \otimes (\underline{\mathbf{a}}_{\mathrm{A}} \oplus \underline{\mathbf{a}}_{\mathrm{B}} \oplus \underline{\mathbf{a}}_{\mathrm{C}}) = (\underline{\mathbf{a}}_{\mathrm{F}}) \oplus (\underline{\mathbf{a}}_{\mathrm{F}} \otimes \underline{\mathbf{a}}_{\mathrm{A}}) \oplus (\underline{\mathbf{a}}_{\mathrm{F}} \otimes \underline{\mathbf{a}}_{\mathrm{B}}) \oplus (\underline{\mathbf{a}}_{\mathrm{F}} \otimes \underline{\mathbf{a}}_{\mathrm{C}}) = (\underline{\mathbf{a}}_{\mathrm{F}} \otimes \underline{\mathbf{a}}_{\mathrm{C}}) \oplus (\underline{\mathbf{a}}_{\mathrm{F}} \otimes \underline{\mathbf{a}}_{\mathrm{F}}) \oplus (\underline{\mathbf{a}}_{\mathrm$$

-- and, "'summing-up" the results of these two 'categorial multiplications', you'll obtain --

 $( {}^{\flat} \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B} \oplus \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{CA} \oplus \underline{\mathbf{q}}_{CB} \oplus \underline{\mathbf{q}}_{F} ( ) \oplus ( {}^{\flat} \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B} \oplus \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{FA} \oplus \underline{\mathbf{q}}_{FB} \oplus \underline{\mathbf{q}}_{FC} ( ) =$ 

 $({}^{\scriptscriptstyle D} \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B} \oplus \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{CA} \oplus \underline{\mathbf{q}}_{CB} \oplus \underline{\mathbf{q}}_{F} \oplus \underline{\mathbf{q}}_{FA} \oplus \underline{\mathbf{q}}_{FB} \oplus \underline{\mathbf{q}}_{FC}).$ 

Your overall result for step **2** is thus the following **9** (= **3**<sup>2</sup>) term 'consecuum-cumulum' or '<u>*qual*</u> itative superposition' --  $\underline{D}_2 = (\underline{D} \ \underline{q}_A \oplus \ \underline{q}_B \oplus \ \underline{q}_C (\underline{D}^3 \ \underline{\partial}] = (\underline{D} \ \underline{q}_A \oplus \ \underline{q}_B \oplus \ \underline{q}_C \oplus \ \underline{q}_{CA} \oplus \ \underline{q}_{CB} \oplus \ \underline{q}_F \oplus \ \underline{q}_{FA} \oplus \ \underline{q}_{FB} \oplus \ \underline{q}_{FC} (\underline{D})$ . Suppose further that you are able to <u>*uni*</u> vocally "solve for" the **5** other additional, '<u>*bi*</u>-vocal', 'algebraic <u>*un*</u> known category-symbols' so <u>gene</u>rated, e.g. --  $\underline{q}_{CA} |= \underline{q}_D, \ \underline{q}_{CB} |= \underline{q}_E, \ \underline{q}_{FA} |= \underline{q}_G, \ \underline{q}_{FB} |= \underline{q}_H, \ \underline{q}_{FC} |= \underline{q}_I$ . If so, then we have --()  $\underline{q}_A \oplus \ \underline{q}_B \oplus \ \underline{q}_C \oplus \ \underline{q}_{CB} \oplus \ \underline{q}_E \oplus \ \underline{$ 

For this '<u>triad</u>ic' version of o<u>ur</u>  ${}_{NQ}$  method, but *not* for its '<u>dyad</u>ic' version, already addressed above, the **9**th 'categorysymbol', ' $\mathbf{g}_{FC}$  |==  $\mathbf{g}_{I}$ ', is expected to represent a 'second *full <u>uni</u>*-category' in this multi-category progression. It does so by way of representing the combination(<u>s</u>), <u>uni</u>fication(<u>s</u>), fusion(<u>s</u>), reconciliation(<u>s</u>), compound(<u>s</u>), 'compositization(s)', hybridization(s), or '''complex unit(y)(<u>ies</u>)''' [cf. Hegel] of the **3**rd 'category-symbol',  $\mathbf{g}_{C}$ , with the **6**th. I.e., ' $\mathbf{g}_{FC}$  |==  $\mathbf{g}_{I}$ ' unifies the 'first [*full*] <u>uni</u>-category' in this category progression,  $\mathbf{g}_{C}$ , with its **6**th 'category-symbol',  $\mathbf{g}_{CC}$  |==  $\mathbf{g}_{F}$ , with  $\mathbf{g}_{F}$ also signing the '2nd [*full*] <u>contra</u>-category' in this categorial progression. In <u>gen</u>eral, in this '<u>triad</u>ic' version of the  ${}_{NQ}$ method, but **not** in its '<u>dyad</u>ic' version, each step of the categorial progression <u>present</u> ation ends in a new, higher, morecomplex '''complex unity'''' category [cf. Hegel], '<u>syn</u>thesis category', or '<u>uni</u>-category', one that reconciles one of the previous '<u>syn</u>thesis categor<u>ies</u>' with the '<u>anti</u> thesis category' that grew out of the most recent new '<u>syn</u>thesis category'.

The <u>syn</u>chronic perspective that holds that the eventual, full, <u>explicit categorial series</u>,  $\underline{D}_{\Omega}$ , is already <u>implicit in  $\underline{D}_{0}$ </u>, in an <u>ord</u>er of accessibility that echoes the exact, consecutive, systematic, taxonomic, simpler-to-more-complex <u>dialectical</u> categorial <u>ord</u>er, <u>implies</u> that the same holds for the starting category,  $\underline{\mathbf{q}}_{A}$ . The <u>self-reflexion/self-critique</u> power<u>s</u> --  $\underline{\mathbf{q}}_{A}^{3}$ , followed, consecutively, by  $() \underline{\mathbf{q}}_{A}^{3} ()^{3}$ , etc. -- divulge *the <u>same</u>* series of categor<u>ies</u> in the <u>same</u>, systematic[-<u>dialectical</u>] <u>ord</u>er, as does the conceptual analysis of  $\underline{\mathbf{D}}_{0}$ . The same systematically-<u>ord</u>ered series of categor<u>ies</u> that is <u>im</u>manent/-<u>im</u>plicit in  $\mathbf{D}$  is also <u>im</u>manent/<u>im</u>plicit in  $\underline{\mathbf{q}}_{A}$ , the *«arché»* of the <u>Domain</u>, and of the <u>Domain</u>'s ontological analysis by categorial progression. That series is 'outered' by 'self-iterated' '''self-refl<u>e</u>xion''' of & upon the *«arché»* category,  $\underline{\mathbf{q}}_{A}$ . From here on, the completion of this <u>triad</u>ic method's critique-procedure for any given <u>s</u>tep is just a matter of your, again, applying the most-advanced, most-complex 'category-symbol', evoked at the end of the <u>present</u>, latest stage/<u>s</u>tep of your <u>presentation</u>. For example, for <u>s</u>tep 2, that 'category-symbol' is ' $\mathbf{g}_{FC} \models \mathbf{g}_{I}$ '. We, next, use it to critique the state of <u>presentation</u> of that <u>present s</u>tep as a whole, by applying that leading 'category-symbol', via the ' $\otimes$ ' operation, to all of the other 'category-symbols' evoked so far, and, finally, to itself as well. Thus, for <u>s</u>tep 2, this means (1) 'critically applying'  $\mathbf{g}_{FC} \models \mathbf{g}_{I}$  to the 'categor<u>ies</u>-sum', that concludes step 2, i.e., to --

## $({}^{\scriptscriptstyle 0}\underline{\mathbf{a}}_{\mathrm{A}} \oplus \underline{\mathbf{a}}_{\mathrm{B}} \oplus \underline{\mathbf{a}}_{\mathrm{C}} \oplus \underline{\mathbf{a}}_{\mathrm{D}} \oplus \underline{\mathbf{a}}_{\mathrm{E}} \oplus \underline{\mathbf{a}}_{\mathrm{F}} \oplus \underline{\mathbf{a}}_{\mathrm{G}} \oplus \underline{\mathbf{a}}_{\mathrm{H}} \oplus \underline{\mathbf{a}}_{\mathrm{I}} ()$

-- and, thereby, launching <u>s</u>tep **3**.

Next, (2), you critically apply the most advanced, most-complex 'category-symbol' of *that* result, *again*, to --

# $( {}^{\scriptscriptstyle 0} \underline{\mathbf{q}}_{\scriptscriptstyle A} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle B} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle C} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle D} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle E} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle F} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle G} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle H} \oplus \underline{\mathbf{q}}_{\scriptscriptstyle I} ( )$

-- then, (3), finally, you "sum" the two results. These three steps provide a short-cut to --

# $(\underline{\mathbf{a}}_{\mathrm{A}} \oplus \underline{\mathbf{a}}_{\mathrm{B}} \oplus \underline{\mathbf{a}}_{\mathrm{C}} \oplus \underline{\mathbf{a}}_{\mathrm{D}} \oplus \underline{\mathbf{a}}_{\mathrm{E}} \oplus \underline{\mathbf{a}}_{\mathrm{F}} \oplus \underline{\mathbf{a}}_{\mathrm{G}} \oplus \underline{\mathbf{a}}_{\mathrm{H}} \oplus \underline{\mathbf{a}}_{\mathrm{I}} (\underline{\mathbf{a}})^{3} \cdot$

After that procedure, your next move, per the <u>triad</u>ic variant of this method, is to <u>uni</u>vocally "solve for" the new, e.g., <u>'bi</u>-vocal category-symbol<u>s</u>' thereby <u>gen</u>erated. For <u>step</u> **3**, since there are  $9 (= 3^2)$  categor<u>ies</u> inherited from <u>step</u> **2**, there will be **18** additional, new 'category symbol<u>s</u>' to "solve for"/define after you apply the <u>step</u> **3** critique procedure, for a total of  $27 (= 3^3)$  'category-symbol<u>s</u>' in the <u>step</u> **3** 'categorial consecuum-cumulum', 'categor<u>ies</u> series', or 'category-symbol<u>s</u> sum'. In <u>gen</u>eral, for <u>step</u>  $n \ge 1$ , if that <u>step</u> has inherited **m** categor<u>ies</u> from <u>step</u> n - 1, then there will be another **2m** additional 'category-symbol<u>s</u>' <u>gen</u>erated by the <u>step</u> **n** critique procedure, for a new total, in <u>step</u> **n**, of **3m** categor<u>ies</u>, to be inherited <u>from</u> <u>step</u>  $n \ge 1$ .

"Solving for"/defining each such new increment of initially, e.g., <u>'bi</u>-vocal', "'algebraic-<u>un</u>known'" 'category-symbol<u>s</u>' is simply a matter of defining those 'category-symbol<u>s</u>' in term<u>s</u> of kind<u>s</u> of unit<u>s</u> that you can find as existing in the <u>present</u> of the <u>Domain</u> that you are <u>experiencing</u>, <u>present</u>ing and <u>explicating</u>. You then use existing name<u>s</u> for any already-recognized categor<u>ies</u> that encompass those unit<u>s</u>, and/or create new name<u>s</u> that serve to aptly "'christen'" any newly-noticed kind<u>s</u> of <u>present</u>ly-existing unit<u>s</u>, forming newly-cognized ontological categor<u>ies</u>, that are brought to light by this method, but that have **not** been recognized -- widely, or even at all -- previously.

If you continue to [re-]iterate this <u>s</u>tep-wise categorial 'consecuum-cumulum' critique-procedure, you will eventually reach a <u>s</u>tep for which you will find yourself <u>un</u>able to "solve for"/define, in terms of <u>present</u> phenomen<u>a</u>, some, or even all, of the new, "'algebraic-<u>un</u>known'" 'category-symbols' <u>gene</u>rated by the immanent critique operation of that <u>s</u>tep.

This may be because the collective, human-<u>*phen*</u>omic, "'meme<u>s</u>-pool'" insight<u>s</u>, upon which you may draw for such category-recognition, have **not yet** progressed to the degree necessary to enable your clear discernment of the <u>**D**omain</u>-ontology representable by these 'category-symbol<u>s</u>', even though that ontology is actually already <u>**present**</u> in the <u>**present**</u> that you are <u>**present**</u> ing. You would then need to extend and deepen your insight in order to grasp them.

Or, it may be because nothing corresponding to those 'category-symbols' is as yet  $[\underline{fully}]$  extant in that <u>present</u>. In that case, it may be time to note the final solvable/definable ''algebraic'' 'category-symbol' of your categorial series <u>presentation</u>, and to conclude your <u>presentation</u> with your ''<u>uni</u>vocal'' solution/definition for that, e.g., '<u>bi</u>-vocal', 'category-symbol'.

If the <u>present</u>ly-<u>un</u>solvable/'<u>un</u>definable' 'category-symbol(<u>s</u>)' intimate(s), to your mind, probable <u>future</u> ontology that you expect will arise starting in a *future-<u>present</u>* of your <u>**D**omain</u>, then, if you feel it appropriate, you may want to add a '''coda''' to your <u>presentation</u>, stating your prediction-hypothes<u>es</u> about one or more such *future-<u>present(s</u>)* that you expect. These two eventualit<u>ies</u> are addressed in more detail in the next two sub<sup>2</sup>-section<u>s</u> of this sub<sup>1</sup>-section. Let us now work through, in detail, <u>step</u> **3** of our <u>generic</u> example. W<u>e</u> do so to further clarify and to exemplify also what further [re-]iteration<u>s</u> of this critique-procedure, e.g., also beyond <u>step</u> **3**, <u>generic</u> and your interval.

To <u>self</u>-critique the <u>s</u>tep 2 state of your <u>presentation</u>,  $\underline{\mathbf{D}} \approx (\mathbf{)} \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B} \oplus \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{D} \oplus \underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{G} \oplus \underline{\mathbf{q}}_{H} \oplus \underline{\mathbf{q}}_{I} (\mathbf{)}$  as the present '<u>qual</u>itative approximation' of your explication of <u>Domain</u> **D**, so as to gain a [possibly] fuller, richer, more apt, more fitting, more adequate if also more complex explication of your <u>Domain</u>, perform the critique-operation denoted by --

# $\underline{\mathbf{q}}_{\mathbf{I}} \otimes (\underline{\mathbf{q}}_{\mathbf{A}} \oplus \underline{\mathbf{q}}_{\mathbf{B}} \oplus \underline{\mathbf{q}}_{\mathbf{C}} \oplus \underline{\mathbf{q}}_{\mathbf{D}} \oplus \underline{\mathbf{q}}_{\mathbf{E}} \oplus \underline{\mathbf{q}}_{\mathbf{F}} \oplus \underline{\mathbf{q}}_{\mathbf{G}} \oplus \underline{\mathbf{q}}_{\mathbf{H}} \oplus \underline{\mathbf{q}}_{\mathbf{I}} (\mathbf{J})$

-- and try to solve-for/define the **9** new, e.g., 'bi-vocal' ''algebraic-unknown''' 'category-symbol' terms so generated.

Doing so, you will obtain the following --

 $\underline{\mathbf{q}}_{\mathrm{I}} \otimes \left( \mathbf{\mathbf{0}} \ \underline{\mathbf{q}}_{\mathrm{A}} \oplus \ \underline{\mathbf{q}}_{\mathrm{B}} \oplus \ \underline{\mathbf{q}}_{\mathrm{C}} \oplus \ \underline{\mathbf{q}}_{\mathrm{D}} \oplus \ \underline{\mathbf{q}}_{\mathrm{E}} \oplus \ \underline{\mathbf{q}}_{\mathrm{E}} \oplus \ \underline{\mathbf{q}}_{\mathrm{E}} \oplus \ \underline{\mathbf{q}}_{\mathrm{G}} \oplus \ \underline{\mathbf{q}}_{\mathrm{H}} \oplus \ \underline{\mathbf{q}}_{\mathrm{I}}^{\mathsf{C}} \right) =$ 

 $\underline{\mathbf{q}}_{\mathrm{A}} \oplus \underline{\mathbf{q}}_{\mathrm{B}} \oplus \underline{\mathbf{q}}_{\mathrm{C}} \oplus \underline{\mathbf{q}}_{\mathrm{D}} \oplus \underline{\mathbf{q}}_{\mathrm{E}} \oplus \underline{\mathbf{q}}_{\mathrm{F}} \oplus \underline{\mathbf{q}}_{\mathrm{G}} \oplus \underline{\mathbf{q}}_{\mathrm{H}} \oplus \underline{\mathbf{q}}_{\mathrm{I}} \oplus \underline{\mathbf{q}}_{\mathrm{IA}} \oplus \underline{\mathbf{q}}_{\mathrm{IB}} \oplus \underline{\mathbf{q}}_{\mathrm{IC}} \oplus \underline{\mathbf{q}}_{\mathrm{ID}} \oplus \underline{\mathbf{q}}_{\mathrm{IE}} \oplus \underline{\mathbf{q}}_{\mathrm{IE}} \oplus \underline{\mathbf{q}}_{\mathrm{IG}} \oplus \underline{\mathbf{q}}_{\mathrm{IG}} \oplus \underline{\mathbf{q}}_{\mathrm{IH}} \oplus \underline{\mathbf{q}}_{\mathrm{II}} \oplus \underline$ 

-- yielding **9** new 'category-symbol<u>s</u>' --  $\mathbf{g}_{IA}$ ,  $\mathbf{g}_{IB}$ ,  $\mathbf{g}_{IC}$ ,  $\mathbf{g}_{ID}$ ,  $\mathbf{g}_{IE}$ ,  $\mathbf{g}_{IF}$ ,  $\mathbf{g}_{IG}$ ,  $\mathbf{g}_{IH}$ , and  $\mathbf{g}_{II}$  -- to "solve-for"/define. Suppose that you can identify each of these **9** new, '<u>*bi*</u>-vocal', 'category-symbol<u>s</u>' with a <u>*uni*</u>vocal, widely-recognized, already-named category, of known unit<u>s</u>, already widely known to be extant in the <u>*present*</u> of the **<u>Domain</u>** that your <u>*present*</u> is explicating, e.g. --

 $\underline{\mathbf{q}}_{\mathrm{IA}} \mid = \underline{\mathbf{q}}_{\mathrm{J}}; \ \underline{\mathbf{q}}_{\mathrm{IB}} \mid = \underline{\mathbf{q}}_{\mathrm{K}}; \ \underline{\mathbf{q}}_{\mathrm{IC}} \mid = \underline{\mathbf{q}}_{\mathrm{L}}; \ \underline{\mathbf{q}}_{\mathrm{ID}} \mid = \underline{\mathbf{q}}_{\mathrm{M}}; \ \underline{\mathbf{q}}_{\mathrm{IE}} \mid = \underline{\mathbf{q}}_{\mathrm{N}}; \ \underline{\mathbf{q}}_{\mathrm{IF}} \mid = \underline{\mathbf{q}}_{\mathrm{O}}; \ \underline{\mathbf{q}}_{\mathrm{IG}} \mid = \underline{\mathbf{q}}_{\mathrm{P}}; \ \underline{\mathbf{q}}_{\mathrm{IH}} \mid = \underline{\mathbf{q}}_{\mathrm{Q}}; \ \underline{\mathbf{q}}_{\mathrm{II}} \mid = \underline{\mathbf{q}}_{\mathrm{R}}.$ 

If so, then you have achieved the first of two parts of the <u>step 3</u> '<u>qual</u>itative approximation' of **D**, for your categorial series <u>presentation</u> of **D**, in the following 'category-symbols cumulum'/'''sum''', of **18** 'terms' --

 $\underline{\mathbf{D}} \approx \left( \mathbf{a}_{A} \oplus \underline{\mathbf{a}}_{B} \oplus \underline{\mathbf{a}}_{C} \oplus \underline{\mathbf{a}}_{D} \oplus \underline{\mathbf{a}}_{E} \oplus \underline{\mathbf{a}}_{F} \oplus \underline{\mathbf{a}}_{G} \oplus \underline{\mathbf{a}}_{H} \oplus \underline{\mathbf{a}}_{I} \oplus \underline{\mathbf{a}}_{J} \oplus \underline{\mathbf{a}}_{K} \oplus \underline{\mathbf{a}}_{L} \oplus \underline{\mathbf{a}}_{M} \oplus \underline{\mathbf{a}}_{N} \oplus \underline{\mathbf{a}}_{O} \oplus \underline{\mathbf{a}}_{P} \oplus \underline{\mathbf{a}}_{Q} \oplus \underline{\mathbf{a}}_{R} \right), \text{ or:}$ 

 $\underline{\partial \mathbf{D}_{3}} = (\underline{\partial} \underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B} \oplus \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{D} \oplus \underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{F} \oplus \underline{\mathbf{q}}_{G} \oplus \underline{\mathbf{q}}_{H} \oplus \underline{\mathbf{q}}_{I} \oplus \underline{\mathbf{q}}_{J} \oplus \underline{\mathbf{q}}_{K} \oplus \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{M} \oplus \underline{\mathbf{q}}_{N} \oplus \underline{\mathbf{q}}_{O} \oplus \underline{\mathbf{q}}_{P} \oplus \underline{\mathbf{q}}_{Q} \oplus \underline{\mathbf{q}}_{R} (\underline{\mathbf{p}}_{R})$ 

To this "'non-amalgamative sum", you may then "add" the additional 9 new terms that result as follows --

 $\underline{\mathbf{g}}_{R} \otimes \left( {}^{\mathsf{D}} \underline{\mathbf{g}}_{A} \oplus \underline{\mathbf{g}}_{B} \oplus \underline{\mathbf{g}}_{C} \oplus \underline{\mathbf{g}}_{D} \oplus \underline{\mathbf{g}}_{E} \oplus \underline{\mathbf{g}}_{F} \oplus \underline{\mathbf{g}}_{G} \oplus \underline{\mathbf{g}}_{H} \oplus \underline{\mathbf{g}}_{I} \right) =$ 

$$\underline{\mathbf{q}}_{A} \oplus \underline{\mathbf{q}}_{B} \oplus \underline{\mathbf{q}}_{C} \oplus \underline{\mathbf{q}}_{D} \oplus \underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{F} \oplus \underline{\mathbf{q}}_{G} \oplus \underline{\mathbf{q}}_{H} \oplus \underline{\mathbf{q}}_{I} \oplus \underline{\mathbf{q}}_{RA} \oplus \underline{\mathbf{q}}_{RB} \oplus \underline{\mathbf{q}}_{RC} \oplus \underline{\mathbf{q}}_{RD} \oplus \underline{\mathbf{q}}_{RE} \oplus \underline{\mathbf{q}}_{RF} \oplus \underline{\mathbf{q}}_{RG} \oplus \underline{\mathbf{q}}_{RH} \oplus \underline{\mathbf{q}}_{RH}$$

-- yielding **9** new <u>'bi</u>-vocal category-symbol<u>s</u>' --  $\mathbf{g}_{RA}$ ,  $\mathbf{g}_{RB}$ ,  $\mathbf{g}_{RC}$ ,  $\mathbf{g}_{RD}$ ,  $\mathbf{g}_{RE}$ ,  $\mathbf{g}_{RG}$ ,  $\mathbf{g}_{RH}$ , and  $\mathbf{g}_{RI}$  -- to "solve-for". Suppose that you are able to identify each of these **9** new 'category-symbol<u>s</u>' with a <u>uni</u>vocal, recognized, already-named category of known unit<u>s</u>, already extant in the <u>present</u> of the <u>Domain</u> of your <u>present</u>ation, e.g.:

$$\underline{\mathbf{g}}_{RA} | = \underline{\mathbf{g}}_{S}; \ \underline{\mathbf{g}}_{RB} | = \underline{\mathbf{g}}_{T}; \ \underline{\mathbf{g}}_{RC} | = \underline{\mathbf{g}}_{U}; \ \underline{\mathbf{g}}_{RD} | = \underline{\mathbf{g}}_{V}; \ \underline{\mathbf{g}}_{RE} | = \underline{\mathbf{g}}_{W}; \ \underline{\mathbf{g}}_{RF} | = \underline{\mathbf{g}}_{X}; \ \underline{\mathbf{g}}_{RG} | = \underline{\mathbf{g}}_{Y}; \ \underline{\mathbf{g}}_{RH} | = \underline{\mathbf{g}}_{Z}; \ \underline{\mathbf{g}}_{RI} | = \underline{\mathbf{g}}_{RI} |$$

If so, then you have achieved the second of two parts toward the <u>step 3</u> '*qual*itative approximation' of **D**, for your categorial progression <u>presentation</u> of **D**. This then yields, upon adding the two parts' results together, the following 'category-symbols consecuum-cumulum', or '''sum''', now of **27** (= **3**<sup>3</sup>) 'terms' total --

<u>Example</u>. Suppose that  $w\underline{e} - admittedly ambitiously -- want to present a systematic, taxonomic, dialectical model of the ontological-categorial contents of our total known* cosmos as of our broad <u>PRESENT</u> time. Suppose further that <math>w\underline{e}$  have selected  $\underline{q}_n$ , standing for the sub-<u>n</u>uclear "particle"-units, e.g., standing for the "<u>non</u>-composite bosonic and fermionic "particle"-units ''', as starting category for a categorial-progression dialectical-mathematical meta-model of the total <u>Domain</u> of the  $D \equiv$  "phenomena of the total known cosmos, presently, <u>synchronically</u>", for our known, broadly present universe. I.e., this means a meta-model for what w<u>e</u> call "<u>The SYSTEMATIC Dialectic of Nature</u>". Suppose next that w<u>e</u>'ve "solved for" the new 'categorograms of the categorial expansion of/from  $\underline{q}_n$ , through <u>s</u>tep 2, as [with <u>Q</u> 'generic meta-numeral' correspondences noted via the relation sign '(-)'] --

Step  $\mathbf{0}, \mathbf{q}_1 (-] \mathbf{q}_n = \mathbf{q}_n^1 \equiv \underline{the \ physical \ units'}, 'physio-ontological \ category' for those units or «monads» which are <u>presently known as</u> '''<u>non-composite bosonic</u> & fermionic ''particle''-units''', e.g., gluons & quarks; photons & electrons, etc.:$ 

 $\therefore \text{ for } \underline{s} \text{tep } \mathbf{0}, \underline{\mathbf{D}} \approx (\underline{\mathbf{0}}_{n} (\underline{\mathbf{0}}_{n}), \underline{\mathbf{0}}_{n} = (\underline{\mathbf{0}}_{n} (\underline{\mathbf{0}}_{n});$ 

Step 1,  $\underline{\mathbf{q}}_{n} \otimes \underline{\mathbf{q}}_{n} \otimes \underline{\mathbf{q}}_{n} = \underline{\mathbf{q}}_{n}^{3} = \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{nn} \oplus \underline{\mathbf{q}}_{nnn}$ , whose *two new 'category-symbols' we solve for as* follows --  $\underline{\mathbf{q}}_{2}$  (-]  $\underline{\mathbf{q}}_{nn} \models \underline{\mathbf{q}}_{s} \equiv$  the '*physio-ontological species category*' of '''*composite bosonic* & *fermionic "particle"-units*''', e.g., *mesons*, *and protons*, *grasped as 'meta-units*' of *gluon and quark* [*sub-*]*units*, such that, e.g., *each proton unit is heterogeneous and composite*, i.e., *is made up out of a multiplicity* of *quark units* together with gluon units;

 $\underline{\mathbf{q}}_{3}$  (-]  $\underline{\mathbf{q}}_{nnn} \underline{\partial}$ ]- $\equiv \underline{\mathbf{q}}_{sn}$  [- $\equiv \underline{\mathbf{q}}_{u} \equiv$  the '<u>physio-ontological species</u> category' for <u>units</u> which <u>combine</u>  $\underline{\mathbf{q}}_{s}$  <u>units</u>  $\underline{\mathbf{k}} \underline{\mathbf{q}}_{n}$  <u>units</u>, for which <u>we identify four sub-species</u> -- (1) proton-electron ''fusion''' ne<u>u</u>trons; (2) single-proton, single-electron, neutral Hydrogen atoms ['<u>ur</u>-atoms']; (3) neutron stars' bulk ne<u>u</u>tronium, and, hypothetically; (4) black holes' bulk 'holoni<u>u</u>m' or 'hyper-ne<u>u</u>tronium'.

 $\therefore \text{ for } \underline{s} \text{tep } \mathbf{1}, \underline{\mathbf{D}} \approx (\underline{\mathbf{Q}}_{n} \oplus \underline{\mathbf{Q}}_{s} \oplus \underline{\mathbf{Q}}_{u}), or \underline{\mathbf{D}}_{1} = (\underline{\mathbf{Q}}_{n} \oplus \underline{\mathbf{Q}}_{s} \oplus \underline{\mathbf{Q}}_{u});$ 

• Step 2, ()  $\underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u}$  ()<sup>3</sup>, which is equal to the '<u>non</u>-amalgamative sum' from  $\underline{\mathbf{q}}_{u} \otimes () \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u}$  () =  $\underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{uu}$ , <u>plus</u>  $\underline{\mathbf{q}}_{uu} \otimes () \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u}$  (), i.e., is equal to the 9 (= 3<sup>2</sup>) terms sum:  $\underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{uu} \oplus \underline{\mathbf{q}}_{uus} \oplus \underline{\mathbf{q}}_{uuu}$ . We solve the latter, 6, new 'category-symbols' contained therein as [again with generic '<u>meta-numeral</u>' attributions ['(---)'] noted \*\*]:

- <u>**q**</u><sub>4</sub> (−] <u>**q**</u><sub>un</sub> |= the '<u>phys</u>io-ontological category' of, e.g., interactions / ··· conversions ··· of <u>**q**</u><sub>n</sub> units into <u>**q**</u><sub>u</sub> units, e.g., <u>sub-speci</u>es (4) black hole '··absorption ··· of '·· free ··· photons & '·· free ··· electrons</u>;
- <u>**q**</u><sub>5</sub> (−] <u>**q**</u><sub>us</sub> |-≡ the '<u>phys</u>io-ontological category' of, e.g., interaction<u>s</u> / '' 'conversion<u>s</u> ''' of <u>**q**</u><sub>s</sub> unit<u>s</u> into <u>**q**</u><sub>u</sub> unit<u>s</u>, e.g., <u>sub-speci</u>es (4) black hole '' 'absorption ''' of cosmic ray ''' free ''' proton<u>s</u>;
- $\mathbf{q}_{6} (-] \mathbf{q}_{uu} \models \mathbf{q}_{a} = \text{ the } category \text{ of } \underline{\mathbf{a}} tom\underline{s} proper; (2) \text{ of } \underline{\mathbf{a}} tomic species \underline{beyond single-proton, single-electron} \\ \underline{\mathbf{H}} y drogen `\underline{ur} atom\underline{s}', including higher species \underline{\mathbf{a}} tom\underline{s} constituted by `\underline{self} conversion\underline{s}' \text{ of } \\ `\underline{ur} atom\underline{s}', [i.e., by stellar-nucleosynthesis fusion\underline{s} \text{ of } \mathbf{H} atom\underline{s} \mathbf{\&}, later, by further fusion product\underline{s}];$
- $\underline{\mathbf{q}}_{\mathbf{q}} (-] \underline{\mathbf{q}}_{uun} \underline{\partial} ] = \underline{\mathbf{q}}_{an} \equiv \frac{physio-ontological \ category' \ for \ interactions''', \ \underline{\mathbf{k}} \ interaction \ products, \\ of \ \underline{\mathbf{q}}_{n} \ units' \ into \ \underline{\mathbf{q}}_{a} \ units', \ e.g., \ photon \ \underline{\mathbf{k}} \ electron \ absorption \ by \ \underline{\mathbf{a}}toms' \ in''' \ \underline{\mathbf{a}}tomic \ clouds''';$
- $\underline{\mathbf{q}}_{\mathbf{g}} (-] \underline{\mathbf{q}}_{uus} \underline{\partial} = \underline{\mathbf{g}}_{as} = \frac{\mathbf{physio-ontological category' for interactions}}{\mathbf{of } \underline{\mathbf{q}}_{s} units into } \frac{\mathbf{q}}{\mathbf{q}}_{a} units, e.g., cosmic ray proton collisions with } \underline{\mathbf{a}}toms in "\underline{\mathbf{a}}tomic clouds";$

<sup>\*[&</sup>quot;Dark Energy" & "Dark Matter", albeit named, are **not** yet so <u>known</u> for us to here <u>hold</u> "Dark Energy" as «arché», "Dark Matter" as **1**st <u>contra</u>-category].

<sup>\*\*[</sup>In this text, we mostly shy away from explicit invocations of the Q arithmetic, and of its generic dialectic, that undergirds this method, thus usually not citing the NQ = { g<sub>N</sub> } set of 'generic ordinal qualifier meta-numbers', & the technicalities of their rules-systems, or axioms-systems, in order to keep the exposition herein more algebraic/intuitive. But for readers wishing to know more of this 'ordinal meta-numerals arithmetic', the following link links to a statement of one variant of Q's core axioms-systems -- http://www.dialectics.info/dialectics/Applications files/F.E.D., Core Axioms of the Seldonian First Arithmetic for Dialectic , 14MAY2018,jpg ].

<u>q</u><sub>9</sub>(-] <u>q</u><sub>uuu</sub> <u>∂</u>]= <u>q</u><sub>au</sub> = '<u>physio-ontological category</u>' for at least the following four <u>sub-species</u>: combinations of -- (1) higher <u>atoms</u> with ne<u>u</u>trons, e.g., supernova ne<u>u</u>tron-capture nucleosynthesis; also fission of higher <u>atoms</u> by ne<u>u</u>tron collision; (2) <u>Hydrogen 'ur-atoms</u>' with higher <u>atoms</u>, forming '<u>hydrogen</u>ous ur-molecules', e.g., H<sub>2</sub>O, & <u>hydrocarbons</u> [CH<sub>4</sub>, etc.]; (3) higher <u>atoms</u> with bulk ne<u>u</u>tronium, e.g., accretion of '<u>trans</u>-hydrogenous' <u>atoms</u> to ne<u>u</u>tron stars; (4) <u>atoms</u> with bulk holoni<u>u</u>m, e.g., <u>atoms</u>' accretion to 'hyper-ne<u>u</u>tronium'.

 $\therefore \text{ for } \underline{s} \text{tep 2}, \quad \underline{D} \approx (\underline{Q}_{n} \oplus \underline{Q}_{s} \oplus \underline{Q}_{u} \oplus \underline{Q}_{un} \oplus \underline{Q}_{us} \oplus \underline{Q}_{a} \oplus \underline{Q}_{an} \oplus \underline{Q}_{as} \oplus \underline{Q}_{au}),$   $or: \qquad \underline{D}_{2} = (\underline{Q}_{n} \oplus \underline{Q}_{s} \oplus \underline{Q}_{u} \oplus \underline{Q}_{un} \oplus \underline{Q}_{us} \oplus \underline{Q}_{a} \oplus \underline{Q}_{an} \oplus \underline{Q}_{as} \oplus \underline{Q}_{au}).$ 

If so, then the procedure for step 3 looks like this --

• Step 3, ()  $\underline{\mathbf{q}}_{\mathbf{n}} \oplus \underline{\mathbf{q}}_{\mathbf{s}} \oplus \underline{\mathbf{q}}_{\mathbf{u}} \oplus \underline{\mathbf{q}}_{\mathbf{u}\mathbf{n}} \oplus \underline{\mathbf{q}}_{\mathbf{u}\mathbf{s}} \oplus \underline{\mathbf{q}}_{\mathbf{a}\mathbf{s}} \oplus \underline{\mathbf{q}}_{\mathbf{a}\mathbf{n}} \oplus \underline{\mathbf{q}}_{\mathbf{a}\mathbf{s}} \oplus \underline{\mathbf{q}}_{\mathbf{a}\mathbf{u}}$  ()<sup>3</sup>, equals the '<u>non</u>-amalgamative sum':

-- as the part 1 result, which, per the following solution/definition --

 $\underline{\mathbf{q}}_{auu} \underline{\partial} = \underline{\mathbf{q}}_{au} + \underline{\mathbf{q}}_{m} = \text{ the category of } \underline{\mathbf{m}}_{olecules} \text{ proper, beyond the simpler, } \underline{\mathbf{q}}_{au} + \underline{\mathbf{m}}_{olecules} \mathbf{u}_{c} + \mathbf{u}_$ 

-- becomes the 18 term 'categorial series' --

 $\underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \underline{\mathbf{q}}_{au} \oplus \underline{\mathbf{q}}_{aus} \oplus \underline{\mathbf{q}}_{mu} \oplus \underline{\mathbf{q}}_{mus} \oplus \underline{\mathbf{q}}_{mu$ 

-- plus the part 2 result --

 $\begin{array}{l} \underline{\mathbf{q}}_{ma} \otimes \left( \begin{smallmatrix} \mathbf{q}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \end{smallmatrix} \right) = \\ \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \\ \underline{\mathbf{q}}_{man} \oplus \underline{\mathbf{q}}_{mas} \oplus \underline{\mathbf{q}}_{mau} \oplus \underline{\mathbf{q}}_{maun} \oplus \underline{\mathbf{q}}_{maus} \oplus \underline{\mathbf{q}}_{maas} \oplus \underline{\mathbf{q}}_{maan} \oplus \underline{\mathbf{q}}_{maas} \oplus \underline{\mathbf{q}}_{maas} \oplus \underline{\mathbf{q}}_{maas} \oplus \underline{\mathbf{q}}_{maas} \oplus \underline{\mathbf{q}}_{maas} \end{array}$ 

-- which, given the *following solution/definition* --

 $\underline{\mathbf{q}}_{\text{maa}} \underline{\partial} \stackrel{|=}{=} \underline{\mathbf{q}}_{\text{mm}} \stackrel{|=}{=} \underline{\mathbf{q}}_{\mathbf{p}} \equiv the \underline{phys} io-ontological category of "\underline{p}rokaryotic", or of "'\underline{p}re-eukaryotic''', living cells" -- becomes the$ **18**term 'categorial series' --

 $\begin{array}{c} \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \\ \underline{\mathbf{q}}_{man} \oplus \underline{\mathbf{q}}_{mas} \oplus \underline{\mathbf{q}}_{mau} \oplus \underline{\mathbf{q}}_{maun} \oplus \underline{\mathbf{q}}_{maus} \oplus \underline{\mathbf{q}}_{p} \oplus \underline{\mathbf{q}}_{pn} \oplus \underline{\mathbf{q}}_{ps} \oplus \underline{\mathbf{q}}_{up} \end{array}$ 

-- which, when the part 1 and part 2 results are added together, of course "non-amalgamatively" [cf. Musès], yields --

 $\begin{array}{c} \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \\ \underline{\mathbf{q}}_{aun} \oplus \underline{\mathbf{q}}_{aus} \oplus \underline{\mathbf{q}}_{m} \oplus \underline{\mathbf{q}}_{mn} \oplus \underline{\mathbf{q}}_{ms} \oplus \underline{\mathbf{q}}_{mu} \oplus \underline{\mathbf{q}}_{mun} \oplus \underline{\mathbf{q}}_{mus} \oplus \underline{\mathbf{q}}_{ma} \\ \oplus \\ \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \\ \underline{\mathbf{q}}_{man} \oplus \underline{\mathbf{q}}_{mas} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \\ \end{array}$ 

-- and after eliminating, per our NQ addition axiom, one of the two, redundant copies of --

W<u>e</u> leave solving-for the, **18**, new, additional 'category-symbols', <u>gen</u>erated above, to the <u>reader</u>, as an <u>exercise</u>. W<u>e</u> have already given, above, o<u>ur</u> solutions  $\underline{q}_{aa} \models \underline{q}_{m}$  and  $\underline{q}_{mm} \models \underline{q}_{p}$ , as support to you for conducting that exercise.

 $\underline{\mathbf{q}}_{\mathrm{man}} \oplus \underline{\mathbf{q}}_{\mathrm{mas}} \oplus \underline{\mathbf{q}}_{\mathrm{mau}} \oplus \underline{\mathbf{q}}_{\mathrm{maun}} \oplus \underline{\mathbf{q}}_{\mathrm{maus}} \oplus \underline{\mathbf{q}}_{\mathrm{p}} \oplus \underline{\mathbf{q}}_{\mathrm{pn}} \oplus \underline{\mathbf{q}}_{\mathrm{ps}} \oplus \underline{\mathbf{q}}_{\mathrm{up}} ().$ 

Note *also*, of course, that, e.g. --

$$\underline{\mathbf{D}}_{3} = (\mathbf{P} \ \underline{\mathbf{q}}_{n} \oplus \underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{u} \oplus \underline{\mathbf{q}}_{un} \oplus \underline{\mathbf{q}}_{us} \oplus \underline{\mathbf{q}}_{a} \oplus \underline{\mathbf{q}}_{an} \oplus \underline{\mathbf{q}}_{as} \oplus \underline{\mathbf{q}}_{au} \oplus \mathbf{q}_{au} \oplus \mathbf{q}_{aun} \oplus \underline{\mathbf{q}}_{aus} \oplus \underline{\mathbf{q}}_{m} \oplus \underline{\mathbf{q}}_{mn} \oplus \underline{\mathbf{q}}_{ms} \oplus \underline{\mathbf{q}}_{mu} \oplus \underline{\mathbf{q}}_{mun} \oplus \underline{\mathbf{q}}_{mus} \oplus \underline{\mathbf{q}}_{mus} \oplus \underline{\mathbf{q}}_{mas} \oplus \mathbf{q}_{mas} \oplus \mathbf{q}_{mas}$$

-- is not the WHOLE <u>presentation</u> for <u>Domain</u>  $D \equiv$  the <u>present</u> cosmological totality  $\equiv \forall$ , even for just <u>step</u> 3.

It is but an extremely terse "shorthand", a 'hyper-concise' outline, a kind of 'horizontal list' ["vector"], of the ontologicalcategorial contents -- of the "kinds" content -- of this **D**omain,  $D \equiv \forall$ , i.e., of the <u>synchronic</u>, taxonomic, <u>systematic</u> "<u>dialectic</u> of nature <u>NOW</u>"; of our <u>known</u>[-to-us], <u>present</u> total cosmos, and up to model epoch **3** only. Expositions of the terms of this universe model equation, of varying degrees of [in] adequacy, could easily extend to the length of a large book, or even to the extent of a multi-volume encyclopedia, even apart from reconstructing the <u>known</u> ontological <u>history</u> of our cosmos, <u>past</u> to <u>present</u>, "a work in its own right which, it is hoped, we shall be able to undertake as well"; but focusing solely on the broadly <u>present known</u> cosmos. The potential lengthiness of such expositions can be easily seen by noting that the further key 'contra-category' ontology of this universe model includes the following, per our solves --

 $\mathbf{\underline{q}}_{48} (-] \mathbf{\underline{q}}_{pp} \models \mathbf{\underline{q}}_{e} \equiv \text{the } category \text{ of } \mathbf{\underline{e}} \text{ukaryotic living cell}_{\underline{s}}; \\ \mathbf{\underline{q}}_{96} (-] \mathbf{\underline{q}}_{ee} \models \mathbf{\underline{q}}_{e} \equiv \mathbf{\underline{q}}_{b} \equiv \text{the } category \text{ of } \mathbf{\underline{m}} \text{ulti-}[\underline{e}ukaryotic-] \text{ cellular, } \underline{\underline{a}} \text{ social `meta-} \mathbf{\underline{b}} \text{ iot} \underline{\underline{a}}'; \\ \mathbf{\underline{a}}_{96} (-] \mathbf{\underline{q}}_{ee} \models \mathbf{\underline{q}}_{b} \equiv \text{the } category \text{ of } \mathbf{\underline{m}} \text{ulti-} [\underline{e}ukaryotic-] \text{ cellular, } \underline{\underline{a}} \text{ social `meta-} \mathbf{\underline{b}} \text{ iot} \underline{\underline{a}}'; \\ \mathbf{\underline{a}}_{10} = \mathbf{\underline{a}}_{$ 

 $\underline{\mathbf{q}}_{192}(-] \ \underline{\mathbf{q}}_{\mathbf{bb}} \mid = \ \underline{\mathbf{q}}_{\ell} \equiv \text{ the } \underline{category} \text{ of } \underline{proto-\underline{\ell}} \text{ anguage} \underline{s} \text{-based } \text{ anima} \underline{\ell} \ & \underline{\mathbf{p}} \underline{\ell} \text{ and } \text{ societ} \underline{ies}; \ & \underline{aufheben} \ & \underline{imits}' \text{ of } \underline{\mathbf{q}}_{\mathbf{b}} \text{ unit} \underline{s};$ 

 $\underline{\mathbf{q}}_{384}(-] \ \underline{\mathbf{q}}_{\ell\ell} \mid = \ \underline{\mathbf{q}}_{\mathbf{h}} \equiv \text{the } category \text{ of } [full] \ languages-based, \ \underline{\mathbf{h}} \text{umans-led} \ \underline{'meta}\text{-societ} \\ \underline{\mathbf{q}}_{\ell} \text{ units} \ \underline{\mathbf{q}}_{\ell} \text{ units}$ 

-- and that the full complement of hybridizations of the 'human[oid]ities' category with all of the earlier-evoked, pre-h 'cosmo-ontological' categories extends the **384** categories count to **767** categories. *Every one* of those **767** *categories* deserves *an essay of its own*, to *define its meaning more fully*. Thus, *an* estimate of ~ **800** pages would constitute a conservative guess as to the *length of exposition needed* to *present*, *per our systematic dialectical method of presentation* for, e.g., the **D**<sub>7</sub> *categorial progression*, *with fuller adequacy*. *Moreover*, the **767** *categories count covers only* the *genera or «gene» categories*. *Many of those «gene» categories have multiple «species» categories*. *Some* of *those «species» categories categories*. *Some* of *those «species» categories categories*, i.e., *multiple sub*<sup>1</sup>*-«species» categories. Some* of *those sub*<sup>1</sup>*-«species» categories,* i.e., *multiple sub*<sup>2</sup>*-«species» categories. In turn, some* of *those sub*<sup>2</sup>*-«species» categories exhibit many sub*<sup>1</sup>*-sub*<sup>1</sup>*-sub*<sup>1</sup>*-«species» categories,* i.e., *exhibit many sub*<sup>3</sup>*-«species» categories,* i.e., *solution for a sub*<sup>3</sup>*-«species, categories, in a finite, but often deep, taxonomic, systematic 'qualo-fractally' scaled self-similarity regress. Thus, even* **800** page*s might be far* from *sufficient.* 

<u>«Aufheben»</u> 'meta-unit-ization' in this example, and in the other examples, described herein. The 'universal dialectical architectonic', hidden in our earlier examples herein, is also ingredient in the examples of the four 'category-symbol' solutions described immediately above. Indeed all of the mostly 'full <u>contra</u>-category' solutions in the above-described  $\mathbf{q}_n^{\mathbf{s}=7}$  '''self-involution''' model of 'The <u>Dialectic</u> of Nature NOW', with s denoting the so far maximal <u>presentation s</u>tep number variable, are <u>speci</u>al cases of this general 'universal <u>dialectical</u> architectonic'. <u>This continuity can be shown</u>, in greater detail, for each of the 9 key <u>non</u>-warché» categories in this model, as follows:

- (1)  $\mathbf{q}_{2}(-] \mathbf{q}_{nn} \models \mathbf{q}_{s} \equiv \text{full contra-category of ```sub-atomic ```, composite bosonic & fermionic units, e.g., of proton & meson & hyperon units, as <u>meta-units</u> to the <math>\mathbf{q}_{1}(-] \mathbf{q}_{n} \equiv \text{``sub-nuclear particle ``` <u>non-composite bosonic & fermionic units</u>, e.g., photon, electron, gluon, & quark units. I.e., <u>each typical single <math>\mathbf{q}_{s}$  [meta-]unit is made up out of a heterogeneous multiplicity of [former]  $\mathbf{q}_{n}$  units, e.g., is made up out of gluon & quark units;</u>
- (2) q<sub>3</sub>(-] q<sub>sn</sub> |-≡ q<sub>u</sub> ≡ hybrid <u>uni</u>-category of electro-ne<u>u</u>tral (a.) proton-electron-coalescence ne<u>u</u>tron <u>units</u>, (b.) standard single-electron, single-proton electro-ne<u>u</u>tral <u>Hydrogen</u> '<u>ur-atom</u>' <u>units</u>, (c.) ne<u>u</u>tron star b<u>ulk ne<u>u</u>troni<u>um</u> <u>units</u>, &, per o<u>ur</u> hypothesis, (d.) black hole b<u>ulk</u> 'holoni<u>um</u>' <u>units</u> -- all different <u>unities</u> of <u>q</u><sub>s</sub> & <u>q</u><sub>n</sub> proton & electron units -- i.e., each single such <u>unit is made up of a heterogeneous multiplicity of [former] <u>q</u><sub>s</sub> units <u>& q</u><sub>n</sub> units -- of proton units <u>& electron units</u>;</u></u>
- (3) q<sub>6</sub>(-] q<sub>uu</sub> = q<sub>a</sub> = 'full <u>contra</u>-category' of <u>a</u>tom units, '<u>meta</u>-units' of q<sub>u</sub> units, i.e., such that <u>each</u> single q<sub>a</sub> [<u>meta</u>-]unit is made out of a <u>multiplicity of</u> [former] q<sub>u</sub> units, e.g., is made out of standard ne<u>u</u>tral <u>Hydrogen units</u>, <u>& ne<u>u</u>tron <u>unit(s</u>), 'isotopizing' or otherwise, e.g., via <u>stellar nucleosynthesis</u>;
  </u>
- (4)  $\underline{\mathbf{q}_{12}} (-] \underline{\mathbf{q}_{aa}} \models \underline{\mathbf{q}_{m}} \equiv full contra-category' of <u>molecule units</u>; <u>meta-units</u>' of \underline{\mathbf{q}_{a}} units</u>, i.e., <u>each</u> typical single <math>\underline{\mathbf{q}_{m}}$  <u>molecule [meta-]unit is typically made up out of a heterogeneous multiplicity of [former]</u>  $\underline{\mathbf{q}_{a}}$  <u>a</u>tom units;
- (5)  $\underline{\mathbf{q}}_{24}$  (-]  $\underline{\mathbf{q}}_{mm}$  |=  $\underline{\mathbf{q}}_{p} \equiv \text{full contra-category of } \underline{\mathbf{p}}\text{rokaryotic living cell units}, \text{ (meta-units) of [former] } \underline{\mathbf{q}}_{m} \text{ units},$ i.e., <u>each</u> single  $\underline{\mathbf{q}}_{p}$  prokaryote [meta-]unit is made of a heterogeneous & <u>VAST multiplicity of } \underline{\mathbf{q}}\_{m} molecule units;</u>
- (6) q<sub>48</sub> (−] q<sub>pp</sub> |= q<sub>e</sub> ≡ 'full <u>contra</u>-category' <u>of</u> <u>e</u>ukaryotic living cell units</u>; '<u>meta</u>-units' of [former] <u>p</u>rokaryotic living cell, q<sub>p</sub>, units, i.e., <u>each present</u> single q<sub>e</sub> <u>e</u>ukaryote [<u>meta</u>-]unit is <u>now</u> made up out of a heterogeneous <u>multiplicity of</u> [<u>former</u>] q<sub>p</sub> <u>p</u>rokaryote or <u>p</u>re-eukaryote units, e.g., mitochondrion & chloroplast [& nucleus] organelle units, originally via «aufheben» "endosymbiosis" & "symbiogenesis", e.g., via 'ingestion <u>with</u> arrested digestion'.
- (7)  $\underline{\mathbf{q}}_{96}$  (--]  $\underline{\mathbf{q}}_{ee} \models \underline{\mathbf{q}}_{b} \equiv full contra-category' of <u>multi-[eukaryotic-]cellular</u>, asocial <u>meta-b</u>ion', <math>\underline{\mathbf{q}}_{b}$ , units; <u>meta-units</u>' of  $\underline{\mathbf{q}}_{a}$  units, i.e., <u>each</u> typical single  $\underline{\mathbf{q}}_{b}$  [meta-]unit is made of a <u>vast multiplicity of</u> [former]  $\underline{\mathbf{q}}_{a}$  units;
- (8)  $\underline{\mathbf{q}_{192}} (-] \underline{\mathbf{q}_{bb}} |= \underline{\mathbf{q}}_{\ell} \equiv `full contra-category' of [gestural & vocal, or <u>biochemical</u>] proto-<u>l</u>anguage-based ``anima<u>l</u> society'' unit<u>s</u> & `p<u>l</u>ant society' unit<u>s</u>; '<u>meta</u>-unit<u>s</u>' of <math>\underline{\mathbf{q}}_{b}$  unit<u>s</u>, i.e., <u>each single</u>  $\underline{\mathbf{q}}_{\ell}$  '<u>meta-meta-b</u>ion <u>society'</u> [<u>meta</u>-]unit is made up out of a heterogeneous <u>multiplicity of</u> [<u>former</u>]  $\underline{\mathbf{q}}_{b}$ , formerly '<u>asocial meta</u>-<u>b</u>ion' unit<u>s</u>;
(9)  $\mathbf{q}_{384}(-] \mathbf{q}_{u} \mid = \mathbf{q}_{h} \equiv `full contra-category' of full languages-based, humans-led `meta^1-society' units;$  $`meta^1-units' of <math>\mathbf{q}_{u}$  mere [meta^0-]society units, i.e., each single  $\mathbf{q}_{h}$  [meta^1-]unit is made up out of a heterogeneous multiplicity of [former]  $\mathbf{q}_{u}$  [meta^0-]units, via «aufheben» `endosymsociosis' & `symsociogenesis', led by initially- $\mathbf{q}_{u}$ proto-human[oid] units, e.g., proto-humans proto-social groups ``domesticating'' wolf animal societies into communal hunting dogs and camps' guard dogs, etc.

The contrast of "systematic-dialectical", virtually <u>syn</u>chronic <u>meta</u>-monad-<u>icity</u> RELATIONs, versus "historical-<u>dialectical</u>", <u>dia</u>chronic <u>meta</u>-monad-<u>ization</u> PROCESS<u>es</u>, is <u>illustrated</u>, on the following page, for the case of the universal <u>dialectic</u> of Nature, to <u>presentation</u> <u>step</u> s = 3 and to model-epoch  $\tau = 3$ , respectively.

The <u>pictorial paradigm</u>, for both of the following-page's 'dialectograms', symbolizes 'meta-units containing units', via depicting 'lower-degree category-pictogram enclosures' nested inside 'higher-degree category-pictogram enclosures'.

The «arché» category therein is  $\underline{\mathbf{q}}_{r}$ , not  $\underline{\mathbf{q}}_{n}$ . Category  $\underline{\mathbf{q}}_{r}$  combines the categories  $\underline{\mathbf{q}}_{n}$  and  $\underline{\mathbf{q}}_{s}$  of the 'SYSTEMATIC [singular] <u>Dialectic of Nature NOW</u>' model given above.

Also, both 'dialectograms' depict a dyadic function dialectical model, rather than a triadic function dialectical model such as we have given above.

*Commentary on the Two 'Dialectograms' Below*: The two 'dialectograms' below offer, by their juxtaposition, an opportunity to relate and contrast a *systematic*-dialectical '*meta*-equation *meta*-model' and an *historical*-dialectical '*meta*-equation *meta*-model', of the same **D***omain*. Not just of *any old* **D***omain*, but of the '''<u>A</u>ll''' **D***omain*; of the **D***omain* of the known cosmos/cosmological totality itself, up to its fourth **s**tep/epoch, per o*ur* periodization.

Note that, once again, the *'universal dialectical architectonic'* of dialectical, *«aufheben» part* ial 'chain-*containment'* [as notated via o<u>ur</u> relation-sign ' $\square$ '], i.e., of *'meta*-genealogy' and of *«aufheben»*, dialectical *'meta*-unit-ization' is in evidence in this example also. The *'partial*-containment' relation-sign expression, ' $\underline{X} \square \underline{Y}$ ', signifies that *all* unit<u>s</u> of  $\underline{Y}$  contain unit<u>s</u> of  $\underline{X}$ , but that *not all* unit<u>s</u> of  $\underline{X}$  are contained in unit<u>s</u> of  $\underline{Y}$  --

<u>r</u> IC <u>a</u> IC <u>m</u> IC <u>p</u> -- or --

sub-atomic/pre-atomic particles atoms and molecules prokaryotic/pre-eukaryotic living cells.

Note that the example-model presented above, as well as the two models illustrated below, **are still** <u>in</u>adequate, as models of the ontological-categorial, natural-historical 'meta-evolution' of **our** known universe and of its present ontological units-contents. Adequacy would mean, in part, encompassing every major kind of thing of which we presently know, in terms of **our** universe's total ontology, of all of its past-to-present ontological categor<u>ies</u>. The model presented above, and the two models presented below, are <u>in</u>adequate, at the very least, in that all of these models omit the origin(s) and presence(s) of the units of major ontological categor<u>ies</u> – ontological categor<u>ies</u> of space, of time, of gravity, and of the other presently-known "fundamental forces", e.g., of the "electro-weak force", and of the "strong nuclear force".



We also hold that there already, <u>presently exist partial</u>, '<u>qualitatively-fractional</u>', emergent manifestation<u>s</u> of a next higher category of 'cosmo-ontology', & predict, or 'pre-construct', <u>symbolically</u>, that this new category, <u>un</u>precedented to our knowledge, at least locally, will irrupt via '<u>meta-finite</u> resonance singularity', in the not-too-distant future, namely --

(10)  $\underline{\mathbf{q}}_{768}$  (-]  $\underline{\mathbf{q}}_{hh}$  |=  $\underline{\mathbf{q}}_{y}$  = the *category* of <u>meta</u>-humanit<u>y</u> unit<u>s</u>; of the <u>meta</u>-human'; of <u>meta-meta</u>-society unit<u>s</u>, or of <u>meta</u><sup>2</sup>-society unit<u>s</u>, each one made up out of a <u>heterogeneous <u>multiplicity</u> of <u>meta</u><sup>1</sup>-society', or  $\underline{\mathbf{q}}_{h}$ , unit<u>s</u>.</u>

We hold that a viable higher destiny for human[oid] planets like Earth; for  $\underline{\mathbf{q}}_{\mathbf{h}}$ , for those planets that successfully pass their '<u>Meta-Darwinian Planetary Fitness Tests</u>', is a global, 'socio-politico-economically <u>uni</u>fied' human 'meta-society', i.e., a popularly <u>DEMOCRATIC</u> 'planetary polis'. We therefore also solve  $\underline{\mathbf{q}}_{768}$  (-]  $\underline{\mathbf{q}}_{\mathbf{h}\mathbf{h}}$  as predicting a '''federation''' of <u>multiple planetary «poleis</u>» [hats off to Gene Roddenberry], probably initially limited, within our expanding ecosphere, to a Terran 'planetary polis' and, perhaps, also a Luna satellite polis, both federated with a Mars 'planetary polis'. We also predict that this level and scale of <u>meta-human-social formation</u> will entail 3 species of deep transformations to the individual <u>human[oid]</u> body, whose methods we categorize as: (1) human-genome self-re-engineerings; (2) android robotics, &; (3) 'cyborgic', combining (1) & (2), i.e., unifying human-genomic self-re-engineerings and/with prosthetics/bionics technologies borrowed from android <u>robotics</u>, 'inter-mutually' joined in a 'triad ic species-dialectic'.

Note next that each of, e.g., the 9 key parts of the above  $\underline{D}_2$  dialectical equation, based on a triadic dialectical function, besides its "solved-for", explicit, meta-model-specific name, has also its own generic name, per our interpretation.

**1**. <u>Gen</u>erically, category  $\mathbf{q}_1$  (-]  $\mathbf{q}_n$  is, of course, called the '*«arché»-category' or 'starting category', in <u>this</u> example, <u>specifically</u> for the '<u>present</u>, sufficiently-<u>known</u> whole-cosmos' <u>D</u>omain.* 

**2.** Category  $\underline{\mathbf{q}}_{2}(-] \underline{\mathbf{q}}_{nn} \models = \underline{\mathbf{q}}_{c}$  is called 'first <u>contra</u>-category', in <u>our</u> 'supplementary opposition' sense of 'contra'.

**3**. Category  $\underline{\mathbf{q}}_{3}(-] \underline{\mathbf{q}}_{sn} \models = \underline{\mathbf{q}}_{u}$  is called a given, <u>generic</u> <u>D</u>omain's 'first [<u>full</u>] <u>uni</u>-category'.

4. Category  $\underline{\mathbf{q}}_{4}(-] \underline{\mathbf{q}}_{10}$  is called its 'first partial contra-category', as  $\underline{\mathbf{q}}_{2}(-] \underline{\mathbf{q}}_{3}$  is still implicitly excluded.

**5**. Category  $\underline{\mathbf{q}}_{5}$  (-)  $\underline{\mathbf{q}}_{us}$  is called <u>its</u> 'second <u>partial contra</u>-category', as  $\underline{\mathbf{q}}_{1}$  (-)  $\underline{\mathbf{q}}_{n}$  is still <u>implicitly excluded</u>.

6. Category  $\underline{\mathbf{q}}_{6}(-] \underline{\mathbf{q}}_{usn} \underline{\partial}|=\underline{\mathbf{q}}_{uu}|=\underline{\mathbf{q}}_{a}$  is called a <u>gen</u>eric <u>D</u>omain's 'second <u>full contra</u>-category', because <u>it</u> <u>does</u> implicitly include categorial determinations  $\underline{\mathbf{q}}_{1}(-] \underline{\mathbf{q}}_{n}, \underline{\mathbf{q}}_{2}(-] \underline{\mathbf{q}}_{s}, \underline{\mathbf{k}} \underline{\mathbf{q}}_{3}(-] \underline{\mathbf{q}}_{u}, by being \underline{\mathbf{q}}_{6}(-] \underline{\mathbf{q}}_{uu}, or \underline{\mathbf{q}}_{nsu}, the <u>fruition</u>$  $of the <u>solved self</u>-critique, <math>\underline{\mathbf{q}}_{a} \models = (\underline{\mathbf{k}}, \underline{\mathbf{q}}_{u}) \oplus \underline{\mathbf{q}}_{u}$ , of <u>D</u>omain-adequacy for previous <u>[full]</u> '<u>uni</u>-category',  $\underline{\mathbf{q}}_{3}(-] \underline{\mathbf{q}}_{u}$ . 7. Category  $\underline{\mathbf{q}}_{7}(-] \underline{\mathbf{q}}_{an}$  is called <u>its</u> 'first <u>part</u>ial <u>uni</u>-category' for a <u>gen</u>eric <u>D</u>omain, because it still <u>implicitly ex</u>cludes categorial determination  $\underline{\mathbf{q}}_{2}(-] \underline{\mathbf{q}}_{s}$ .

8. Category  $\underline{\mathbf{q}}_{8}(-]$   $\underline{\mathbf{q}}_{as}$  is called the 'second <u>partial uni</u>-category' for a <u>generic</u> <u>D</u>omain, because <u>it still implicitly</u> <u>ex</u>cludes categorial determination  $\underline{\mathbf{q}}_{1}(-]$   $\underline{\mathbf{q}}_{n}$ .

9. Finally, for  $\underline{D}_2$ , ontic category  $\underline{q}_9$  (-]  $\underline{q}_{asn} \underline{\partial}$  =  $\underline{q}_{au}$  is called the '2nd <u>full uni</u>-category' for a <u>generic</u> <u>D</u>omain.

Note also that, while 'partial contra-categories' do not arise in our generic interpretation of the dyadic method variant, they do arise in our generic interpretation of the triadic method variant. Note lastly a pattern in these category-symbols progressions that generalizes Marx's capital concepts of ''real subsumption''' vs. ''formal subsumption'''. We use the generic  $\underline{D}_n = (P_A \oplus ... \oplus \underline{q}_M \oplus ... \oplus \underline{q}_\Omega \oplus ... (P_A)$  to express '''formal subsumption''', by the  $\underline{q}_\Omega$  ontic category, of 'consecuum-cumulum' ( $P_A \oplus ... \oplus \underline{q}_M \oplus ... (P_A \oplus ... (P_A)$  - i.e., the '''formal subsumption''' of a range of earlier-evoked ontic categories of Domain D, in presentation-step n, by the  $\underline{q}_\Omega$  ontic category. Then, in a later, succeeding multi-categorial ''gualitative superposition', '''sum''', or series, we will have the 'consecuum-cumulum' --

 $\underline{\mathbf{D}}_{\mathsf{n+1}} = \left( \begin{array}{c} \underline{\mathbf{q}}_{\mathsf{A}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{M}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{\Omega}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{\Omega}\mathsf{A}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{\Omega}\mathsf{M}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{\Omega}\mathsf{\Omega}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{\Omega}} \oplus ... \oplus \underline{\mathbf{q}}_{\mathsf{\Omega}\mathsf{\Omega}} \oplus ... \oplus \underline{\mathbf{q}}_$ 

-- wherein the terms-range  $\underline{\mathbf{q}}_{\Omega A} \oplus ... \oplus \underline{\mathbf{q}}_{\Omega M} \oplus ...$  registers the "<u>real</u> subsumption" of categories  $\underline{\mathbf{q}}_{A}$  through  $\underline{\mathbf{q}}_{M} \oplus ...$ by category  $\underline{\mathbf{q}}_{O}$ , plus the "<u>formal</u> subsumption" of all earlier-evoked ontic categories of **D** by ontic category  $\underline{\mathbf{q}}_{\Omega O}$ . In the <u>dyadic method</u>, <u>presented</u> in the <u>immediately preceding <u>sub</u><sup>2</sup>-section herein, <u>every</u> <u>s</u>tep of <u>presentation ends</u> with an added-in, 'meta-meristemal', <u>last</u>, most-complex-yet 'category-symbol', e.g.,  $\underline{q}_{\Omega}$ , one that thereby, by its mere <u>presence</u> there, as only added to [' $\oplus$ '], but not <u>yet</u> multiplicatively [' $\otimes$ '] interacting with, all/any earlier-evoked 'category-symbol(s)', thereby merely 'formally-subsumes' <u>all</u> of those previously-<u>evoked</u> 'category-symbols'.</u>

<u>Every</u> consecutive next <u>s</u>tep then includes the '<u>real</u> subsumption', e.g., by its  $\underline{\mathbf{q}}_{\Omega}$ , of <u>all</u>, save <u>itself</u>, of the 'categorysymbols' that are extant in that <u>immediately</u>, consecutively previous <u>s</u>tep.

<u>Every</u> consecutive next <u>s</u>tep also includes, as its last 'category-symbol', the result of the '<u>self</u>-subsumption',  $\underline{\mathbf{q}}_{\Omega\Omega}$ , of the 'category-symbol',  $\underline{\mathbf{q}}_{\Omega}$ , that has just achieved the ''<u>real</u> subsumption ''' of <u>all</u> 'category-symbols' that precede <u>it</u> in complexity. i.e., that exhibit lower levels/qualo-fractal scales of complexity/determinateness,

That  $\underline{\mathbf{q}}_{\Omega\Omega}$  as the 'self-subsumption category-symbol' for the  $\underline{\mathbf{q}}_{\Omega}$  'category-symbol', thus also <u>begins</u> the next '''formal subsumption ''', of <u>all</u> of the preceding 'category-symbols', now <u>including</u>  $\underline{\mathbf{q}}_{\Omega}$ , by  $\underline{\mathbf{q}}_{\Omega\Omega}$ .

In the <u>triad</u>ic method, on the <u>contra</u>ry, the full accrual of the <u>'really-subsumed category-symbols</u>' can span across more than one <u>s</u>tep <u>after</u> the <u>'''formal</u> subsumption ''' -- by, e.g.,  $\underline{\mathbf{q}}_{oo}$ , or by  $\underline{\mathbf{q}}_{oo}$ , etc. -- first registers.

In conclusion, for this example, please note that, once again, the *'universal dialectical architectonic'* of dialectical, *«aufheben»* 'chain-<u>part</u>ial-<u>containment</u>' ['IL'], i.e., of *«aufheben»*, '''evolute''' dialectical '<u>meta</u>-unit-ization', is abundantly in evidence, in this example too --

<u>n ⊫ s ⊫ a</u> ⊫ <u>m</u> ⊫ <u>p</u> ⊫ <u>e</u> ⊫ <u>b</u> ⊫ <u>ℓ</u> ⊫ <u>h</u>.

-- or --

<u>pre-Nuclears</u>  $\square$  <u>Sub-atomics</u>  $\square$  <u>Atoms</u>  $\square$  <u>Molecules</u>  $\square$  <u>Prokaryotes</u>  $\square$  <u>eukaryotes</u>  $\square$  <u>Meta-biota</u>  $\square$  <u>social organisms</u>  $\square$  <u>human 'meta-societies</u>'.

The 2 'dialectograms' following visualize this '«*aufheben*»-nested', 'containment of the containment of the ... ' relation.

*General Observation*. The view of the successive, progressing ontological states of a given  $\underline{D}$  omain that the  $\underline{NQ}$  Method provides is <u>momentaneous</u> [somewhat analogous to, e.g., the "<u>instantaneous</u>" velocity interpretation of "first derivatives of position with respect to time" in differential calculus], and "<u>stroboscopic</u>". We see each successive "non-amalgamative sum"/" superposition" of category-symbols, representing a qualitatively-distinct 'ontology-state' of the given  $\underline{D}$  omain, as if *just <u>after</u>* it arises, by the self-interaction/self-multiplication/squaring of the immediately-previous 'ontology-state' representation, but also *just <u>before</u>* the self-interaction/self-multiplication/squaring of this new 'ontology-state' representation has even begun. The  $\underline{NQ}$  Method '<u>stroboscopically</u>' freezes each such "momentaneous" moment, and holds it up in "still-life" before our gaze.



Finding Your *Finishing Category* for Your *Systematic <u>Present</u>ation* of that <u>Present</u> of Your <u>Domain</u>. If you continue to '<u>re</u>-iterate' the <u>s</u>tep-wise procedure described above, you will eventually reach a <u>s</u>tep for which you will <u>not</u> be able to "solve for" some or even all of the new 'category-symbols' <u>gene</u>rated by that <u>s</u>tep's critique.

This may be because the collective, human-<u>phen</u>omic "'meme<u>s</u>-pool"' that incites and insights your solution-recognition has **not yet** progressed to the degree necessary to discern **<u>D</u>omain**-ontology aptly symbolized by these 'category-symbol<u>s</u>', even though that ontology is actually <u>present</u> in the <u>present</u> that you are <u>present</u>ing.

Or, it may be because nothing -- at least nothing '''whole''', no <u>full</u> unit<u>s</u> -- corresponding to (that)(those) 'categorysymbol(<u>s</u>)' is/are as yet extant in that <u>present</u>. What we describe as '<u>fract</u>ional presence<u>s</u>', '<u>frag</u>mental, <u>part</u>ial extantc<u>ies</u>', growing with each epoch to rising <u>fract</u>ional '''absolute value<u>s</u>'''; growing monotonically toward <u>qual</u>itative, ontological '<u>whole</u>-presence', may veritably **abound** in the **actualities** of the **Domains** that we map using NQ 'metamodel<u>s</u>'. But such **actual** <u>qual</u>itative, ontological '<u>sub-wholenesses</u>' or '<u>fract</u>ionalit<u>ies</u>' cannot be expressed within the limitation<u>s</u> of that NQ language. In one direction of systematic-dialectical system<u>s</u>-as-categories-progression, e.g., in the "standard arithmetic<u>s</u>" direction of categorial/system<u>s</u> progression, such '<u>fract</u>ionalit<u>ies</u>' cannot be expressed within the limitation<u>s</u> of **it**s successor language<u>s</u>, even as far along in that direction-of-progression as the wQ and <u>zQ</u> axiom<u>s</u>-system<u>s</u> for <u>dialectical</u> arithmetic. The potential for expressibility of such '<u>qual</u>itative, ontological <u>fract</u>ionality' begins only later still, in that direction, with the <u>Q</u> and then with the <u>RQ</u> language<u>s</u>.

In the event of <u>un</u>solvability of or among the latest increment of new 'category-symbols', it may be time to identify the final solvable/definable 'category-symbol', for you, of your categorial progression <u>presentation</u>, and to conclude your <u>presentation</u> with your solution/definition for *that* 'category-symbol'.

Alternatively, [some of] (that)(those) 'category-symbol(')( $\underline{s}$ )(') <u>un</u>solvability may be because the solution( $\underline{s}$ )/definition( $\underline{s}$ ) to that 'category-symbol', or to those 'category-symbols', reside <u>outside</u> of the <u>Domain</u> that you are <u>present</u>ing.

This may be so in the <u>weaker</u> sense of residing <u>outside</u> the <u>present</u> ontological state of that <u>**D**omain</u>, but not outside of some or all of your <u>**D**omain</u>'s <u>future-presents</u>, as expected by you.

Or, it may be so in the <u>stronger</u> sense that the solution( $\underline{s}$ ) to that 'category-symbol', or to those 'category-symbol $\underline{s}$ ', fully transcend that **D***omain* altogether, such that your **D***omain*'s categorial progression has ""ended"" – e.g., with a <u>leap</u> into a new, qualitatively-different, ontologically-different, higher-complexity **D***omain*, perhaps even ending with a category that can serve as the *«arché»* for that next-""higher" **D***omain*.

For our example, above, a case of that weaker sense arises in our solution for the ''algebraic-unknown''' 'categorysymbol'  $\mathbf{q}_{768}$  (-]  $\mathbf{q}_{hh}$  [-=  $\mathbf{q}_{y}$  = the 'cosmo-ontological' category of the 'meta-humanit  $\underline{\mathbf{V}}$ s'; of 'the meta-human'; of 'meta-meta-societies', or of 'meta<sup>2</sup>-societies'.

The <u>**q**</u>, units are expected by us to be «aufheben» 'meta-units' of the <u>**q**</u>, units.

That is, <u>each future / predicted  $\underline{q}_{y}$  unit is expected by  $\underline{u}_{\underline{s}}$  to be made up out of a typically hetero<u>gen</u>eous <u>multiplicity</u> of  $\underline{q}_{\underline{h}}$  units, i.e., <u>of planetary/single-planet</u> '<u>meta</u><sup>1</sup>-society' units</u>. That is, each one of  $\underline{q}_{y}$ 's '<u>meta</u><sup>2</sup>-society' units, we expect, will be a democratically self-governed <u>FEDERATION</u> [again, hats off to Gene Roddenberry]. The <u>multiple units</u>, within and making-up each single such <u>FEDERATION</u> unit we expect will be the various celestial body-based, hetero<u>gen</u>eous '<u>meta</u><sup>1</sup>-societ<u>ies</u>' — e.g., the disparate single-planet, democratically self-governing planetary 'poli', or "poleis", units, collectively denoted by  $\underline{q}_{\underline{h}}$ .

Initially, in our solar system, this might mean a <u>FEDERATION</u> unit uniting an Earth planetary-<u>polis</u>, and, perhaps, also an independent, democratically self-governing Luna satellite-<u>polis</u>, with a Mars planetary-<u>polis</u> [hats off also to Daniel Abraham and Ty Franck].

**Finding Your Ontological-Categorial** *Prediction-Hypothesis* **for the** *<u><i>Future*</u> **of Your** <u>**D**</u>*omain*. If the <u>*present*</u>ly-<u>*un*</u>solvable/<u>*in*</u>definable 'category-symbol(<u>s</u>)' intimate(s), to your mind, probable <u>*future*</u> ontology that you expect will arise in a *future-present* of your <u>**D***omain*, then, if you feel it to be appropriate, you may want to add a "'coda"' to your <u>*presentation*</u> document, expressing your resulting prediction hypothesis, or prediction hypothes<u>es</u>, about one or more such *future-present*(<u>s</u>) and <u>*present*</u>ly-<u>*un*</u>solved-because-*not*-yet-extant categor<u>*ies*</u> of your <u>**D***omain*, **D**.</u></u>

Or, if your solution for a *present*ly-*un*solvable/*in*definable 'category-symbol' -- to your mind -- concretely <u>transcends</u> your **D***omain*, then you may want to characterize, in such a '''coda''', the *new, higher* **D***omain* which the *present*ly*un*solvable/indefinable 'category-symbol(<u>s</u>)', per your hypothesis or hypothes<u>es</u>, inaugurate(s). Perhaps the final, *un*solvable symbol even constitutes the starting-category for a systematic-<u>dialectical</u> *presentation* of one of your predicted [*future-*]*presents* of your thus 'symbolically <u>pre</u>constructed', and 'concretely-transcendent' *new, higher* **D***omain*.

The 'dialectogram' below illustrates the major prediction-hypothesis that emerges, per our solutions, for the example of this sub<sup>1</sup>-section. Its unit[y]-indicating diamond-shaped boxes, for the three «species» category-units, as well as for the single «genos» category-unit, are all bounded by dashed lines, instead of by solid lines. This is to tell readers that all four diamond-shaped-box category-enclosure depiction-units represent, per our hypothesis, ontology that, at least "locally", has <u>never</u> [fully] existed in the past, and which does not yet fully exist in the present, but that we predict will exist in the future. The underscored "ontological [qualitative] "partial" <u>FINITE</u> difference "operators, 'ô', in the dash-lined, rectangularly-"boxed" solution-asserting dialectical equation, indicate that what is presently extant of these three predicted future categorial «monads» are but finite, 'qualitatively <u>FRACTional</u>', 'protoic ' precursors to the predicted future, full 'extantcy' of the «monads» of these predicted future categories. Some examples of these 'protoic species of 'meta-humanity' is humans-like because, initially, it'll be important for such robots to be 'well-relatable' for humans. The arrow symbols, that usually point from left to right, from a predecessor «species»-unit diamond-shaped box in our 'dialectograms', are <u>absent</u> in the 'dialectogram' below, because we expect that these 3 «species» will emerge, &, indeed, already have emerged, toward 'whole-presence', but still only '''fractionally'', in parallel, and approximately <u>concurrently</u>. Of course, this, our expected future, may fail to materialize.



#### **T**<u>H</u>*e* **N**<u>**Q**</u> <u>*Method*</u> <u>*as*</u> <u>*Applied*</u> <u>*fO*<u>*r*</u> <u>*HISTORICAL*</u> <u>*Dialectic*</u>.</u>

By an "'historical <u>dialectic</u>al model'", for a given **D**omain, we mean a <u>dialectic</u>al-mathematical model that <u>gen</u>erates a categorial <u>past-to-present reconstruction</u> of the actual recorded history -- or of the inferred, hypothetical history -- of that given **D**omain, in the form of a [meta-]progression of ontological 'categories-symbols' progressions, or a [meta-]series of '<u>ontic</u>-categories-symbols' series. This '<u>meta</u>-progression' progresses to its next progression per each unit-increment of a **W**hole-number-valued, '<u>meta</u>-exponentiated' ''<u>in</u>dependent variable''',  $\tau$ , as <u>past-to-present</u> epoch-counter variable.

In such a '<u>meta</u>-series', the <u>present</u> epoch 'categor<u>ies</u>-symbol<u>s</u>' represent the 'ontological state' of the <u>Domain</u>, only momentaneously, without 'inter-multiplication' interaction among them as yet, as also at of the <u>start</u> of each <u>generic past</u> epoch,  $\tau$ . The category-symbol<u>s</u> are '''summed'''/'<u>qual</u>itatively superposed'/[ac]<u>cumulated</u>', ''<u>non</u>-amalgamatively'', i.e., '''<u>non</u>-reductively''', for each <u>past epoch</u> value of  $\tau$ , until the <u>present epoch</u> value of  $\tau$  is reached, and <u>its</u> '<u>ontic</u>categorial historical <u>consecuum-cumulum</u>' is computed. Such a <u>dialectic</u>al method, for *historical* <u>dialectic</u>, proceeds in the <u>chronological</u> order of advent of the ontic content<u>s</u> of the given <u>Domain</u>, by means of presenting a progression of <u>epochal</u> ser<u>ies</u> of ontological 'categor<u>ies</u>-symbol<u>s</u>', in the actual, or inferred, historical '''<u>order of appearance</u>''' [cf. Chardin] of the kind<u>s</u> of unit<u>s</u> that those 'category-symbol<u>s</u>' represent. Such a method <u>starts</u> from a 'category-symbol' representing the earliest-to-appear known kind of unit<u>s</u> that still inhere[d] in, and, indeed, that gave birth to, the <u>Domain</u> in question, taking the 'category-symbol' for that category of unit<u>s</u>, or «arithmos» of «monad<u>s</u>», as «arché»-'category-symbol' for that **D**.

Such a method <u>finishes</u>, after successively <u>gen</u>erating a -- perhaps large but alway<u>s finite</u> -- number of <u>epochal</u> 'categorysymbol' increments/incremental 'category-symbol<u>s</u>', with a <u>present</u>-epoch '''sum''' of 'ontological category-symbol<u>s</u>', that '''sum-up''' the 'ontology-state' -- the <u>present</u>, momentaneous 'ontology-<u>inventory</u>' -- of that <u>Domain</u>. In such an ontological-categorial '<u>meta</u>-progression of progressions', or '<u>meta</u>-series of series', the incremental categories/kinds [cf. Plato] of units, for a given historical epoch of that <u>Domain</u>, may be seen as deriving/"descending", '<u>meta-gen</u>ealogically', from those categories/kinds-of-units, already in that series, for one+ earlier-<u>past</u> epochs. A given successor category may also be felt to <u>qual</u>itatively <u>oppose</u> a predecessor category, or to <u>oppose</u> both/all of two [or more] already mutually-<u>opposing</u> predecessor categories, and/or to be a <u>reconciliation</u> of the <u>opposition</u> between <u>opposing</u> pairs+ of predecessor categories.

#### **<u>Dyad</u>ic Versions of THe Q Method as Applied fOr HISTORICAL Dialectic</u>. The method version set forth in**

detail in this sub<sup>1</sup>-section is called, by  $u\underline{s}$ , '<u>dyad</u>ic', because it expands upon a starting category by raising the power of its symbol<u>s</u>' exponent by power<u>s</u> of "the <u>dyad</u>"; of the number **2**. But, herein, w<u>e</u> will **not** describe this '<u>dyad</u>ic algorithmic-heuristic method', mainly, via a power<u>s</u> of **2** approach, for such would involve an advanced <u>arithmetical operation</u>, one that w<u>e</u> term '<u>meta</u>-exponentiation' -- i.e., of exponent<u>s</u> raised to *their own* exponent<u>s</u> -- likely <u>un</u>familiar to many reader<u>s</u>.

**Finding Your** Starting Category for Your Reconstruction of <u>Past-to-Present</u> History for a Given <u>Domain</u>. The '<u>qual</u>itative factorization' procedure, o<u>ur</u> method of discovery of a starting category for a given <u>Domain</u>, which w<u>e</u> have already presented, above, for the '''≈ <u>syn</u>chronic''' [or 'micro-diachronic'], and [taxonomical] '''systematics''' versions of this method, may also be insightfully engaged for the '''[macro-]<u>diachronic''</u>, ''historical''', or 'history-reconstructive', 'ontology-history-modeling' versions. However, the starting category for an '''historical <u>dialectic</u>''' must be the earliest, '''inaugural''', '''seed''' category of the <u>Domain</u> whose history is to be modeled -- whose ontology-history is to be reconstructed, categorially. The starting category's units must be the ontic '''seeds''' potentiating the entire <u>Domain</u>.

#### Expanding Your *Reconstruction* of <u>Past-to-Present</u> History for Your <u>D</u>omain from Your Starting Category.

Once you have found your starting category for the **D**omain whose ontology-history you wish to model -- to <u>reconstruct</u> and to <u>explain</u> -- the <u>next</u> step in this method is to study the historical record regarding that starting category, in relation to its **D**omain as a whole. Indeed, the <u>next</u> step is to understand the interactions among the units of that category, which are signed via the '<u>self</u>-interaction', or "squaring", of its 'category-symbol'. Your starting category should be the ''root''' of its entire **D**omain, the category of your **D**omain that contains, in its native context, the potential to create, over time, your entire **D**omain, the ultimate '<u>meta-gene</u>alogical' ancestor of that **D**omain as it comes to be later, and as a whole. Your study should also help you to bring into focus the <u>next</u> category immanent in your **D**omain, next after that starting category -- the category of units to which the units of your starting category directly gave birth; its '''<u>first</u> offspring'''. But here we are already talking about your model's **epoch 1**. Let's start instead with its **epoch 0**. Let's name your starting category, <u>gen</u>erically, by the 'symbol-name', or 'algebraic-name',  $\mathcal{Q}_A$ . The 'category-symbol'  $\mathcal{Q}_A \equiv \underline{A}$  represents an abbreviation for the name of the key, preeminent <u>qual</u>ity, feature, facet, or attribute that all of the units that are <u>implicit</u> in the ontological category, or "*kind*-of-being" category, denoted by  $\mathcal{Q}_A$ , share in common.

E.g., <u>A</u> might be the first letter of the name of that shared <u>qual</u>ity. Indeed, the 'algebra-name'  $q_A$  "means": "all of those things/units that share <u>qual</u>ity A".

Identifying 'starting category  $\underline{q}_{A}$ ' begins "epoch **0**" of your sought 'model of ontological history' for your <u>**D**</u>omain of interest. Next, to start epoch **1** of that 'model of <u>**D**</u>omain ontology-history', perform the "purely" <u>qual</u>itative computation  $\underline{q}_{A} \iff \underline{q}_{A}$  or  $\underline{q}_{A}^{2}$ , by way of the ' $\iff$ ' "aufheben"-"[self-]multiplication" operation, per its axiomatic definition:

$$\mathcal{Q}_X \iff \mathcal{Q}_X \blacksquare = \mathcal{Q}_X \iff \mathcal{Q}_X \equiv \mathcal{Q}_X \iff \Delta \mathcal{Q}_X - a$$
 "conversion" of ' $\iff$  "multiplication" into ' $\ll$  "addition".

The "<u>self</u>-squared" "product" -- the product of  $\mathcal{Q}_A$  with itself;  $\mathcal{Q}_A$ 's "<u>self</u>-multiplication" -- signifies the <u>self</u>-action of category-sign  $\mathcal{Q}_A$ , i.e., your mental interaction of the <u>A</u>, with[in] the <u>A</u>. The <u>net</u> result(<u>s</u>) of this <u>intra</u>-action inside <u>A</u> is denoted by  $\mathcal{Q}_{AA}$ , meaning the <u>net</u> result(<u>s</u>) of the <u>'self</u>-[inter]action of <u>the <u>A</u>, i.e., of the <u>'intra</u>-action' of the unit<u>s</u>-content of <u>«arithmos</u>»  $\mathcal{Q}_A$ . This means <u>interactions among</u> the unit<u>s</u> that 'category-symbol'  $\mathcal{Q}_A$  <u>uni</u>vocally, and summarily, and collectively represents. Typically, these <u>interactions</u> will, in time, produce <u>qual</u>itatively-different, i.e., <u>ontically</u>-different, new <u>kinds</u> of unit<u>s</u>. These new unit<u>s</u> may be aptly representable by a new 'category-symbol', let's call it  $\mathcal{Q}_B$ :  $\mathcal{Q}_B = -| \mathcal{Q}_{AA}$ .</u>

The ' $\ll$ ' operation represents, in this context, the <u>self</u>- $\ll$ aufheben  $\gg$  mutual-transformation of  $\mathcal{Q}_A$  unit<u>s</u> -- but, '<u>evolutely</u>' so; of only <u>some</u>, not <u>all</u> of the unit<u>s</u> of  $\mathcal{Q}_A$  -- into new unit<u>s</u>; the unit<u>s</u> to be represented by 'category-symbol'  $\mathcal{Q}_B$ . I.e., <u>qual</u>itatively different, ontologically new unit<u>s</u> -- new <u>kinds</u> of unit<u>s</u> -- derive from <u>interactions</u> among <u>older kinds</u> of unit<u>s</u>.

In parallel, at the level of symbols, *new* ontological 'category-symbols' are <u>gen</u>erated by "times" operations among *older*, earlier-<u>gen</u>erated ontological 'category-symbols'.

In this algorithm, that principle extends all the way back to the stipulated starting 'category-symbol', or *«arché»*-symbol, <u>gen</u>erically,  $\underline{q}_A$ . And note that, by the rule<u>s</u> of 'ontological-categorial multiplication' for the  $\underline{Q}_A$  arithmetic, the operation  $\underline{q}_A \iff \underline{q}_A$  or  $\underline{q}_A^2$  will, in part, yield/reproduce  $\underline{q}_A$  again [representing the 'moment of auto-catalysis/self-reproduction of the *«arché»*'].

The typical realit<u>ies</u>/experience<u>s</u> that this mathematical rule is designed to model see "<u>reproduction</u>" of *some*, <u>partial</u>, <u>indefinite <u>quant</u>ity of the <u> $\mathbf{q}_{A}$ </u> type of unit<u>s</u>, often a smaller <u>quant</u>ity of those unit<u>s</u> than existed for epoch **0** of your model, <u>plus</u> the <u>new production</u> of an 'ontological-categorial <u>increment</u>' of <u>new kinds</u> of unit<u>s</u>, collectively represented by the 'category-symbol', or '<u>arithmos</u>»-symbol',  $\underline{\mathbf{q}}_{AA} \equiv \underline{\Delta} \underline{\mathbf{q}}_{A}$ , viz. --</u>

#### $q_{A} \iff q_{A} = q_{A}^{2} \equiv q_{A}^{+} \triangleq q_{A}^{+} \equiv q_{A}^{+} \Rightarrow q_{A}^{+} |= q_{A}^{+} \Rightarrow q_{B}^{+}$

The 'categorial increment' symbol, or 'incremental category' symbol,  $\Delta q_A$ , or  $q_{AA}$ , denotes a <u>later</u>-born '<u>other</u>-category', of *new* unit<u>s</u>; an ontological-categorial <u>other</u>, and an '<u>e</u>volute' <u>successor</u>, to category  $q_A$ , which signs usually still-extant unit<u>s</u>. The unit<u>s</u> implicit in category  $\Delta q_A$  denote the *historical <u>actualization</u>* of a <u>potentiality</u> that already existed, as yet <u>un</u>actualized, in the unit<u>s</u> denoted by category  $q_A$ , in their native context, even during model-epoch **0** of your model.

That <u>*potential*</u> was *not* manifestly <u>*actualized*</u>, as yet, during all of model-epoch **0**. The temporal start of manifestation of this <u>*potential*</u> <u>*actualization*</u> is what defines the <u>*beginning*</u> of epoch **1** of your model.

It is typical that category  $\Delta q_A$  represents units of a <u>kind</u> that, though they differ <u>qual</u>itatively from the units mapped by  $q_A$ , still inhere in, still "belong to", and still nonetheless "belong" with<u>in</u>, <u>Domain</u> D, i.e., still also "reside" in your D.

When symbolized as  $\Delta q_A$ , this category is still, typically, an [algebraic and semantic] <u>un</u>known for you that, yes, is expected to meet certain <u>gen</u>eric criteria, as stated above, but whose <u>speci</u>fic identity within the context of your <u>Domain</u> D is yet to be determined by you.

What completes epoch **1** of your <u>model</u> is your compelling and cogent argument, based upon the data on the history of your <u>Domain</u>, as to the <u>specific</u> identity of category  $\underline{\Delta q}_A$  or  $\underline{q}_{AA}$  within <u>Domain</u> D; that is, your "<u>solution</u> /<u>definition</u> for"  $\underline{\Delta q}_A \equiv \underline{q}_{AA}$ . Often, category  $\underline{\Delta q}_A$  can be "solved" //defined as your <u>Domain</u> D ontic category whose units are '<u>meta</u>-units' to/of some of the former units of category  $\underline{q}_A$ . E.g., each <u>unit</u> of category  $\underline{\Delta q}_A$  may have been <u>gen</u>erated, historically, by an *historical process* of <u>self</u>-«aufheben» 'self-<u>meta</u>-unit-ization' of some [:. former] units of category  $\underline{q}_A$ .

As a result of such a process, each extant, epoch  $\mathbf{1} \underline{unit}$  of  $\langle arithmos \rangle \Delta \mathbf{q}_{A}$  would be made out of a hetero<u>gen</u>eous <u>multiplicity</u> of thus <u>former</u> units of  $\langle arithmos \rangle \mathbf{q}_{A}$ . That is, each <u>unit</u> of category  $\Delta \mathbf{q}_{A}$  or  $\mathbf{q}_{AA}$  is a <u>dialectic</u>al, i.e., is an  $\langle aufheben \rangle$  'meta-unit' -- a negation/conservation/elevation '<u>meta-unit</u>' -- built from/by <u>some</u> of the units, thereby become <u>former</u> units, of  $\langle arithmos \rangle$ /ontological category  $\mathbf{q}_{A}$ .

For example, for the <u>Sub</u>-<u>D</u>omain of 'galactic chemistry', note how some atom<u>s</u> are <u>presently</u> embedded in the higher [more inclusive] organizational 'content-structure<u>s</u>' known as molecule<u>s</u>, in interstellar "molecular[/atomic] cloud<u>s</u>", while other atom<u>s</u>, even inside those self-same "molecular[/atomic]" cloud<u>s</u>, are free of that higher-level of organization. Each typical, now-<u>present</u> molecule unit is a self-«aufheben», <u>dialectical self-negation/-conservation/-elevation 'self-meta-unit-ization</u>' of some formerly molecularly-<u>un</u>bound atom unit<u>s</u>. Each typical molecule unit is made up out of a hetero<u>gene</u>ous <u>multi</u>plicity of atom unit<u>s</u>. Early interstellar 'atomic cloud<u>s</u>' transformed themselves, in interaction<u>s</u>/reactions within themsel<u>ves</u>, as well as with their environment<u>s</u>/native context<u>s</u>, into the later "molecular[/atomic] cloud<u>s</u>", as the progress of stellar nucleosynthesis progressively enriched the interstellar medium -- from which such cloud<u>s</u> "'condense'' -- with growing <u>quant</u>itative accumulation<u>s</u> of a growing diversity of <u>higher</u>-than-Hydrogen-and-Helium atomic species.

For another example, from the <u>Sub-Domain</u> of "'cellular biology", remember that "free-living", "<u>p</u>rokaryotic" or '<u>p</u>re-eukaryotic' living cell<u>s</u> -- including some capable of performing Oxygen <u>respiration</u>, and some others capable of performing Carbon Dioxide <u>photosynthesis</u> [the bio-synthesis, via <u>photons</u>, of energy-richer molecules] -- thereby began manifesting sustained escalating rate<u>s</u> of <u>self</u>-expanding <u>self</u>-reproduction. Thus their extant population<u>s</u>, and their Darwinian fitness, had burgeoned. Consequently, their '<u>phys</u>ical-spatial concentration<u>s</u>', or "'densit<u>ies</u>'", peaked, in some loc<u>i</u>. These cell<u>s</u> therefore interacted with other<u>s</u> <u>such</u> in a context of resulting, fast-increasing frequenc<u>ies</u> of mutual encounter, in way<u>s</u> including what might be characterized as '<u>in</u>gestion with arrested <u>dig</u>estion', in some case<u>s</u>. In such case<u>s</u>, these '<u>in</u>gestor pre-eukaryote<u>s</u>' ended up internally stabilizing their '<u>in</u>gest<u>ee</u> pre-eukaryote<u>s</u>', with some of their descendant<u>s</u> thereby eventually morphing into "<u>e</u>ukaryotic" living cell<u>s</u>, equipped with respirating mitochondri<u>a</u> organelle<u>s</u>, sometimes also with photosynthesizing chloroplast organelle<u>s</u>, the former still retaining, to this day, their own, separate "mitochondrial DNA" [as a vestige of their former <u>gene</u>tic material as "free living", individual, <u>p</u>re-eukaryotic organism<u>s</u>]. Hat<u>s</u> off to Lynn Margulis.

In other case<u>s</u>, no hint of '*aufheben*» <u>meta</u>-unit-ization' may be evident, and 'category-symbol'/algebraic-<u>un</u>known  $\underline{\Delta q}_{A}$ , or  $\underline{q}_{AA}$ , may best be '''solved'''/defined as indicating an ontic category whose unit<u>s</u> are in other way<u>s</u> '*aufheben*» <u>qual</u>itative '<u>otherizations</u>' of, and/or 'disparate<u>s</u>' of, the unit<u>s</u> of category  $\underline{q}_{A}$ , but also as having grown out of the  $\underline{q}_{A}$  unit<u>s</u>.

Suppose that you have decided what  $\Delta \underline{Q}_A$  means to you in the context of the history of your **D**. I.e., suppose that you have found an <u>explicit category</u> of that **D** ontic history, call it  $\underline{Q}_B$ , such that, e.g., '**B**' is the first letter of the/your name for that '<u>second</u>-born' category -- whether or **not** this category has been recognized as such, and named, in <u>known-to-you</u> previous discourse -- that fulfills this role of '<u>second</u>-born <u>other</u>' to category  $\underline{Q}_A$ .

If so, then you have completed your <u>specification</u> of the ontological content of your model's epoch **1** for <u>**D**</u>*omain* **D**; you have "solved for" the meaning/definition of  $\underline{\Delta \varphi}_{A} \equiv \underline{\varphi}_{AA}$ . This solution/definition may be formulated, symbolically, by the expression ' $\underline{\Delta \varphi}_{A} \equiv \underline{\varphi}_{AA}$  |=  $\underline{\varphi}_{B}$ ', wherein the sign '|=" signifies the <u>assertion</u> ['|-"; cf. Frege and Russell] of a <u>definition</u> ['='] [cf. [Plato's] Socrates] for the initially <u>un</u>known meaning of algebraic 'category-symbol'  $\underline{\Delta \varphi}_{A} \equiv \underline{\varphi}_{AA}$ .

Your *epoch*  $\tau$  *'ontology-state'*,  $\underline{D}_{\tau}$ , per your *model* of the *epochal <u>history</u>* of <u>D</u>*omain* D, has now progressed from its initial, *epoch* 0,  $\tau = 0$ , stage, of ' $\underline{D}_0 = \underline{q}_A$ ', to its second, *epoch* 1,  $\tau = 1$ , stage, of ' $\underline{D}_1 = \underline{q}_A <+> \underline{q}_B$ '.

Note that the '++' sign signs a <u>special</u> '''addition''' operation which is ( $\alpha$ ) ''<u>non</u>-amalgamative'' [cf. Charles Musès] for '''<u>un</u>like<u>s</u>''', i.e., for hetero<u>geneous</u>, <u>qual</u>itatively <u>different</u> ''kind<u>s</u>'', or categor<u>ies</u>, which, thereby, do not '''collapse''' into a single category. This is <u>un</u>like familiar addition, in which, e.g., the '**3**' and the '**4**' of '**3** + **4**' do '''collapse''' into a single value, '**7**'. The '<+>' sign also signs an '''addition''' operation which is ( $\beta$ ) '<u>hyper</u>-amalgamative' for <u>likes</u> -- for multiple redundant cop<u>ies</u> of one and the <u>same</u> 'category-symbol'. I.e., by axiom ['**b**'], for any category-of-unit<u>s</u>  $q_A$ ,

 ${}^{\circ}\boldsymbol{\mathcal{Y}}_{A} <+> \boldsymbol{\mathcal{Y}}_{A} = \boldsymbol{\mathcal{Y}}_{A}$ . E.g.,  ${}^{\circ}\boldsymbol{\mathcal{Y}}_{A} <+> \boldsymbol{\mathcal{Y}}_{A}$  does <u>not</u> equal " $\boldsymbol{\mathcal{2}}\boldsymbol{\mathcal{Y}}_{A}$ ". [I.e.,  $\boldsymbol{\mathcal{Y}}_{A}$  is <u>asumbletoi</u> [cf. Plato], or <u>un</u>-sum-able'; an <u>unquantifiable</u> categorial, arithmetical <u>qualifier <u>meta</u>-number'. This also means that the  $\boldsymbol{\mathcal{Q}}_{A}$  axiom<u>s</u>-system<u>s</u> of arithmetic are system<u>s</u> of "purely"-<u>qualitative</u> arithmetics].</u>

To <u>gen</u>erate the represented ontological content of the *next* model-epoch, **epoch 2**, in your model of the ontic history of your **D**omain **D**, apply the '<>' interaction operation, using category  $\mathcal{Q}_B$ , to the fruits of model-epoch **1** of your categorial progression model <u>re</u>construction of **D**omain **D** <u>past history</u>, namely, to  $\langle \mathcal{Q}_A \langle + \mathcal{Q}_B \rangle$ . I.e., apply  $\mathcal{Q}_B$  to category  $\mathcal{Q}_A$  and then to category  $\mathcal{Q}_B$  itself. Then '''sum''' ['<+>'] the results of those two «aufheben» interactions --

 $\mathcal{Q}_{B} \iff \langle \mathcal{Q}_{A} \iff \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{A} \langle \mathcal{Q}_{A} \rangle \end{pmatrix} \iff \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \rangle \langle \mathcal{Q}_{B} \rangle \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \rangle \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \rangle \langle \mathcal{Q}_{B} \rangle \langle \mathcal{Q}_{B} \langle \mathcal{Q}_{B} \rangle \langle \mathcal$ 

[Note: We are using special brackets, [' $\langle \rangle$ '; ' $\langle \rangle$ '], to signify enclosed content consisting of "purely" *qual*itative values, undergirded by the  $\mathbb{N}^{Q}$  'arithmetic of *qual*ities', but this time in a *fully* <u>diachronic</u>, ""[*macro*-]historical-<u>dialectical</u>"" interpretation.].

<u>Results</u>:  $\langle \cdot \langle \cdot \varphi_{B} \Leftrightarrow \varphi_{A} \rangle \langle \cdot \varphi_{A} \Leftrightarrow \langle \cdot \varphi_{B} \otimes \varphi_{B} \rangle \rangle = \langle \cdot \langle \cdot \varphi_{A} \leftrightarrow \varphi_{BA} \rangle \langle \cdot \varphi_{B} \langle \cdot \rangle \langle \varphi_{B} \langle \cdot \rangle \langle \cdot \varphi_{A} \rangle$ , which, e.g., when and once it is *commutatively* re-ordered into the expected *chronological* "order of appearance" [cf. Chardin] of the **D***omain*'s *kinds* in the history of the **D***omain*, becomes  $\langle \cdot \varphi_{A} \leftrightarrow \varphi_{B} \langle \cdot \rangle \langle \varphi_{A} \leftrightarrow \rangle \langle \varphi_{B} \langle \cdot \rangle \langle \varphi_{A} \langle \cdot \rangle \langle \varphi_{B} \langle \cdot \rangle \langle \cdot \rangle \langle \varphi_{B} \langle \langle \cdot \rangle \langle \varphi_{B} \langle \cdot \langle \varphi_{B} \langle$ 

For the '<u>dyad</u>ic' version of this method, but **not** for its '<u>triad</u>ic' version, the 'category-symbol' ' $\Delta q_B$ ' or ' $q_{BB}$ ' is expected to represent the 'second <u>other</u>-category' of this categorial progression. It connotes the '''product''', or result, of your mind's <u>self-inter</u>-action, or '[<u>self-inter</u>-action', of the **2**nd 'category-symbol' in this 'category-symbols' progression. That action represents the preeminent interactions among its actual units, i.e., among the units signed by «*arithmos*»/category  $q_B$  itself, alone. In the '<u>dyad</u>ic' version of this method, '<u>other</u>ization' continually arises anew, in *epoch after epoch*, in ever later *epochs*, '''outflanking''' and surpassing the most-recent-<u>past epoch's 'sym</u> thesis category', by way of the unit<u>s</u>interaction<u>s</u>-signifying, 'categorially self-multiplicative' '''<u>self</u>-action''' of each preceding '<u>other</u>-category symbol', or '<u>anti</u>thesis category-symbol', starting with/from ' $q_{BB}$ '. As with our earlier <u>self</u>-interaction of  $q_A - q_A \iff q_A = q_A^2 =$  $q_A \iff \Delta q_A = q_A \iff q_A = q_A \iff \Delta q_B = q_B \iff \Delta q_B = q_B \iff \Delta q_B$ .

This is the  $\underline{q}_{BB}$  component of your **D***omain* history-model's historical-time-modeling advance beyond the 'ontology-state' of its *epoch* **1**, namely  $\underline{D}_1 = \underline{q}_A \iff \underline{q}_B$ , toward the 'ontology-state' of your model's *epoch* **2**, namely -- $\underline{D}_2 = \langle : \underline{q}_A \iff \underline{q}_B \iff \underline{q}_{BA} \iff \underline{q}_{BB} < \rangle$ .

The full, model-*epoch*-advancing interaction, here named  $(\mathcal{Q}_{B} \iff \langle \mathcal{Q}_{A} \iff \mathcal{Q}_{B} \rangle)$ , is such that this category,  $\mathcal{Q}_{BB}$ , denotes, when "added" together with category  $\underline{\varphi}_{BA}$ , the next incremental, next historically later-to-arise sprouting of new ontic categor<u>ies</u>, modeling the history-advancing *ontic* content, the progressing *kinds-of-beings* content, of your **D***omain* **D**. Suppose that you are able to identify <u>*bi*</u>-vocal' category  $\mathbf{q}_{BA}$  in a <u>*uni*</u>vocal' way, with, say, <u>**C**</u> as abbreviation for the name of the *kind*, of the preeminent <u>quality-of-units</u>, that <u>univocally characterizes your  $q_{BA}$  categorial "<u>syn</u>thesis".</u> You have then "solved for"/defined a meaning for former 'algebraic <u>unknown</u>' category  $\underline{q}_{BA}$ :  $\underline{q}_{BA}$   $\mid = \underline{q}_{C}$ . Suppose further that you are able to identify category  $\underline{\mathcal{Y}}_{BB}$ , in a <u>univocal</u> way, with, say,  $\underline{D}$  as abbreviation for the name of the preeminent <u>qual</u>ity that <u>uni</u>vocally characterizes the units of the  $\underline{q}_{RB}$  new categorial "other". You have then "solved for "/defined your meaning for former 'algebraic <u>unknown</u>' category-symbol  $\underline{\mathcal{Y}}_{BB}$ :  $\underline{\mathcal{Y}}_{BB}$  |=  $\underline{\mathcal{Y}}_{D}$ . Then, if you combine these two solutions, "additively", you will have completed epoch 2 of your historical-dialectical model of Domain D. You will have arrived at that later 'ontology-state', that is the consecutively next one beyond that of your model's epoch **1**,  $\underline{D}_1 = \langle \mathcal{A}_A \langle \mathcal{A}_A \rangle$ , with its **2** (= **2**<sup>1</sup>) terms. You have moved your historical[-<u>dialectical</u>] modeling on to the moreadvanced 'ontic state' of your *epoch* **2**,  $\underline{\mathbf{D}}_{2} = \langle \mathcal{A}_{A} \langle \mathcal{A}_{A} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{D} \rangle \langle \mathcal{A}_{D} \rangle$ , with its **4** (= **2**<sup>2</sup>) term<u>s</u>. The latter is your epoch 2,  $\tau = 2$  shorthand for your categorial progression, ontological categories progression, categorial series symbolical reconstruction of the 'ontological-content-history' of your **Domain D**. In 'meta-genealogical' terms -- in terms of historical-dialectical "'lineages" -- the «*arché*»-category,  $\boldsymbol{q}_{\mathbf{A}}$ , was "'begotten" as a final fruition of another, earlier, **Domain**. Then, next,  $\boldsymbol{\mathcal{Y}}_{A}$  "begat"  $\boldsymbol{\mathcal{Y}}_{B}$  as  $\boldsymbol{\mathcal{Y}}_{AA}$ . Then  $\boldsymbol{\mathcal{Y}}_{A}$  and  $\boldsymbol{\mathcal{Y}}_{B}$  together "beget"  $\boldsymbol{\mathcal{Y}}_{BA}$ , and  $\boldsymbol{\mathcal{Y}}_{B}$  "begets"  $\boldsymbol{\mathcal{Y}}_{D}$  as  $\boldsymbol{\mathcal{Y}}_{BB}$ .

From here on, this <u>dyad</u>ic <u>dia</u>chronic method's procedure is 'helically or spirally [partially] repetitive'. It is merely a matter of, again, applying the most advanced, most-recently-derived 'category-symbol', constructed at the end of your latest model *epoch*. For your *epoch* **2**,  $\tau = 2$ , for example, that 'category-symbol' is  $\mathcal{Q}_{D}$ . First, model the <u>specific</u> «aufheben» interactions <u>among</u> the actual units represented by that -- '<u>meta</u>-meristemal' -- 'category-symbol',  $\mathcal{Q}_{D}$ , <u>with</u> the different <u>kinds</u> of units represented by each of the category-symbols – in general, for *epoch*  $\tau$ , a count of  $2^{\tau} - 1$  distinct category-symbols – that are other-than- $\mathcal{Q}_{D}$ , e.g., 'earlier-model-*epochs*-advented category-symbols'. «Aufheben»-interact that latest 'category-symbol',  $\mathcal{Q}_{D}$ , with all of the other, often-earlier-epochs-generated 'category-symbols', 'extanted' so far. Then, finally, apply  $\mathcal{Q}_{D}$  to itself, also using the ' $\infty$ ' «aufheben» interaction-sign. For example, also for *epoch* **2**, all of this together means applying  $\mathbf{q}_{D}$ , via the ' $\infty$ ' «aufheben» operation, to the '''sum''' (>  $\mathcal{Q}_{A} <+> \mathcal{Q}_{B} <+> \mathcal{Q}_{C} <+> \mathcal{Q}_{D} <$ ), to launch to your model's *epoch* **3**,  $\tau = 3$ .

After that procedure, your next move, per this dyadic historical-dialectical method, is to "solve for"/define the new 'category-symbols' thereby <u>gen</u>erated. For *epoch* **3**,  $\tau = 3$ , since there are  $2^2 = 4$  categor<u>ies</u> inherited from *epoch* **2**,  $\tau = 2$ , there will also be  $2^2 = 4$  additional, new, incremental 'category symbols' to "solve for"/define, after you apply the *epoch* **3**,  $\tau = 3$ , interaction [' $\ll$ '] procedure. In <u>gen</u>eral, for *epoch*  $\tau \ge 1$ , if that *epoch* has inherited  $2^{\tau-1}$  'category-symbols' from model-*epoch*  $\tau - 1$ , then there will be another  $2^{\tau-1}$  additional ontological 'category-symbols', thence to be inherited from *epoch*  $\tau$  by *epoch*  $\tau + 1$ .

"Solving for"/defining each such new increment of initially "algebraic-<u>unknown</u>" 'category-symbol(<u>s</u>)' is simply a matter of **(1)** defining (that)(those) 'category-symbol(<u>s</u>)' in term<u>s</u> of (a) *kind*(<u>s</u>) of *unit*(<u>s</u>) that you can find as having existed in the historical record of the <u>Domain</u> whose <u>past-to-present</u> ontology-history you are modeling, and **(2)** using (an) existing name(<u>s</u>) for (an) already-recognized categor(y)(<u>ies</u>) that encompass(es) those <u>units</u>, or creating (a) new name(<u>s</u>) that will aptly "christen" (that)(those) new 'category-symbol(<u>s</u>)'.

If you continue iterating this *epoch*-wise procedure, a model *epoch* will arrive for which you will *not* be able to solve [*one*, *some*, or even *all* of the] incremental new 'category-symbol(<u>s</u>)' *gene*rated by the recipe for that *epoch*. This may be because the collective, human-*phen*omic, ''meme<u>s</u>-pool''' insight<u>s</u> upon which you draw for such solution-recognition have *not yet* progressed to the degree necessary to discern the **D***omain*-ontology signed by (that)(these) 'category-symbol(<u>s</u>)', *even though* that ontology was, to your later light<u>s</u>, demonstrably *extant* in the *past epoch* that you are *modeling*.

Or, it may be because nothing corresponding to (that)(those) 'category-symbol( $\underline{s}$ )' is [wholly] extant in the historical actuality corresponding to that model *epoch*. In the latter event, it may be time to identify the final solvable/definable "'algebraic-<u>un</u>known"' 'category-symbol' of your categorial progression <u>Domain-history-model</u>, and to conclude your model write-up with your solution/definition for that final <u>present</u>ly-solvable/definable 'category-symbol'. If the <u>present</u>ly-<u>un</u>solvable 'category-symbol( $\underline{s}$ )' intimate(s), to your mind, probable <u>future</u> ontology that you expect will arise in the <u>future-history</u> of your <u>Domain</u>, then, if you feel it to be appropriate, you may want to add a "'coda"' to your model write-up, expressing your resulting prediction hypothes(is)(<u>es</u>) about that, your expected <u>future-history</u> of your <u>Domain</u>. These eventualit<u>ies</u> are addressed in more detail in the next two sub-sub-sections of this sub-section.

Let us now work through model *epoch* **3** for our *gene*ric example. This will further exemplify and clarify what the further iterations of this procedure, e.g., including also those for beyond model *epoch* **3**, *gene*rically and algorithmically involve. To *self*-interact your model-*epoch* **2** 'ontological-categorial consecuum-cumulum', or 'ontology-state' of **D***omain* **D**, so as to get from the  $\underline{D}_2 = \langle \rangle \mathscr{Q}_A \langle + \rangle \mathscr{Q}_B \langle + \rangle \mathscr{Q}_C \langle + \rangle \mathscr{Q}_D \rangle$  model 'ontology-state' of your history-model for **D***omain* **D**, to your *epoch* **3** model 'ontology-state' for that **D***omain*, enact  $\mathscr{Q}_D \langle \rangle \mathscr{Q}_A \langle + \rangle \mathscr{Q}_B \langle + \rangle \mathscr{Q}_C \langle + \rangle \mathscr{Q}_D \langle \rangle$ , and systematically *ord*er the **2**<sup>2</sup> **= 4** new 'category-symbol' terms so *gene*rated. By so doing, you obtain --

-- yielding a total of **8** (=  $2^3$ ) terms, including  $2^2 = 4$  new 'category-symbols' --  $\mathcal{Q}_{DA}$ ,  $\mathcal{Q}_{DB}$ ,  $\mathcal{Q}_{DC}$ , and  $\mathcal{Q}_{DD}$  -- to "solvefor"/define. Suppose that you are able to identify *each* of these  $2^2 = 4$  new, '*bi*-vocal category-symbols' with your symbol for a *uni*vocal, recognized, already-named category, of known units, extant in the *actual epoch* **3**, corresponding to your model epoch **3**, per the *historical record* of the **D***omain* whose *past-to-present ontology-history* you are *modeling*, e.g. --

$$q_{\mathcal{L}_{DA}} \mid = q_{\mathcal{L}_{E}}; q_{\mathcal{L}_{DB}} \mid = q_{\mathcal{L}_{F}}; q_{\mathcal{L}_{DC}} \mid = q_{\mathcal{L}_{G}}; q_{\mathcal{L}_{DD}} \mid = q_{\mathcal{L}_{H}}.$$

If so, then you have achieved the epoch 3 categorial progression model of your Domain's ontology-history --

$$\underline{\mathbf{D}}_{3} = \langle \mathcal{A}_{A} \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{C} \rangle \langle \mathcal{A}_{D} \rangle \langle \mathcal{A}_{D} \rangle \langle \mathcal{A}_{D} \rangle \langle \mathcal{A}_{C} \rangle \langle \mathcal{$$

<u>Example</u>. For a <u>specific example</u> of the <u>application</u> of <u>this generic dyadic diachronic method</u>, <u>suppose</u> that <u>you have</u> <u>selected</u>, or have been assigned, to map the <u>Domain</u> of "<u>human-social formation(s</u>)", D = f, as <u>that</u> whose <u>'socio-ontological' history you are to model</u> -- that is, to <u>reconstruct</u>, <u>symbolically</u>, and to <u>explain</u>.

By the term "<u>human-social formation</u>", we mean the entire <u>psychohistorical process</u> of the «bildung» of <u>human</u> society, as distinct from 'animal-social formations'.

By the term "'<u>human-social formations</u>"", w<u>e</u> mean the <u>psychohistorical progression</u> of forms of <u>human society, from</u> "*"anthropopoiesis"'' to our <u>present</u>, as a series of distinct kinds of <u>human society</u>, each kind defining its own <u>specific</u> <u>'socio-ontic' category of <u>human "social relations of production</u>"'[Marx] '<u>socio-ontology</u>', corresponding to rising levels of 'the <u>self-productivity' of humanity</u>, i.e., of 'the societal self-reproductive self-force' of the expanding <u>human</u> <u>speci</u>es, or of the 'meta-Darwinian fitness' of <u>same</u>. The term "social formation" is used frequently, by Marx, in his surviving writings -- both those published by him, during his lifetime, and those not* published by him -- as well as in the posthumous literature on his work. That term is used to <u>name or describe many distinct aspects</u> of the <u>human-social</u> <u>phenomenon</u>. Herein, w<u>e</u> will use this term, "'[<u>human-]social formation</u>"', to refer to an historically ever more "'<u>geo-physical</u>'', and "'<u>geo</u>-morphological'' aspect of Terran <u>humanity</u>; to refer to the '''shapes''' of the ''<u>physical</u> plants''' of <u>human social constructions</u>, and '''infrastructures''', e.g., upon the face of the Earth, and in space<u>s</u> excavated just beneath Earth's surface, forming, in effect, a new envelope, of "<u>noospheric</u>" [cf. Chardin; cf. Vernadsky], layered/stratified, <u>meta-geological layerings</u>, atop the 'conspheroidal' strata of the lithosphere, i.e., atop the earliernature-built layers of <u>pre-human-natural/geological formations</u>; <u>geological "strata</u>".</u>

This example will show how an <u>Q</u> '<u>dialectic</u>al-mathematical <u>meta</u>-model', <u>present</u>ing a core categorial progression of

'<u>self</u>-«aufheben» <u>self-meta</u>-«monad»-ization<u>s</u>', 'time-mapping' a '''<u>psycho-physical</u>''' &, indeed, a <u>psychohistorical</u> material progression, can capture main features of the ontology-history of such '''<u>human-social formation(s)</u>''' on Earth. An excerpt, inserted below, from Robert Wright's synthesis of the archaeological & historical literature on this story, in his book <u>Nonzero</u>: The Logic of Human Destiny [New York: Pantheon Books, 2000] provides <u>key</u> 'thematics', anchoring our narration of this <u>dialectical</u> ''<u>'history-model</u>''', in the 'dialectogram' diagram<u>s</u> which follow, below.

Suppose that you selected a category connoted by the symbol ' $Q_b$ ', standing for the <u>socio</u>-ontological category of huntergatherer/forager/scavenger <u>b</u>ands -- <u>typically</u> composed of family-related [<u>proto</u>-]human[oid]s; i.e., of close kin -- as your starting category for the <u>D</u>omain of '''<u>human-social formations</u>''', D = f.

Suppose that *you* have also been able to "solve for"/define the further 'category-symbol<u>s</u>' of the categorial expansion for this  $D = f \underline{D}omain$ , *beyond model epoch* **0**, as follows, with these *solutions/definitions* decoded as per the 'dialectogram' diagrams below, where the *full <u>dialectical model-equation</u>* for and through *epoch* **5** *is also* given. This *model-equation* features just **1** *term* on its LHS [Left-Hand Side], raised to its **32**nd power, *versus* **32** *terms* on its RHS [Right-Hand Side]. So supposing, you would have addressed the following epoch-wise *categorial 'series of series'*, *here once again with 'generic*  $\sqrt{Q}$  *meta-numeral' attributions noted* via the relation-sign '[->' --

• <u>Model epoch</u>  $\mathbf{0}, \mathbf{q}_{\mathbf{b}}^{2^{\mathbf{0}}} = \mathbf{q}_{\mathbf{b}}^{1} = \mathbf{q}_{\mathbf{b}} \equiv \underline{\mathbf{socio-ontological category'}} \circ f hunter-gatherer/forager/scavenger <u>b</u>ands:$ 

 $\therefore \text{ for Model epoch } \tau = \mathbf{0}, \underline{\mathbf{D}}_{\tau} = \underline{\mathbf{D}}_{\mathbf{0}} = \langle > \underline{q}_{\mathbf{b}} < \rangle [\longrightarrow \underline{\mathbf{q}}_{\mathbf{1}}. \text{ This category, denoted, } \underline{\mathbf{b}}, \text{ is } \underline{\mathbf{o}} \underline{ur} \text{ stipulated } \underline{\mathbf{D}} \text{omain } \mathbf{f} \ll arché > ;$ 

- <u>Model epoch</u> 1,  $q_{b} \leftrightarrow q_{b} = q_{b}^{2^{1}} = q_{b}^{2} = q_{b} \leftrightarrow q_{bb}$ ; the new 'category-symbol' of which, named  $q_{bb}$ , we solve for/define as  $q_{bb} \models q_{c} \equiv (socio-ontic category' of <u>multi</u>-band, <u>sporadically-occupied camps</u>. [<u>meta-]bands</u> of <u>bands</u>$  $<math>\mid = camps, q_{c}$ .
- $\therefore \text{ for } Model epoch \ \tau = \mathbf{1}, \ \underline{\mathbf{D}}_{\tau} = \underline{\mathbf{D}}_{\mathbf{1}} = \langle \mathsf{P}_{\mathbf{1}} \mathsf{P}_{$

We solve for/define the latter, 2, new, initially algebraic/<u>unknown</u> 'category-symbols' contained therein as --

- <u>q</u><sub>3</sub> <--] <u>q</u><sub>cb</sub> |-≡ <u>'socio-ontological category</u> 'of, e.g., interactions/'' conversions ''' of <u>q</u><sub>b</sub> units by/into <u>q</u><sub>c</sub> units, e.g., single band camps, viz., <u>Camps arising</u> from rapid growth of single bands, as well as from fusions of <u>multiple bands</u>, as <u>catalyzed/imposed</u> by the presence/actions/competition of already existing camps;
- $\underline{\mathbf{q}}_{4} \leftarrow \underline{\mathbf{q}}_{cc} \models \underline{\mathbf{socio-ontological category'} of, e.g., mutual \underline{self-interactions/mutual ```\underline{self-conversions} ``` of \underline{\mathbf{q}}_{c} units \\ \underline{\mathbf{nto}} \ \underline{\mathbf{q}}_{u} units; into \underline{\mathbf{multi}} \cdot \underline{\mathbf{c}} amp, \underline{longitudinally} \cdot occupied \underline{\mathbf{v}} illages. [\underline{meta} ]\underline{\mathbf{c}} amps of \underline{\mathbf{c}} amps | = \underline{\mathbf{v}} illages, \underline{\mathbf{q}}_{u}.$
- $\therefore \text{ for } Model epoch \ \tau = 2, \ \underline{D}_{\tau} = \underline{D}_{2} \ \partial |= \langle > \underline{q}_{h} <+> \underline{q}_{c} <+> \underline{q}_{ch} <+> \underline{q}_{c} <\rangle;$

• <u>Model epoch</u> 3,  $\langle \rangle \, q_{b} \, \leftrightarrow \rangle \, q_{c} \, \leftrightarrow \rangle \, q_{cb} \, \leftrightarrow \rangle \, q_{v} \, \langle \rangle^{2}$ , equal to the '''sum''' from  $q_{v} \, \leftrightarrow \rangle \, q_{b} \, \leftrightarrow \rangle \, q_{c} \, \leftrightarrow \rangle \, q_{cb} \, \leftrightarrow \rangle \, q_{v} \, \langle \rangle \, q_{b} \, \langle \rangle \, q_{cb} \, q_{cb} \, \langle \rangle \, q_{cb} \, q_{cb} \, q_{cb} \, \langle \rangle \, q_{cb} \,$ 

We solve for/define the latter, 4 new, model epoch 3, initially algebraic/<u>unknown symbols formed thereby as --</u>

- <u>**q**</u><sub>5</sub> <--] <u><u>4</u><sub>vb</sub> |-= <u>'socio-ontological category' of</u>, e.g., interaction<u>s</u>/''<u>'conversions</u>''' of <u><u>4</u><sub>b</sub> unit<u>s</u> by/into <u>4</u><sub>v</sub> unit<u>s</u>, e.g., single band <u><u>v</u>illages</u>, viz., <u><u>v</u>illages arising from rapid growth of single bands</u>, as well as from <u>multiple</u> band<u>s</u>' fusion<u>s</u> directly into <u><u>v</u>illages</u>, as <u>catalyzed/imposed</u> by the presence of/interaction<u>s</u> with/competition from, already extant <u><u>v</u>illages</u> ["uneven development" leading to "combined development" [cf. Trotsky]];</u></u>
- $\underline{\mathbf{q}}_{6} < \underline{\mathbf{q}}_{vc} \quad |= \underbrace{\mathsf{socio-ontological category'of, e.g., interactions}/```conversions}''' of \underbrace{\boldsymbol{q}}_{c} units with/into \underbrace{\boldsymbol{q}}_{v} units, e.g., \\ single camp \underline{\mathbf{v}}illages, viz., \underline{\mathbf{v}}illages arising by rapid growth of single camps, as well as by <u>multiple</u> \\ \underline{\mathbf{C}}amps' fusions, as catalyzed by \underbrace{\boldsymbol{q}}_{v} presences;$
- <u>q</u><sub>7</sub> <--] *q*<sub>vcb</sub> |-= '<u>socio-ontological category</u>' of, e.g., interactions/'''conversions''' of *q*<sub>cb</sub> units with/into *q*<sub>v</sub> units, e.g., single band camp <u>v</u>illages, viz., <u>v</u>illages arising from rapid growth of single band camps, as well as from <u>multiple</u> single band camps' fusions; from <u>multiple</u> single band <u>camps</u>' coalescences into <u>v</u>illages, as <u>catalyzed/imposed</u> by the actions of already existing <u>v</u>illages;
- $\underline{\mathbf{q}}_{8} \leftarrow \underline{\mathbf{q}}_{vv} \models \underline{\mathbf{socio}} \text{ ontological category ' of, e.g., } \underline{self} \text{ interactions} / `` \underline{self} [mutual] \text{ conversions} '`' of \underline{\mathbf{q}}_{v} \text{ units} \text{ into } \underline{\mathbf{q}}_{f} \text{ units; into } \underline{multi} \cdot \underline{\mathbf{v}} \text{ illage, central} \cdot \underline{\mathbf{v}} \text{ illage-ruled chiefdoms}. [meta-] \underline{\mathbf{v}} \text{ illages of } \underline{\mathbf{v}} \text{ illages} \models \underline{\mathbf{chiefdoms}}, \underline{\mathbf{q}}_{f}.$
- $\therefore \text{ for } \underline{Model \ epoch} \ \tau = \mathbf{3}, \underline{\mathbf{D}}_{\tau} = \underline{\mathbf{D}}_{\mathbf{3}} \partial |= \langle \cdot \ \underline{q}_{\mathsf{b}} <+> \underline{q}_{\mathsf{c}\mathsf{b}} <+> \underline{q}_{\mathsf{c}\mathsf{b}} <+> \underline{q}_{\mathsf{v}\mathsf{b}} <+> \underline{q}_{\mathsf{v}\mathsf{c}} <+> \underline{q}_{\mathsf{v}\mathsf{v}} <+> \underline{q}_{\mathsf{v}\mathsf{v}} <+> \underline{q}_{\mathsf{v}\mathsf{v}} <+> \underline{q}_{\mathsf{$
- <u>Model epoch</u> 4,  $\langle \rangle \, \underline{q_b} \, <+> \underline{q_c} \, <+> \underline{q_v} \, <+> \underline{q_t} \, <\rangle^2 = \text{the ```sum''' resulting from the categorial multiplication' -- \underline{q_f} <<> \langle \rangle \, \underline{q_b} \, <+> \underline{q_v} \, <$

 $\langle \cdot \mathcal{Q}_{\mathsf{f}} \leftrightarrow \mathcal{Q}_{\mathsf{b}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{c}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{cb}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{v}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{vb}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{vb}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{vc}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{vc}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{vc}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{f}} \otimes \mathcal{Q}_{\mathsf{vc}} \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{fcb}} \rangle \langle \cdot + \rangle \langle \cdot + \rangle \langle \cdot \mathcal{Q}_{\mathsf{fcb}} \rangle \langle \cdot + \rangle \langle \cdot$ 

i.e., equals the **16** (= **2**<sup>4</sup>) *terms heterogeneous*/«*asumbletoi*»/"*non*-amalgamative [*un*solved] sum" --

 $\langle \cdot \underline{q}_{\mathsf{b}} < + \rangle \underline{q}_{\mathsf{c}} < + \rangle \underline{q}_{\mathsf{c}\mathsf{b}} < + \rangle \underline{q}_{\mathsf{v}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{v}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{v}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{f}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{f}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{f}\mathsf{c}\mathsf{b}} < + \rangle \underline{q}_{\mathsf{f}\mathsf{v}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{f}\mathsf{c}} < + \rangle \underline{q}_{\mathsf{f}} < + \rangle \underline{q}$ 

We solve for/define the <u>final</u> term of the latter, 8, new, model epoch 4 'category-symbols' contained therein as -  $q_{16} \leftarrow q_s \equiv q_s \equiv cocio-ontological category' of, e.g., <u>self-interactions</u>/''self-conversions'' of <math>q_f$  units into  $q_s$ units, i.e., into <u>multi</u>-chiefdom, <u>multi</u>-tribe city-states. [meta-]chiefdoms of chiefdoms |= city-states,  $q_c$ .

:. for *Model epoch*  $\tau = 4$ ,  $\underline{D}_{\tau} = \underline{D}_4 \partial |=$ 

 $\langle > \boldsymbol{\mathcal{Y}}_{b} < +> \boldsymbol{\mathcal{Y}}_{c} < +> \boldsymbol{\mathcal{Y}}_{cb} < +> \boldsymbol{\mathcal{Y}}_{vb} < +> \boldsymbol{\mathcal{Y}}_{vc} < +> \boldsymbol{\mathcal{Y}}_{vcb} < +> \boldsymbol{\mathcal{Y}}_{fb} < +> \boldsymbol{\mathcal{Y}}_{fc} < +> \boldsymbol{\mathcal{Y}}_{fcb} < +> \boldsymbol{\mathcal{Y}}_{fvb} < +> \boldsymbol{\mathcal{Y}}_{fvc} < +> \boldsymbol{\mathcal{Y}}_{fvc} < +> \boldsymbol{\mathcal{Y}}_{fvcb} < +> \boldsymbol{\mathcal{Y}}_{s} < \rangle.$ 

• Model epoch 5,

 $\langle > \underline{q_b} < +> \underline{q_c} < +> \underline{q_c} < +> \underline{q_v} < +> \underline{q_v} < +> \underline{q_{vcb}} < +> \underline{q_{fc}} < +> \underline{q_{fc}} < +> \underline{q_{fc}} < +> \underline{q_{fvc}} < +> \underline{q_{fvc}} < +> \underline{q_{fvc}} < +> \underline{q_{fvc}} < +> \underline{q_s} < \rangle^2 = the ```<u>non</u>-amalgamative sum''' of `category-symbols' resulting from the `categorial multiplication' --$ 

 $\begin{aligned} &\mathcal{Y}_{s} < > \langle \rangle \ \mathcal{Q}_{b} < +> \mathcal{Q}_{c} < +> \mathcal{Q}_{cb} < +> \mathcal{Q}_{vb} < +> \mathcal{Q}_{vb} < +> \mathcal{Q}_{vcb} < +> \mathcal{Q}_{vcb} < +> \mathcal{Q}_{fb} < +> \mathcal{Q}_{fc} < +> \mathcal{Q}_{fcb} < +> \mathcal{Q}_{fvb} < +> \mathcal{Q}_{fvb} < +> \mathcal{Q}_{fvcb} < +> \mathcal{Q$ 

 $= \langle \circ q_{b} < + \circ q_{sb} < \rangle < + \circ \langle \circ q_{c} < + \circ q_{sc} < \rangle < + \circ \langle \circ q_{cb} < + \circ q_{scb} < \rangle < + \circ \langle \circ q_{v} < + \circ q_{sv} < \rangle < + \circ \langle \circ q_{vb} < + \circ q_{svb} < \rangle < + \circ \langle \circ q_{vc} < + \circ q_{svc} < \rangle < + \circ \langle \circ q_{vc} < + \circ q_{svc} < \rangle < + \circ \langle \circ q_{vc} < + \circ q_{svc} < \rangle < + \circ \langle \circ q_{vc} < + \circ q_{svc} < \rangle < + \circ \langle \circ q_{vc} < + \circ q_{svc} < \rangle < + \circ \langle \circ q_{tb} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{tc} < + \circ q_{stc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{tc} < \rangle < + \circ \langle \circ q_{tc} < + \circ q_{tc$ 

i.e., equals the **32** (= 2<sup>5</sup>) *terms heterogeneous*/«asumbletoi»/"<u>non</u>-amalgamative sum" --

 $\langle \cdot \boldsymbol{\mathcal{Q}}_{b} \langle + \rangle \boldsymbol{\mathcal{Q}}_{c} \langle + \rangle \boldsymbol{\mathcal{Q}}_{cb} \langle + \rangle \boldsymbol{\mathcal{Q}}_{vcb} \langle + \rangle \boldsymbol{\mathcal{Q}}_{vcb} \langle + \rangle \boldsymbol{\mathcal{Q}}_{fb} \langle + \rangle \boldsymbol{\mathcal{Q}}_{fc} \langle + \rangle \boldsymbol{\mathcal{Q}}_{fvb} \langle + \rangle \boldsymbol{\mathcal{Q}}_{fvc} \langle + \rangle \boldsymbol{\mathcal{Q}$ 

:. for *Model epoch*  $\tau = 5$ ,  $\underline{D}_{\tau} = \underline{D}_{5} =$ 

 $\langle \cdot \boldsymbol{\mathcal{Y}}_{b} < + \rangle \boldsymbol{\mathcal{Y}}_{c} < + \rangle \boldsymbol{\mathcal{Y}}_{c} < + \rangle \boldsymbol{\mathcal{Y}}_{v} < + \rangle \boldsymbol{\mathcal{Y}}_{vc} < + \rangle \boldsymbol{\mathcal{Y}}_{vc} < + \rangle \boldsymbol{\mathcal{Y}}_{fc} < + \rangle \boldsymbol{\mathcal{Y}}_{fc} < + \rangle \boldsymbol{\mathcal{Y}}_{fc} < + \rangle \boldsymbol{\mathcal{Y}}_{fc} < + \rangle \boldsymbol{\mathcal{Y}}_{fvc} < + \rangle \boldsymbol{\mathcal{Y}}_{fvc} < + \rangle \boldsymbol{\mathcal{Y}}_{fvc} < + \rangle \boldsymbol{\mathcal{Y}}_{sb} < + \rangle \boldsymbol{\mathcal{Y}}_{sb} < + \rangle \boldsymbol{\mathcal{Y}}_{sc} < + \rangle \boldsymbol{\mathcal{Y}}$ 

We leave univocally solving-for/defining the remaining 15 new 'category-symbols', generated but left unsolved above, to you, the reader, as an exercise. We have already given you, above, our solutions/definitions for  $q_{ff}$  and for  $q_{ss}$  as support to you for conducting that exercise.

### The [Psycho]<u>Historical Dialectic of human-social formation(s)</u> – Connotations of Key 'Self-Hybrid', 'Self-Conversion' Terms.

 $\begin{aligned} & = \operatorname{carchd-physics} \operatorname{socio-ontological category of human-social formation; arithmoly of hunting/gathering/foraging "band" units/ anonadys;$  $<math display="block"> \hat{a}_{n}^{\dagger} \hat{b}_{b} \mapsto \hat{b}_{1} \vdots \\ & = \operatorname{1sr} \operatorname{meta-mgano-sphysics} \operatorname{socio-ontological category of human-social formation; of the sarithmoly of "Gamp" units/ smonadys;$  $<math display="block"> \hat{a}_{n}^{\dagger} \hat{b}_{b} \stackrel{i=}{=} \hat{a}_{n}^{\dagger} e \mapsto \hat{b}_{2} : Each Gamp unit that is [initially] made up out of a heterogeneous multiplicity of band units;$  $<math display="block"> \operatorname{"primitive accumulation"} of Gampy units [self-saufhebens meta-unit-ization]; \\ & = \operatorname{2nd} \operatorname{meta-mgano-sphysics} \operatorname{socio-ontological category of human-social formation; of the sarithmoly of "Yillage" units/ anonadys;$  $<math display="block"> \hat{a}_{n}^{\dagger} \hat{b}_{c} \stackrel{i=}{e} \hat{a}_{p}^{\dagger} e \mapsto \hat{b}_{4} : Each Yillage unit is [initially] made up out of a heterogeneous multiplicity of Gamp units;$  $<math display="block"> \operatorname{"primitive accumulation"} of Yillage units [Self-saufhebens meta-unit-ization]; \\ & = \operatorname{3rd} \operatorname{meta-mgano-sphysics} \operatorname{socio-ontological category of human-social formation; of the sarithmoly of "chiefdom" units/ anonadys;$  $<math display="block"> \hat{a}_{n}^{\dagger} \cdot v \stackrel{i=}{e} \hat{a}_{n}^{\dagger} \stackrel{i=}{e} \mapsto \hat{b}_{3} : Each chiefdom unit is [initially] made up out of a heterogeneous multiplicity of Yillage units;$  $<math display="block"> \operatorname{"primitive accumulation"} of chiefdom units [self-saufhebens meta-unit-ization]; \\ & = \operatorname{3rd} \operatorname{"meta-mgano-sphysics"} \operatorname{socio-ontological category of human-social formation; of the sarithmoly of "chiefdom" units/ anonadys;$  $<math display="block"> \hat{a}_{n}^{\dagger} \stackrel{i=}{f} \stackrel{i=}{=} \hat{a}_{n}^{\dagger} \stackrel{i=}{f} \stackrel$ 

'[<u>Psycho]Historical-Dialectical Meta</u>-Equation

of human-social Meta-Evolution' --

[<u>Psych</u>o]Historical <u>Dialectic of</u> '<u>Human</u>-Nature-al' History, human-social formation(s), to model-epoch 5.

$${}^{2}_{a}$$
  $\overset{\bullet}{\underset{}}$  =  $\langle {}^{2}_{b} {}^{0}_{b} {}^{2}_{b} {}^{5}_{c} \approx \langle {}^{2}_{b} {}^{0}_{b} {}^{2}_{b} {}^{32}_{c} \approx {}^{0}_{b} {}^{0}_{b} {}^{32}_{c} =$ 

| ()<br>          | (∲ <sup>ĝ</sup> c        | ∲ <sup>©</sup> cb          | (¢ĝ <sub>v</sub> )        | ∲Ŷ <mark>vb</mark>         | ⊕ <sup>ĝ</sup> vc           | ⊕ <sup>©</sup> vcb            | (⊕ <sup>ĝ</sup> <sub>J</sub> f | \$ |
|-----------------|--------------------------|----------------------------|---------------------------|----------------------------|-----------------------------|-------------------------------|--------------------------------|----|
| <sup>©</sup> fb | <b>⊕</b> <sup>©</sup> fc | ⊕ <sup>©</sup> fbc         | <b>⊕</b> 9₀ <sub>fv</sub> | ₽Ŝ                         | <b>∲</b> ∲ <mark>fvc</mark> | <b>⊕</b><br><sup>®</sup> fvcb | (De ĝ_s)                       | ¢  |
| Sb              | <b>⊕</b> 9 <sub>sc</sub> | ₽Ŝscb                      | ₽Ŷsv                      | <b>⊕</b><br>Syb            | <b>⊕</b><br>Svc             | <b>⊕ ∮</b> svcb               | ¢Ŝsf                           | ¢  |
| Sfb             | ∲ <sup>©</sup> sfc       | <b>⊕</b> <sup>9</sup> sfcb | <b>⊕</b> <sup>9</sup> sfv | <b>⊕</b> <sup>ĝ</sup> sfvb | <b>∲</b><br>sfvc            | <b>⊕</b> 9 <sub>sfvcb</sub>   | eq.                            |    |

\*Full equality here requires 'dyadic expansion'

\*\*On the right-hand-side [RHS] of this 'quasi-equation', the three 'dialectical diacritical marks', included on the LHS, have been dropped, thus precluding exact equality.



Diachronic Direction/Dimension of Self-Proliferation, of "Auto-Catalysis", or of Expanded Self-Reproduction, of Monadic Populations.

# '''Inventory''' of 'Latest Epoch Incremental, Ontologically Unprecedented' <u>human-social formations</u> 'Socio-Ontology'

as of '<u>Meta-Model</u>' Epoch  $\tau = 5$ : ancient <u>empires</u> as '<u>meta</u>-meristem'.

| ${}^{2}_{h} \mathbf{\mathcal{K}}_{5}^{f} \diamond {}^{2}_{h} \mathbf{\mathcal{K}}_{4}^{f} = \diamond {}^{2}_{h} \mathbf{\mathcal{K}}_{4}^{f} \models \diamond $ | $\begin{array}{c} & & & & \\ & & & \\ & & \\ & & \\ & & \\ & & \\ &$ |  |  |  |  |  |
|--|---|--|--|--|--|--|
| Sfb Sfc  | → ↔ ↔ ↔ ↔ ↔ ↔ ↔ ↔ ↔ ↔ ↔ ↔ ↔ €.  |  |  |  |  |  |
| In his book <u>Non-Zero</u> . Robert Wright describes the generic 'multi- <u>city state</u> ' " <u>empires</u> " stage of human-social formation, as follows   | "The main point is that the story in China moves in the same direction as the stories elsewhere."<br>"The Shane's successor – the Chen, who dominated the first millennium $B \subset [E_{-} \in E_{-} ]$ – forced a vast state with many   |  |  |  |  |  |
| "Still, even after granting these early and occasionally momentous contacts, we are left with three large realms of ancient civilization, quite removed from each other: China, the Near East, and the New World."   | "But control was diffuse, and Chou principalities – Ch'i, Ch'in, Chin, Ch'u, and others – finally fell into open warfare."  |  |  |  |  |  |
| "The scholarly consensus is that each developed its energy and information technologies - farming and writing -<br>indigenously."  | The Ch'in eventually prevailed, carrying Asian political unity to unprecedented scope. Hence the name China   |  |  |  |  |  |
| "And each underwent its early civilizational history in essential isolation from the others."  | "Keanwhile, back in the Near East, more names had come and gone, and the regions they represented had continued to<br>get bigger, if fitfully: the Assyrian <u>empire</u> dwarfed the Akkadian and was in turn dwarfed by the Persins <u>Empire</u> ,<br>which was then overcome by Alexander the Great (the "son of God" and "general governor and reconciler of the world"),<br>whose Macedonian <u>empire</u> would soon be overshadowed by the Roman <u>Empire</u> (its emperor being "the savior of all<br>mankind")."   |  |  |  |  |  |
| "Yet, in all three cases, the same thing happened."<br>"In all three regions, loosely defined <u>city states</u> - urban cores surrounded by farmlands and willowers and tawars -  |   |  |  |  |  |  |
| seem to have evolved   | "If in 200 B.C.[EFED] the Han, or the Romans, had magically gotten a peek at life in the New World, they would<br>have been unimpressed. A casual glance across the Americas would have suggested a hemisphere full of samees and<br>have been unimpressed. A casual glance across the Americas would have suggested a hemisphere full of samees and  |  |  |  |  |  |
| "And these <u>either statese</u> merged, forming <i>multicity states</i> , and these <i>multicity states</i> grew into <u>empires</u> ."   | and there, visible on close inspection, were cradles of <i>civiliation</i> , small pockets where culture was crossing the hazy line between <i>chiefdom</i> and <i>state</i> ."   |  |  |  |  |  |
| The first raige mutation state in vector and was use Akkadan entry to find about 250 BX. [ $E = -1$ . $\underline{E}$ .], when Sargon of Akkade conquered Sumerian entry.  | "Monte Alban (in southernmost Mexico, near Guatemala), is reminiscent of the first big early in Mesopotamia, Uruk. In<br>both cases, the early to-be was at first a mere <b>large</b> , outshining its neighbors in size and architecture, and dominating them<br>politically, in the classic fashion of a <i>chardiam</i> 's <b>lan</b> . In both cases war and trade helped drive complexity upward, and<br>in both cases information technology and urbanization proceeded hand-in-hand. In Monte Alban by 300 B.C.[E. $-F \notin D$ ]<br>there were calendrical notations, and glyphs used to label sculptures of dead enemies. By 200 B.C.[E. $-F \notin D$ ] the<br>population had grown to 5,000, and it would surpass 30,000.   |  |  |  |  |  |
| "Sargon's conquests came with a divine seal of approval; having toppled a city, he asked the local priests to declare<br>his victory the will of the Mesopotamian god Enhl."   |   |  |  |  |  |  |
| "Perhaps to facilitate clear thinking on their part, he exhibited the vanquished local king in neck-stock."  |   |  |  |  |  |  |
| As a further aid to theological interpretation, Sargon installed his daughter as high priestess of the goddess Nanna at Ur, the religious capital of southern Mesopotamia."  | "But Monte Alban was destined to be outclassed by Teothuacán, a trading partner to the north that by A.D. [C.E. – F <u>ED.]</u><br>550, with 125,000 residents, would be one of the six largest calles in the world"  |  |  |  |  |  |
| "In cast Asia, farming seems to have evolved a millennium or so later than in the Middle East, but its consequences<br>followed just as surely: bigger <u>willages</u> , more artifacts, more trade, vaster conflict, bigger buildings, bigger realms of<br>political control, starker status hierarchies"               | "Teotihuacán is not to be confused with the nearby <i>aity</i> of Tenochitlán, the Aztec capital that, when seen by Cortez in 1519, housed around 200,000 people (more than any European <i>aity</i> [at that time - FED]) and anchored a <i>state</i> twice the size of Portugal."   |  |  |  |  |  |
| "An age of chiefdoms seems to have been reached by the late fourth millennium B.C.[E F.E.D.], and in the   | "Cortez called Tenochtitlán "the most beautiful city in the world," and compared it to Venice."   |  |  |  |  |  |
| second millennium B.C.[E F.E.D.] came testaments to state-level organization: writing, cities, a king who could lead 13,000 men into battle and oversee epic engineering."   | "Built on islands in a saltwater lake, it was laced with canals and bridges and adorned with floating gardens, a zoo, and an aviary."   |  |  |  |  |  |
| "All of this belongs to what is known as "the Shang civilization," but the suggestion of homogeneity may be<br>misleading."  | "The city's waterborne commerce involved tens of thousands of canoes, and its central marketplace, according to Cortez,<br>could accommodate 60,000 buyers and sellers."  |  |  |  |  |  |
| "Some scholars now dissent from the long-accepted Chinese view of a unified national past, and envision the Shang<br>as much like early Mesopotamia: individual, perhaps amorphous, <u>aity status</u> that trade and battle, ally and fall out  | [Robert Wright, <u>Non-Zero</u> : The Logic of Human Destiny, <i>ibid.</i> , p. 108-114, <i>emphases added by</i> F. <u>E.D.</u> ; see also<br>http://nonzero.org/toc.htm.].  |  |  |  |  |  |

Interconnection Between Diachronic, Historical Dialectic & More-Synchronic, Systematic Dialectic for this Example. We often find it useful to construct, for a given Domain, both a model of the, past, history of that Domain, & a model of the Domain as it presents itself to our experience in our historical present. Below is a model of the Domain of human social formation(s) as such presently exist over much of the face of our globe today, complementing the 'socioontological history-model' of that Domain given above. 'Generic meta-numeral' attributions are again noted ['(--j'].

- <u>presentation Step</u>  $\mathbf{0}, \mathbf{q}_f^{\mathbf{2}^0} = \mathbf{q}_f^{\mathbf{1}} = \mathbf{q}_f \equiv (socio-ontic category' of <u>co</u>-habiting [e.g., but not only, nuclear] families as units.$  $<math display="block">\therefore \text{ for presentation step } \mathbf{s} = \mathbf{0}, \mathbf{D}_{\mathbf{s}} = \mathbf{D}_{\mathbf{0}} = (\mathbf{q}_f); \mathbf{q}_f [\longrightarrow] \mathbf{q}_1;$
- <u>presentation Step</u> 1,  $\underline{\mathbf{q}}_f \otimes \underline{\mathbf{q}}_f = \underline{\mathbf{q}}_f^{2^1} = \underline{\mathbf{q}}_f^2 = \underline{\mathbf{q}}_f \oplus \underline{\mathbf{q}}_{ff}$ ; the *new 'category-symbol'* of which, w<u>e</u> solve for as --  $\underline{\mathbf{q}}_{ff} \mid = \underline{\mathbf{q}}_n \equiv$  '<u>socio-ontological category</u>' of <u>multi-family neighborhoods</u>; [<u>meta-]</u>families of families  $\mid = \underline{n}_{eighborhoods}$ .  $\therefore$  for <u>presentation step</u>  $\mathbf{s} = \mathbf{1}, \underline{\mathbf{D}}_s = \underline{\mathbf{D}}_1 = (\underline{\mathbf{q}}_f \oplus \underline{\mathbf{q}}_n); \underline{\mathbf{q}}_n = \underline{\mathbf{q}}_2$ ; <u>neighborhoods</u> as units;
- <u>presentation step</u> 2, ()  $\mathbf{q}_f \oplus \mathbf{q}_n$  ()<sup>2</sup>, equal to the ''<u>non</u>-amalgamative sum '' from  $\mathbf{q}_n \otimes (\mathbf{q}_f \oplus \mathbf{q}_n)$ , = ()  $\mathbf{q}_n \otimes \mathbf{q}_f$  ()  $\oplus (\mathbf{q}_n \otimes \mathbf{q}_n)$ , = ()  $\mathbf{q}_f \oplus \mathbf{q}_{nf}$  ()  $\oplus (\mathbf{q}_n \oplus \mathbf{q}_{nn})$ , i.e., is equal to the 4 (= 2<sup>2</sup>) terms sum -- $\mathbf{q}_f \oplus \mathbf{q}_n \oplus \mathbf{q}_{nf} \oplus \mathbf{q}_{nn}$ .

We solve for/define the latter, 2, new 'category-symbols' contained therein as --  $\mathbf{q}_{3}$  (-]  $\mathbf{q}_{nf}$  |= 'socio-ontological category' of, e.g., ''one family <u>n</u>eighborhoods'''; of  $\mathbf{q}_{f}$  units lifted up into  $\mathbf{q}_{n}$  units;  $\mathbf{q}_{4}$  (-]  $\mathbf{q}_{nn}$  |= 'socio-ontological category' of <u>m</u>unicipality units; [meta-]<u>n</u>eighborhoods of <u>n</u>eighborhoods |=  $\mathbf{q}_{m}$  $\therefore$  for <u>presentation step</u>  $\mathbf{s} = 2$ ,  $\mathbf{D}_{\mathbf{s}} = \mathbf{D}_{2} = (\mathbf{q}_{f} \oplus \mathbf{q}_{n} \oplus \mathbf{q}_{m} \oplus \mathbf{q}_{m});$ 

• <u>presentation step</u> 3, ()  $\mathbf{q}_f \oplus \mathbf{q}_n \oplus \mathbf{q}_{nf} \oplus \mathbf{q}_m$ ()<sup>2</sup>, equaling the sum from  $\mathbf{q}_m \otimes (\mathbf{q}_f \oplus \mathbf{q}_n \oplus \mathbf{q}_{nf} \oplus \mathbf{q}_m)$ , = ()  $\mathbf{q}_m \otimes \mathbf{q}_f$ ()  $\oplus (\mathbf{q}_m \otimes \mathbf{q}_n) \oplus (\mathbf{q}_m \otimes \mathbf{q}_{nf}) \oplus (\mathbf{q}_m \otimes \mathbf{q}_m)$ , = ()  $\mathbf{q}_f \oplus \mathbf{q}_{mf}$ ()  $\oplus (\mathbf{q}_n \oplus \mathbf{q}_{mn}) \oplus (\mathbf{q}_n \oplus \mathbf{q}_{mnf}) \oplus (\mathbf{q}_m \oplus \mathbf{q}_m)$ , equal to the 8 (= 2<sup>3</sup>) terms sum --()  $\mathbf{q}_f \oplus \mathbf{q}_n \oplus \mathbf{q}_{nf} \oplus \mathbf{q}_m \oplus \mathbf{q}_{mf} \oplus \mathbf{q}_{mnf} \oplus \mathbf{q}_{mnf}$ ().

We solve for/define the latter, 4, new, model epoch 3 'category-symbols' contained therein as --

 $\mathbf{q}_{5} (-] \mathbf{q}_{mf} \models \underline{socio-ontological category' of, e.g., ```one family <u>municipalities</u>'''; of \underline{\mathbf{q}}_{f} units lifted up into \underline{\mathbf{q}}_{m} units^{*};$   $\mathbf{q}_{6} (-] \mathbf{q}_{mn} \models \underline{socio-ontic category' of, e.g., ```one \underline{n}eighborhood \underline{m}unicipalities'''; of \underline{\mathbf{q}}_{n} units lifted up to \underline{\mathbf{q}}_{m} units;$   $\mathbf{q}_{7} (-] \mathbf{q}_{mnf} \models \underline{socio-onto' of, e.g., ```one \underline{n}eighborhood \underline{m}unicipalities'''; of \underline{\mathbf{q}}_{n} units lifted up to \underline{\mathbf{q}}_{m} units;$   $\mathbf{q}_{8} (-] \mathbf{q}_{mm} \models \underline{socio-onto' of, e.g., ```one \underline{n}eighborhood \underline{m}unicipalities'''; of \underline{\mathbf{q}}_{nf} units lifted up to \underline{\mathbf{q}}_{m} units^{*};$   $\mathbf{q}_{8} (-] \mathbf{q}_{mm} \models \underline{socio-onto' of, e.g., ```one \underline{n}eighborhood \underline{m}unicipalities '''; of \underline{\mathbf{q}}_{nf} units lifted up to \underline{\mathbf{q}}_{m} units^{*};$   $\mathbf{q}_{8} (-] \mathbf{q}_{mm} \models \underline{socio-onto' of, e.g., ```one \underline{n}eighborhood \underline{m}unicipalities '''; of \underline{\mathbf{q}}_{nf} units lifted up to \underline{\mathbf{q}}_{m} units^{*};$   $\mathbf{q}_{8} (-] \mathbf{q}_{mm} \models \underline{socio-onto' of, e.g., ```one \underline{n}eighborhood \underline{m}unicipalities made up out of \underline{m}unicipalities; \mathbf{q}_{c}.$   $\therefore \text{ for } \underline{presentation step } \mathbf{s} = \mathbf{3}, \mathbf{D}_{\mathbf{s}} = \mathbf{D}_{\mathbf{3}} = () \mathbf{q}_{f} \oplus \mathbf{q}_{n} \oplus \mathbf{q}_{mf} \oplus \mathbf{q}_{mf} \oplus \mathbf{q}_{mn} \oplus \mathbf{q}_{mnf} \oplus \mathbf{q}_{mnf} \oplus \mathbf{q}_{c} ().$ 

The *images* on the *following four pages*, *provide*, *firstly*, *a graphical juxtaposition/comparison* of the *historicaldialectic and systematic-dialectic models* of the **D***omain* of **human** <u>social</u> formation(s), out as far as <u>reconstructed</u> epoch **3**, and out as far as <u>presentation</u> <u>step</u> **3**, respectively, and, <u>secondly</u>, provide a separate rendering of each <u>dialecti</u>cal model, both using the same core 'dialectogram' format.

<sup>\*[</sup>These 'categorial/units' combinations' may be highly exceptional, "tails of the distributions" social formations, rarely-existent to non-existent in today's actuality.].









Dialectic: Users' Manual. Edition 2. 04 June 2022.

#### Finding Your Finishing Category for Your <u>Re</u>construction of <u>Past-to-Present</u> History for Your <u>D</u>omain.

If you continue to [<u>re</u>-]iterate the epoch-wise procedure described above, you will eventually reach a model epoch for which you will **not** be able to "solve for"/define even one, some, or even all of the new 'category-symbol<u>s</u>' corresponding to the interaction<u>s</u> that launch that epoch. This may be because the collective, human-<u>phenomic</u>, "'meme<u>s</u>-pool'" of the insight<u>s</u> upon which you draw for such solution-recognition have **not yet** progressed to the degree necessary to discern the **Domain**-ontology signed by these 'category-symbol<u>s</u>', even though that ontology was actually already extant in the <u>past</u> historical epoch in whose model these 'category-symbol<u>s</u>' arise, and even in all of the epoch<u>s</u> ever since, <u>past</u>-to-<u>present</u>.

Or, it may be that nothing corresponding to those 'category-symbols' was <u>ever</u> [wholly] extant in that epoch, or before, or since. In the latter case, it may be enough to substitute the 'empty category' symbol, ' $\bigcirc$ ', for that 'category-symbol algebraic <u>un</u>known', and to continue 'self-iteration' to the next epoch.

However, it could be because the solution( $\underline{s}$ ) to that 'category-symbol', or to those 'category-symbols', reside <u>outside</u> of the <u>**D**omain</u> whose <u>**past**</u> history you are reconstructing. This may be the case in the <u>weaker sense</u> of residing <u>outside</u> of the model-epoch whose iteration you have just completed, but **not** outside of some or all of that <u>**D**omain</u>'s later and/or expected <u>**future**</u> epoch<u>s</u>, as expected by you. Or, it may be the case in the <u>stronger sense</u> that the solution(<u>s</u>) to that 'category-symbol', or to those 'category-symbols', transcend that <u>**D**omain</u> altogether.

In the case of o<u>ur</u> 'historical <u>dyadic dialectic</u>' example, above, we might expect that the most advanced *social* formation manifested in Terran human history *to <u>present</u>* would be, *not* that of the *ancient* <u>multi</u>-city-state <u>e</u>mpire<u>s</u>, all of *which* have, by now, *vanished*, but, instead, that of the <u>n</u>ation-state<u>s</u>, which would appear to constitute the predominant <u>social</u> formation in <u>recent</u> history. However, there would be a problem, a break in the *«aufheben»* pattern, if we were to assert:

'Model epoch  $\tau = 6$ :  $\underline{\mathbf{q}}_{64} \leftarrow ] \mathcal{Q}_{ee} \mid = \mathcal{Q}_{n}$ , 'socio-ontological category' of, e.g., self-interactions /'''self-conversions ''' of  $\mathcal{Q}_{e}$  units to  $\mathcal{Q}_{n}$  units, i.e., into <u>multi</u>-empire <u>nation-state</u> units; [meta-]empires made up out of empires |= <u>nation-states</u>.' -- as discussed in the text-image below:

### On the Pattern-Break in this 'Meta-Model' After the Ancient <u>empires</u> Epoch.

Our solution for epoch  $\tau = 6$  concludes with that of the initially algebraic -- <u>unknown</u> -- category-symbol  $\mathbf{g}_{ee}$ . We solve this symbol as describing the modern nation-state social formation:  $\mathbf{g}_{ee} \coloneqq \mathbf{g}_n \equiv \mathbf{n}$ . But, in accepting this solution, we are breaking with the pattern of all of our previous solutions for 'self-hybrid' terms of this 'meta-model', all the way from  $\mathbf{c}$ ,  $\mathbf{y}$ ,  $\mathbf{f}$ ,  $\mathbf{k}$  s right up to  $\mathbf{e}$  itself. This is because the modern nation-state unit is <u>NOT</u> a 'meta-empire' unit, each unit of which is made up out of a <u>heterogeneous</u> multiplicity of [initially] <u>INTACT</u> empire [sub-]units'. Instead, the modern nation-state unit is, initially and essentially, made up out of a <u>heterogeneous</u> multiplicity of the <u>ruined fragments</u>, or <u>fragmentary</u> ruins, of former, <u>fallen</u> empires -- of the fragmentary ruins of the ancient <u>Roman</u> empire in particular.

The kind of 'meta-models' that the  $\[mathbb{NQ}\]$  dialectical algebra can explicitly express are entirely endogenous 'meta-models'. They express directly only the "pure", idealized, internal, 'essence-ial', inherent, immanent development -- the 'self-development' -- of the **Domain** that they address: the «causa sui», or «causa immanens», ultimately, of the «arché arithmos» of that **Domain** itself. But the actual course of development of any ''eventity''' -- short of that of the whole cosmos as the totality, which has <u>no</u> known outside, <u>no</u> "external environment" -- is <u>co</u>determined together, by the combination of «causa <u>immanens</u>» & «causa transiens», external causes: exogenous forces & conditions, as well as <u>internal ones</u>.

We confront the impacts of such exogenous co-determinants in this break in the previously-unbroken pattern of 'meta-unit-ization' captured in this 'meta-model'. As Robert Wright noted, the main ancient empires were largely isolated from one another.

The level of the "social forces of production" as expressed in the technologies for distant transportation & communication in the ancient world were insufficient to bring about the kind of intensive, regular, concentrated inter-empire contact & interaction that might induce direct formation of 'meta-empire' units, or even of a single world-wide 'meta-empire' unit, so keeping post-empire human-social formation in pattern. It ran up against the limitations of the habitable surface area of our globe at this empires stage, which precluded the plethoric multiplication, & resulting dense contemporaneous multiplicity, of multi-city-state empire units, that might have been required to irrupt in a 'meta-finite singularity' that could result in multi-empire states, or even in a single planetary super-empire. Huge multi-city-state empires, like that of Alexander of Macedonia, & like that of ancient Rome, which split into separate Western & Eastern wings, were more likely to fragment, under such conditions, or to collapse altogether, into Dark Ages degeneration, than to coalesce with other empires, e.g., by conquest or alliance, into (a) 'meta-empire(s)'.

The *impact* of *these* <u>exogenous</u> conditions broke the <u>pattern</u> based upon the dominance of the exclusively <u>endogenous</u>, <u>immanent</u>, <u>self</u>-development moment of what was always actually an <u>inter</u>-determination'. By accepting the <u>solution</u>  $\mathbf{g}_{ee} \vdash = \mathbf{g}_n \equiv \underline{\mathbf{n}}$ , we are <u>embracing</u> a stealth importation of «causa transiens» into our <u>nominally</u> «causa <u>immanens</u>»-<u>only</u> <u>imeta</u>-model'.

#### Finding Your Ontological-Categorial *Prediction-Hypothesis* for the *Future History* of Your Domain.

If the *present*ly-*un*solvable 'category-symbol(s)' intimate(s), to your mind, probable *future* ontology that you expect will arise in the *future-history* of the **Domain** whose *past-to-present ontology-history* you have *modeled*, then, it may be appropriate to add a "coda" to your model write-up, stating your 'pre-construction' -- your resulting model prediction hypothesis or prediction hypotheses -- about your expectation(s) for the *future ontology-history* of your <u>Domain</u>, D. An algebraic 'category-symbol' which you find 'undefinable'/unsolvable, per all of your present data and knowledge on the past-to-present ontology-history of the **Domain** that you are modeling, may be describing a kind of units which, e.g., either by '<u>unit</u>ic <u>mere</u> hybridization' [simplest form  $\boldsymbol{q}_{vv}$ ], or by '<u>unit</u>ic <u>self</u>-hybridization' [simplest form  $\boldsymbol{q}_{vv}$ ], may arise in the future ontology-history of your **Domain**, but which has not yet [wholly] arisen in the past history-to-actual-present epoch of this **Domain**. But you may be expecting that this *kind* of units may yet irrupt into existence *later* in the *actual present epoch* of this **D***omain*, or, e.g., in the next, the immediately subsequent, *future actual epoch*, or etc. We leave aside, in this elementary introduction to our method, the possibility of 'qualitatively and ontologically fractional' actualizations of the units corresponding to new, upcoming categories during their 'protoic' pre-history, in the process of their [be-]coming [into their *full*, whole existence]. However, if your solution/definition for a *present*ly-*un* solvable/ '*un* definable' 'category-sign', to your mind, transcends this **Domain**, you may want to characterize, in a different kind of "coda", the new **Domain**, the

expected higher **Domain**, which the **present**ly-**Domain**-**D**-unsolvable/'undefinable' 'category-symbol', per your hypothesis or hypotheses, inaugurates. That "**D**-un solvable" 'category-symbol' may perhaps even qualify as the very 'starting category', or '*arché*-category', of the new **Domain** of 'neo-ontology', which, you expect, will first begin to show itself at some moment in *future time*.

In the case of our example model for this first sub-section of our second section, our model of the ontology-history of the **D**omain of **h**uman-<u>social</u> formation(s), we can iterate two epochs -- two "squarings" -- beyond the iteration or "squaring" that ends with what we solve, albeit problematically [see text-image above] as the nation-state units category/-«arithmos». We can then still feel that we can identify, define, or "solve for", the meaning of the 'category-symbols' that end each iteration -- the meaning of  $\mathcal{Q}_{nn}$  and, per our solution for  $\mathcal{Q}_{nn}$ , the meaning of  $\mathcal{Q}_{nn}$  as well, respectively. All this is despite the fact that these solutions, and the actuality of these two 'socio-ontological', social-formation(s) categories, clearly do NOT belong to the past-to-present history of this **D**omain,  $\mathbf{D} = \mathbf{f}$ . They belong instead, per our prediction, or 'pre-construction', hypotheses, to what we expect to be the future outcomes of the dialectics already at work within Terran human society, "iff" the "'eucatastrophic "' [cf. Tolkein] potential of Terran humanity prevails.

#### They are --

(7) Model epoch  $\tau = 7$ :  $\underline{q}_{128}$  (--]  $\underline{q}_{nn}$  |=  $\underline{q}_{p} \equiv \underline{socio}$ -ontological category '/«arithmos» of democratically <u>self-governing</u> <u>p</u>lanetary <u>p</u>olis unit<u>s</u>; <u>'meta</u>-unit<u>s</u>' <u>of</u>  $q_n$  <u>n</u>ation-state unit<u>s</u>, i.e., <u>each</u> single  $q_p$  <u>p</u>lanetary <u>p</u>olis «aufheben» <u>meta</u>-unit is made up out of a heterogeneous <u>multiplicity of</u>  $\underline{q}_n$  <u>nation-state units</u>, as its <u>sub</u>-units; (8) Model epoch  $\tau = 8$ :  $\underline{q}_{256}$  (-]  $\underline{q}_{pp} \models \underline{q}_{i} \equiv \underline{soci}_{0}$ -ontological category '/«arithmos» of democratically <u>self-governing</u> interplanetary <u>federation</u> units; <u>'meta-units</u>' of  $\mathcal{Q}_{\mathsf{p}}$  planetary polis units, i.e., <u>each</u> single  $\mathcal{Q}_{\mathsf{i}}$ interplanetary federation meta-unit is made up out of a heterogeneous multiplicity of  $q_{p}$  democratically self-governing planetary polis units, as its sub-units.

Of course, these solutions have already been, in effect, envisioned popularly, e.g., via that breakthrough in popular human collective 'self-foreseeing', and 'self-aspiring' that was, and is, "the Star Trek Universe", however much many later series in that 'multi-series', or 'meta-series', have been/will be corrupted using ideologies engineered by the mega-corporate plutocracy that has usurped the "ownership rights" to that "Universe". Note that, once again, the 'universal dialectical architectonic' of dialectical, «aufheben», partial 'chain-containment' ['IL'], i.e., of earlier-arising units «aufheben»-"" contained" inside later-arising units 'meta-Darwinian meta-genealogy', i.e., of «aufheben», or dialectical, 'meta-unit-ization', is in evidence, in this example also --

#### $\mathcal{Y}_{\mathbf{b}} \models \mathcal{Y}_{\mathbf{c}} \models$

**bands**  $\square$  **Camps**  $\square$  **Villages**  $\square$  **chiefdoms**  $\square$  **city-States**  $\square$  **Camps**  $\partial \square$  **n**ation-states □ [predicted] **p**lanetary 'polises' □ [predicted] inter-planetary federations.

<u>**Triadic Versions of The NQ Method as Applied fOr HISTORICAL Dialectic.</u></u> The method-version<u>s</u> detailed in this section are called '<u>triad</u>ic' because they extend, categorially, from the starting category, by raising the symbol of that starting category to escalating whole number powers of "the <u>triad</u>"; of whole number <b>3**. But, herein, we will **not** describe this '<u>triad</u>ic algorithmic-heuristic method' via a powers of **3** approach, in the main, as that would involve an arithmetic operation of '<u>meta-exponentiation</u>', the third '<u>self-hybrid</u>' arithmetical operations category in o<u>ur</u> categorial progression systematic <u>dialectic</u> of the standard arithmetical operations. That operation may be <u>un</u>familiar to many readers.</u>

#### Finding Your Starting Category for Your <u>Re</u>construction of <u>Past-to-Present</u> History for a Given <u>D</u>omain.

The 'qualitative factorization' procedure, our method of discovery of a starting category for a given **D**omain, which we have already presented, above, for the ''' $\approx$ synchronic''' [or 'micro-diachronic'], '''systematics''' versions, dyadic and triadic, of this method, may also be insightfully engaged for this '''[macro-]diachronic''', ''historical''', 'history-reconstructive', 'history-modeling' version. However, the starting category for an '''historical dialectic''' must be the earliest, the initial, '''inaugural''', ''seed''' category of the **D**omain whose ontological history is to be modeled -- whose 'ontology-history' is to be <u>re</u>constructed, symbolically. It must be the ontological category for the earliest extant kind of units that, to your belief, '''contains''' the <u>potential</u>, in its natural context, to construct the total <u>past-to-present</u> 'ontology-history' of the **D**omain at issue, and even the <u>potential</u> to construct your expected ontological <u>future</u> for this **D**omain as well.

**Expanding Your** <u>Reconstruction</u> of <u>Past-to-Present</u> History for Your <u>Domain</u> from Your Starting Category. Once you have found your starting category for the <u>Domain</u> whose 'ontology-history' you wish to model -- to explain by symbolic <u>reconstruction</u> -- your next move in this method is to study the historical record regarding that starting category, in relation to its <u>Domain</u> as a whole. Indeed, your next move is to understand the interaction<u>s</u> among the actual unit<u>s</u> that are represented by that starting category, symbolized/simulated via the 'self-iterated self-interaction<u>s</u>', of its 'category-symbol'. Your study should also help you to bring into focus the '<u>chrono</u>-logically' next two categor<u>ies</u> potentiated in this <u>Domain</u> -- the two categor<u>ies</u> of unit<u>s</u> to which the unit<u>s</u> of your starting category directly gave birth; its <u>dual</u> '''first offspring'''. But here we are already talking about your model's epoch **1**. Let's start instead with epoch **1**'s <u>prior</u> epoch, with epoch **0**.

Let's name your starting category, <u>gen</u>erically, by the 'symbol-name', or 'algebraic-name',  $\underline{q}_A$ , wherein 'A' might serve as an abbreviation of the name of the key, preeminent <u>qual</u>ity, feature, facet, predicate, or attribute that all of the unit<u>s</u> that are <u>im</u>plicit in this ontological category, i.e., in "<u>kind</u>-of-being" category  $\underline{q}_A$ , share in common.

E.g., 'A' might be the first letter of the name of that shared <u>qual</u>ity. Indeed, the 'arithmetic-name'  $\underline{q}_{A}$  "means": 'all of those thing<u>s</u>/unit<u>s</u> [of <u>Domain</u> <u>D</u>] that share <u>qual</u>ity A'.

Identifying/defining starting category  $\underline{q}_{A}$  yields "epoch **0**" of your sought *'model of ontology-history* ' for your **D***omain*.

Next, to start epoch **1** of that 'model of **D**omain history', perform the "purely" <u>qual</u>itative computation,  $\mathcal{Q}_A \iff \mathcal{Q}_A$ , or  $\mathcal{Q}_A^3$ , using the ' $\ll$ ' "aufheben" "multiplication" operation, per its axiomatic [' $\blacksquare$ -'] <u>gen</u>eral, algebraic definition -- $\mathcal{Q}_Y \iff \mathcal{Q}_X \blacksquare = \mathcal{Q}_X \iff \mathcal{Q}_Y$ , for 'allo-hybrids'. Its 'self-reflexive', 'self-hybrid' corollary is  $\mathcal{Q}_Y \iff \mathcal{Q}_Y \blacksquare = \mathcal{Q}_Y \iff \mathcal{Q}_{YY}$ .

The "<u>self</u>-cubed" "product", of  $\boldsymbol{q}_{A}$  with itself, <u>twice</u>, i.e.,  $\boldsymbol{q}_{A}$ 's "<u>double</u> self-multiplication", signifies the repeated, <u>re</u>iterated, double <u>self</u>-action of category-symbol  $\boldsymbol{q}_{A}$ , corresponding to the two-fold <u>self</u>-inter action of <u>the</u>  $\underline{\mathbf{A}}$ , with[in] <u>the</u>  $\underline{\mathbf{A}}$ ; the <u>determinate</u>, <u>self</u>-action of the <u>self</u>-negation of the <u>self</u>-negation" of/among/within the <u> $\mathbf{A}$ </u>.

Its <u>net</u> result -- net of the <u>re</u>production of  $\mathcal{Q}_{A}$  itself -- is  $\mathcal{Q}_{AAA} <+> \mathcal{Q}_{AAA}$ . This "'sum" means the <u>'self</u>-[inter]action of <u>A</u>, i.e., the <u>'intra</u>-action' of the unit<u>s</u>-content of <u>«arithmos</u>»  $\mathcal{Q}_{A}$ , followed by the renewed interaction of the unit<u>s</u> of  $\mathcal{Q}_{A}$  with the already-resulted <u>new units</u>, the unit<u>s</u> of category/<u>«arithmos</u>»  $\mathcal{Q}_{AA}$ . The latter means <u>interactions</u> among the unit<u>s</u> that 'category-symbol', ' $\mathcal{Q}_{A}$ ', <u>uni</u>vocally, summarily and collectively <u>re</u>presents, with those that  $\mathcal{Q}_{AA}$  <u>'bi</u>-vocally' represents. Typically, these *real* <u>interactions</u> will, at length, produce <u>qual</u>itatively-different, i.e., <u>'neo</u>-ontic', <u>ontologically</u>-different, new unit<u>s</u>. The new actual unit<u>s</u> corresponding to  $\mathcal{Q}_{AA}$  may be represent<u>able</u> by a new, <u>uni</u>vocal 'category-symbol', let's call it  $\mathcal{Q}_{B}: \mathcal{Q}_{AA} \models = \mathcal{Q}_{B}$ . The actual process<u>es</u> modeled by the ' $\infty$ ' operation, in  $\mathcal{Q}_{A} \propto \mathcal{Q}_{A}$ , thus transform  $\mathcal{Q}_{A}$  unit<u>s</u> -- but, typically, '<u>evolutely</u>' so; only <u>some</u>, not <u>all</u> of the unit<u>s</u> of  $\mathcal{Q}_{A}$  -- into new unit<u>s</u>; the unit<u>s</u> to be represented by 'categorysymbol'  $\mathcal{Q}_{B}$ . Then, the renewed, second multiplication/action by the  $\mathcal{Q}_{A}$ , including the multiplication of/upon the  $\mathcal{Q}_{B}$  by the  $\mathcal{Q}_{A}$  themsel<u>ves</u>, plus, ''<u>reproductively</u>'', of/upon the  $\mathcal{Q}_{A}$ , by the  $\mathcal{Q}_{A}$  again, represents the actual <u>net</u>-production of another, second, new kind-«arithmos», of new unit<u>s</u>; unit<u>s</u> that unite <u>some</u> of the [former] unit<u>s</u> of  $\mathcal{Q}_{B}$  with <u>some</u> of the [formerly] remaining unit<u>s</u> of  $\mathcal{Q}_{A}$ .

In the *second* [*self*-]*«aufheben»* action/multiplication by the  $\mathcal{Q}_A$ , the  $\mathcal{Q}_B$  are now available to interact with the  $\mathcal{Q}_A$ , as a result of the *first* multiplication/*self-«aufheben»* action by the  $\mathcal{Q}_A$ . Thus, in that "second act" of the construction of model epoch **1**,  $\mathcal{Q}_A$  units operate upon/interact with  $\mathcal{Q}_B$  units, in an [*allo-*]*«aufheben»* way, as well as operating upon the  $\mathcal{Q}_A$  themsel<u>ves</u> again, in a *self-«aufheben»* way, thus both "*self-reproductively*" *and*  $\mathcal{Q}_{BA}$ -*productively*. When the  $\mathcal{Q}_A$  operate upon the  $\mathcal{Q}_A$  in other-part, are also absorbed by and lifted up/elevated into the  $\mathcal{Q}_B$ s' level. I.e., some units of  $\mathcal{Q}_A$  are *converted* into units of  $\mathcal{Q}_B$ , and/or some [other]  $\mathcal{Q}_A$  units go into hybrids of  $\mathcal{Q}_A$  units and/with  $\mathcal{Q}_B$  units.

In many case  $\underline{s}$ ,  $\underline{\varphi}_{BA}$  can represent the '<u>reproductive</u> accumulation' of  $\underline{\varphi}_{B}$  unit  $\underline{s}$ , by ongoing conversion  $\underline{s}$  of  $\underline{\varphi}_{A}$  unit  $\underline{s}$  <u>into</u>  $\underline{\varphi}_{B}$ unit  $\underline{s}$ , <u>catalyzed</u> <u>by</u>  $\underline{\varphi}_{B}$  unit  $\underline{s}$  now already present, just as  $\underline{\varphi}_{AA} \mid = \underline{\varphi}_{B}$  can sign the ''<u>original</u> accumulation''' [cf. Marx] of  $\underline{\varphi}_{B}$ unit  $\underline{s}$ . The first [self-]multiplication results in  $\langle \rangle \underline{\varphi}_{A} <+> \underline{\varphi}_{B} <\rangle$  as a ''<u>formal</u> subsumption''' [cf. Marx] of  $\underline{\varphi}_{A}$  unit  $\underline{s}$  by  $\underline{\varphi}_{B}$  unit  $\underline{s}$ . The **2**nd [self-]multiplication, of the **1**st multiplication's result,  $\langle \rangle \underline{\varphi}_{A} <+> \underline{\varphi}_{B} <\rangle$ , again by  $\underline{\varphi}_{A}$ , yields  $\langle \rangle \underline{\varphi}_{A} <+> \underline{\varphi}_{B} <\rangle$ , with  $\underline{\varphi}_{AB}$  or  $\underline{\varphi}_{BA}$  signing ''<u>real</u> subsumption''' [cf. Marx] of  $\underline{\varphi}_{A}$  by  $\underline{\varphi}_{B}$ , and often a ''conversion''' of  $\underline{\varphi}_{A}$  unit  $\underline{s}$  into  $\underline{\varphi}_{B}$  unit  $\underline{s}$ .

For example, in cosmological atomic evolution,  $\underline{\varphi}_{AA} \models = \underline{\varphi}_{B}$  might be used to represent "<u>cosmological</u> nucleosynthesis", that of ionic atomic nucle<u>i</u> and of atom<u>s</u>, e.g., of <u>H</u>ydrogen ['H'] and <u>He</u>lium ['He']. Then,  $\underline{\varphi}_{BA}$  would sign "<u>stellar</u> nucleosynthesis", of more He from already-existing H, plus stellar production of higher "atomic species", beyond He.

The *first*, <u>self</u>-«*aufheben*» action/multiplication, of  $\underline{q}_A$  upon itself, models the self-transformation of some of the unit<u>s</u> represented by  $\underline{q}_A$  -- of an "<u>in</u>definite number" portion, or <u>sub</u>-«*arithmos*», of  $\underline{q}_A$ 's unit<u>s</u> -- into their «*aufheben*» <u>'meta</u>-unit<u>s</u>', solved/defined herein by the "'name'"  $\underline{q}_B$ , though also leaving many  $\underline{q}_A$  unit<u>s</u> essentially *intact* -- again, an "<u>in</u>definite number" of them, i.e., another sub-«*arithmos*» of them, often even the <u>bulk</u> of them -- "behind", i.e., *not* so transformed: leaving them out of that [<u>self</u>-]transformation.

Thus, unit<u>s</u> represented by the epoch  $\mathbf{1} \, \mathbf{q}_{A}$  'multiplicand identical' product,  $\mathbf{q}_{A} \iff \mathbf{q}_{A}$ , also <u>return</u> in the <u>product</u> of that [<u>self</u>-]multiplication: this <u>'product</u>-tion' "'produces'" <u>"'e</u>volutely'", **not** <u>"'con</u>volutely'''.

So we get, for the <u>first</u> stage of the epoch **1** multiplication:  $(\mathcal{Q}_A \iff \mathcal{Q}_A) = old \mathcal{Q}_A$  again,  $\langle + \rangle new \mathcal{Q}_B$ :  $\mathcal{Q}_A^2 = \mathcal{Q}_A \langle + \rangle \mathcal{Q}_B$ . The <u>second</u> stage of the epoch **1** multiplication/ $\langle aufheben \rangle$  action, again by  $\mathcal{Q}_A$ , but, this time, upon, not  $\mathcal{Q}_A$  <u>alone</u>, but, instead, upon the  $\langle \rangle \mathcal{Q}_A \langle + \rangle \mathcal{Q}_B \langle \rangle$  result or product of that <u>first</u> stage  $\langle aufheben \rangle$  action/multiplication by  $\mathcal{Q}_A$ , typically leaves behind <u>some</u>  $\mathcal{Q}_A$  units, and also, typically, leaves behind <u>some</u>  $\mathcal{Q}_B$  units, essentially *intact*, but also, in <u>some</u> cases, can model transformations of <u>some</u> of the remaining  $\mathcal{Q}_A$  units, and of <u>some</u> of the just-born  $\mathcal{Q}_B$  units, into <u>combined</u>  $\mathcal{Q}_{AB}$  and/or  $\mathcal{Q}_{BA}$  units -- into a "<u>syn</u>thesis", or "[mere-]hybridization", of  $\mathcal{Q}_B$  units and/with  $\mathcal{Q}_A$  units. <u>**Example</u></u>. For example, again modeling early epochs of that '<u>A</u>ll-<u><b>D***omain*', **D** =  $\forall$ , as <u>*present*</u>ly <u>*known*</u> to us, and as known to us as the <u>**D***omain*</u> of 'cosmological <u>*meta*</u>-evolution', we have the 'categorial-<u>dialectic</u>al equation' --</u></u>

 $(\underline{electrons}^3 = \underline{electrons} \iff \underline{electrons} \iff \underline{electrons} \iff \underline{electrons} \iff \langle \underline{electrons} \iff \underline{electrons} \iff \underline{electrons}$ 

 $\frac{electrons}{e} \iff \langle \rangle \frac{electrons}{e} <+> \underline{r}-but-\underline{other}-than-\underline{electrons}}{e} <\rangle \square \underline{electrons} \ll \langle \rangle \underline{electrons} <+> \underline{protons}} <\rangle |= \\ \frac{electrons}{e} <+> \underline{protons}}{e} again, <+> complex unities} of [some] units of those two categories' -- ```complex unities' ``` whose sub-species include neutrons, and "pure", neutral, single-proton/single-electron Hydrogen 'ur-atoms' -- in short: \\ \underline{e}^{3} |= \underline{e} <\ll \langle \rangle \underline{e} <+> \underline{p} <\rangle |= \underline{e} <+> \underline{p} <+> \underline{u} \{\underline{neutrons} \& \underline{neutral} \\ \underline{Hydrogen} ur-atoms \& \underline{bulk} \\ \underline{neutroniums} \& \underline{black-hole} \\ \underline{bulk} \\ \underline{bulk} \\ \underline{bulk} \\ \underline{bulk} \\ \underline{black-hole} \\ \underline{bulk} \\ \underline$ 

Recall that, in the <u>dyad</u> ic <u>dia</u>chronic/historical <u>dialectical</u> method,  $\mathcal{Q}_{BA}$  arises in model-epoch **2**. On the contrary, in the <u>triad</u> ic <u>dia</u>chronic method, as we have just seen,  $\mathcal{Q}_{BA}$  arises in model-epoch **1**. The <u>dyad</u> ic method's model-epoch **1** ends in  $\mathcal{Q}_{B}$  as <u>qual</u> itatively-contrasting, supplemental **D**omain ontology to the **D**omain ontology "named"  $\mathcal{Q}_{A}$ . The <u>triad</u> ic method's model-epoch **1** ends in  $\mathcal{Q}_{BA}$ , e.g., in a 'category-symbol' for the <u>syn</u> thesis/<u>re</u>conciliation/<u>hybrid</u> ization of  $\mathcal{Q}_{B}$  and/with  $\mathcal{Q}_{A}$ . Or, it ends in a 'category-symbol' for an <u>«arithmos</u>» of 'conversion-formation<u>s</u>', converting  $\mathcal{Q}_{A}$  units into  $\mathcal{Q}_{B}$  units acatalyzed by  $\mathcal{Q}_{B}$  units already extant. The <u>dyad</u> ic model-epochs end in categorial "<u>antitheses</u>"; in new "oppositions". <u>Triad</u> ic method model-epochs end in categorial "<u>syntheses</u>""/<u>unif</u> fications, "<u>part</u> ial" or "full". And note also that these earliest two <u>triad</u> ic method stages of [<u>self</u>-]*«aufheben*» categorial multiplication all go on within a <u>single</u> model-epoch: in this case, within model-epoch **1**. Likewise for later-computed model-epochs in this <u>triad</u> ic method. Per o<u>ur</u> "shorthand", using <u>ideogramic</u> symbols, "borrowed" from English <u>phonogramic</u> symbols, we have:  $\mathcal{Q}_{A} \ll \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \equiv \mathcal{Q}_{A}^{3^{1}} = \mathcal{Q}_{A} \ll \langle \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \langle \mathcal{Q}_{A} \prec \mathcal{Q}_{A} \langle \mathcal$ 

Again, per the <u>triad</u>ic method, as per the <u>dyad</u>ic method, <u>newer</u> unit<u>s</u> derive from <u>aufheben</u> <u>inter</u> actions among <u>older</u> ones; among <u>older</u> unit<u>s</u>. In parallel, per this algorithm, at the level of symbols, <u>newer</u> 'category-symbols' are <u>gen</u> erated by <u>"times</u> operations"; i.e., by ' $\infty$ ', <u>aufheben</u> operations, among <u>older</u>, earlier-<u>gen</u> erated 'category-symbols', all the way back to that stipulated/<u>pre</u>-solved 'category-symbol' that symbolizes the 'starting category-of-unit<u>s</u>' itself: that signs or symbolizes the <u>arché-arithmos</u> of the <u>Domain</u> itself.

In summary --

Move **0** of the '<u>triad</u>ic method' is to identify that <u>qual</u>ifying starting or «*arché*» category for your given <u>Domain</u>:  $Q_A$ . Move **1** is to "cube" the starting category's symbol -- to model a '"<u>self</u>-«*aufheben*» of the <u>self</u>-«*aufheben*» "' of  $Q_A$ .

In  $\underline{q}_{A}^{3^{1}} = \underline{q}_{A} \langle \rangle |\underline{q}_{A} \langle \rangle |\underline{q}_{$ 

This yields, symbolically, a <u>qual</u>itatively-different, an *ontologically*-different, 'supplementary category', that may be '''solved-for''' as an historically-observed «*arithmos*», signed ' $\mathcal{Q}_{B}$ '. That intermediate result is the fruition of the '''first <u>self</u>-«*aufheben*» <u>self</u>-negation ''' of  $\mathcal{Q}_{A}$ . That resulting, later-observed «*arithmos*», signed by  $\mathcal{Q}_{B}$ , will also typically '''contain''' the units that are the <u>next</u> more complex units of the given **Domain**. The result of the '''second «*aufheben*» negation ''', this time of  $\langle \mathcal{Q}_{A} \prec \mathcal{Q}_{A} \lor \mathcal{Q}_{A}$ , results as well in the completion of your model's epoch **1** --  $\mathcal{Q}_{A} \ll \langle \mathcal{Q}_{A} \prec \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{B} \lt \rangle \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{B} \lt \rangle \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{B} \lt \rangle \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{B} \lt \rangle \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lt \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \lhd \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \simeq \mathcal{Q}_{A} \lhd \mathcal{Q}_{A} \ll \mathcal{Q}_{A} \simeq \mathcal{Q}_{$ 

<sup>\*[</sup>In this example, we use another version of the <u>gen</u>eric  $\mathbb{Q}_{\mathbb{Q}}$  product rule/axiom, the '<u>meta-gene</u>alogical <u>evolute product</u>' rule:  $\underline{q}_{\mathbb{R}} [\times] \underline{q}_{\mathbb{R}} = \underline{q}_{\mathbb{R}} [+] \underline{q}_{\mathbb{R}+\mathbb{R}} ]$ .

In that <u>triad</u>ic "'sum'", or 'consecuum-cumulum', of 'category-symbol<u>s</u>', categor<u>ies</u>  $\mathcal{Q}_{BA} \models \mathcal{Q}_{C}$  stands for the *to-be-"fleshed-out"* combination, <u>unification</u>, reconciliation, hybridization, 'conversion-formation', or <u>'syn</u>thesis categor<u>ies</u>' for categor<u>ies</u>  $\mathcal{Q}_{B}$  and/with categor<u>ies</u>  $\mathcal{Q}_{A}$ . The state of your <u>reconstruction of Domain D ontology-history</u> has now advanced from that of your epoch **0**'s ' $\underline{D}_{0} = \mathcal{Q}_{A}$ ', to that of your epoch **1**'s ' $\underline{D}_{1} = \langle \mathcal{Q}_{A} \langle \mathcal{Q}_{B} \rangle$ '. Epoch **2** starts via  $\underline{D}_{1}^{3}$ .

What do you do, to make your next move in your <u>reconstruction of your Domain's ontological history</u>, i.e., to launch model-epoch **2**, per this <u>tri</u>adic version of o<u>ur</u> 'ontology-history-modeling' method? <u>First</u>, apply the ' $\ll$ ' "aufheben" operation, using category  $\mathcal{Q}_{C}$ , the most advanced category of epoch **1**, to the full fruits of model-epoch **1** of your categorial progression historical <u>re</u>construction of <u>Domain</u> D so far. Namely, apply  $\mathcal{Q}_{C}$  to  $\langle \mathcal{Q}_{A} \langle \mathcal{P}_{B} \rangle \langle \mathcal{P}_{C} \rangle$ . That is, "aufheben"-apply 'category-symbol'  $\mathcal{Q}_{C}$  to 'category-symbols  $\underline{s}' \mathcal{Q}_{A}$ , and then to  $\mathcal{Q}_{B}$ , and then to  $\mathcal{Q}_{C}$  itself.

Next, carry out your ''<u>non</u>-amalgamative [historical] summing''' ['<+>'] of the three resulting 'ontological-categorial' «*aufheben*» '''[historical or fully-diachronic] multiplication<u>s</u> ''' ['<>>'] --

$$\mathcal{Q}_{C} \iff \langle \mathsf{P}_{A} \mathsf{<+} \mathsf{P}_{B} \mathsf{<+} \mathsf{P}_{C} \mathsf{<} \rangle \blacksquare = \langle \mathsf{P}_{C} \mathsf{<} \mathsf{P}_{C} \mathsf{<} \mathsf{P}_{A} \mathsf{<} \rangle \mathsf{<+} \mathsf{P}_{C} \mathsf{<} \mathsf{P}_{B} \mathsf{<} \rangle \mathsf{<+} \mathsf{P}_{C} \mathsf{<} \mathfrak{P}_{C} \mathsf{<} \mathsf{P}_{C} \mathsf{P}_{C} \mathsf{<} \mathsf{P}_{C} \mathsf{P$$

This is a "sum" of multiplications which, per the  $\mathbf{Q}$  algebra's sum and product rules, equals [ $\mathbf{P}$ =] the "sum" --

$$\langle \rangle \langle \rangle \, \mathcal{Q}_{A} <+> \mathcal{Q}_{CA} <\rangle <+> \langle \rangle \, \mathcal{Q}_{B} <+> \mathcal{Q}_{CB} <\rangle <+> \langle \rangle \, \mathcal{Q}_{C} <+> \mathcal{Q}_{CC} <\rangle <\rangle \blacksquare = \langle \rangle \, \mathcal{Q}_{A} <+> \mathcal{Q}_{B} <+> \mathcal{Q}_{CA} <+> \mathcal{Q}_{CB} <+> \mathcal{Q}_{CC} <\rangle.$$

Now, suppose too that you can <u>uni</u>vocally "'solve for"'/define at least **1** of the **3** (= **3**<sup>1</sup>) "new", <u>'bi</u>-vocal' term<u>s</u> thus evoked and "'added'". Namely, suppose that you can assert with conviction that  $\underline{\varphi}_{CC} \models \underline{\varphi}_{F}$ , as mapping an *«arithmos»* registered in the recorded historical past of your **Domain**, and typically even still present/still extant in **I**ts present.

Then, finish this abbreviated algorithm for "cubing" your model-epoch **1** 'consecuum-cumulum',  $\langle \mathcal{P}_{A} \mathcal{P}_{A} \mathcal{P}_{B} \mathcal{P}_{C} \rangle$ , by again applying the ' $\mathcal{P}_{A}$  '[historical/<u>dia</u>chronic-]«**aufheben**» operation, using 'category-symbol'  $\mathcal{Q}_{F}$ , "distributively", to, again, that whole model-epoch **1** 'consecuum-cumulum' --

$$\begin{aligned} \underline{\varphi}_{\mathrm{F}} &\iff \langle \rangle \ \underline{\varphi}_{\mathrm{A}} &\iff \underline{\varphi}_{\mathrm{B}} &\iff \underline{\varphi}_{\mathrm{C}} &< \rangle = \langle \rangle \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\iff \underline{\varphi}_{\mathrm{A}} &< \rangle &\iff \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\iff \underline{\varphi}_{\mathrm{B}} &< \rangle &\leqslant \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\iff \underline{\varphi}_{\mathrm{C}} &< \rangle &\leqslant \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\iff \underline{\varphi}_{\mathrm{C}} &< \rangle &\leqslant \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\ll \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\ll \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\ll \langle \rangle & \underline{\varphi}_{\mathrm{F}} &\ll \langle \rangle &\leqslant \langle \rangle \ \underline{\varphi}_{\mathrm{F}} &\ll \langle \rangle &\leqslant \langle \rangle &\equiv \langle \rangle \ \underline{\varphi}_{\mathrm{A}} &< + \rangle \ \underline{\varphi}_{\mathrm{FB}} &< \rangle &\leqslant \langle \rangle \ \underline{\varphi}_{\mathrm{FB}} &< \rangle &\leqslant \langle \rangle \ \underline{\varphi}_{\mathrm{FC}} &< \rangle &\leqslant \langle \rangle \\ &\langle \rangle \ \underline{\varphi}_{\mathrm{A}} &< + \rangle \ \underline{\varphi}_{\mathrm{B}} &< + \rangle \ \underline{\varphi}_{\mathrm{FB}} &< + \rangle \ \underline{\varphi}_{\mathrm{FC}} &< \rangle &= \langle \rangle \ \underline{\varphi}_{\mathrm{A}} &< + \rangle \ \underline{\varphi}_{\mathrm{FA}} &< + \rangle \ \underline{\varphi}_{\mathrm{FB}} &< + \rangle \ \underline{\varphi}_{\mathrm{FC}} &< \rangle. \end{aligned}$$

Then, '''summing-up''' the results of your **2**, separate, ''short-cut'' [diachronic-] «aufheben» multiplications, you'll obtain --  $\langle > \mathcal{Q}_A <+> \mathcal{Q}_B <+> \mathcal{Q}_C <+> \mathcal{Q}_{CA} <+> \mathcal{Q}_{CB} <+> \mathcal{Q}_F <\rangle <+> \langle > \mathcal{Q}_A <+> \mathcal{Q}_B <+> \mathcal{Q}_C <+> \mathcal{Q}_{FA} <+> \mathcal{Q}_{FB} <+> \mathcal{Q}_{FC} <\rangle$ 

Your overall result for your model epoch **2** will therefore be the **9** (= **3**<sup>2</sup>) term<u>s</u>-"containing" "sum" -- $\underline{D}_{2} = \underline{D}_{1}^{3} = \langle \rangle \mathcal{Q}_{A} \langle + \rangle \mathcal{Q}_{B} \langle + \rangle \mathcal{Q}_{C} \langle \rangle^{3} \underline{\partial} | = \equiv$   $\langle \rangle \mathcal{Q}_{A} \langle + \rangle \mathcal{Q}_{B} \langle + \rangle \mathcal{Q}_{C} \langle + \rangle \mathcal{Q}_{CB} \langle + \rangle \mathcal{Q}_{FB} \langle + \rangle \mathcal{Q}_{FB} \langle + \rangle \mathcal{Q}_{FB} \langle + \rangle \mathcal{Q}_{FC} \langle \rangle.$ 

Suppose too that you are able to <u>uni</u>vocally "solve for" the **5** other additional, <u>'bi</u>-vocal', initially 'algebraic-<u>un</u>known category-symbols' so <u>gen</u>erated, e.g. --  $\mathcal{Q}_{CA} \mid = \mathcal{Q}_{D}; \mathcal{Q}_{CB} \mid = \mathcal{Q}_{E}; \mathcal{Q}_{FA} \mid = \mathcal{Q}_{G}; \mathcal{Q}_{FB} \mid = \mathcal{Q}_{H}, \text{ and}; \mathcal{Q}_{FC} \mid = \mathcal{Q}_{I}$ . If so, then you'll have obtained, as your "solved" result from "cubing"  $\langle \rangle \mathcal{Q}_{A} <+> \mathcal{Q}_{B} <+> \mathcal{Q}_{C} <\rangle$  --

$$\langle > \mathcal{Q}_{A} <+> \mathcal{Q}_{B} <+> \mathcal{Q}_{C} <+> \mathcal{Q}_{CA} <+> \mathcal{Q}_{CB} <+> \mathcal{Q}_{FA} <+> \mathcal{Q}_{FA} <+> \mathcal{Q}_{FB} <+> \mathcal{Q}_{FC} <\rangle \mid == \langle > \mathcal{Q}_{A} <+> \mathcal{Q}_{B} <+> \mathcal{Q}_{C} <+> \mathcal{Q}_{D} <+> \mathcal{Q}_{E} <+> \mathcal{Q}_{F} <+> \mathcal{Q}_{G} <+> \mathcal{Q}_{H} <+> \mathcal{Q}_{I} <\rangle.$$

For this <u>'triad</u> ic' version of o<u>ur</u> method, but **not** for its <u>'dyad</u> ic' version, already addressed above, the **9**th 'category-symbol', <u>' $\mathcal{Q}_{FC}$ </u>', is expected to represent the 'second *full <u>uni</u>*-category' of this categorial progression, by way of representing the combination, <u>uni</u>fication, fusion, reconciliation, hybridization, or "complex unit(y)(<u>ies</u>)" [cf. Hegel] of some [units] of the **3**rd 'category-symbol', <u>' $\mathcal{Q}_{CC}$ </u>', with some [units] of the **6**th 'category-symbol', <u>' $\mathcal{Q}_{CC}$ ' [-= ' $\mathcal{Q}_{F}$ '.</u>

The former,  $\underline{\mathscr{Q}}_{C}$ , *is* the 'first [*full*] <u>uni</u>-category symbol' in this 'category-symbols' progression -- united, in ' $\underline{\mathscr{Q}}_{FC}$ ', with some [units] of the **6**th 'category-symbol', ' $\underline{\mathscr{Q}}_{CC}$ '  $\models : \underline{\mathscr{Q}}_{F}$ ' -- which was/is the 'second *full <u>contra</u>*-category symbol' in this category-symbols' progression, and which typically was/is 'contra' in meaning to the meaning of 'category-symbol'  $\underline{\mathscr{Q}}_{CC}$ .

In <u>gen</u>eral, in these '<u>triad</u>ic' versions of o<u>ur</u> method, but **not** in its '<u>dyad</u>ic' versions, each epoch of categorial advance and historical <u>re</u>construction typically ends in a new, higher, more-complex '''complex unity''' category, '<u>syn</u>thesis category', or '<u>uni</u>-category', one that reconciles one of the previous '<u>syn</u>thesis categor<u>ies</u>', e.g., the most recent past '<u>syn</u>thesis category', with the '<u>anti</u>thesis category' that grew out of <u>self</u>-action by the most recent deeper-past '<u>syn</u>thesis category'.

From here on, this <u>triad</u> ic method's historical progression-procedure is typically a matter of you taking, again, the most-recently-emerged, most-advanced, most-complex 'category-symbol', <u>gene</u>rated and solved at the end of your computation of the latest-computed model-epoch of your **D**omain history-<u>reconstruction</u> -- for model-epoch **2**, that 'category-symbol', herein, is named or labeled  $\mathcal{Q}_{FC}$  |=  $\mathcal{Q}_{I}$  -- and using it to simulate the '<u>temporal</u>-«aufheben» determinate [<u>self</u>-]negation' of the entire 'ontic-state'/'''sum''' of your symbolic <u>reconstruction</u> of that most-recently-computed model-epoch.

For example, suppose that you start your progress to the next model-epoch, as <u>gen</u>erically described above, by applying the latest 'category-symbol' above, ' $\mathcal{Q}_{FC}$ ' or ' $\mathcal{Q}_{I}$ ', by means of the ' $\mathcal{Q}_{FC}$   $\ll$ ' or ' $\mathcal{Q}_{I} \ll$ ', [historical/<u>diachronic-]</u>«*aufheben*» '''time[<u>s</u>]'' operation, to the 'category-symbol<u>s</u>' for all of the other kind<u>s</u> of unit<u>s</u>, extant in that most-recently-computed model-epoch, and, finally, by so applying that latest, leading symbol to its own symbol/to itself as well.

For this example, i.e., for model-epoch **2**, this means applying  $\underline{\varphi}_{I}$  to the 'categor<u>*ies*</u>-sum' that defines model-epoch **2**, i.e., as  $\underline{\varphi}_{I} \iff \langle > \underline{\varphi}_{A} \iff \underline{\varphi}_{B} \iff \underline{\varphi}_{L} \iff \underline{\varphi}_{L}$ and, thereby, to launch into model-epoch **3**.

Next, you apply the most advanced, most-complex 'category-sign' of that result, to, again, the epoch **2** 'cumulum':  $\mathcal{Y}_{II} \iff \langle \mathcal{Y}_{A} \iff \mathcal{Y}_{B} \iff \mathcal{Y}_{C} \iff \mathcal{Y}_{D} \iff \mathcal{Y}_{E} \iff \mathcal{Y}_{F} \iff \mathcal{Y}_{F} \iff \mathcal{Y}_{H} \iff \mathcal{Y}_{I} \iff$ 

Then, finally, you "sum" the two results. All of this is a short-cut to obtain --

$$\langle \mathcal{A}_{A} \langle \mathcal{A}_{A} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{B} \rangle \langle \mathcal{A}_{C} \rangle \langle \mathcal{A}_{D} \rangle \langle \mathcal{A}_{E} \rangle \langle \mathcal{A}_{E} \rangle \langle \mathcal{A}_{F} \rangle \langle \mathcal{A}_{G} \rangle \langle \mathcal{A}_{H} \rangle \langle \mathcal{A}_{H} \rangle \langle \mathcal{A}_{H} \rangle \langle \mathcal{A}_{A} \rangle \langle \mathcal{A}_{A} \rangle \langle \mathcal{A}_{H} \rangle \langle \mathcal{A$$

After that procedure, your next move, per the *triad*ic versions of this method, is to "solve for"/define the new 'category-symbols' thereby *gene*rated.

For model-epoch **3**, since there are **9** (= **3**<sup>2</sup>) categor<u>*ies*</u> inherited from epoch **2**, there will be **2** × **9** = **18** more, incremental, new 'category symbol<u>s</u>' to '"solve for''/define after you apply the model-epoch **3** «*aufheben*» '"'time<u>s</u>''' procedure. This means a total of **27** (= **3**<sup>3</sup>) 'category-symbol<u>s</u>' in the epoch **3** 'categorial consecuum-cumulum', 'categorial series', or 'category-symbol<u>s</u> sum'. In <u>gen</u>eral, for model-epoch **n** ≥ **1**, if it inherited **m** categor<u>*ies*</u> from epoch **n** – **1**, then there will be another **2m** added 'category-symbol<u>s</u>' <u>gen</u>erated by the model-epoch **n** «*aufheben*» critique/-""multiplication"' procedure. This means a new total of **3m** categor<u>*ies*</u>, to be inherited from model-epoch **n** by modelepoch **n** + **1**.

"Solving for" each such new increment of initially "algebraic-<u>unknown</u>" category-symbols is simply a matter of *defining* [cf. Plato's Socrates] those 'category-symbols'. Do so in terms of kinds of units that you can find as having come into existence in the <u>past</u> of the <u>Domain</u> whose ontology-history you are <u>reconstructing</u> and <u>explicating</u>.

Next, use existing name<u>s</u> for those already-recognized categor<u>ies</u> that encompass those kind<u>s</u> of unit<u>s</u>. Also, create new name<u>s</u> that aptly *"christen"* those categor<u>ies</u> that are brought to light by this method, but that have **not** been recognized *-- widely*, or even *at all --* in past discourse witnessed by you, and/or in past recorded discourse otherwise known to you.

If you continue iterating this epoch-wise categorial 'consecuum-cumulum' <u>re</u>construction-procedure, you will eventually reach a model-epoch for which you will find that you are **not** able to '"solve"' one, some, or even all of the new, more complex ''algebraic-<u>un</u>known'" 'category-symbol<u>s</u>' <u>gen</u>erated by the '*«aufheben»*, <u>temporal</u>, determinate negation ' that constructs your symbolic representation for that model-epoch.

This may be because the collective, human-<u>phen</u>omic, "'meme<u>s</u>-pool'" insight<u>s</u> upon which you draw for such categoryrecognition have **not yet** advanced to the degree necessary to enable your clear discernment of the <u>Domain</u>-ontology representable by these 'category-symbol<u>s</u>', even though that ontology was/is actually *already there* in the <u>past-to-present</u> of your <u>Domain</u>. Extended and deepened insight would then be needed in order to grasp them.

Or, it may be because nothing corresponding to those 'category-symbols' has ever yet been [wholly] extant in that <u>past-to-present</u>. In the latter case, it may be time to identify the final solvable/definable ''algebraic''' 'category-symbol' of your categorial progression <u>reconstruction</u>, and to conclude that <u>reconstruction</u> with your solution/definition for that solvable 'category-symbol' -- solvable/definable in terms of the already <u>known</u>-to-you actual units which correspond to it.

If the '<u>present</u>ly-<u>un</u>solvable/<u>in</u>definable category-symbol( $\underline{s}$ )' intimate(s), to your mind, (a) probable <u>future</u> ontology that you expect will arise in (a) future-<u>present(s</u>) of your <u>Domain</u>, then, if you feel it useful and appropriate, you may want to add a ''coda''' to your model write-up, expressing your prediction-hypothes<u>es</u> as to one or more such future-<u>present(s</u>). These two eventualit<u>ies</u> are addressed in more detail, respectively, in the next two sub<sup>2</sup>-section<u>s</u> of this sub<sup>1</sup>-section. As noted before, in earlier sub<sup>w</sup>-section<u>s</u>, '<u>qualitatively fract</u>ional <u>presences</u>' may be involved.

Let us now work through model-epoch **3** for this <u>gene</u>ric example, to further exemplify and clarify that which further iterations of this <u>re</u>construction-procedure -- e.g., also those *beyond* model-epoch **3** -- <u>gene</u>rically and algorithmically involve. To compute the '<u>temporal</u> «aufheben» determinate negation' of the model-epoch **2** 'ontological-categorial' state of your <u>reconstruction</u>, i.e., to get from  $\underline{D}_2 = \langle \rangle \mathcal{Q}_A \langle + \rangle \mathcal{Q}_B \langle + \rangle \mathcal{Q}_C \langle + \rangle \mathcal{Q}_D \langle + \rangle \mathcal{Q}_E \langle + \rangle \mathcal{Q}_G \langle + \rangle \mathcal{Q}_H \langle + \rangle \mathcal{Q}_I \langle \rangle$  to  $\underline{D}_3$ , first perform the operation denoted by  $\mathcal{Q}_I \langle \times \rangle \langle \rangle \mathcal{Q}_A \langle + \rangle \mathcal{Q}_B \langle + \rangle \mathcal{Q}_C \langle + \rangle \mathcal{Q}_D \langle + \rangle \mathcal{Q}_E \langle + \rangle \mathcal{Q}_E \langle + \rangle \mathcal{Q}_H \langle + \rangle \mathcal{Q}_I \langle \rangle$ .

So doing, you'll obtain the following --

$$\begin{aligned} & \mathcal{Q}_{I} < > \langle > \mathcal{Q}_{A} < +> \mathcal{Q}_{B} < +> \mathcal{Q}_{C} < +> \mathcal{Q}_{D} < +> \mathcal{Q}_{E} < +> \mathcal{Q}_{F} < +> \mathcal{Q}_{G} < +> \mathcal{Q}_{H} < +> \mathcal{Q}_{I} < \rangle \end{aligned} = \\ & \mathcal{Q}_{A} < +> \mathcal{Q}_{B} < +> \mathcal{Q}_{C} < +> \mathcal{Q}_{D} < +> \mathcal{Q}_{E} < +> \mathcal{Q}_{F} < +> \mathcal{Q}_{G} < +> \mathcal{Q}_{H} < +> \mathcal{Q}_{I} < \\ & \mathcal{Q}_{IA} < +> \mathcal{Q}_{IB} < +> \mathcal{Q}_{LC} < +> \mathcal{Q}_{LD} < +> \mathcal{Q}_{LE} < +> \mathcal{Q}_{LE$$

Then scrutinize these **9** new, '<u>bi</u>-vocal, ''algebraic''' 'category-symbol' terms so <u>gen</u>erated.

Suppose that you can identify each of these **9** new, '<u>*bi*</u>-vocal category-symbol<u>s</u>' with its own known, <u>*uni*</u>vocal, alreadyrecognized, already-named category, of known unit<u>s</u>, already demonstrably, to your mind, extant in the <u>*past*</u>, or, typically, in the <u>*past-to-present*</u>, of the <u>**D**omain</u> that your ontology-history <u>*reconstruction*</u> model is explicating. E.g. --

$$\boldsymbol{\varrho}_{\mathrm{IA}} \mid = \boldsymbol{\varrho}_{\mathrm{J}}; \ \boldsymbol{\varrho}_{\mathrm{IB}} \mid = \boldsymbol{\varrho}_{\mathrm{K}}; \ \boldsymbol{\varrho}_{\mathrm{IC}} \mid = \boldsymbol{\varrho}_{\mathrm{L}}; \ \boldsymbol{\varrho}_{\mathrm{ID}} \mid = \boldsymbol{\varrho}_{\mathrm{M}}; \ \boldsymbol{\varrho}_{\mathrm{IE}} \mid = \boldsymbol{\varrho}_{\mathrm{N}}; \ \boldsymbol{\varrho}_{\mathrm{IF}} \mid = \boldsymbol{\varrho}_{\mathrm{O}}; \ \boldsymbol{\varrho}_{\mathrm{IG}} \mid = \boldsymbol{\varrho}_{\mathrm{P}}; \ \boldsymbol{\varrho}_{\mathrm{IH}} \mid = \boldsymbol{\varrho}_{\mathrm{Q}}; \ \boldsymbol{\varrho}_{\mathrm{II}} \mid = \boldsymbol{\varrho}_{\mathrm{R}}.$$

If so, then you have completed the first of two [finite] part<u>s</u> [ $\cdot \underline{\vartheta}$ ] of the recipe for deriving the epoch **3** 'ontology-state' of your categorial progression <u>*reconstruction*</u>, via the following 'category-symbol *cumulum*', or '''sum''', of **18** '''term<u>s</u>''':

$$\frac{\partial \mathbf{D}_{3}}{\mathcal{Q}_{A}} = \langle \mathcal{Q}_{A} \langle + \mathcal{Q}_{B} \langle + \mathcal{Q}_{C} \langle + \mathcal{Q}_{D} \rangle \langle + \mathcal{Q}_{D} \langle + \mathcal{Q}_{E} \rangle \langle + \mathcal{Q}_{F} \langle + \mathcal{Q}_{G} \rangle \langle + \mathcal{Q}_{H} \rangle \langle + \mathcal{Q}_{L} \rangle \langle + \mathcal{Q}_{Q} \rangle \langle + \mathcal{Q}_{L} \rangle \langle + \mathcal{Q}_{Q} \rangle \langle + \mathcal{Q} \rangle \langle + \mathcal{Q}_{Q} \rangle \langle + \mathcal{Q} \rangle \langle + \mathcal{Q} \rangle \langle$$

To this "*non*-amalgamative sum", you may then "add" the additional **9** new terms that result as follows --

$$\begin{aligned} \mathcal{Q}_{R} &\iff \langle \rangle \ \mathcal{Q}_{A} &\iff \mathcal{Q}_{B} &\iff \mathcal{Q}_{C} &\iff \mathcal{Q}_{D} &\iff \mathcal{Q}_{E} &\iff \mathcal{Q}_{F} &\iff \mathcal{Q}_{G} &\iff \mathcal{Q}_{H} &\iff \mathcal{Q}_{I} & \langle \rangle \\ \mathcal{Q}_{A} &\iff \mathcal{Q}_{B} &\iff \mathcal{Q}_{C} &\iff \mathcal{Q}_{D} &\iff \mathcal{Q}_{E} &\iff \mathcal{Q}_{F} &\iff \mathcal{Q}_{H} &\iff \mathcal{Q}_{H} &\iff \mathcal{Q}_{I} & ; \\ \mathcal{Q}_{RA} &\iff \mathcal{Q}_{RB} &\iff \mathcal{Q}_{RC} &\iff \mathcal{Q}_{RD} &\iff \mathcal{Q}_{RE} &\iff \mathcal{Q}_{RF} &\iff \mathcal{Q}_{RG} &\iff \mathcal{Q}_{RH} &\iff \mathcal{Q}_{RI} & ; \\ \end{aligned}$$

-- yielding **9** new 'category-symbols' --  $\mathcal{Y}_{RA}$ ,  $\mathcal{Y}_{RB}$ ,  $\mathcal{Y}_{RC}$ ,  $\mathcal{Y}_{RD}$ ,  $\mathcal{Y}_{RE}$ ,  $\mathcal{Y}_{RF}$ ,  $\mathcal{Y}_{RG}$ ,  $\mathcal{Y}_{RH}$ , and  $\mathcal{Y}_{RI}$  -- to "'solve-for"'.

Suppose that you are able to identify each of these **9** new, <u>'bi</u>-vocal category-symbol<u>s</u>' with a <u>uni</u>vocal, recognized, already-named category, of known unit<u>s</u>, already demonstrably extant, to your light<u>s</u>, in the <u>past[-to-present]</u> of your **Domain** of <u>reconstruction</u>, e.g. --

$$\boldsymbol{\mathscr{Q}}_{\mathrm{RA}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{S}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RB}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{T}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RC}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{U}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RD}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{V}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RE}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{W}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RF}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{X}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RG}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{Y}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RH}} \mid = \boldsymbol{\mathscr{Q}}_{\mathrm{Z}}; \ \boldsymbol{\mathscr{Q}}_{\mathrm{RH}} :$$

If so, then you have achieved the third part of <u>gen</u>erating the model-epoch **3** 'ontology-state' of your categorial progression <u>reconstruction</u>. This then yields, upon adding the two "'multiplication" results together, the following 'category-symbol *consecuum-cumulum*', or "'sum'", now of **27** (= **3**<sup>3</sup>) 'terms' total -- **D**<sub>3</sub> =

 $\begin{array}{l} \langle \circ \mathcal{Q}_{A} < + \circ \mathcal{Q}_{B} < + \circ \mathcal{Q}_{C} < + \circ \mathcal{Q}_{D} < + \circ \mathcal{Q}_{E} < + \circ \mathcal{Q}_{F} < + \circ \mathcal{Q}_{G} < + \circ \mathcal{Q}_{H} < + \circ \mathcal{Q}_{J} < + \circ \mathcal{Q}_{L} < + \circ \mathcal{Q}_{L} < + \circ \mathcal{Q}_{M} < + \circ \mathcal{Q}_{N} < + \circ \mathcal{Q}_{Q} < + \circ \mathcal{Q}_{Q}$ 

<u>Example</u>. Suppose that you wish to <u>reconstruct</u> the philosophies-history of that sub-<u>D</u>omain of the Ancient Greek philosophies, and of the Ancient Mediterranean philosophies in general, that can be characterized as – in its known <u>chronological-historic order</u> -- the Heraclitean, the Parmenidean, the Platonian, and, perhaps, also the Aristotelian. Suppose further that you therefore select the category of the historically earliest arisen of these philosophies, the <u>Heraclitean, as your starting category, signed by 'category-symbols</u>'  $\mathcal{Q}_{H}^{3^{0}} = \mathcal{Q}_{H}^{1} = \mathcal{Q}_{H}[[->q_{1}], and as the sole$ 'ideo-ontological' content represented by your model-epoch**0**for this sub-<u>D</u>omain.

Then, per the "<u>triadic</u>" algorithmic "<u>recipes</u>" described above, you would next carry out the following "purely" <u>qualitative</u> "short-cut" computation, to construct model-epoch **1**, as the fruition of  $\mathcal{Q}_{H}^{3^{1}} = \mathcal{Q}_{H}^{3^{-1}}$ .

 $\begin{array}{l}
\boldsymbol{\mathcal{Y}}_{H} \iff \boldsymbol{\mathcal{Y}}_{H} \iff \boldsymbol{\mathcal{Y}}_{H} = \boldsymbol{\mathcal{Y}}_{H} \iff \boldsymbol{\mathcal{Y}} = \boldsymbol{\mathcal{Y}}_{H} \iff \boldsymbol{\mathcal{Y}}_{H} \\
\langle \boldsymbol{\mathcal{Y}}_{H} \iff \boldsymbol{\mathcal{Y}}_{H$ 

The *next* task that *you* would see would be to '<u>semantify</u>' -- to '''solve for '''/define the [*psycho*]*historical meaning*, the *preeminent cognitive quality* -- of each of the *two incremental 'category-symbols' constructed*, *algebraically*, *by* the *foregoing "purely" qualitative computation*. Suppose that you solve/define them as follows --

<u>Model epoch</u> 1.  $\underline{\mathscr{A}}_{H}^{3^{1}}$  [again with 'generic  $\underline{\mathscr{A}}_{P}^{Q}$  ordinal-qualifier <u>meta-numeral' attributions</u> ['<---]'] noted]. Suppose you solved as follows --2.  $\underline{q}_{2}$ <---]  $\underline{\mathscr{A}}_{HH}$  |=  $\underline{\mathscr{A}}_{P}^{P}$  = The '<u>1860-ontological category</u> for the <u>Parmenidean Philosophies</u>; 3.  $\underline{q}_{3}$ <--]  $\underline{\mathscr{A}}_{HHH}$   $\underline{\mathscr{O}}$  =  $\underline{\mathscr{A}}_{PH}$  |=  $\underline{\mathscr{A}}_{E}^{P}$  = The '<u>1860-ontological category</u>' for the <u>Parly Platonian</u>, «<u>E</u>18<u>6</u>» Philosophies. If so, then your solved model-epoch 1 ' $\underline{\iota\delta\varepsilon}$ o-ontology-history-model' for sub-**D**omain Ancient Greek Philosophies is:  $q_{H}^{3^{1}} = \langle q_{H}^{3^{1}} = \langle q_{H}^{2} \rangle, or \underline{D}_{1} = \langle \underline{H}eraclitus-ism\underline{s}' \langle q_{V} \rangle, vs. \langle \underline{E}\iota\delta\underline{\varepsilon} \rangle - alism\underline{s}' \rangle$ . Suppose that you then likewise construct model-epoch 2 --

 $\begin{aligned} \boldsymbol{\mathcal{Y}}_{H}^{3^{2}} \mid = \langle \boldsymbol{\mathcal{Y}}_{H}^{<+} \boldsymbol{\mathcal{Y}}_{p}^{<+} \boldsymbol{\mathcal{Y}}_{p}^{<} \rangle^{3^{1}} = \langle \boldsymbol{\mathcal{Y}}_{H}^{<+} \boldsymbol{\mathcal{Y}}_{p}^{<+} \boldsymbol{\mathcal{Y}}_{p}^{<} \rangle \langle \boldsymbol{\mathcal{Y}}_{H}^{<+} \boldsymbol{\mathcal{Y}}_{p}^{<+} \boldsymbol{\mathcal{Y}}_{p}$ 

If so, your next task would be to ''solve for '''define the **6** incremental '<u>18</u>co-ontological categor<u>ies</u>' thus ''added'''. Suppose that you ''solve for '''define the first three of these six new 'algebraical category-symbols' as below --

4.  $\underline{\mathbf{q}}_{4} \leftarrow \mathbf{\underline{q}}_{4} \leftarrow \mathbf{\underline{\beta}}_{EH} = \text{Critique}_{\underline{s}}/\text{theor}_{\underline{ies}} - \text{of-error}/\text{conversion}_{\underline{s}}, \text{ by } \otimes \underline{\mathbf{E}}_{\underline{i}} \otimes \underline{\mathbf{\delta}}_{\underline{s}} \otimes \underline{\mathbf{Philosoph}}_{\underline{ies}}, \text{ of } \underline{\mathbf{H}}_{\underline{eraclitean}} + \underline{\mathbf{Philosoph}}_{\underline{ies}}, \text{ of } \underline{\mathbf{H}}_{\underline{s}} + \underline{\mathbf{Philosoph}}_{\underline{s}} + \underline{\mathbf{Philosoph}}_{\underline{s}}, \text{ of } \underline{\mathbf{H}}_{\underline{s}} + \underline{\mathbf{Philosoph}}_{\underline{s}}, \text{ of } \underline{\mathbf{H}}_{\underline{s}}, \text{ of } \underline{\mathbf{H}}_{\underline{s}} + \underline{\mathbf{Philosoph}}_{\underline{s}}, \text{ of } \underline{\mathbf{H}}_{\underline{s}} + \underline{\mathbf{Philosoph}}_{\underline{s}}, \text{ of } \underline{\mathbf{H}}_{\underline{s}}, \text{ of }$ 

5.  $\underline{\mathbf{q}}_{5} \leftarrow \mathbf{\underline{q}}_{5} \leftarrow \mathbf{\underline{\beta}}_{F}$  = Critique<u>s</u>/theor<u>ies</u>-of-error/conversion<u>s</u>, by «<u>E</u>toe Philosophies</u>, of <u>Parmenidean Philosophies</u>;

6.  $\underline{\mathbf{q}}_{6} \leftarrow \mathbf{j} \not \mathbf{q}_{EE} \partial \mathbf{l} = \mathcal{q}_{A} \equiv \underline{Self}$ -critiques of « $\underline{E}t\delta e$ » Philosophies, yielding, e.g., Plato's later, «Autokinesis» Philosophy. If so, then your epoch 3 categorial progression equation-model for this philosophical history becomes --

$$\underline{\mathbf{D}}_{3} = \langle \mathcal{Y}_{H} < + \mathcal{Y}_{P} < + \mathcal{Y}_{E} < + \mathcal{Y}_{EH} < + \mathcal{Y}_{EP} < + \mathcal{Y}_{A} < + \mathcal{Y}_{AH} < + \mathcal{Y}_{AP} < + \mathcal{Y}_{AE} < \rangle, or - - \mathcal{Y}_{AE} < 0$$

'The '<u>ide</u>o-ontology' of model-epoch 2 of this sub-<u>D</u>omain of Ancient Greek Philosophies consists of --

Heracliteanisms &/vs. Parmenideanisms &/vs. Platonian '«E1Se»-alisms',

&/vs. <u>E</u> critiques of <u>H</u>, &/vs. <u>E</u> critiques of <u>P</u>, &/vs. <u>E</u> critiques of <u>E</u> itself, yielding «<u>A</u>utokinesis» Philosoph<u>ies</u>, plus: <u>A</u> critiques of <u>H</u>, &/vs. <u>A</u> critiques of <u>P</u>, &/vs. <u>A</u> critiques of <u>E</u>.

Suppose that you "'solve for "' the second three of these six new 'algebraical category-symbols' as --

7.  $\underline{\mathbf{q}}_{7} < - ] \mathbf{q}_{AH} = \text{Critique}_{\underline{s}} / \text{theor}_{\underline{ies}} - \text{of-error/conversion}_{\underline{s}}, \text{ by } \otimes \underline{\mathbf{A}}_{\underline{itokinesis}} > Philosoph_{\underline{ies}}, \text{ of } \underline{\mathbf{H}}_{\underline{eraclitean}} Philosoph_{\underline{ies}};$ 

8.  $\underline{\mathbf{q}}_{8} \leftarrow \mathbf{\underline{q}}_{AP} = \text{Critique}_{\underline{s}}/\text{theor}_{\underline{ies}}$  of  $\underline{error}/\text{conversion}_{\underline{s}}$ , by  $\underline{\mathbf{A}utokinesis} + Philosoph_{\underline{ies}}$ , of  $\underline{Parmenidean} + Philosoph_{\underline{ies}}$ ;

9.  $\underline{\mathbf{q}}_{\alpha} \leftarrow \underline{\mathbf{q}}_{AE}$   $\left|= \text{Critique}_{\underline{s}}/\text{theor}_{\underline{ies}} \cdot \text{of-error/conversion}_{\underline{s}}, \text{ by } \times \underline{\underline{Autokinesis}} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{A} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{\underline{E}} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{E} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{E} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{E} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{E} \cdot \underline{\delta e} \cdot \underline{Philosoph_{\underline{ies}}}, \text{ of } \times \underline{E} \cdot \underline{\delta e} \cdot \underline{\delta e} \cdot \underline{E} \cdot \underline{\delta e} \cdot \underline{\delta e}$ 

Doing so, you might even interpret the  $Q_{AE}$  '<u>ide</u>o-ontological category' -- because it connotes a critical combination or <u>synthesis of the 'statical</u>' philosophies of the «<u>Eide</u>» with the more <u>dynamical</u> philosophies of «<u>A</u>utokinesis» -- as connoting a characteristic of, or perhaps even the most preeminent cognitive <u>quality</u> of, the Aristotelian philosophies. They would include <u>especially</u> Aristotelian critiques of Platonian «<u>Eide</u>» philosophies, and that aspect of Aristotelian philosophies describable as '<u>dynamical essence</u>-ialisms'\*.

<sup>\*[</sup>See, for example, Scott Meikle, *Essentialism in the Thought of Karl Marx*, Open Court Publishing Co., La Salle, IL., **1985**, pp. **118-119**].

## «<u>Auto-Kinesis</u>», or "<u>Self</u>-Change" in Plato's Later Philosophy.

**Quotation**. "The dialogues of the Socratic period provide that view of the world usually associated with Plato. The period of transition and criticism, and the final synthesis, are **little noted** ... The Parmenides can be taken as signaling the change. In this dialogue Socrates is unable to defend his Doctrine of Ideas. ... Where the *Republic* and *Phaedo* stressed the <u>un</u>changing nature of the soul, the emphasis in the *Phaedrus* is exactly reversed. In this dialogue, the soul is the principle of <u>self-motion</u>, and we are told that the soul is <u>always in motion</u>, and what is always in motion is immortal. The difference now between spirit and matter is not changelessness in contrast with change, but <u>self-motion</u> [«<u>autokinesis</u>»], the <u>essence</u> of the soul, in contrast with <u>derived motion</u>. The emphasis on <u>self-motion</u> is continued even in the Laws, Plato's final dialogue."

**<u>References</u>**. William L. Riese, <u>Dictionary of Religion and Philosophy</u>: Eastern and Western Thought, Humanities Press, Inc. [New Jersey: **1980**], pp. **442-443**, *italic*, **bold**, **shadowed**, <u>underlined</u> *emphases* added by F.<u>E.D</u>.

<u>Commentary</u>. ■ <u>Dialectic</u>, in its Early-Platonian, or Platonian-Parmenidean, «arché» form, was <u>not</u> simply "Systematic", or "<u>Syn</u>chronic", but, <u>pre</u>sumptively, 'Eternalistic', or "<u>Timeless</u>". That initial form of <u>Dialectic</u> fell short in that its users and practitioners failed to investigate 'The <u>Origins</u> of The Kinds' -- ... 'The <u>Origin</u> of The «Et&<u>Gene</u>»' and ''The <u>Origin</u> of The «[Et&<u>F]Species</u>»...'" -- but, instead, simply <u>pre</u>sumed that "The Kinds", in the form of the "causal" «Et&<u>S</u>, (1) have always already existed, fully developed/articulated, fully-formed, from Eternity, or (2) [sometimes, as per some later [e.g., <u>Neo-]Platonians</u>] have existed <u>explicitly only</u> from the instant of "Divine Creation", or in the progression of "Divine Emanation(s)".

*Thus, Platonian early <u>Dialectic</u> lacks* the *perspective* of *dynamism*, of *development -- and*, *especially*, *lacks* the *perspective* of *immanent-*, *or self-induced*, *development --* that *burgeons with* the *later immanent development* of <u>Dialectic itself</u>, e.g., *with* the *emergence of Systematic <u>Dialectic</u> from the womb of "Eternal" <u>Dialectic and then</u>, <i>later*, of <u>Historical Dialectic</u>.

However, this deficiency begins to be redressed, toward the climax of Plato's philosophical career, via his introduction, and partial development, of the perspective of <u>auto-kinesis</u>, or of <u>self-chang[e][ingness]</u>, as described in the passage quoted above, and commencing with the dialogue entitled The Parmenides.

## "<u>Self</u>-Change" in Marx's Theory.

#### Quotations

"The materialist doctrine concerning the changing of circumstances and upbringing forgets that circumstances are changed by men and that it is essential to educate the educator himself. This doctrine must, therefore, divide society into two parts, one of which is superior to society. The coincidence of the changing of circumstances and of human activity or <u>self-changing</u> can be conceived and rationally understood only as *revolutionary practice*."<sup>1</sup>

"Not only do the objective conditions change in the act of reproduction, e.g. the village becomes a town, the wilderness a cleared field etc., but the [re-]producers change, too, in that *they bring out new qualities in themselves, develop themselves in production, transform themselves*, develop new powers and new ideas, new modes of intercourse, new needs and new language."<sup>2</sup>

"Labour is, in the first place, a process in which both man [human Nature] and [exo-human] Nature participate, and in which man of his own accord starts, regulates, and controls the material re-actions between himself and [exo-human] Nature. He <u>opposes himself to Nature as one of her own forces</u>, setting in motion arms and legs, head and hands, the natural forces of his body, in order to appropriate Nature's productions in a form adapted to his own wants. By thus acting on the external world and changing it, he at the same time <u>changes his own nature</u>. He develops his slumbering powers and compels them to act in obedience to his sway."<sup>3</sup>

#### References

Karl Marx, Theses on Feuerbach, Thesis III, original version, in Karl Marx and Frederick Engels, <u>The German Ideology</u>, Progress Publishers, Moscow, **1968**, p.**660**, bold, shadowed, *italic*, and <u>underlined</u> emphases added by F.E.D.

2. Karl Marx, <u>Grundrisse</u>: Foundations of the Critique of Political Economy (Rough Draft), translated by Martin Nicolaus, Penguin Books, Middlesex, 1973, p. 494, bold, shadowed, *italic*, and <u>underlined</u> emphases added by F.E.D.

3. Karl Marx, Capital I, Part III, CHAPTER VII., Section 1. The Labour-Process or the Production of Use-Values, International Publishers, New York, 1973, p. 177, bold, shadowed, italic, and underlined emphases added by F.E.D..

**Commentary.** Dialectic is, we hold, born in and by 'self-reflgxivity', and/or in and by 'self-reflgxivity'. The genesis of the 'first contra-category' in each <u>dialectic</u> is via the self-involutionary self-action, or self-reflgxion, the 'bending back upon self', of the contents of the «arché»-category, and/or via the 'self-reflgxion', the 'flowing back upon self', of the contents of the «arché»-category. There is, in the quotes above, a sense that the activity of the creating, producing <u>human subjects</u>, or agents, in passing out of them, to work upon and to change the external world, the world external to their bodies, also passes through them, and, in that process, also changes them as well; is also ''self-activity''' as well as activity of the <u>human agents</u>, in passing out of them, to change that external world, also returns back to them, and changes them as well; is also ''self-activity''' as well as activity upon an external to their bodies, also changes them, and, in that process, also changes them as well; a slow ''self-activity''' as well as activity on an external to their bodies, in passing out of them, to change that external world, also returns back to them, and changes them as well; concurrently. In F.E.D. theory, «<u>auto-kinesis</u>» is centered in the following, algebraically <u>nonlinear</u>, '<u>contra-Boolean</u>', self-involution' equation, involving the category-variable  $\underline{\alpha} \mid \underline{\alpha} \to \underline{\alpha}(\underline{\alpha}) = \underline{\alpha}^2 \mid = \underline{\alpha} \oplus \beta^{\frac{1}{2}} \, \underline{\alpha}$ , in which  $\underline{\alpha}$  denotes a <u>generic</u> ontological category, proxying the unity or «monads» of that category-«arithmos», in their indefinite number, and in which  $\beta$  denotes the <u>supplementary opposite category</u> within the ontological <u>Domain</u> in question. Note that the 'genternity' is <u>elided</u> in this algebraic equation. This key equation is <u>not 'acea =  $\underline{\alpha} \oplus \Delta \alpha^{-1}$ . To what extent Marx's core concept of ''self-activity'' owes any intellectual debt at all to Plato's <u>mystic</u>, <u>mystified</u> conception of «<u>auto-kinesis</u>» is an issue upon which we have not yet achieved </u>



end of, Recorded Platonian Philosophical Developments.



Dialectic: Users' Manual. Edition 2. 04 June 2022.

## The 3 «Kosmo-Arithmoi» per Plato.

"...While the numbers with which the arithmetician deals, the arithmoi [assemblages of units - F.E.D.] mathematikoi or monadikoi [abstract, generic, idealized, qualitatively-id HOMOgeneous "monady" or [ideal[ized], abstract units\_ - F.E.D.] are capable of being counted up, i.e., added, so that, for instance, eight monady [eight abstract ideal[ized]-units, unities, or ideal toms - F.E.D.] and ten monady make precisely eighteen monads together, the assemblages of GLOE [of 'mental seeings' or mental visions of "Locas" - F.E.D.], the "arithmoi eidetkikoi" [assemblages, ensembles, "sets", or [sub-]totalities of qualitatively different, or HETEROgeneous, toes, evidow, or category units - F.E.D.], cannot enter into any "community" with one another [i.e., are 'non-reductive', "nonlinear", "non-superpositioning", "non-additive", 'un-addable', or "non-amalgamative" – F.E.D.]. Their monads are all of different kind [i.e., are 'categorially', ontologically, qualitatively unequal - F.E.D.] and can be brought "together" only "partially", namely only insofar as they happen to belong to one and the same assemblage, whereas insofar as they are "entirely bounded off" from one another ... they are incapable of being thrown together, in-comparable [incapable of being counted as replications of the same quality of unit(y), of the same gualitative unit, or (monady, incomparable guantitatively - F.E.D.] ... The monads which constitute an "stortic number", i.e., an assemblage of 18204; are nothing but a conjunction of eise which belong together. They belong together because they belong to one and the same eisos [singular form of «side»: one particular 'internal/interior seeing', which belong together. F.E.D.] of a higher order, namely a "class" or genos [akin to the grouping of multiple species under a single genus in classical biological "taxonomics" or "systematics" - F.E.D.]. But all will together be able to "partake" in this genos (as for instance, "human being", "horse", "dog", etc., partake in "animal") without "partitioning" it among the (finitely) many eide and without losing their indivisible unity only if the genos itself exhibits the mode of being of an arithmos [singular form of «arithmoi»: a single assemblage of units /«monad»» F.E.D.]. Only the arithmos structure with its special koinon [commonality - F.E.D.] character is able to guarantee the essential traits of the community of eide demanded by dialectic; the indivisibility [a-tom-icity or im-cut-ability - F.E.D.] of the single "monads" which form the arithmos assemblage, the limitedness of this assemblage of monads as expressed in the joining of many monads into one assemblage, i.e., into one idea, and the untouchable integrity of this higher idea as well. What the single eide have "in common" is theirs only in their community and is not something which is to be found "beside" and "outside"... them. ... The unity and determinacy of the arithmos assemblage is here rooted in the content of the idea..., that content which the logos [word; rational speech; ratio - F.E.D.] reaches in its characteristic activity of uncovering foundations "analytically". A special kind of [all-of-one-kind, generic-units-based - F.E.D.] number of a particular nature is not needed in this realm, as it was among the dianoetic numbers [the carithmoi monadikois - F.E.D.]..., to provide a foundation for this unity. In fact, it is impossible that any kinds of number corresponding to those of the dianoetic realm [the realm of 'dianoes's' or of 'adianoias', i.e., of 'pre-/sub-dialectical' thinking - F.E.D.] should exist here, since each etogetic number is, by virtue of its etoetic character [«scho-character or user nature - F.E.D.], unique in kind [i.e., qualitatively unique/distinct/heterogeneous in comparison to other «scho- F.E.D.], just as each of its "monads" has not only unity but also uniqueness. For each idea is characterized by being always the same and simply singular [:. additively idempotent, and :: also 'unquantifiable' - F.E.D.] in contrast to the unlimitedly many homogeneous monads of the realm of mathematical number, which can be rearranged as often as desired into definite numbers. ... The "pure" mathematical monads are, to be sure, differentiated from the single objects of sense by being outside of change and time, but they are not different in this sense — that they occur in multitudes and are of the same kind (Aristotle, Metaphysics B 6, 1002 b 15 f.: [Mathematical objects] differ not at all in being many and of the same kind...), whereas each eidos is, by contrast, unreproducible [hence modelable by idempotent addition, or 'non-addability', and 'non-guantifiability' – F.E.D.] and truly one (Metaphysics A 6, 987 b 15 ff:: "Mathematical objects differ from objects of sense in being everlasting and unchanged, from the eide, on the other hand, in being many and alike, while an eidos is each by itself one only"...). In consequence, as Aristotle reports (e.g., Metaphysics A 6, 9876 b 14 ff. and N 3, 1090 b 35 f.), there are three kinds of arithmoi: (1) the arithmos substitution - idea-number, (2) the arithmos aisthetos - sensible number, (3) and "between"...these, the arithmos mathematikos or monadikos mathematical and monadic number, which shares with the first its "purity" and "changelessness" [here Aristotle reflects only the early, more Parmenidean', Plato, not the later, «autokinesis» Plato - F.E.D.] and with the second its manyness and reproducibility. Here the "aisthetic" ["sensible", i.e., 'sense-able', or sensious - F.E.D.] number represents nothing but the things themselves which happen to be present for aisthesis [for sense perception - F.E.D.] in this number. The mathematical numbers form an independent Domain of objects of study which the dianoia [the faculty of 'pre-Isub-dialectical' thinking - F.E.D.] reaches by noting that its own activity finds its exemplary fulfillment in "reckoning [i.e., account-giving - F.E.D.] and counting".... The eidetic number, finally, indicates the mode of being of the noeton [that which exists "for" thought; that which thought "beholds"; the object of thought, the tore []-object - F.E.D.] as such - it defines the eidos ontologically as a being which has multiple relations to other eide in accordance with their particular nature [i.e., in accord with their content – F.E.D.] and which is nevertheless in itself altogether indivisible. The Platonic theory of the arithmoi eidetikoi is known to us in these terms only from the Aristotelian polemic against it (cf., above all, Metaphysics M 6-9) ... "

Jacob Klein, Greek Mathematical Thought and the Origin of Algebra, 1934-1936, pp. 89-91. [bold, italic, shadow, underline, and color emphasis added by F.E.D.]

### The Purview of The Dialectic According to Plato.

"...disputation and debate may be taken as a paradigmatic model for the general process of reasoning in the pursuit of truth, thus making the transition from rational controversy to rational inquiry. There is nothing new about this approach. Already the Socrates of Plato's Theaetetus conceived of inquiring thought as a discussion or dialogue that one carries on with oneself. Charles Saunders Peirce stands prominent among those many subsequent philosophers who held that discursive thought is a discussion or dialogue that one carries on with oneself. Charles Saunders Peirce stands prominent among those many subsequent philosophers who held that discursive thought is a discussion or dialogue that one carries on with oneself. Charles But Hegel, of course, was the prime exponent of the conception that all genuine knowledge must be developed dialectically. ... These conclusions point in particular towards that aspect of the dialectic which lay at the forefront of Plato's concern. He insisted upon two fundamental ideas: (1) that a starting point for rational argumentation cannot be merely assumed or postulated, but must itself be justified, and (2) that the modus operandi of such a justification cannot be called "dialectical" to overcome this dependence upon unquestioned axioms. It is worthwhile to see how he puts [this] in his own terms:"

"There remain *geometry* and those other allied studies which, as we have said, do in some measure apprehend *reality*; but we observe that they cannot yield anything clearer than *a dream-like vision* of *the real* so long as they leave the <u>assumptions</u> they employ <u>unquestioned</u> and can give no account of them. If your <u>premise</u> is something you do not really know and your conclusion and the intermediate steps are a tissue of things you do not really know, your reasoning may be consistent with itself, but how can it <u>ever</u> amount to <u>knowledge</u>? ... So... the method of <u>dialectic</u> is the only one which takes this course, doing away with <u>assumptions</u>... <u>Dialectic</u> will stand as the coping-stone of the whole structure; there is no other study that deserves to be put above it."

"Plato's writings do not detail in explicit terms the exact nature of this crucial enterprise of <u>dialectic</u>. Presumably we are to gain our insight into its nature not so much by way of explanation as by way of example — the example of Plato's own practice in the <u>dialogues</u>."

Nicholas Rescher, Dialectics: A Controversy-Oriented Approach to the Theory of Knowledge, SUNY Press [Albany: 1977], pp. 46-48, italic, underline, shadow, bold, & color emphasised by F.E.D.

<u>Commentary</u>. <u>It is clear from the passage of Plato's writings</u>, reproduced in the quotation above, as in other such writings</u>, that, in Plato's view, <u>dialectic</u> is the highest, or most <u>inclusive</u>, science, or form of knowledge. It is a key objective of o<u>ur</u> work to <u>re</u>-ground, to <u>re-justify</u>, and to regenerate such a view of a more resolved, <u>DEmystified</u> but also expanded concept -- and mathematically, algorithmically facilitated universal method -- of <u>dialectic</u>, for modern <u>humanity</u>.

#### **<u>OBJECTIVE</u>**: Purposes for the <u>In</u>clusion, Herein, of this '<u>Meta-Model</u>'.

The Ancient Mediterranean Philosophical movement is a foundation, an «arché», an ever-<u>present</u> origin for the ideology science dimensions of the Modern Human Phenome, both in the Modern Occident, **&**, to a growing degree, in the Modern Orient as well.

The Ancient Mediterranean Philosophical movement that culminated in the Philosophical System of Plato &/vs. that of Aristotle also resides near the foundation of the work of immanent critique of ideologies in general of Foundation Encyclopedia Dialectica.

Plato, the founder of self-aware dialectic praxis, under its very name -- «dialektikê» -- conceived of dialectic, in our view, as an immutable and 'statical', frozen relationship of inclusion and embrace; of 'sub-ordin-ation' and 'super-ordin-ation'; of division and collection/unification; of ... 'hypo-Genos' [«vno-Fevo»] & 'Genos' [«Fevo»], & of 'Genos' & 'Hyper-Genos' [«Yno-Fevo»] ..., among "eternal" «Etôs» or `` «Iôsoa»`', with a 'super-ordin-ate' relative «Genos» 'idea-unit', or '«Iôsoa-µovaç»', diverging down into its 'sub-ordin-ate' relative «species» 'idea-units', or '«subo-ordin-ate' relative «species» 'idea-units', or '«subo-ordin-ate', relative (species)' idea-units', or '«subo-ordin-ate', onservation 'meta-monad-ization' relation, forming a 'qualo-fractal' of ever ''self-similar''' qualitative scales of 'sub-ordin-ate' (ideas), potentially continuing ''self-similary''' through many such levels. Of course, Plato did not conceive of these scales of interrelationships, or of ''interconnections'', of «Eide»-units, via the term 'qualo-fractal'.

"'<u>Historical Dialectic</u>''', for Plato's mind, & for his time -- ''psychohistorically''' -- could not be discerned, or admitted into his 'history-less', 'adynamical' «arithmoi eide-tikoi» conception. Nor was his "timeless", "eternal" «arithmoi eide-tikoi» dialectic even yet a ''systematic dialectic''' in the sense of that which emerged later, as such, e.g., in the work of Hegel, & then in the work of Marx. Plato's dialectic was not conceived, by him, as a systematically-ordered presentation of a contemporaneous, synchronic "snapshot" of a changing historical actuality. Plato's writings show that he conceived dialectic as an exploration & exposition of the supposedly eternal, ever unchanging, supposedly immanent & transcendent background to all of the [Heraclitean] flux of a sensuously apprehended, "delusory" -- only "apparent" -- actuality of the empirical, human-sensuous world -- at least in his earlier work, before he embraced «autokinesis».

Thus is it all the more crucial to show how the Ancient-Historical Philosophical [psychohistorical] movement, from circa 510 B.C.E. Heracliteanisms, to circa 480 B.C.E. Parmenideanisms, to circa 400 B.C.E. Platonisms -- yes, the [psycho]historical movement that engulfed even Plato himself -- can be aptly modeled and presented as itself instancing a psychohistorical-dialectical process, as also a ""horizontal"-dialectical process

#### <u>'Meta-Model' SYNOPSIS</u>: The [Psycho]Historical Dialectic of Key Ancient Mediterranean Philosophical Ideologies up to Plato's Philosophical Developments.

The Foundation holds that the historical order of first arising of the major categories for the Domain of Ideology Knowledge in the ''psychohistorical'' self-unfolding of the 'Human Phenome' is: Arts, Mythopoeia, Religions, Philosophies, Sciences, and Psychohistories. In this section, we will be concerned with the collective human psychohistory of the self-development of the Philosophies category of human Ideology Knowledge. The 'psychohistorical-dialectical meta-model meta-equation' presented in this section encompasses the qualitative opposition between the Ancient Mediterranean, esp. Ancient Greek Philosophies of Heracliteanism & Parmenideanism, & of their dialectical synthesis/resolution in the Ancient Mediterranean Philosophies of the Early Platonisms, e.g., in Plato's Philosophy of the ''Dialectical «Etδs»''' - of the «arithmoj eidetikoi»/ «arithmoj monadikoi»/- «arithmoj aisthetoi» constitution of our total «kosmos». This 'meta-model' also provides for a critique & assimilation of both Heracliteanisms & Parmenideanisms by Platonian «Etδs»-Dialectic Philosophies, including for a ''theory of error'', or an ''explanation of fallacy'' for each, from the vantage point of «Etδs» Dialectical Philosophies, all in its epoch two model.

This 'meta-model' also encompasses, in its final, second, epoch, the emergence of Plato's later philosophy, that of «Autokinesis», modeled as an immanent critique, or self-critique, of Plato's Early, «E  $\iota\delta \omega$ », Philosophy. This epoch two model encompasses also the 're-critique', and assimilation, of Heracliteanisms, & of Parmenideanisms, by the later, «Autokinesis», Philosophies, plus the reconciliation of the «Autokinesis» and «E  $\iota\delta \omega$ » Philosophies in a new & final dialectical synthesis -- final for this 'meta-model', although not final for the actual, full [psycho]history of the [sub-]Domain of Ancient Mediterranean Philosophies as a whole.

This 'meta-model', as solved herein, describes Parmenideanisms as outgrowths of their dialectical/historic predecessor/opposites, namely Heracliteanisms, by way of an immanent critique of Heracliteanisms --- in effect, via a self-critique of Heracliteanisms, & of similar Philosophies -- because of the ''internal contradictions''' of Heracliteanisms, as 'explicitized', for example, by Zeno's paradoxes, that is, by Zeno's «reductio ad absurdum» exhibition of the self-contradictoriness of core categories appropriated by Heracliteanisms, and by other, similar Philosophies, of space, & of time/change/motion. These contradictions call for negation of these premises of Heracliteanisms, yielding, e.g., the Parmenidean Philosophical Systems of space-less, time-less, change-less, motion-less ''Absolute''/Abstract, 'other-less' ''Being''. This 'meta-model' depicts the Early, «Et&p>-Dialectic Philosophy of Plato as a combination/synthesis/reconciliation/complex unification of Parmenideanisms & Heracliteanisms, with a bias toward an 'Ibeo-Ontological Conversion' of Heracliteanisms into Parmenideanisms. The 3rd term that connotes this synthesis, does not, by itself, connote, in any detail, the specifics of the Platonian reconciliation, & could apply to other possible species of that resolution, some of which may have actually manifested historically, as parts of the Ancient Mediterranean Philosophies [sub-]Domain.
#### <u>'Meta-Model' NARRATION</u>: <u>The</u> [Psycho]<u>Historical Dialectic</u> of Key Ancient <u>Mediterranean</u> [D = M] <u>Philosophical Ideologies</u> <u>up to</u> Plato's <u>Philosophical Developments</u>.

The <u>Triadic</u> Seldon Function version of our '<u>Meta-Equation Meta-Model</u>' for the <u>Domain exemplified in this</u> section, that of Ancient <u>Mediterranean Philosophical Ideologies</u> -- the version <u>presented herein</u> -- in its epoch  $_{M}\tau_{3} = 0$  model, expresses only the [psycho]historical «arché» category that we have chosen for that <u>Domain</u>, the category symbolized by <u>H</u>, connoting, e.g., the ancient <u>Heraclitean Philosophical Ideologies</u>.

The epoch  $_{M}\tau_{3} = 1$  model expresses, first, the «arché» category again, as of still-possible Philosophical positions, "even" in epoch 1, despite their earlier origin, in epoch 0. But it also "adds" a new Philosophical positions' category, which arose as the fruition of an "immanent critique", or "self-critique", of both  $\underline{H}$  [compared against our knowledge of history & content for this Domain of Ancient Mediterranean Philosophies] as a false claim to exhaust the actual historical record of Ancient Mediterranean Philosophies, & of  $\underline{H}$  as exhausting the whole of the Domain of the Philosophical positions that were possible for the Ancient Mediterranean 'human phenome'.

This historically 2nd category, P, connoting the ancient Parmenidean Philosophies, irrupts, in this case, as both the chronologically 2nd category, & the systematically 2nd category, the latter because it constitutes extreme opposite positions, & Domain-inherent & ancient 'human phenome'-inherent strong counter-examples to, plus also recording extreme psychohistorical reactions against, the Philosophical content of the 1st category, H. Further, per our solution of this epoch 1 equation, epoch 1 ''adds''' also a 3rd category, E, which represents a dialectical synthesis of, a ''complex unity'' of, & a 'uni-category' for, the Philosophical content of categories H & P, namely, Plato's early '«arithmoj Etőe-tikoi»/«arithmoj monad-ikoi»/«arithmoj aisthetoi»' Philosophy.

The epoch  $_{M}\tau_{3} = 2 \mod l$ , for the final M epoch per the 'meta-model' constructed herein, expresses, 1st, the full '<u>sub-</u>cumulum' of 3 categories already extant in 1 or more of the earlier epochs. In addition, it <u>gen</u>erates 2 new categories, one for the category E critique/conversion/theory of error for category H, one for the same for P. E next critiques/converts/theorizes the error in <u>itself</u>, yielding a new Philosophical '<u>counter-category</u>', that of A, connoting Plato's later, final «Auto-Kinesis»/ «Allo-Kinesis»' Philosophy. The next 2 new categories connote '<u>partial syntheses' of A</u> with H, & of A with P. Our story then culminates in the 'full <u>synthesis' term for A & E</u>, that is, for A & P & H, all three combined. As examined in the defects module, this is <u>not</u> yet the <u>full</u> story of M.

#### <u>'Meta-Model' ASSESSMENT</u>: The [Psycho]Historical Dialectic of Key Ancient Mediterranean [D = M] Philosophical Ideologies Efficacy & 'Homeomorphic Defect'.

<u>The</u> 3-epoch, 3-model '<u>meta-model</u>' <u>presented</u> herein provides a succinct connotational <u>ideographical metaphor</u>, **&** a 'mnemonic algorithm', capturing key features of an important phase in the [psycho]history of Ancient Greek/-<u>Mediterranean Philosophies</u>, one which <u>generates</u> 'connotogramic', '<u>'in</u>tensional categorograms''', <u>ideographic</u> symbols, for a sequence of key Philosophies, in the <u>order</u> in which those Philosophies arose '<u>chrono-logically</u>', i.e., historically, **&** involving fresh insights into <u>the hypothesized collective</u> '<u>cognitive</u>-[psycho]historical <u>meta-dynamics</u>', <u>generating</u> that historical sequence, in that '<u>chrono-logical</u>' <u>order</u>. This '<u>meta-model meta-equation</u>' solution is thus efficacious for a key range of Ancient <u>Mediterranean Philosophical-Ideological history</u>, <u>to a degree</u>. It thus represents a <u>part</u>ial '<u>chrono-ideo-taxonomy</u>' for <u>its</u> <u>D</u>omain.

In terms of what we define later in this text as 'Type a Homeomorphic Defect', i.e., in terms of what of its target Domain this 'meta-model' leaves out, we note again that it does not cover the full history of its Domain: Ancient Mediterranean Philosophies. In particular, at least as presented herein, this 'meta-model' does not yet cover the Aristotelian Philosophies as a critique of Platonian Philosophies as a whole, not to mention of Ancient Grecian materialisms. Perhaps even more omissively, this 'meta-model' treats 'Heracliteanisms' as the «arché» category of M's 'ideo-meta-genealogy' culminating, per this 'meta-model', in Plato's later Philosophy, leaving-out-of-story Pythagorean Religions/Philosophies, which form a more apt «arché» for Plato's Philosophies, earlier & later. Finally, this 'meta-model' does not cover the Philosophy/Religion of Neoplatonism, the dialectical synthesis of Aristotelianism & Platonism in late-Ancient Philosophy, or leading Medieval Religions / "Philosophies" of Christianity, e.g., Thomism, although the latter two might be ruled as outside of its Domain. The third term, with subscript 'PH', is insufficient, by virtue of its explicit connotations alone, to stipulate details of the key features of Plato's «Etde» synthesis. In terms of 'Type B. Homeomorphic Defect' -- i.e., in terms of what this 'meta-model' "leaves in" that is not "in" its Domain -- we call attention to the later 5 of the 'hybrid terms' solved, in the text preceding, excepting the 'hybrid term' which we ''solved'' as connoting the Platonian «Etde» Philosophies, which, at least insofar as we have presented any textual evidence herein, may, all 5, be provisionally considered as "extraneous" to the historical record of Ancient Mediterranean Philosophies, unless the final synthesis term, subscript 'AE', is solved as a category for key dynamical features, & sources, of 'Aristotelianisms' themselves.

#### Finding Your Finishing Category for Your Reconstruction of <u>Past-to-Present</u> History for Your <u>D</u>omain.

If you continue to 're-iterate' the 'epoch-wise' procedure described above, you will eventually reach a model-epoch for which you will not be able to "solve for"/define one, some or even all of the new 'category-symbols' generated by the «aufheben» operations for that 'model-epoch'. This may be because the collective, human-phenomic, ''memes-pool'' insights upon which you draw for such solution/definition recognition have not yet progressed to the degree needed for you to discern the **Domain**-ontology signed by these 'category-symbols', even though the ontology that those symbols could aptly represent is actually extant in the epoch that your are *reconstructing*, and may also have continued to be extant, ever since that *epoch*, right up to the *present* time. In such cases, extended insight, beyond that of the prevailing 'human phenome', may be sought. Or, your inability to solve for the meaning of – that is, your inability to 'semantify' -- such (a) 'category-symbol( $\underline{s}$ )' may be because <u>nothing</u> corresponding to (that)(those) 'category-symbol( $\underline{s}$ )' is as yet [wholly] *extant* in that *epoch*, and/or in any of the *epochs* before it, or even in any *epochs* after it so far, right up to the time[-span] of the *present epoch*. In the latter event, it *may* be time to identify the final 'category-symbol' of your dialectic categorial progression reconstruction that you are able to 'semantify', and to conclude your model write-up with your solution for that 'category-symbol'. Your inability to 'semantify' such (a) 'category-symbol(s)' might be so in the stronger sense that the actuality of this "unsolvable" 'category-symbol', or the actualities of those "unsolvable" 'category-symbols', transcend your Domain altogether. It may be because any plausible solution(s) for that 'category-symbol', or for those 'category-symbols', reside *outside* of the **D**omain that you are *reconstructing*. Perhaps this means that the progression of your model has *escaped* your **D***omain* -- e.g., has *transitioned* to, and perhaps has even captured what is giving birth to, or what has already given birth to, a new, higher **Domain**. Or, this '**Domain**. outside-ness' may be in the weaker sense of that "unsolvable" 'category-symbol', or of those "unsolvable" 'category-symbols', residing *outside* of the *past-to-present* ontic state of your **Domain**, but not outside of some -- even all -- of the *future-presents* of your **D**omain that you expect.

In the case of our example for this <u>sub</u><sup>2</sup>-section, to our lights, <u>its</u> ("toy model") stays well within its defined, <u>past</u>, <u>D</u>omain, that of some of the Ancient Greek philosophical ideologies, and of Ancient Mediterranean philosophy-ideologies in general, throughout <u>its</u> three model-epochs, i.e., <u>its</u> model-epochs  $\tau = 0$  to  $\tau = 2$ , and does not even exhaust the content of the 'ideo-ontological history' of that <u>D</u>omain by its final model-epoch, epoch  $\tau = 2$ .

<u>Aside</u>: What to Do When Exponent Optimality Falls "Between" <u>Dyad</u> and <u>Triad</u>. In a gem of a book\*-- only ~ 40 page<u>s</u> – and entitled, <u>Number Systems</u>, S. V. Fomin solves for the number base most "economical", i.e., which number of basic symbol<u>s</u> allows the largest number of number<u>s</u> to be expressed using only **n** symbol<u>s</u>. The function he derives to solve this issue has its maximum at **e**, the "transcendental irrational" "<u>R</u>eal" number that is the base of the "natural logarithm<u>s</u>", and that pops up ubiquitously throughout higher mathematical analysis. But we know *not* how to make a number system with **e**  $\approx$  **2.718281828459045**... <u>separate</u> basic symbol<u>s</u>. The closest '**R**-conserved integer' to **e** is **3**, so that a number system with **3** basic symbol<u>s</u> -- e.g., "**0**" for "electrical signal absent", "**1**" for "electrical signal present", and '**0**|**1**' for the "quantum superposition" of the "**0**" and "**1**" states, the three possible value<u>s</u> of the standard "qubit" of "quantum computers" -- would be the most "economical" in Fomin's sense of that term. The binary number system, founded on just two basic symbol<u>s</u>, e.g., "**0**" and "**1**", and a tetradic or **4**-basic-symbol number system, are, in that order, the close runner<u>s</u>-up to the ternary number system, for such "economy" of number expression. W<u>e</u> find a similar situation in regard to whether the <u>dyad</u> cdialectical function, or the <u>triad</u> cdialectical function, or even the <u>tetrad</u> ic dialectical function [*not* yet addressed herein], makes the fitter 'dialectical meta-model meta-equation<u>s</u>' for the largest number of **D***omain*<u>s</u>. Sometimes w<u>e</u> find that, for certain **D***omains*, it is a *combination* of the '**2**-adic' and the '**3**-adic' dialectical function <u>s</u> that makes for the fitter 'meta-model'.

Now, w<u>e</u> are **not** here suggesting the 'semantification' of an '**e**-adic dialectical function' of the form ' $\mathbf{f}_{\mathbf{e}}(\tau) = \underline{\alpha}^{\mathbf{e}^{\tau}}$ ', or of the form '

 $\underbrace{\mathbf{K}}_{\tau_{e}} = \langle {}^{\diamond} \underline{\alpha} \rangle^{e^{\tau_{e}}}, \text{ operating in the }_{\mathbf{R}} \underline{\mathbf{Q}}, \text{ not }_{\mathbf{N}} \underline{\mathbf{Q}}, \text{ space, replacing both, e.g., } \underbrace{\mathbf{K}}_{\tau_{2}} = \langle {}^{\diamond} \underline{\alpha} \rangle^{2^{\tau_{2}}}, \text{ and } \underbrace{\mathbf{K}}_{\tau_{3}} = \langle {}^{\diamond} \underline{\alpha} \rangle^{3^{\tau_{3}}}.$ 

But w<u>e</u> are suggesting 'wQ dialectical functions' that unite terms with '<u>triad</u> with terms with <u>dyad</u> [<u>meta</u>-]exponentiations'. E.g., if one picks the ontic category of "standard model" pre-**n**uclear particles, **n**, i.e., of "<u>non-composite</u>" fermions & bosons, e.g., "quarks" & "gluons", as the deepest "*fully*-known" '*«arché»*-category' for a model of the 'All **D**omain, **D** =  $\forall$ , one capturing, as a top-level, not a sub-level, '*«aufheben»* meta-*«monad»*-ization', the formation of the "<u>composite</u> bosons & fermions", e.g., "mesons", "protons" & "neutrons" [holding both "Dark Energy" and "Dark Matter" to be still too largely "<u>unknown</u>" to serve as *«arché»*] then a '<u>dvad</u> ic dialectical function' yields an anomaly of 'electron-less atoms', not getting beyond *fully*-ionized nucle<u>i</u> in the main line of  $\forall$  'meta-genealogy'. But alone, a '<u>triad</u> ic dialectical function' yields other categorial terms not recognized by us in the known cosmos. But a '<u>re</u>-*«arché»*ization' or '<u>dual</u> «arché»-ization' combination of constant, <u>static</u> power 3 and power 2 terms, with a <u>dynamic dyad</u> ic 'self-involution function', escapes some of these '<u>un</u>fittness<u>es</u>', e.g., the function  $\forall(\tau) = \langle \cdot \underline{n} < \rangle^3 <+> \langle >\tau <>> \langle > \underline{n} < \rangle^2 <> \langle > \underline{n} < \rangle^2 <> \langle >$ , via <sub>wQ</sub>, if it is used in conjunction with the variant 'meta-<u>gene</u>alogical evolute product rule' axiom -- albeit the clean ' $\tau$ -epochality' of the <u>dyad</u> ic and triadic functions, each  $\tau$  value associated with a new 'contra-category', or 'uni-category', respectively, for each value of  $\tau$ , is lost.

<sup>\*[</sup>S. V. Fomin, Number Systems, translated from the Russian by J. W. Teller and T. P. Branson, University of Chicago Press, Chicago, 1974, pp. 33-34.].

#### Finding Your Ontological-Categorial Prediction-Hypothesis for the <u>Future</u> History of Your <u>Domain</u>.

If your <u>present</u>ly-<u>un</u>solvable 'category-symbol(<u>s</u>)' intimate(s), to your mind, probable <u>future</u> ontology that you expect will arise in a <u>future</u> actual epoch of your <u>Domain</u>, then, if you feel it to be appropriate, you may want to add a '''coda''' to your model write-up, expressing your resulting prediction hypothesis, or prediction hypothes<u>es</u>, about one or more such future actual <u>epoch(s)</u> of your <u>Domain</u> D, and about one or more actual, latter-day-<u>emergent</u>, or 'latter-day-<u>irruptant</u>', ontological categories whose unit<u>s</u> you expect to materialize in the <u>future</u>.

Or, if your hypothesized solution for one or more of your <u>present</u>ly-<u>un</u>solvable 'category-symbol( $\underline{s}$ )' -- to your mind --<u>transcends</u> that <u>Domain</u> entirely, then you may want to characterize, in a different kind of '''coda''', the new <u>Domain</u> which your <u>present</u>ly-<u>un</u>solvable 'category-symbol( $\underline{s}$ )', per your hypothesis or hypothes<u>es</u>, anticipate(s), perhaps even invoking (the)(one of these) new 'category-symbol( $\underline{s}$ )' - the one able to serve as the starting 'category-symbol', or «*arché*» 'category-symbol' – as the new 'categorial premise' for the <u>dialectical</u> modeling of that new, higher ontological <u>Domain</u> which, in your view, already <u>has</u> emerged/irrupted in the <u>past-to-present</u>, or <u>will</u> emerge/irrupt in the <u>future</u>.

In the case of our example for this <u>sub</u><sup>1</sup>-section, no such <u>pre</u>-construction(<u>s</u>) of <u>future</u> ontology, and no <u>such</u> <u>D</u>omain <u>transcendence</u>, is in evidence, to <u>our lights</u>.

The further development of the philosophical, 'ideo-ontological' and ideological tradition of the Domain of our example for this <u>sub</u><sup>1</sup>-section was cut-off/terminated, or, at the very least, was profoundly <u>interrupted</u>, by the prolonged and violent events surrounding the demise of the ancient, slave-labor based civilization of the Roman multi-city-state Empire, by the irruption of the "Christian" <u>ide</u>ology as a <u>state religion</u>, including via the proscription of paganism by Roman tyrant Theodosius, in his decrees from ~389-392 C.E., leading to mass murders of pagans throughout the Roman Empire, and to the burning of Greek books by the thousands, and by the edict of the Eastern Roman tyrant Justinian, in 529 C.E., shuttering all of the Greek schools of philosophy, including Plato's Academy, and by the ~1,000 years' European "Dark Ages" that followed the fall of the city-state Empire.

### <u>Higher Dialectical Methods</u>: axioms-systems evoked deeper into **T\_he N**<sup>2s<sup> $\circ$ </sup></sup> progression than is **Q**.

An '«arché»-category' might be grasped as the '<u>zeroth uni</u>-category', or '<u>zeroth syn</u>thesis category', of a <u>dialectical</u> categorial progression. But it is also a category that is already pregnant with a potential '''energizing principle''' [Marx], via its immanent 'in<u>tra-du</u>ality' or '<u>self-du</u>ality', and, more <u>gen</u>erally, via its immanent, inherent 'in<u>tra-multi</u>ality' or '<u>self-multi</u>ality'.

The systematic-<u>dialectic</u> al '<u>dialectic</u> of the arithmetics for <u>dialectic</u>' categorial progression is the <u>dialectic</u> al <u>series</u> that breaks out the <u>succession</u> of axiom<u>s</u>-system<u>s</u> of <u>dialectic</u> al arithmetic that undergird <u>our</u> '<u>trans-</u><u><u>Q</u>-based</u>', higher

<u>dialectical methods</u>. It is <u>evoked via</u> the <u>'self-du</u>ality' that <u>we</u> detect in the <u>meaning</u> of <u>N</u>', i.e., in the <u>meaning</u> of <u>our</u> <u>symbol</u> for the <u>category</u> of the <u>variant axioms</u> <u>systems</u>, of <u>primarily</u> <u>"ordinal numbers</u>", <u>standardly named</u> those of the <u>standard</u> <u>"Natural Numbers of 1st order</u>". That is <u>our</u> <u>«arché»-category</u> for <u>our</u> progression of arithmetics for <u>dialectic</u>.

"1st order" axioms for **N** are those axioms which employ only "first-order logic" -- e.g., via the ' $\forall$ ', denoting "for <u>A</u>ll", and ' $\exists$ ', denoting "there <u>Exists</u>", "logical quantifiers" -- to "quantify over"/make assertions about, <u>only</u> individual "<u>Natural Numbers</u>", and not about groups of such numbers in terms of the "propert<u>ies</u>" which they share. Such "first order" axioms are typified by the various variants of the first four, "first order" Peano Postulates. The following variant may evoke a feeling for the '<u>ordinality</u>' at the heart of these axioms, which constitute the deductive «archai» [cf. Aristotle] of **N**, the 1st-order core of 2nd-order **N**, the latter denoting the '<u>ide</u>o-ontological' category which takes the axioms-systems variants for the standard "<u>Natural Numbers</u>", as primarily "cardinal numbers", as its units. A primarily "ordinal numbers", "first order logic" axioms-system for **N**, is --

#### §1. '1' is a "<u>Natural Number</u>". Or: ' $1 \in \mathbb{N}$ '.

- §2. The successor of any "<u>Natural Number</u>" is a "<u>Natural Number</u>". Or:  $\forall n \in N, s(n) \in N'$ . [ $s(n) \equiv n + 1$ ].
- §3. No two distinct "<u>Natural Numbers</u>" have the same Successor. Or:  $\forall n, \forall m \in \mathbb{N}, n \neq m \Rightarrow s(n) \neq s(m)$ .
- §4. There is no "<u>Natural Number</u>" that is the predecessor of '1'. Or:  $\sim \exists x \in N \mid s(x) = 1$ .

The *radical ambiguity*/ '<u>self-duality</u>' we see in N is of 'Peanic' "<u>ordinal quantity</u>" versus 'Peanic' '<u>ordinal quality</u>'.

'Peanic' "<u>ordinal quantity</u>" characterizes the set {first, second, third, fourth, fifth, ...}. 'Peanic' '<u>ordinal quality</u>' characterizes the set {first-<u>ness</u>, second-<u>ness</u>, third-<u>ness</u>, fourth-<u>ness</u>, ...}, or { $\mathbf{q}_1, \mathbf{q}_2, \mathbf{q}_3, \mathbf{q}_4, ...$ }. The <u>quality</u> of 'first-<u>ness</u>' is the <u>quality</u> shared by all '*«arché»-categories*'. The <u>quality</u> of 'second-<u>ness</u>' is expressed by the set of all, e.g., 'first contra-categories' – the set of all categories which come second in their native categorial progressions – 'the set of all <u>2nds</u>' -- the <u>quality</u> of third-<u>ness</u> by the set of all 'first <u>uni</u>-categories', the set of all categories which come third in their native categorial progressions. Etc.

Both interpretations of the  $\mathbb{N}_{--}$  (1) 'The consecuum of ordinal <u>quant</u>ities' interpretation, and (2) 'The consecuum of ordinal <u>quant</u>ities' interpretation -- are supported by the first four, "first-<u>order</u>" 'Peano axioms' variant for the standard "Matural Numbers" stated above. The  $\mathbb{N}_{-}$  systems-category, as <u>standard</u> interpreted, represents the former: 'Peanic' 'ordinal <u>quantity</u>". The  $\mathbb{N}_{-}$  Q\_\_systems-category, of <u>non-standard</u> "natural" arithmetics, represents the latter: 'Peanic' 'ordinal <u>quality</u>'. In our 'systematic-<u>dialectic</u> of the arithmetics for <u>dialectic</u>' categorial progression <u>presentation</u>, we start with  $\mathbb{N}_{-}$   $\mathbb{Q}_{-}$  N as 'warché»-category', the 'ideo-ontological category' of the first-<u>order-formal-logic</u> based axioms-systems of the "Matural Numbers" systems of arithmetic, e.g., as just stated above. They are primarily "ordinal numbers" systems of arithmetic. Category  $\mathbb{N}_{-}$  thus serves as first systems category. We take the axioms-systems variants' of category  $\mathbb{N}_{-}$  to be its units. Then, consecutively, next, after  $g_{-}(-)_{-} \mathbb{N}_{-} g_{-} = \mathbb{N}_{-}$ , in the  $\mathbb{N}_{-}^{2^{\circ n}}$  dialectical categorial progression representing our succession of systems of arithmetics for dialectics, we narratively evoke a second systems category, also with its variant axioms-systems as its units. We represent that second systems' category of systems' is a member of the set of all '2nds'; of all categories that come second in their home categorial progression(s).

The axiom<u>s</u>-system<u>s</u> category that we denote by  $\underline{NQ}_Q$  or  $\underline{NQ}_Q$  is also a 'Lakatosian' <u>counter-example</u> to the <u>im</u>plicit claim that  $\underline{N}_A$ , as <u>standardly interpreted</u>, exhausts <u>all</u> of the possible meaning<u>s</u> of the first four, first-order Peano Postulate<u>s</u>.

The symbol  $\mathbf{N}_{\underline{\mathbf{s}}}$  denotes, for  $\underline{\mathbf{us}}$ , the category of all "standard models" of those postulates, e.g., the model with **1** as *«arché»* "Natural" number, as well as the variant model with **0** as *«arché»* "Natural" number.

The symbol  $\underline{NQ}$  denotes, for  $\underline{us}$ , the category of all "<u>NON</u>-standard models" of those four postulates, but with focus upon a <u>specific unit/constituent</u> of this category, the one that bases the F.<u>E.D</u>. " $\underline{NQ}$  dialectic method", as set forth herein.

In <u>our dialectical categorial progression</u>/axiom<u>s</u>-system<u>s</u>-progression <u>presentation</u> of the systematic dialectic of the axiom<u>s</u>-system<u>s</u> of the F.<u>E.D</u>. 'dialectical ideographies', we <u>narratively evoke</u> that <u>second system</u> by <u>noticing</u> the <u>im</u>plicit '<u>intra-du</u>ality' in the <u>presentation</u> of this progression's step 0 content, namely, of <u>N</u>, so as to break it out into the <u>explicit 'exo-duality'</u> of <u>N</u> ~ <u>N</u> <u>Q</u> and as <u>N</u> <u>evoke</u>. This forms <u>presentation step</u> 1 of the <u>N</u> <sup>2s<sup>†</sup></sup> ''systematic dialectic'''. But this is only the beginning of <u>N</u>'s immanent development. The <u>N</u> ~ <u>N</u> <u>Q</u> opposition is hardly the only instance of the '<u>intra-multiality</u>' with which, at root, ultimately, 'Peanic' <u>N</u> is pregnant, i.e., an '<u>intra-multiality</u>' that is, in the <u>last analysis</u>, traceable back to **N**\_.

This step 1 is illustrated/visualized in the 'dialectogram' presented on the following page.



#### <u>Commentary on</u> '<u>Dialectic</u>al '«<u>Gene</u>»-ration 'O<u>F</u> t<u>h</u>e 'First <u>Dialectic</u>al Arithmetic' FROM the 'First Standard Arithmetic'.'

<u>Background</u>. The preceding 'dialectogram' de<u>pict</u>s the human, mental process of an <u>immanent</u> critique of the concept of "<u>Natural</u>" <u>Number</u> -- or of the <u>self</u>-critique of the mentally-embodied concept and <u>**Gual**</u> ity that is "<u>Natural</u>" <u>Number</u> -- upon two levels, two <u>gualo-fractal</u>', <u>gual</u> itatively self-similar, 'inter<u>generate</u>' scales.

The *first* of these *two* scales, rendered partly '*pict*' in the dialectogram's top division, is for a 'micro-scale' of representation, of the *generic numeral* of the "first-order", "*standard*", "*Natural*" *Numbers*,  $n, \in N$ , in its human, mental embodiment, i.e., as the simulated transitional <u>content</u> of the mind of a human subject -- as *constructed in and by*, and as thence held within the mind of that <u>generic</u> human subject, <u>generating</u>, by the self-reflexion of this **n** upon itself, within that mind, by agency of that mind, the <u>generic</u> '*meta-numeral*' of the Seldonian, "first-order", *non-standard* '*meta-Natural* '*meta-numeral*', **g**, representing the <u>generic</u> '*meta-number*' of <u>space</u>, Q, is '*meta-*' to the <u>generic</u> *numeral*' of **s** space **N**, namely **n**, because **g**, as net result of this self-reflection self-critique of **n**, is *not abstractly negated*, or *annihilated*, by that critique, but is rather preserved in that critique's net result, although as subordinated -- "demoted" [cf. Hegel, in <u>Quotation</u> below] -- syntactically, down to the subscript position, or to the "'denominator'" position, as the *basis* or *ground* of something "*new*" and "'*higher*''': **g**. This syntactic 'de-motion', or 'downmotion' de<u>pict</u>'s the semantics, the meaning, of **g**.

The *second* of these '*qualo-fractal*' scales, rendered '*pict*' vely' in the bottom division of the 'dialectogram', is for the 'macro-scale' of this representation, that of the *gene*ric *number space* of the 'first-order', "*standard*'', "**Natural**" **Numbers**, **N**, in its human, mental embodiment, i.e., as *constructed in and by, and as thence held within the mind* of that *gene*ric human subject, *gene*rating, by the self-reflexion of this **N** upon itself, within that mind, by agency of that mind, the *gene*ric '*meta-number space*' of the Seldonian, 'first-order'', *non-standard* '*meta-Natural* '*meta-numbers*', namely, **Q**. This *second*, more '''macro''', higher scale concept mainly mirrors the critical '''mental [de-]motion''' as accomplished by the *first*, more '''micro''', scale.

**Both** scales feature, in common, a **generic syntactic** '[self-de-]motion', a '[**self**-]**under-turning**', in response to an immanent, critical self-reflexion, of the ''subject-object identical''' of that <u>self-reflexion</u>, or ''self-squaring''', that of, respectively, **n** and **N**. This '[self]under-turning' is hard to discern, at first, because the opposite pole to **n** -- while **n** is, initially, still the upper, top pole -- is still ''invisible''', implicit only, still <u>unadmitted</u> in the 'social <u>unconscious mind</u>', in the so far <u>unknown</u>, as yet <u>uncognized</u> «potentia», of the prevailing '<u>human phenome</u>'. The rotation-up of **Q**, forced by & forcing the rotation-down of **n**, takes the <u>cognitive form</u> of the irruption/emergence of **Q** out of the hitherto <u>undiscerned</u>; as a <u>revelation</u> & a shocking discovery. Likewise, the rotation of **N** to <u>under Q</u>. This motion, of '[self]under-turning', is, in this depiction, used to characterize only the contents of the very first move of 'the systematic dialectic of the Seldonian arithmetics for dialectic', namely, this axioms-systems-level/scale move: **N**<sup>2</sup>  $\models$  **N**  $\oplus$  **Q**, with **N** & **Q** <u>denoting</u>, respectively, the "first-order" axioms-systems for **N** & for **Q**. But it could be used to describe all of the '<u>self-hybridizing</u>' moves, '-)', of that entire dialectic, <u>generating</u>, thereby, an abbreviated, short-form rendition of <u>if</u>, e.g. --

 $\mathbf{n} \rightarrow \underline{\mathbf{q}}_{\mathbf{n}} \rightarrow \underline{\mathbf{m}} / (\underline{\mathbf{q}}_{\mathbf{j}} \oplus ... \oplus \underline{\mathbf{q}}_{\Omega}) \rightarrow \underline{\mathbf{s}} / (\underline{\mathbf{m}}_{\mathbf{j}} / (\underline{\Sigma}_{\mathbf{j}} \underline{\mathbf{q}}_{\mathbf{j}})) \oplus (\underline{\mathbf{m}}_{\mathbf{2}} / (\underline{\Sigma}_{\mathbf{k}} \underline{\mathbf{q}}_{\mathbf{k}})) \oplus ... \oplus (\underline{\mathbf{m}}_{\Omega} / (\underline{\Sigma}_{\mathbf{m}} \underline{\mathbf{q}}_{\mathbf{m}}))) \rightarrow ... \rightarrow \underline{\mathbf{m}} / ((\mu_{\mathbf{1}}(\tau) \underline{\mu}^{\circ}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{u}} \underline{\mu}^{\circ}_{\mathbf{1}}}) \oplus (\mu_{\alpha}(\tau) \underline{\mu}^{\circ}_{\Omega \oplus \underline{\Sigma}_{\mathbf{u}} \underline{\mu}^{\circ}_{\mathbf{m}}})) \rightarrow ... \rightarrow \underline{\mathbf{m}} / (\underline{\mathbf{m}}_{\mathbf{1}} + \underline{\mathbf{m}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{u}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1}}}) \oplus (\mu_{\alpha}(\tau) \underline{\mu}^{\circ}_{\Omega \oplus \underline{\Sigma}_{\mathbf{u}} \underline{\mathbf{m}}^{\circ}_{\mathbf{m}}})) \rightarrow ... \rightarrow \underline{\mathbf{m}} / (\underline{\mathbf{m}}_{\mathbf{1}} + \underline{\mathbf{m}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{u}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1}}}) \oplus (\underline{\mathbf{m}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1}}}) \oplus (\underline{\mathbf{m}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1}}}) \oplus (\underline{\mathbf{m}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\circ}_{\mathbf{1}}}) \oplus (\underline{\mathbf{m}}_{\mathbf{1} \oplus \underline{\mathbf{m}}^{\circ}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\mathbf{m}}^{\bullet}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1}} \underline{\underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1}} \underline{\underline{\Sigma}}_{\mathbf{1} \oplus \underline{\Sigma}_{\mathbf{1}} \underline{\underline{\Sigma$ 

**Quotation**: "The progression is as follows. ...Every newly emerging concept is more concretely determinate than its predecessor. We are always carrying everything that went before along with ourselves into what is new, but everything prior is, within what is new, **put in its** determinate **place**. Whereas, in what preceded, each [momentarily immediate] determination...passed as **ultimate**, it is now **demoted** into being only a moment...".

Reference: G.W.F. Hegel, Lectures on Logic: Berlin, 1831, Indiana University Press, Indianapolis, 2001, pp. 79-80 [emphases added].

*Further to the Commentary Above*. So far, per the 'model [theory] of mind' here in use, w<u>e</u> have assurance only that a few mind<u>s</u> – e.g., the mind<u>s</u> of the member<u>s</u> of Foundation <u>Encyclopedia Dialectica</u> – have ever achieved, or recapitulated, this immanent critique of "first order", "Natural" arithmetic<u>s</u>. In such a discovery, or in its recapitulation, a human mind is the agent of this cognitive/conceptual realization. That mind forms, and holds in mind, the concept/category of "first order", 'Peanic' N. Such a mind then, guided by the unity intimated via the triangulation of the joint implication<u>s</u> of the multiplicity of the first four, "first order Peano Postulate<u>s</u>", holds their joint quality of 'Peanicity' in mind, and, with another part of such mind, reflects upon that so-constructed mental object – indeed, reflects that object back upon itself.

So reflecting within itself, **N** upon **N** – **N**(**N**) -- such a mind notices, within what at first seemed to be a singular mental object, **N**, an 'intra-duality' or '''self-duality''', within this **N**, albeit a subtle one. This element of the 'intra-duality' of **N**, of the "Natural" Number<u>s</u>, is that of their nature as "<u>c</u>ardinal number<u>s</u>", or "<u>c</u>ounting number<u>s</u>", and/versus their nature as "<u>o</u>rdinal number<u>s</u>". Informally notated, every individual "Natural Number", **n**, in its self-reflexive moment, reflected back upon itself, reveals this 'intra-duality' -- **n**(**n**) = **n**<sup>2</sup> = **n**<sub>c</sub> + **n**<sub>o</sub>. And it is precisely the "<u>o</u>rdinal numbers" aspect of the nature of the **N** that is emphasized in the first four, "first order" Peano Postulates.

From the initial focus on a unitary categorial idea-object of "first order", **N**, the mind shifts its focus to the inner duality, of the quality of "cardinality" versus the quality of 'ordinality' therein -- to  $\mathbf{n}_c$  vs.  $\mathbf{n}_o$ , or  $\mathbf{n}_c \sim \oplus \sim \mathbf{n}_o$ . Then that mind shifts focus further, again, this time to the "<u>o</u>rdinal" aspect of the **N**:  $\mathbf{n}_o$ .

And, within that "<u>o</u>rdinal" aspect of **N**, within **n**<sub>o</sub> itself, that mind notices a deeper 'intra-duality', an 'intra-duality' within **n**<sub>o</sub> itself: that of '<u>o</u>rdinal <u>quant</u>ity' versus '<u>o</u>rdinal <u>qual</u>ity', or that between 'qua<u>n</u>titative <u>o</u>rdinality' and 'qua<u>t</u>itative <u>o</u>rdinality': **n**<sub>o</sub>(**n**<sub>o</sub>) = **n**<sub>o</sub><sup>2</sup> = **n**<sub>on</sub> + **n**<sub>ot</sub>.

This means noticing the distinction between the set of "ordinal quantities", or of 'ordinal quantifiers', which defines o<u>ur</u> meaning for the phrase '<u>quantitative</u> ordinality' -- {*first*, *second*, *third*, ...} – and/versus the set of 'ordinal qualities', or of 'ordinal qualifiers' – {*first*.<u>NESS</u>, *second*.<u>NESS</u>, *third*.<u>NESS</u>, ...} – which defines o<u>ur</u> meaning for the phrase '<u>qual</u>itative ordinality'. Using an informal notation for which w<u>e</u> offer no undergirding axiomatic arithmetic, this model human mind moves its focus, successively and progressively, from internally constructing and reflecting upon a mental representation of **N**, or of {**n**}, as a whole, to noticing, and reflecting upon, an 'intra-duality', within {**n**}, of the form [**n**<sub>o</sub> ~  $\Theta$  ~ **n**<sub>o</sub>], to discovering and reflecting upon the 'intra-duality', within {**n**<sub>o</sub>}, of the form [**n**<sub>o</sub> ~  $\Theta$  ~ **n**<sub>o</sub>].

At this point, the concept of  $\{\underline{q}_n\} \equiv \mathbb{N}^{\underline{Q}}$  can arise, as the basis of a <u>non</u>-standard 'contra-category' to the standard category of the first-order **N** "Standard Natural Number<u>s</u>" arithmetic<u>s</u>.

Thereby, the '*intra*-opposition<u>s</u>' or '*endo*-opposition<u>s</u>', discovered within **N**, thus become 'explicitized', for this model mind, as an '*exo*-opposition' within that mind, mentally externalized as  $\mathbf{N}_{\text{standard}} \sim \bigoplus \sim \mathbf{N}_{\text{non-standard}} \mid = \mathbf{N} \sim \bigoplus \sim \mathbf{N}_{\mathbf{N}}$ .

The whole model-process of cognition that we have described above can be symbolized, informally, as -

 $\mathbf{N} \longrightarrow \mathbf{N}(\mathbf{N}) \equiv \mathbf{N}_{c} \sim \oplus \sim \mathbf{N}_{c}; \mathbf{N}_{o} \longrightarrow \mathbf{N}_{o}(\mathbf{N}_{o}) \equiv \mathbf{N}_{on} \sim \oplus \sim \mathbf{N}_{on} \equiv \mathbf{N}_{standard} \sim \oplus \sim \mathbf{N}_{non-standard} \mid = \mathbf{N} \sim \oplus \sim \mathbf{N}_{on}$ 

The second 'ideo-ontological category' of axioms-systems of arithmetics for dialectics,  $\mathbf{N}$ ,  $\mathbf{Q}$ , undergirds the 'Universal Algorithmic-Heuristic Dialectical Method' described, albeit more 'algebraically' than arithmetically, in this text. However, each subsequent major category of axioms-systems of arithmetics for dialectics in that dialectical-categorial systems-progression undergirds a higher 'universal algorithmic-heuristic dialectical method' vis-a-vis what the  $\mathbf{N}$  Q languages variants undergird.

Systematic-<u>dialectical</u> categorial-progression-<u>function</u> methods of <u>presentation</u>, as herein described, exhibit a gradient of monotonically increasing complexity, 'thought-concreteness', and "determinateness", i.e., of ever increasing '<u>organized</u>-determinations-richness', with the adding, to their "'superposition'"/'consecuum-cumulum', of each new successor category-symbol that *they <u>gen</u>e*rate, once that successor category-symbol has been explicated/'solved-for'. They then, consecutively, '<u>qualitatively superpose</u>' that successor category together with all of their previously-evoked categories.

F.<u>E.D</u>.'s '<u>dialectic of dialectical arithmetics</u>' -- i.e., <u>our</u> 'long-form'\* [meta-]systematic-<u>dialectical method of presentation of the categorial progression of the axioms-systems of <u>E.D</u>.'s 'arithmetics for <u>dialectics</u>' -- represents a progression of <u>dialectical-ideographical <u>languages</u> for the formulation and expression of <u>dialectical categorial</u> progressions in <u>general [itself included</u>]. When a <u>dialectical-categorial</u> progression is <u>also</u> a progression of <u>lideographical</u>] <u>languages</u>, that gradient of increasing complexity, 'thought-concreteness', and determinations-richness manifests as an increasing capability of the successive <u>languages</u> for richness of formulation, for an <u>ideographic-symbol-based</u> concreteness and richness of articulation. That 'long form' version is illustrated in the two 'dialectograms' presented below, for the first <u>eight</u> dialectical-arithmetical axioms-systems' '<u>ideo-ontological' categories</u> and <u>languages</u>. The units of these categor<u>ies</u> are <u>ideographic languages</u>.</u></u>

Our plan for the entries in <u>Encyclopedia Dialectica</u> [<u>E.D.</u>], in addition to including, often lengthy, '<u>phono</u>gramic' <u>language</u>, <u>phon</u>etic-prose definitions and descriptions, and in addition to including the myriad '<u>picto</u>gramic'/-""geo<u>metrical</u>"' descriptions, for each <u>kind</u>-category of "eventities"' covered in the <u>E.D.</u> 'Universal Taxonomy of <u>Presently-Known</u> Cosmo-Ontology', also includes incorporating '<u>ideo</u>graphical definitions' -- i.e., <u>dialectical</u> mathematical models <u>as definitions</u> -- for each such "eventity" category [but, in terms of 'metrological <u>quanto-qualifiers'</u>, only for those "eventities" that evince sufficient "<u>phys</u>icality" -- i.e., not so covering, e.g., those "eventities" that are of "purely" '<u>ideo</u>-ontological' kinds].

That is,  $o\underline{ur} \underline{E} \underline{D}$ . *definitions* are planned to include '<u>dialectical</u> <u>ideographical</u>' model equations, drawn from the '<u>dialectical</u> <u>ideographical</u>' languages that are <u>specific</u> to <u>each</u> <u>applicable</u> system of <u>dialectical</u> mathematics in this  $\underline{N}_{2^{S^{\uparrow}}}^{2^{S^{\uparrow}}}$  systems-progression, to the extent that <u>each</u> exhibits higher utility for such definitions/descriptions. E.g., w<u>e</u> <u>may</u> use the  $\underline{q}_{2}(-]_{\underline{N}} \underline{Q}_{\underline{n}} \equiv \underline{q}_{\underline{Q}}$  languages, the  $\underline{q}_{24}(-]_{\underline{N}} \underline{q}_{\underline{B}A}$  languages, and the  $\underline{q}_{56}(-]_{\underline{N}} \underline{q}_{\underline{TB}A}$  "<u>purely</u>" <u>qualitative</u> languages, vis-a-vis the, '<u>quanto-qualitative</u>',  $\underline{q}_{3}(-]_{\underline{R}} \underline{U}_{\underline{n}}$  languages, the  $\underline{q}_{7}(-]_{\underline{R}} \underline{q}_{\underline{M}U}$  languages, the  $\underline{q}_{15}(-]_{\underline{R}} \underline{q}_{\underline{A}MU}$ languages, the  $\underline{q}_{31}(-]_{\underline{R}} \underline{q}_{\underline{B}AMU}$  languages, and the  $\underline{q}_{63}(-]_{\underline{R}} \underline{q}_{\underline{TB}AMU}$  languages, etc., wherein  $\underline{R}_{\underline{n}}$  denotes a 1st-order logic axioms-system of "Real" numbers arithmetic, replacing the  $\underline{N}_{\underline{n}}$  in  $\underline{N}_{\underline{2}}^{s^{\circ\uparrow}}$ , to form  $\underline{R}_{\underline{2}}^{s^{\circ\uparrow}}$ .

The  $\mathbf{g}_{24}$  (-]  $\mathbf{N}_{\mathbf{Q}_{BA}}$ , and  $\mathbf{g}_{56}$  (-]  $\mathbf{N}_{\mathbf{Q}_{\Gamma BA}}$  languages, and their sequel, per our solutions, "'inherit'" the characteristic of '<u>un</u>quantifiability' -- of involving only '<u>un</u>quantifiable arithmetical <u>qual</u>ifier <u>meta</u>-numerals' -- from the  $\mathbf{g}_{2}$  (-)  $\mathbf{N}_{\mathbf{Q}_{a}}$ languages which they all «*aufheben*»-"'contain'", i.e., due to the paired, ' $\mathbf{NN}$ ' epithets which they all subsume. That epithets-pair, per our solutions, signifies cancelling-out of the potential **N**-based '<u>quantitativity</u>' of those axioms-systems. This means that they can express categor<u>ies both uni</u>vocally -- focusing on a single <u>qual</u>ity or feature characterizing a given category, which is all that the  $\mathbf{NQ}$  languages can do -- but also, simultaneously, '<u>multi</u>-vocally', describing a given ontological category <u>both</u> in terms of its <u>unit</u>y and in terms of the <u>multi</u>plicity of features that <u>unif</u>y/combine to merge into that <u>unit</u>y. Thus, for example, the  $\mathbf{N} \mathbf{Q}_{BA}$  languages can be used to define a "<u>numerator</u>" single-feature or singlequality category [their 'B-level' or 'beta-level'], also in terms of a "<u>diversity</u>" - in terms of an <u>in</u>homogeneous, <u>non</u>-reducing, "<u>non</u>-amalgamative sum" of "'<u>denominator</u>" resident 'arithmetical <u>sub</u>-feature-<u>qual</u>ifiers' [their 'A-level' or 'alpha-level'].



The  $\underline{\mathbf{N}} \underline{\mathbf{q}}_{\Gamma B A}$  languages can also be used to define an ultimate-"<u>numerator</u>"-resident, single-feature or single-<u>qual</u>ity [' $\mathbf{T}$ -level' or 'gamma-level'] category in terms of an <u>in</u>homogeneous, <u>non</u>-reducing sum of <u>first</u>-"'<u>denominator</u>"'-resident [' $\mathbf{B}$ -level' or 'beta-level'] 'arithmetical <u>sub</u><sup>1</sup>-feature-<u>qual</u>ifiers'. But, in the  $\underline{\mathbf{N}} \underline{\mathbf{q}}_{\Gamma B A}$  case, <u>each</u> of these <u>sub</u>-feature-<u>qual</u>ifier '<u>meta</u>-numerals' may have, in turn, its own '<u>multi</u>plicitous', deeper <u>divers</u>ity, as an <u>in</u>homogeneous, <u>non</u>-reducing sum of "<u>2nd</u> <u>denominators</u> ['A-level' or 'alpha-level'] to each **1**st <u>denominator</u>"': its own 'arithmetical <u>sub</u><sup>2</sup>-feature-<u>qual</u>ifiers'.

This yields, as a whole, '<u>meta</u>-numeral<u>s</u>' with [finitary] '<u>qualo</u>-fractal syntactical/semantic 'content-structure', thereby with the capability to exhibit ever richer '<u>explicitude</u>' in the description of the <u>multi</u>ple defining subordinate <u>qual</u>it<u>ies</u>, <u>implicit</u> in, and involved in, typical, single ontological categor<u>ies</u>, categor<u>ies</u> that are often '<u>mis</u>-referenced' as if they were merely and absolutely '<u>mono</u>-qualitative'.

The  $\mathbf{R} \mathbf{q}_{AMU}$ ,  $\mathbf{R} \mathbf{q}_{BAMU}$ , and  $\mathbf{R} \mathbf{q}_{\Gamma BAMU}$  *ide*ographical mathematical languages "inherit" '*quant* if iablity', per o<u>ur</u> solutions for them, from their, <u>un</u>paired, 'u' or ' $\mathbf{q}\mathbf{R}$ ' subscript/epithet-components, which they all *«aufheben»*- "'contain". Thereby, they can express '*quanto-qualo*-fractal' state-space/control parameter-space models of the kind of ontological categor<u>*ies*</u> whose units are '*meta*-dynamical systems', all of the same "family".

Such system<u>s</u> exhibit characteristic<u>s</u> that can be represented by <u>in</u>homogeneous sum<u>s</u> of <u>dynamical</u> state-variable<u>s</u> as well as of non-constant, generally <u>variable</u>, e.g., also "time-varying", control parameter<u>s</u>.



The 'arithmetical <u>quant</u> ifiers' in such cases can <u>quant</u> ify explicit metrological-unit <u>qual</u> ifiers. The latter are also being ""multiplied"" by state-variable 'arithmetical <u>qual</u> ifier <u>meta</u>-numbers', or by control-parameter 'arithmetical <u>qual</u> ifier <u>meta</u>-numbers'. The [*finite*] 'fractal-fraction' shapes of the 'meta-numerals' called for by the axioms-systems of categories **R\_9\_BAMU** and beyond, allow for the <u>explicit</u>, increasingly '<u>quanto-qualo</u>-fractal' <u>co</u>-representation of dynamical systems, their dynamical <u>sub</u><sup>1</sup>-systems, and their dynamical <u>sub</u><sup>1</sup>-<u>sub</u><sup>1</sup>-systems, or <u>sub</u><sup>2</sup>-systems, etc., etc., <u>in a single expression</u>, when these 'content-structures' are applied to present the <u>gene</u>ral solutions of "<u>ordinary</u>" -- i.e., of "<u>total</u>-differential" -integro-differential equations. For example, the **R\_9\_**AFBAMU languages can <u>co</u>-represent, concurrently -- *first*, in the "'top'", '**A**-level', or 'delta-level' of their 'meta-numerals' -- a '<u>meta</u>-dynamical systems' family category, <u>and</u>, in the second down, '**F**-level', or 'gamma-level' of such a 'meta-numeral', the <u>multi</u>ple '<u>meta</u>-dynamical <u>sub</u><sup>1</sup>-systems' famil<u>ies</u> categor<u>ies</u> that are immanent within that [<u>sub</u><sup>0</sup>-]systems' family category.

Moreover, for <u>each</u> such <u>'meta</u>-dynamical <u>sub</u><sup>1</sup>-system<u>s</u>' family category, the <u>**R**</u>  $\underline{\mathbf{q}}_{AFBAMU}$  language<u>s</u> can <u>co</u>-represent, in the <u>third</u> level down, using the '**B**-level', or 'beta-level' of its 'meta-numeral layering<u>s</u>', the multiple <u>'meta</u>-dynamical <u>sub</u><sup>1</sup>-<u>sub</u><sup>1</sup>-system<u>s</u>, or <u>sub</u><sup>2</sup>-system<u>s</u> famil<u>ies</u> that are immanent within that <u>sub</u><sup>1</sup>-system<u>s</u>' family category. In turn, for <u>each</u> of those multiple, <u>'meta</u>-dynamical sub<sup>2</sup>-system<u>s</u>' famil<u>ies</u>, the **<u>R</u></u> \underline{\mathbf{q}}\_{AFBAMU} language<u>s</u> can <u>co</u>-represent, in the <u>fourth</u>** 

level down, using the 'A-level', or 'alpha-level' of its 'meta-numeral<u>s</u>' finite number of '<u>qual</u>o-fractal layerings', the multiple '<u>meta</u>-dynamical sub<sup>1</sup>-sub<sup>1</sup>-sub<sup>1</sup>-system<u>s</u>, or sub<sup>3</sup>-system<u>s</u> famil<u>ies</u> that are immanent within that sub<sup>2</sup>-system<u>s</u> family category.

Thus, what the  $\mathbf{\underline{R}} \mathbf{\underline{Q}}_{\Delta\Gamma BAMU}$  languages can present, is a <u>single</u>, <u>uni</u>fied, finitary, <u>'quanto-qual</u>o-fractal' "fraction'", a <u>'meta</u>-number <u>meta</u>-numeral', co-representing the solutions of the integro-differential equations for all of these <u>'meta</u>-dynamical systems', via their [<u>sub</u><sup>0</sup>-]<u>system</u> [ $\Delta$ ], <u>sub</u><sup>1</sup>-system [ $\Gamma$ ], <u>sub</u><sup>2</sup>-system [B], and <u>sub</u><sup>3</sup>-system [A] level<u>s</u>. The

 $N_{Q_{A}} \rightarrow N_{Q_{M}} \rightarrow N_{Q_{A}} \rightarrow N_{Q_{A}} \rightarrow N_{Q_{BA}} \rightarrow N_{Q_{TBA}} \rightarrow N_{Q_{TBA}} \rightarrow N_{Q_{ATBA}} \rightarrow \dots$  "purely"-*qual*itative arithmetics' axiomssystems/categories <u>sub</u>-progression and the  $R_{Q_{Q}} = -1_{R_{Q_{Q}}} =$ 

That is, both <u>*sub*</u>-progression<u>s</u> exhibit their <u>dialectical</u>-arithmetical [*meta*-]unit<u>s</u> as 'meta-numeral<u>s</u>' which are assembled, respectively, as '<u>*qual*</u>itative, [<u>*finitely*</u>-]continued fraction<u>s</u>' or as '<u>*qualo*-<u>*quant*</u>itative [<u>*finitely*</u>-]continued fraction<u>s</u>', involving, respectively, *non*-amalgamative, "purely"-<u>*qual*</u>itative division operation<u>s</u>, which result in what w<u>e</u> call a <u>*finitary*</u> '[<u>*quanto*</u>-] <u>*qualo*</u>-fractal' <u>*syntactical*</u> format and <u>*semantical*</u> content -- i.e., in a <u>*finitary*</u> '[<u>*quanto*</u>-]<u>*qualo*</u>-fractal content-structure'.</u>

The  $\underline{\mathbf{n}}_{\mathbf{Q}} = \underline{\mathbf{Q}}_{\mathbf{Q}} \longrightarrow \underline{\mathbf{n}}_{\mathbf{N}} = \underline{\mathbf{q}}_{\mathbf{\Delta}\mathbf{\Gamma}\mathbf{B}\mathbf{A}} \longrightarrow \underline{\mathbf{sub}}$ -progression features "purely"-<u>*qual*</u>itative [<u>finitely</u>-]continued-fraction <u>finitary</u> '<u>*qualo*</u>-fractal <u>meta</u>-numbers', or '<u>meta</u>-«arithmoi}»'. The later of these increasingly-complex, ever more determination<u>s</u>rich '<u>meta</u>-numbers' are applied to model, e.g., explicitly 'co-expressed' taxonom<u>ies</u> of ontic categor<u>ies</u>, plus <u>their</u> ontic <u>sub</u><sup>1</sup>-categor<u>ies</u>, plus <u>their</u> ontic <u>sub</u><sup>2</sup>-categor<u>ies</u>, etc., all in a single, <u>finitary</u>, '<u>*quanto*-gualo</u>-fractal', scaledly self-similar "'fractional''' sign. They can be so used because, per o<u>ur</u> solution<u>s</u> for them, they contain, after  $\underline{\mathbf{n}}_{\mathbf{Q}}$  itself, only <u>paired</u>

 ${}^{\circ}_{Q}$ ' sub-script<u>s</u>, such that each  ${}^{\circ}_{Q}$ ' subscript represents the first "purely"-<u>*qual*</u>itative <u>dialectic</u>al arithmetic in that  $\mathbb{N}_{2}^{2^{s} \uparrow}$ progression of <u>dialectic</u>al arithmetic<u>s</u>. That is, for example,  $\mathbb{N}_{Q} = -|_{\mathbb{N}_{Q}} \mathbb{Q}_{MM} \stackrel{?}{=} -|_{\mathbb{N}_{Q}} \mathbb{Q}_{QQQQ}$ , and  $\mathbb{N}_{Q} = -|_{\mathbb{N}_{Q}} \mathbb{Q}_{NN}$ . Such <u>*paired*  ${}^{\circ}_{\mathbb{N}}$ ' subscript<u>s</u>, per o<u>*ur*</u> solution<u>s</u>, signify a "cancelling-out" of, and/or an opposition/counter to, and/or an immanent critique of, the "purely"-<u>*quant*</u>itative "standard" interpretation of "N". This critical, double- $\mathbb{N}$ , or  ${}^{\circ}_{\mathbb{N}}$ , determination opposes the single- $\mathbb{N}$ , or  ${}^{\circ}_{\mathbb{N}}$ ', determination -- which characterizes the one "purely"-<u>*quant*</u>itative arithmetic in this progression, namely, that of  $\mathbb{N}$  -- by way of the double- $\mathbb{N}$  subscript<u>s</u> determining "purely"-<u>*qual*</u>itative arithmetics<u>i</u>'.</u>

The  $\mathbf{R} = \mathbf{Q} - \mathbf{U} \rightarrow \mathbf{m} - \mathbf{M} = \mathbf{M} - \mathbf{M$ 

They can be so applied because, per o<u>ur</u> solution<u>s</u> for them, after  $\mathbf{R} \mathbf{g}_{U}$  itself, they each contain the '<sub>MU</sub>' subscript symbol<u>s</u>complex, i.e., the '<sub>MQR</sub>' subscript-component/"determination". That is, they each involve an <u>unpaired</u> '<sub>R</sub>' subscriptcomponent, that lends them, per o<u>ur</u> solution<u>s</u>/definition<u>s</u>, an ''<u>im</u>pure''' aspect of <u>both</u> '<u>quant</u> itativity' and '<u>qual</u> itativity' at once. This renders each of them a '<u>qualo-quant</u> itative' [<u>partial</u>] <u>syn</u> thesis of '<sub>Q</sub>' and '<sub>R</sub>', and thus renders them <u>neither</u> "purely" <u>qual</u> itative <u>nor</u> "purely" <u>quant</u> itative axiom<u>s</u>-system<u>s</u> for <u>dialectic</u> al arithmetic, and thus for <u>dialectic</u> al algebra.

As we go deeper into these 'sub-script sequence<u>s</u>' of  $\underline{\mathbf{n}} \underline{\mathbf{q}}_{\dots \mathbf{B}A}$  and  $\underline{\mathbf{r}} \underline{\mathbf{q}}_{\dots \mathbf{B}AMU}$ , encoding multi-denominator, '[finitary] qualofractal' scaling<u>s</u>, the "two-dimensional" surface<u>s</u> of note-pad<u>s</u>, printed sheet<u>s</u> of paper and of digital/pixel<u>s</u> screen<u>s</u> become increasingly <u>in</u>adequate as medi<u>a</u> for the increasingly complex, increasingly determinate, increasingly replete, increasingly "multi-dimensional" -- *more-than-two*-dimensional,  $\mathbf{n} > 2$  -- higher '<u>meta</u><sup>n</sup>-number' unit<u>s</u>, or '<u>ideo-meta</u><sup>n</sup>-«*monad*<u>s</u>»', represented by their '<u>meta</u><sup>n</sup>-numeral<u>s</u>'. Three-dimensional holographic projector<u>s</u>, <u>a la our</u> take on Asimov's fictional "Prime Radiant", become increasingly requisite. The <u>gen</u>eric representative '<u>meta</u><sup>2</sup>-numeral' ['<u>meta</u><sup>2</sup>' relative to the «monads» of the <u>space</u>  $\underline{\mathbf{g}}_{\mathbf{A}}$ , taken as if '''mere''' '<u>meta</u><sup>1</sup>'-numerals'] of the  $\underline{\mathbf{g}}_{\mathbf{B}}$  <u>dialectic</u>al arithmetic is --  $\underline{\boldsymbol{\beta}}$  -- wherein  $\underline{\boldsymbol{\beta}}$  and all of the  $\underline{\boldsymbol{\alpha}}_{\mathbf{k}}$  are '<u>un</u>quantifiable arithmetical,

#### $\underline{\alpha}_1 \oplus \dots \oplus \underline{\alpha}_{\Omega}$

ontological, e.g., *categorial*, qualifier<u>s</u>', that can be used to represent a <u>trans</u>-Platonian,  $\approx \underline{syn}$  chronic, systematic -- or <u>'ideo-taxonomic' -- <u>dialectic</u>, e.g., a <u>genos</u> category,  $\underline{\beta}$ , together with the <u>full</u> spectrum of sub<sup>1</sup>-categor<u>ies</u> into which it <u>exhaustively</u> "divides", at the <u>next</u> richer level of "<u>speci</u>ficity", e.g., at that of <u>its <u>species</u> categor<u>ies</u>, {  $\underline{\alpha}_1, \dots, \underline{\alpha}_{\Omega}$  }. This  $\underline{N} = \underline{q}_{-BA}$  <u>gene</u>ric 'unit qualifier' exhibits the form 'unity/diversity' or of 'unity over diversity'-- "unity of the diverse" [Marx, <u>Grundrisse</u>, *ibid.*, p. 101]. The <u>gene</u>ric representative '<u>meta</u><sup>3</sup>-numeral' ['<u>meta</u><sup>3</sup>' relative to the <u>space</u> of the dialectical-mathematical <u>space</u>  $\underline{N} = \underline{A}_A$ , taken as if "mere"' '<u>meta</u><sup>1</sup>-numeral<u>s</u>'] of the  $\underline{N} = \underline{q}_{-IBA}$  <u>dialectic</u> al arithmetic is --</u></u>

|   | Υ  |            |
|---|--|------------|
| <u>β</u> 1  | ΦΦ   | <u>β</u> Ω |
| $\underline{\alpha}_{11} \oplus \oplus \underline{\alpha}_{1A}$ | $\underline{\alpha}_{\Omega 1} \oplus \oplus \underline{\alpha}_{\Omega \omega}$ |            |

Therein  $\underline{\gamma}$  and all of the  $\underline{\beta}_{\mathbf{k}}$  and  $\underline{\alpha}_{\mathbf{km}}$  are '<u>un</u>quantifiable arithmetical, ontological, e.g., *categorial*, qualifier<u>s</u>', usable to represent a *richer still*, also <u>trans</u>-Platonian,  $\approx$ <u>syn</u>chronic, systematic, or '<u>ide</u>o-taxonomic', «arithmo<u>i</u> e<u>ide</u>tikoi» <u>dialectic</u>.

E.g.,  $\underline{\mathbf{Q}}_{\mathsf{TBA}}$  can model the 'genericity' of a «genos» category,  $\underline{\gamma}$ , together with the <u>full</u> spectrum of sub<sup>1</sup>-categor<u>ies</u> into which it <u>exhaustively</u> '''divides''' at the <u>next</u> richer level of ''<u>specificity</u>''', e.g., at that of <u>its</u> «species» categor<u>ies</u>, noted as {  $\underline{\beta}_1, \dots, \underline{\beta}_{\Omega}$  }, together with, for <u>each</u> «species» sub<sup>1</sup>-category,  $\underline{\beta}_k$ , the <u>full</u> spectrum of sub<sup>2</sup>-categor<u>ies</u> into which it <u>exhaustively</u> '''divides''' at the <u>next</u> yet-richer level of ''<u>specificity</u>''', e.g., at the <u>level</u> of <u>its</u> <u>sub</u><sup>1</sup>-«species» categor<u>ies</u>, at the <u>next</u> yet-richer level of ''<u>specificity</u>''', e.g., at the <u>level</u> of <u>its</u> <u>sub</u><sup>1</sup>-«species» categor<u>ies</u>, {  $\underline{\alpha}_{k1}, \dots, \underline{\alpha}_{k\zeta}$  }. Note the "purely"-<u>qual</u>itative scaled self-similarity 'content-structure' of these level<u>s</u>/scale<u>s</u>/layer<u>s</u> of '<u>gen</u>eralized arithmetical division', in this "<u>non</u>-amalgamative" [cf. Musès] aspect of '<u>gen</u>eralized arithmetical division', i.e., notice its '<u>qualo</u>-fractality'. W<u>e</u> characterize these arithmetics as ''<u>dialectic</u>al''' due to the 'vertical-«aufheben»' relations among the always <u>finite</u> 'scales-count', '<u>finite</u>ly-continued-fraction' level<u>s</u>/layer<u>s</u> of their <u>gen</u>erality/specificity.





#### Commentary on the Image Above: Hats off to Denise Schmandt-Besserat!

The [various variants of the]  $\mathbf{\underline{U}} \equiv \mathbf{\underline{q}}_{-1} \equiv \mathbf{\underline{q}}_{-1} \equiv \mathbf{\underline{q}}_{-0}$  'arithmetics for <u>dialectic</u>' in the  $\mathbf{\underline{U}}_{-1}$  axioms-systems-category, in the <mark>2<sup>ع ۱</sup></mark> axiom<u>s</u>-system<u>s</u>-categor<u>ies</u> dialectical-categorial progression, represent a dialectical synthesis axioms-systemscategory -- the *first* <u>dialectical</u> <u>synthesis</u> axiom<u>s</u>-system<u>s</u>-category, in that <u>dialectical</u> progression of axiom<u>s</u>-system<u>s</u>categories. The <u>L</u> category represents a <u>dialectical</u> <u>synthesis</u>-category in relation to the <u>dialectical</u>-categorial <u>antithesis</u>,  $\mathbf{Q}_{\mathbf{R}} \mathbf{Q}_{\mathbf{R}}$ , formed by axiom<u>s</u>-system<u>s</u>-category/«*arithmos*»  $\mathbf{Q}_{\mathbf{R}} \mathbf{Q}_{\mathbf{Q}} \equiv \mathbf{Q}_{\mathbf{R}}$ , versus the axiom<u>s</u>-system<u>s</u>category/«arithmos»  $\mathbf{R} \equiv \mathbf{R} \mathbf{q}_{\mathbf{R}}$ . Thus,  $\mathbf{U}_{\mathbf{R}} \underline{\mathbf{U}}_{\mathbf{R}}$  and  $\mathbf{R}_{\mathbf{R}} \mathbf{Q}_{\mathbf{R}}$  and  $\mathbf{R}_{\mathbf{R}} \mathbf{Q}_{\mathbf{R}}$ . Thus,  $\mathbf{R} \underline{\mathbf{U}}_{\mathbf{R}}$  and  $\mathbf{R}_{\mathbf{R}} \mathbf{Q}_{\mathbf{R}}$ . The categorial *antithesis* that U transcends/resolves is that *between* the *unquantifiable arithmetical ordinal* transcends/resolves is that *between* the *unquantifiable arithmetical ordinal* <u>qualifiers</u>' of  $\mathbf{Q}_{\mathbf{Q}}$ , versus the '<u>unqualified arithmetical ordinal quantifiers</u>' of  $\mathbf{R}_{\mathbf{Q}}$ , the latter being the «arché» axiom<u>s</u>system<u>s</u>-category/«*arithmos*» of the entire  $\mathbb{R}^{2^{s}}$  axiom<u>s</u>-system<u>s</u> dialectical categorial/«<u>ide</u>o-arithmo<u>i</u>» progression itself. The "numerals" of the, "first order logic", R axioms-systems-category -- "numerals" which we denote, generically, by r -- represent 'unqualified arithmetical quantifiers'. That is, r does not denote r apples, r oranges, or r centimeters, ...... The symbol r denotes our abstraction of the "pure" 'arithmetical quantifier' from out of all possible such 'arithmetical quantifier '/categorial qualifier combinations, which are both 'arithmetical quantifications of categorial qualifiers', and 'categorial <u>qualifications</u> of arithmetical <u>quantifiers</u>'. The 'meta-numerals' of the R\_-opposing Q\_ axiomssystem<u>s</u>-category, <u>*meta*-numerals</u> which we denote, <u>gen</u>erically, by  $\mathbf{R} \subseteq \mathbf{N}_{\mathbf{R}}$ , <u>sign</u> <u>*unquantifiable arithmetical*</u> ordinal <u>qualifiers</u>'. I.e., <u>a</u> too does not sign r <u>apples</u>, r <u>oranges</u>, or r <u>cm</u>.s, .....

The '<u>meta-numeral' symbol</u>  $\underline{R} \underline{Q}_n$  does *not* represent '**r** things inhering in the *category* of <u>apples</u>', or '**r** things inhering in the *category* of <u>oranges</u>', or '**r** things inhering in the *category* of <u>centimeters</u>', ...

Instead, the symbol  $_{\mathbb{R}}$   $\underline{\mathsf{q}}_{\mathsf{n}}$  represents  $\circ \underline{ur} \ \underline{abstraction}$  of that "pure" 'arithmetical  $\underline{qualifier}$ ' from out of all possible such 'arithmetical  $\underline{qualifier}$ '/categorial  $\underline{qualifier}$  combinations -- within which the 'arithmetical  $\underline{qualifier}$ ' denotes the **n**th category of the <u>ordinal</u>, sequential ontological-categorial  $\underline{taxonomy}$  in use for this occasion of  $_{\mathbb{R}}$   $\underline{\mathsf{Q}}_{\_}$ 's application. The defining  $\underline{qualities}$ , or characteristics, of the <u>generic</u>, unit-'meta-numerals' of the  $_{\mathbb{R}}$   $\underline{\mathsf{U}}_{\_} \equiv_{\mathbb{R}}$   $\underline{\mathsf{q}}_{\_\mathbb{U}} \equiv_{-|_{\mathbb{R}}}$   $\underline{\mathsf{q}}_{\_\mathbb{Q}_{\mathbb{R}}}$  axioms-systems category/«arithmos» show that  $_{\mathbb{R}}$   $\underline{\mathsf{U}}_{\_}$  both opposes, and specifically synthesizes, dialectically, both  $\mathbb{R}_{\_}$  and  $_{\mathbb{R}}$   $\underline{\mathsf{Q}}_{\_}$ . The '<u>meta</u>-numerals' of  $_{\mathbb{R}}$   $\underline{\mathsf{U}}_{\_}$  are <u>both quantifiable/quantified</u> and <u>qualified</u>. They are neither '<u>unquantifiable</u>' nor '<u>unqualified</u>'. They combine 'arithmetical <u>quantifiers</u>' and/with <u>connected</u> 'arithmetical <u>unit qualifiers</u>'.

Thus, the <u>generic</u>, unit- <u>meta</u>-numeral' of the  $\underline{\mathbf{R}} \underbrace{\mathbf{U}}_{\mathbf{n}}$  system<u>s</u>-category, namely  $\mathbf{u}_{\mathbf{n}} \otimes \underline{\mathbf{u}}_{\mathbf{n}}^{\mathbf{n}}$ , or just  $\mathbf{u}_{\mathbf{n}} \underbrace{\mathbf{u}}_{\mathbf{n}}^{\mathbf{n}}$ , consists of an *'arithmetical <u>quantifier</u>', \mathbf{u}\_{\mathbf{n}}, which tells us how many <u>qualitative</u> unit<u>s</u>, of <u>kind</u> \underline{\mathbf{u}}\_{\mathbf{n}}^{\mathbf{n}}, of <i>category*  $\underline{\mathbf{q}}_{\mathbf{n}}$ , are extant, in the *present* context, <u>combined</u> with / *'''multiplied by '''* a/its *'arithmetical <u>qualifier</u>', \underline{\mathbf{u}}\_{\mathbf{n}}^{\mathbf{n}}, which tells us that the qualitative, ontological unit<u>s</u>, \underline{\mathbf{u}}\_{\mathbf{n}}^{\mathbf{n}}, <u>present</u> in <u>quantity</u> \mathbf{u}\_{\mathbf{n}}, all inhere in the nth category of the ordinal, sequential ontologicalcategorial <u>taxonomy</u> in use for this occasion of the <u>application</u> of the <u>N</u> <u>U</u>\_ arithmetic for <u>dialectic</u>, or of the <u>R</u> <u>U</u>\_ arithmetic for <u>dialectic</u>.* 

The '<u>o</u>micron exponent', '<sup>o</sup>', of/in  $\underline{u}^{o}_{n}$ , signifies, in deference to Diophantus's  $\mu^{o}$ , the '<u>quantifiability</u>' of the  $\underline{u}^{o}_{n}$  unit-

<u>qualifier</u>. The <u>generic</u>, <u>unit</u>-'<u>meta</u>-numeral<u>s</u>' of the  $\mathbb{R} \bigcup$  system<u>s</u>-category, namely the set  $\{ u_k \bigcup_k^0 \}$ , are all '<u>quantified</u> <u>qualifiers</u>', or, equally, are '<u>qualified</u> <u>quantifiers</u>'. However, the 'arithmetical <u>qualifiers</u>' of  $\mathbb{N} \bigcup$  or  $\mathbb{R} \bigcup$ , <u>un</u>like those of  $\mathbb{R} \bigcup$ , are no longer 'categorial <u>qualifiers</u>', '<u>whole</u>-category <u>symbols</u>'. To make sense, they must be re-interpreted, as

'«<u>monad</u>»-ic <u>qualifiers</u>', '<u>unit</u>-ic <u>qualifiers</u>'. Thus, in *a given <u>specific</u> case* of the <u>generic</u>  $\mathbb{R} \bigcup_{k=1}^{\infty}$  '<u>meta</u>-numeral',  $\mathbb{R} \bigcup_{k=1}^{\infty}$ , say where --

 $\mathbf{u}_{\mathbf{k}} = \mathbf{5} \text{ and } \mathbf{u}_{\mathbf{k}}^{\mathbf{o}} (-) \underline{\mathbf{cm}}.s$ , the resulting, more concrete '<u>meta</u>-numeral',  $\mathbf{5}_{\mathbf{u}}_{\mathbf{k}}^{\mathbf{o}}$ , or " $\mathbf{5} \underline{\mathbf{cm}}$ .", asserts, in the *given* context, that there exist *five* things which, despite their individual differences *in detail*, each *qualify* as *one* <u>centimeter</u>, each inhering in the ontic category/«*arithmos*» named '<u>centimeters</u>'. Thereby, via subsumed arithmetical systems category  $\mathbf{R} = \mathbf{q}_{\mathbf{u}} = -\mathbf{k} \mathbf{q}_{\mathbf{q}_{\mathbf{k}}}$ , in the form of <u>its</u> subsumed <u>generic</u> units,  $\{\mathbf{u}_{\mathbf{k}} \otimes \mathbf{u}_{\mathbf{k}}^{\mathbf{o}}\}$ , or just  $\{\mathbf{u}_{\mathbf{k}}\mathbf{u}_{\mathbf{k}}^{\mathbf{o}}\}$ , the <u>generic</u> representative '<u>meta</u><sup>1</sup>-numeral' unit of the  $\mathbf{R} = \mathbf{q}_{\mathbf{AMQR}}$  <u>dialectical</u> arithmetics category is\* --

# $\frac{\underline{\alpha}}{\mu_{1}(t)\otimes_{1}\underline{\mu}^{\circ}\sum_{\underline{-}_{k}}\underline{u}_{k}\underline{u}^{\circ}_{k}}\otimes\underline{\mu}^{\circ}_{1}\oplus...\oplus\mu_{\Omega}(t)\otimes_{\Omega}\underline{\mu}^{\circ}_{\underline{\sum}_{k}}\underline{u}_{k}\underline{u}^{\circ}_{k}}\otimes\underline{\mu}^{\circ}_{\Omega}}$

-- wherein all of the  $\mu^{o}_{\underline{\Sigma}-\mathbf{n}^{U}\mathbf{n}\underline{\Psi}^{o}\mathbf{n}}$  denote '<u>quantifiable</u> ['o'] arithmetical [typically compound] <u>metrological</u> unit <u>qualifiers</u>'.

\*[wherein double-underscored  $\Sigma_{-}$  serves as the <u>gene</u>ralized summation operator symbol for summing '<u>qual</u>o-<u>quant</u>itative' terms].

## All of the $\mu_{j}^{o}$ denote '<u>metrological</u>-unit-<u>qual</u>o-<u>quantifiable</u> dynamical-system <u>state</u>-<u>variable</u> arithmetical <u>qual</u>ifiers' or '[<u>variable</u>, dynamic-]<u>control</u>-<u>parameter</u> arithmetical <u>qual</u>ifiers'.

Therein also, the  $\mu_{\mathbf{h}}(\mathbf{t})$  represent <u>**R**</u>eal-number-valued '<u>metrological</u>-unit arithmetical <u>quant</u>ifier <u>functions</u>', so that this '<u>meta</u>-numeral', with the <u>functions</u> {  $\mu_{\mathbf{h}}(\mathbf{t})$  } varying with the advance of their <u>time in</u>dependent <u>variable</u>, t, represent the ''state-space trajectory'' and perhaps also the 'control-space path', of the dynamical system labeled/''named'''  $\underline{\alpha}$ , for which  $\underline{\alpha}$  serves as the 'dynamical system [e.g., <u>un</u>quantifiable] arithmetical <u>qual</u>ifier'.

The <u>gen</u>eric representative '<u>meta</u><sup>2</sup>-numeral' ['<u>meta</u><sup>2</sup>, relative to the «monads» of the <u>space</u>  $\mathbf{g}_{AMU}$ , taken as if ''mere''' ['<u>meta</u><sup>1</sup>,-] numerals'] unit of the  $\mathbf{g}_{BAMU}$   $\partial = -|_{\mathbf{R}} \mathbf{g}_{BAMUR}$  <u>dialectic</u> arithmetics category, given that of  $\mathbf{g}_{AMU}$   $\partial = -|_{\mathbf{R}} \mathbf{g}_{AMUR}$  as stated above, is --



-- whereby the whole expression/'meta-numeral' denotes a <u>single</u> [meta-]dynamical system, named  $\underline{\beta}$ , such that this system, and the first ''layer''', or 'alpha layer' [ $\underline{\alpha}_i$ ], of its '[meta-]dynamical <u>sub</u>-system<u>s</u>', i.e., its [meta-]dynamical '<u>sub</u><sup>1</sup>-system<u>s</u>', are '<u>co</u>-represented', by their [meta-]dynamical state<u>s</u>, i.e., by their "summed" state-variable<u>s</u> 'value<u>s</u> as function<u>s</u> of time [their "state-space<u>s</u> trajector<u>ies</u>"], and also, potentially, by their summed [meta-]dynamical control parameter<u>s</u> [their 'control space<u>s</u> path<u>s</u>'].

The state-space trajectory of the dynamical system named  $\underline{\beta}$ , if we exclude, for the moment, any dynamical control parameters, is given by a cardinal count denoted by  $\Omega [\in \mathbb{N}]$ , of "time-valued", "time-varying" state-variables, numbered from **1** to  $\Omega$ , i.e.,  $\mu_1(\mathbf{t}) \otimes_1 \underline{\mu}^{\circ} \sum_{\mathbf{k}'' \mathbf{k}''' \mathbf{k}} \otimes \underline{\mu}^{\circ} \mathbf{1} \oplus ... \oplus \mu_{\Omega}(\mathbf{t}) \otimes_{\Omega} \underline{\mu}^{\circ} \sum_{\mathbf{k}'' \mathbf{k}''' \mathbf{k}} \otimes \underline{\mu}^{\circ} \Omega$ . Therein,  $\mu_1(\mathbf{t})$  through  $\mu_{\Omega}(\mathbf{t})$  are the <u>quant</u> if iter dynamical functions. The values of those functions  $[\in \mathbb{R}]$  <u>quant</u> if y, <u>directly</u>, the 'metrological unit <u>qual</u> if iters', namely  $\mathbf{1}^{\mu^{\circ}} \sum_{\mathbf{k}'' \mathbf{k}'' \mathbf{k}} \mathbf{0}^{\bullet} \mathbf{k}$ , each of which represents a "physical unit", a [<u>qual</u> itative] <u>metrological</u> unit, i.e., a unit of

measure, like, or involving/compounding, e.g., "cm.", "gm.", or "sec." – the latter as presently rendered via their, currently-standard, "syncopation" abbreviations.

Those 'metrological unit <u>qual</u>ifier<u>s</u>' are further '<u>qual</u>ified', arithmetically, by their 'state variable arithmetical <u>qual</u>ifier<u>s</u>',  $\mu^{o}_{1}$  through  $\mu^{o}_{\Omega}$ , which are needed, e.g., to prevent additive "amalgamation" of two or more distinct state-variable<u>s</u> in case<u>s</u> where, as in classical "phase spaces", both/some/all share the same '<u>metrological</u> unit <u>qual</u>ifier'.

The ' $\otimes$ ' symbol represents the higher/<u>gen</u>eralized version of the standard multiplication operation rule, one that, via that very generalization, works for all of the element<u>s</u> in this expression; for 'arithmetical <u>quant</u>ifier<u>s</u>', for likewise-arithmetical, 'metrological unit <u>qual</u>ifier<u>s</u>', and for arithmetical 'state-variable <u>qual</u>ifier<u>s</u>' alike. Some of these [count = ] $\Omega$  "time-varying", 'metrically <u>qual</u>ified' value<u>s</u> may denote dynamical control parameter<u>s</u>, **not** dynamical state-variable<u>s</u>.

The [cardinal count denoted by]  $\mathbf{\omega}$  'dynamical sub<sup>1</sup>-system<u>s</u>' of dynamical system  $\underline{\boldsymbol{\beta}}$  are '''named'''  $\underline{\boldsymbol{\alpha}_1}$  through  $\underline{\boldsymbol{\alpha}_0}$ . Each has its own '''denominator'''-sum of "time-varying", 'metrologically <u>qual</u>ified' value<u>s</u>, that typically represent the <u>dynamical</u> state-variable<u>s</u> of each such 'dynamical sub<sup>1</sup>-system', but one or more of which might represent that sub<sup>1</sup>-system's <u>dynamical [non-constant]</u> control parameter<u>s</u>, instead of one or more of its <u>dynamical</u> state-variable<u>s</u>. If we formulate, in among the  $\mu_{...}(\mathbf{t})$  '<u>quant</u>ifier dynamical function<u>s</u>', also some 'control parameter dynamical <u>quant</u>ifier<u>s</u>' that are, sometime<u>s</u>, themsel<u>ves</u> function<u>s</u> of/driven by 'state-variable <u>quant</u>ifier-function' dynamics/value<u>s</u>, then these  $\mathbf{r} = \mathbf{q}_{...\mathbf{BAMU}}$ 

sometimes, themsel<u>ves</u> functions of/driven by 'state-variable <u>quantifier-function</u>' dynamics/values, then these  $\mathbf{R} \mathbf{q}_{\dots \mathbf{BAMU}}$ 'meta-numbers' may mark dynamical [sub<sup>w</sup>-]systems' '''<u>self</u>-control''', '''<u>self</u>-determination''', and '''<u>self</u>-bifurcation'''.



The <u>Dialectic of the Dialectical Ideographies</u> --<u>Syntactical Anatomy of Higher</u>, [<u>Meta-</u>]Dynamical System Arithmetical <u>Qualifiers</u>: The Meaning of '<u>Qual</u>o-<u>Quant</u>itative Division'.



<u>'Holistic Notation</u>': "'Equal Billing'' of [Sub<sup>0</sup>-]System-Level Determinations with Any/All <u>Sub</u><sup>n</sup>-System-Level Determinations, to Separately Track <u>Emergent</u> Ontologies, <u>Qualities</u>, & Properties of Each Such '<u>Meta</u>-Fractal' Scale,

& with the 'Inter-Causalities' Among Levels/Scales Captured via 'Inter-Argumentation' of their State-/Control-Functions, Averting the Reductionism of Attempting to Model the Phenomena of <u>All Scales</u> from, e.g., Just those of the <u>Lowest</u> '<u>Meta</u>-Fractal' Scale.

(t) ⊗ µ  $L = \Omega_{L}(t)$ <sup>β</sup>,m<sup>u</sup>L ⊗<sub>β,m</sub> <sup>U</sup>L

Here, in this generic 2 'Meta-Fractal Scale', 2-Level, System/Sub-Systems example, the State-Variables and Control-Parameters characterizing the single, 'Beta-Level', or System-Level, and the State-Variables and Control-Parameters characterizing each of the  $\Omega_k(t)$ -many <u>Sub-Systems</u> of the 'Alpha-Level', or Sub-Systems Level, are co-posited, co-present, with "equal billing". No Level is "Reduced to" any other Level. Instead, each Level is explicitly co-presented, as making a partially autonomous, partially independent contribution to the reality, the phenomenology, of this 2-Level, 2-Scale 'Super1-System' as a 'hol', due to the Ontologies/Qualities/Properties that are Emergent from, & unique to, each Level/'Meta-Fractal Scale'. Causal Influences that emanate from one Level to the Other are captured by 'inter-argumentation', i.e., by having the 1 or more State-Variables, or Control-Parameters -- the metrics that measure the influences of the Influencing Level upon the Influenced Level -- appear as explicit arguments inside the 1 or more of the Influenced Level's State-Variable functions, and/or Control-Parameter functions, that register those influences. Such influences can operate 'inter-determinately', both from & to each Level, from & to the Other(s). Thus **1** of more of the  $_{\mu}\mu_{m}(t)$  become  $_{\mu}\mu_{m}(t, \{ _{\mu}\mu_{i}(t) \})$ , 'argumented' by a <u>sub</u>-set of the  $_{\mu}\mu_{i}(t)$ , and/or **1** or more of the  $_{\mu}\mu_{i}(t)$  become  $_{\mu}\mu_{i}(t, \{ _{\mu}\mu_{m}(t) \})$ ,

'argumented' by a <u>sub</u>-set of the  $_{\beta}\mu_{m}(t)$ . The  $_{\beta,m}u_{L}^{\otimes}u_{L}$  are also, <u>im</u>plicitly, all

functions of **t**, thereby "capturing" <u>'meta-evolutionary' changes</u> of State-Variable & of Control-Parameter metrics / 'state-control <u>meta-space' axes/dimensions</u>.

### Using an Excerpt from the dialectic arithmetics to 'syntactically visualize' Universal Interconnection.

Errol E. Harris [**1908** to **2009**] was a latter-day Hegelian, *dialectical-<u>idealist</u>* philosopher, whose view<u>s</u> on dialectical logic, and on dialectic in general, represent, for <u>us</u>, some of the most advanced view<u>s</u> on dialectic since Marx. With his more concrete, scientific, experience-based and experiment-based perspective<u>s</u> on dialectic, and apart from his departure<u>s</u> into his more mystical and idealist speculation<u>s</u>, <u>we</u> find <u>our</u>selve<u>s</u> in broad agreement with many of his view<u>s</u> on dialectics.

A key component of Harris's work is his critique of modern formal logic, and of the often-denied metaphysic upon which the worldview of modern formal logic is founded. Regarding the, scientifically-untenable, metaphysical foundation of the modern formal logic ideology, Harris wrote as follows: "The appropriate metaphysical theory is logical atomism, as it was propounded by Bertrand Russell early in [the  $20^{th} - \underline{E} \cdot \underline{D}$ ] century, and by Wittgenstein in his *Tractatus*. It is the theory which conceives the world as made up of, or as a collection of, facts, each independent of all the rest, so that any one of them may be the case or may not be the case without making any difference to any of the others. The facts are therefore atomic and their mutual relations external."<sup>1</sup>

Harris then points out that *not even* "Newtonian Mechanics" – which many might suppose conforms to the worldview of the ideology of modern formal logic – on the contrary, *falsifies* that ideology as an observation<u>s</u>-conformant scientific theory: "For Newtonian science the world consisted of bodies – in the last resort, mass-points – moving about in absolute space under the impulse of forces dependent upon their masses and mutual distance. From these data, the movement and position at any given time of any or all bodies at any prior or subsequent time could be calculated. Mass-points were regarded as independent, for their position and momentum, of absolute space, which was indifferent to them and was related to them as a containing receptacle. Mass was held to be independent of velocity and mutual positioning was taken to be (at least initially) purely fortuitous. Thus, maintaining that such a world consisted of facts each of which might be the case or not...be the case and all the rest remain the same seemed plausible. Yet, clearly it could not be so, for the motion of every particle [i.e., "body", or "mass-point" – <u>E.D.</u>] must be influenced by the position and mass of every other, hence even in Newtonian mechanics every fact is dependent upon every other and whatever is the case in one part of the universe at any one time would affect whatever is the case elsewhere (however slightly) at any other [future time – <u>E.D.</u>]."<sup>2</sup>

The case for the ideological worldview of modern formal logic is even worse with respect to the trans-Newtonian theor<u>ies</u> that predominate in physical science today. The <u>Special</u> Theory of Relativity upholds experimental observations in which the mass of a body, and the rate of 'clock-process<u>es</u>' within that body, relative to that of other such bod<u>ies</u>, is dependent upon the relative velocity of that body, i.e. relative to those of those other bodies. Even worse for the ideology of formal logic, the <u>General</u> Theory of Relativity upholds the observations that the rate of 'clock-process<u>es</u>' within a body depends upon the intensity of the gravitational field in which it is immersed; that even the paths of rays of rest-mass-less "photons" – light rays – depend upon the gravitational fields in which they are immersed, and that gravitational fields themsel<u>ves</u> are manifestations of curvatures in space-time that are caused by the presences and densities of bodies of mass-energy. In quantum field theory, excitations of <u>universal</u> fields manifest as "sub-atomic particles". The fields behind different "particles" overlap and interact, though these fields' heterogeneity is **not** explained, as the sought theory of a single, universal, self-differentiating "unitary field" might do.

In "'psychohistorical'' term<u>s</u>, w<u>e</u> see the ideology of "logical atomism" as a projection of the ego-structure, of the selfidentity, of "modern" [i.e., of capitalist epoch] [<u>anti-</u>]social individual<u>s</u> – seeing society as a "'gas'" of <u>dis</u>connected, maximally 'de-communitized', mutually-indifferent, and mutually-alienated individual<u>s</u>, as if they are *separately self-subsistent*; as if there is no such thing as "society" at all [cf. Margaret Thatcher]. A better "metaphysical" hypothesis would hold that it is arrays of "'[<u>non</u>linear] dynamical system<u>s</u>"" that constitute our cosmos, and that the <u>present</u> "'<u>dyn</u>amical st<u>ate</u>"", or '<u>dynate</u>', of each such system depends upon (**1**) its own past '<u>dynates</u>'; (**2**) the past '<u>dynates</u>' of all of its dynamical sub<sup>{n}</sup>-system<u>s</u>, and; (**3**) the past '<u>dynates</u>' of all other such system<u>s</u> and sub<sup>{n}</sup>-system<u>s</u>, to <u>different degrees</u> ["however slightly"].

<u>**The</u>** <u>**Q**</u> <u>**CENTRAL**</u> <u>**dialectical arithmetics**</u>, those which form the **63**<sup>rd</sup> category in the dialectical categorial progression of the</u>

long-form/'slow-form' systematic-dialectical <u>present</u>ation of the <u>Encyclopedia Dialectica</u> 'ideographies for dialectics', can provide a dialectical-ideographical language for the mathematical representation of that "far better" "metaphysical" hypothesis, as described in the 2 'text-images' below, via its ramified 'unity-over-diversity' '<u>qualo-fract[al][tion]</u>' syntax.

<sup>1</sup>[Errol E. Harris, *Formal, Transcendental And Dialectical Thinking*: Logic and Reality, SUNY Press, Albany, New York, **1987**, p. **30**.].

<sup>&</sup>lt;sup>2</sup>[Errol E. Harris, *ibid.*, pp. **58** to **59**.].

#### 'Dialectical-Mathematical Syntax for 'Harris-World'/Aspects of 'Bohm-World'.

The symbols-formation below represents the ontological-mathematical 'content-structure' of a single system excerpt from the world according to Harris and, 2, to Bohm. This system is covered by this symbols-formation to a level of detail which includes a count of \Omega sub-systems, or sub<sup>1</sup>-systems, each of which also contains a number of 'sub-sub-systems', or sub<sup>2</sup>-systems, the dynamical states of all of which are together encompassed by the singular dialectical-mathematical expression below. The keys to this 'syntactical visualization' of systems 'levels' interconnectivity are the "arguments" of the "state-variable functions" whose values' momentaneous <u>non</u>-amalgamative "O" & "<u>D</u>" sums 'sum-marize' the dynamical "states" of these systems-levels. The [166°] System-level's level <u>γ</u> "state-variable function<u>r</u>", are μ<sub>1</sub> through μ<sub>Ω</sub>. Their "argument<u>r</u>" are all the same: (τ, γ, β, α, Ε). This means that the value of each given state-variable of system Y, responds -- changes, to some degree -- due to past values of states of system Y, and to past values of states of Y's sub<sup>1</sup>-systems, **B**, and to past values of the states of **y**'s sub<sup>2</sup>-systems, i.e. of **B**'s sub<sup>1</sup>-systems, **a**, as well as to past states of all External systems, **E**. This exemplifies the 'self-argumentation' & 'inter-argumentation' 'other-argumentation' principles for representation of universal interconnection.  $\mu_1$  (τ, γ, β, α, Ε) ⊗μ<sup>ο</sup> <sub>1 ⊕Συh</sub>⊗μ<sup>°</sup>  $\mu_{\Omega}(\tau,\gamma,\beta,\alpha,E)\otimes\underline{\mu}^{\circ}_{\Omega^{\oplus}\underline{\Sigma}\underline{u};\otimes\underline{u}^{\circ}_{1}}$ ⊕...⊕ β<sub>ω</sub> β1  $_{1}\mu_{1}(\tau, \gamma, \beta, \alpha) \otimes_{1}\mu_{0}^{\circ} \otimes_{\Sigma_{u, \infty}} \oplus \dots \oplus _{1}\mu_{0}(\tau, \gamma, \beta, \alpha) \otimes_{1}\mu_{0}^{\circ} \oplus \Sigma_{u, \infty}$  ${}_{\omega}\mu_{1}(\tau,\gamma,\beta,\alpha) \otimes_{\omega} \underline{\mu}^{\circ}{}_{1 \oplus \underline{\Sigma}_{u,\infty}} \otimes_{\omega} \underline{\mu}_{\zeta}(\tau,\gamma,\beta,\alpha) \otimes_{\omega} \underline{\mu}^{\circ}{}_{\zeta \oplus \underline{\Sigma}_{u,\infty}} \otimes_{\omega} \otimes_{\omega} \underline{\mu}^{\circ}{}_{\zeta \oplus \underline{\Sigma}_{u,\infty}} \otimes_{\omega} \underline{\mu}^{\circ}{}_{\zeta \oplus \underline{\Sigma}_{u,\infty}} \otimes_{\omega} \otimes_{\omega}$ <u>α</u>11  $\underline{\alpha}_{1\phi}$  $\alpha_{01}$ awa ⊕...⊕ ⊕...⊕ 11μ<sub>1</sub>(τ, γ, β, α)<sup>80</sup>11μ<sup>ο</sup>1 θ<u>Σ</u>, ου<sup>\*</sup>  $_{1\downarrow}\mu_1(\tau, \gamma, \beta, \alpha)\otimes_{1\downarrow}\mu^{\circ}_{1\otimes \underline{r}_{\alpha}\otimes_{1}^{\circ}}$  $\alpha_1 \mu_1(\tau, \gamma, \beta, \alpha) \otimes_{\alpha_1} \mu_1^{\circ} e_{\Sigma_1 \otimes_{\gamma}}^{\circ}$  $_{00}\mu_1(\tau, \gamma, \beta, \alpha) \otimes_{00}\mu_{1\otimes \Sigma_{1}\otimes 0}$ 

Quotations: "If we do not presume that the world is constituted out of atomic facts, and if we are to take account of internal relations, a very different sort of logical theory is required to make intelligible the connections between [better among - E.D.] facts that justify scientific theorizing. If our logic is not to be wholly extensional, classes, universals, relations, and concepts would have to be quite differently defined and conceived; and if the truths of mathematics could be derived from the principles of this different logic, it would not be by the kind of linear deduction contemplated by Frege, Russell, and their followers."\*

"The striking speculations of Professor David Bohm, emphasize still further this contemporary insistence on holism. He envisages an "implicate order" enfolded into what he calls the "holomovement", using the hologram as an analogy, in such a way that a universal principle of order is immanent throughout the physical world, and manifests itself in diverse ways in particular phenomena, the whole [and the restof the party/phenomena - £ D] being implicated in every part and in every event."\*\*

Reference: Errol E. Harris, Formal, Transcendental, and Dialectical Thinking: Logic and Reality, SUNY Press, Albany, NY, 1987, \*p. 44; \*\*p. 60.

#### <u>Commentary</u> On <u>T</u>he

'Dialectical-Mathematical Syntax for 'Harris-World' / Aspects of 'Bohm-World'.

In standard mathematical "function notation", in an equation of the form/content " $\mathbf{y} = \mathbf{f}(\mathbf{x})$ ", the symbol " $\mathbf{y}$ " is named the "function-value", the symbol " $\mathbf{f}$ " is named the "argument". The symbols:formation in the immediately-preceding text-module represents the <u>dynamical states</u> -- or what we call the 'dynates', to b[o]se[n] the "<u>state</u>' connotations of the word "<u>state</u>" -- of a system, its count,  $\Omega \in \mathbf{N}$ , of dynamical <u>sub</u>-systems, that is, its *number* of dynamical <u>sub</u>-systems,  $\mathbf{a}$  its varying *number* of dynamical <u>sub</u>-systems, or <u>sub</u>-systems, for each of those  $\Omega$  <u>sub</u>-systems. The <u>unity</u> of the system is represented by the 'arithmetical qualifier' called a 'system-qualifier',  $\mathbf{Y}$ . The <u>unity</u> of the state is in the <u>sub</u>-system is represented by the 'arithmetical qualifier' called a 'system-qualifier',  $\mathbf{X}$ . The <u>unity</u> of the state is in the <u>sub</u>-system is represented by the 'arithmetical qualifier' and the 'state-call of these arithmetical elements inhere in the axions-system of the 63rd category, denoted by <u> $\Omega_{TBACM} [--) \Omega_{SS}$ </u> in the long-form/'slow-form' dialectical categorial progression of the [meta-]systematic-dialectical presentation of the F<u>E</u>D arithmetics for <u>dialectics</u>. The <u>unity</u> of the transition of the represented by <u> $\omega_{1}^{-}$  and represented by <u> $\omega_{2}^{-}$  arithmetics</u> of determinations characterizing each [ $\omega_{2}^{-}$ ]system level, or scale, are represented by <u> $\omega_{2}^{-}$  and represented by <u> $\omega_{2}^{-}$  arithmetics</u> as arguments, multiplying -- in the generalized sense of "multiply" ['  $\otimes$  ' induce limit of measure" or "dynate variable as sets of "multiply" ['  $\otimes$  ' induce limit of measure" or "dimension" of the 'dynate variable qualifier', representing the 'unit of measure" or "dimension" of the 'dynate variable qualifier', which in turn, multiplies an arithmetical 'metrological unit qualifier', each 'system 'quantifiable qualifier' ' are of the form  $\mu_{0}^{-}$ ,  $\mathbf{N}$ , the 'dynate variable 'in quector. The 'dynate quantifier', repr</u></u>

the 63rd category of 'dialectic arithmeticg', from the 3rd category of 'dialectic arithmeticg',  $\mathbf{q}_{n} = \underline{U}$ , in the long-form categorial progression presentation of the F.E.D. arithmetics for <u>dialectic</u>s. Per the generalized multiplication operation immanent in this 63rd category of 'dialectic arithmetic',  $\underline{\mu}_{n}^{\circ} \otimes \underline{\mu}_{2}^{\circ} \otimes \underline{\mu}_{2}^{\circ} \otimes \underline{\mu}_{2}^{\circ}$ , with the 'subscripted' operator  $\underline{\Sigma}$  signing the <u>summation</u> of  $\mathbf{u}_{d} \otimes \underline{\mathbf{u}}_{d}^{\circ}$  arithmetical 'qualo-quantifiers', i.e., of arithmetical 'quanto-qualifiers'.

Throughout the  $\underline{\gamma}$  expression, 'arithmetical qualifierg' are underscored, arithmetical quantifierg are *not*. 'Arithmetical qualifierg' that are 'quantifiable' are so signed by an 'omicron exponent', ' $\mathbf{o}$ ' [in deference to Diophantus'  $\mu$ ]. 'Arithmetical qualifierg' that are <u>un</u>quantifiable are underscored only, without any 'omicron exponent'. That  $\underline{\gamma}$  expression is presented as a <u>finitely</u>-continued qualo-quantitative fraction that is also a 'qualo-quanto-fractal' -- the scaled. <u>finite</u> self-similarity regress of a dynamical system, its dynamical <u>sub</u>-systems, and their dynamical <u>sub-systems</u>. Because the state-variable terms at every level are 'qualified qualifierg', i.e., are 'quantified qualifierg' that are qualitatively different from one another -- i.e., are qualitatively heterogeneous 'arithmetical qualifierg' -- their summing, their addition, is <u>non</u>-amalgamative. These sums do not collapse or reduce to a single value, <u>un</u>like, e.g., **4** + **3**, which collapses/reduces to **7**. For the same reason, the **63**rd-category's form of 'generalized division', indicated by the ten shown, color-coded orange 'division' barg', are also <u>non</u>-amalgamative/<u>non</u>-reductive, so that this entire six-level, <u>finitely</u>-continued fraction' does not collapse into or reduce to a single value, <u>un</u>like, e.g., the way in which the 'purely''-quantitative fraction **8**/2/3 reduces to **1**.

It is the "arguments" of the 'dynate-variable' "functions" that carry the syntax for "*iniversal interconnection*". They do so by what we call 'self-argumentation', *inter-argumentation* '& 'other-argumentation'. In the "arguments", ' $(\tau, \gamma, \beta, \alpha, E)$ ', of the  $\gamma$ -level, or system-level, 'dynate variable' "functions", the  $\gamma$  component signifies the 'self-argumentation of system  $\gamma$ . The current "function-value" of "function"  $\mu_{n'}$  namely  $\mu_n(\tau, \gamma, \beta, \alpha, E)$ , varies with (the) <u>past</u> state(s) of system  $\gamma$ , i.e., with <u>past</u> values of all of its <u>own</u> "state-variables", or 'dynate variable'. 'Inter-argumentation' is signified by inclusion of  $\beta$  &  $\alpha$  in the "arguments" of the system-level functions { $\mu_n$ }. Each present  $\mu_n(\tau, \gamma, \beta, \alpha, E)$   $\gamma$  system-state state-variable "function-value" varies with (the) <u>past</u> value(s) of all of system  $\gamma$ 's <u>sub</u><sup>1</sup>-systems j states,  $\beta$ , a with all of system  $\gamma$  is <u>sub</u><sup>2</sup>-systems j <u>past</u> states,  $\alpha$ . (*Other-argumentation*' is signed by inclusion of E in the "arguments" of the system-level functions { $\mu_n$ }. Each present  $\mu_n(\tau, \gamma, \beta, \alpha, E)$   $\gamma$ -system-state state-variable varies, to some, *perhaps minute*, degree, with (the) <u>past</u> value(s) of all of the state-variable of all other dynamical system  $\gamma$  in the *universe*, that are "External" to system  $\gamma$ . The "arguments" for the state-variable "functions" if or the state-variable of all other dynamical system  $\gamma$  in the *universe*, that are "External" to system  $\gamma$ . The "arguments" for the state-variable "functions" for the <u>sub</u><sup>1</sup>-systems <u>§</u> <u>sub</u><sup>2</sup>-systems of system  $\gamma$  are, herein, <u>indexined</u> as ( $\tau, \gamma, \beta, \alpha$ , excluding E from their "arguments". This is as if system  $\gamma$  enclosed its <u>sub</u><sup>0</sup> is system in an "absolutely <u>imp</u>ermeable membrane", that shields them from all "External" dynamical-systems j influences on their <u>dyna</u>sized". <u>Explicit signing</u> of <u>intra</u>-connections (that include <u>sub</u><sup>3</sup>-systems/even deeper "--systems, n > 3, takes recourse to <u>Encyclopeedia Dialectica</u> dialectic arithmetics

#### "Dimensional Analysis" -- Beyond "Syncopated" Notations.

'<u>Quant</u>ifiable arithmetical <u>qual</u>ifier meta-number meta-unit<u>s</u>', of the form '...<u>µ</u>° \_\_\_k''k''' (a reinterpretable as signing '''<u>Metrological unit<u>s</u>''', or "unit<u>s</u> of <u>Measure</u>" -- i.e. "physical quantit<u>ies</u>" [<u>better</u>: '<u>quant</u>ifiable metrological <u>unit qualifiers</u>'], also known as the "dimension<u>s</u>" of "dimensional analysis". This is by mean<u>s</u> of their <u>non</u>-amalgamatively summed/differenced subscript<u>s</u>, which are "aufheben"-inherited by the  $\mathbf{R}_{\underline{\mu}} \equiv \mathbf{R}_{\underline{q}} = \mathbf</u>$ 

They are so via a <u>sub</u>script-level addition/subtraction that represents, respectively, '<u>script</u>-level' multiplication/division. This is similar to the way in which, in the domain of logarithm<u>s</u>, <u>super</u>script-level addition/subtraction represents, respectively, '<u>script</u>-level' multiplication/division.

Assigning <u>elementary</u> unit<u>s</u> of a standard <u>metrical metrological</u> system, in their archaic, but still presently-standard, still-"syncopated" form, to the "elementary" [<u>un</u>compounded] arithmetical unit<u>s</u> of the  $\underline{R} \stackrel{\mu}{=} \equiv \underline{R} \stackrel{\mu}{=} -|\underline{R} \stackrel{\mu}{=}$ 

*one* "sec." [—) **1**<u>µ</u>°; 1<u>µ</u>°;

one "gm." [--) 1<sup>0</sup>, and;

*one* "cm." [—) **1**<u>µ</u>°

-- yields the 'Mu'  $[`_{\underline{R}} \stackrel{\mu}{=} \equiv_{\underline{R}} \stackrel{q}{=}_{\mu} = [_{\underline{R}} \stackrel{q}{=}_{\underline{M} \cup R}] \frac{\partial}{\partial a = [_{\underline{R}} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial a = [_{\underline{M} \cup R} \stackrel{q}{=}_{\underline{M} \cup R}]} \frac{\partial}{\partial$ 

The "compound" <u>metrological</u> unit of "*Velocity*" = "cm./sec." [-)  $\mu^{\circ}_{\underline{\mu}^{\circ}_{2}} \oplus \mu^{\circ}_{\underline{\mu}^{\circ}_{1}} = \mathbf{1}_{\underline{\mu}^{\circ}_{2}};$ 

The "compound" <u>metrological</u> unit of "*Acceleration*" = "cm./sec.<sup>2</sup>" [-)  $\underline{\mu}^{o}_{\underline{\mu}^{o}_{3}} \bigoplus [\underline{\mu}^{o}_{\underline{\mu}^{o}_{1}}]^{2} = \mathbf{1}_{\underline{\mu}^{o}_{3}-2\underline{\mu}^{o}_{1}};$ 

The <u>metrological</u> unit of "*Momentum*" = "(gm.  $\otimes$  cm.)/sec." [-)  $\mu_{\underline{u}_{2}}^{\circ} \otimes \mu_{\underline{u}_{3}}^{\circ} \oplus \mu_{\underline{u}_{1}}^{\circ} = \mathbf{1} \mu_{\underline{u}_{2}}^{\circ} + \mu_{3}^{\circ} - \mu_{1}^{\circ};$ 

The <u>metrological</u> unit of "*Force*" = "(gm.  $\otimes$  cm.)/sec.<sup>2</sup>" [-)  $\mu_{\underline{u}_{2}}^{o} \otimes \mu_{\underline{u}_{3}}^{o} \otimes \mu_{\underline{u}_{3}}^{o} = \mathbf{1}_{\underline{\mu}_{2}}^{o} = \mathbf{1}_{\underline{u}_{3}}^{o} + \underline{\mu}_{3}^{o} - 2\underline{u}_{1}^{o}$ ,

and;

A metrological unit for "*Energy*" = "gm. 
$$\otimes$$
 (cm. <sup>2</sup>/sec.<sup>2</sup>)" [-)  $\mu^{\circ}_{\underline{\mu}^{\circ}_{2}} \otimes \mu^{\circ}_{\underline{2}\underline{\mu}^{\circ}_{3}} \oplus \mu^{\circ}_{\underline{2}\underline{\mu}^{\circ}_{1}} = \mathbf{1}_{\underline{\mu}^{\circ}_{2}} + \mathbf{1}_{\underline{\mu}^{\circ}_{3}} - \mathbf{1}_{\underline{2}\underline{\mu}^{\circ}_{1}}$ .

By the above and related symbolic arrangements, the "'higher <u>dialectic</u>al methods'', addressed herein, can encompass total and also partial integrodifferential equation 'meta-dynamical meta-models', including those involving deep, essential singularit<u>ies [finite time "infinite" or "undefined" state-values</u>], via the 'full zero', , 'hridyamic <u>meta</u>-number', such that, per axiom,  $(\mathbf{0})_{\mu_{k}^{\circ}} = \mathbf{0}$ , i.e., such that '<u>empty</u> zeros' [**0**], times '<u>metrological</u> arithmetical <u>qual</u>ifiers', = '<u>full</u> zeros' ['**0**'].

The next eight text-images describe this 'full zero' concept, whose 'meta-number' is denoted by , in more detail.

#### Encyclopedia Dialectica Notation, Sign Design Specification: Arithmetic's Finitary Quanto-Qualitative Zero ['Full Zero'] Sign, commenced Background: Sign Design & Meaning --Usage/Application Example -This new arithmetical 'ideo-ontology' of the 'Full Zero Drawing upon the Background information presented via meta-number', ' ; first fully arises in the 3rd step of the the text to the left, the candidate axiom for the core of the Seldonian 'meta-systematic dialectical' presentation of the operatorial characteristics of the 'full zero meta-number' 'Seldonian Dialectical Arithmetics'. It arises as the 7th that we will be testing in this example is the following -category in that categorial progression presentation. It (0)[μ°<sub>k⊕Σ μμ</sub>] = represents the 7th consecutive category of axioms-systems of dialectical arithmetic in that progression, as the 2nd full $(\mu_{k}(\tau)) [\underline{\mu}^{\circ}_{k \oplus \underline{\Sigma} \ \underline{\cup}_{k} \underline{\cup}_{k}}] \otimes \bullet = \bullet \otimes (\mu_{k}(\tau)) [\underline{\mu}^{\circ}_{k \oplus \underline{\Sigma} \ \underline{\cup}_{k}}]$ 'uni-category' ['''dialectical synthesis''' category] of arithmetics, the "culminant" of presentation Step 5 = 3. $(\mu_{k}(\tau))[\underline{\mu}^{\circ}_{k \oplus \underline{\nu}_{\underline{u}} \underline{u}_{\underline{u}}^{\circ}}] \textcircled{O}(0)[\underline{\mu}^{\circ}_{j \oplus \underline{\nu}_{\underline{u}} \underline{u}_{\underline{u}}^{\circ}}]$ It unifies the 4 preceding systems / categories of (1) the W\_ [first order only "Whole" numbers] arithmetics of "pure", $(0)[\underline{\mu}^{\circ}_{k \oplus \underline{\nu} \ \underline{u}, \underline{u}^{\circ}_{n}}] \bigoplus (\mu_{j}(\tau))[\underline{\mu}^{\circ}_{j \oplus \underline{\nu} \ \underline{u}, \underline{u}^{\circ}_{n}}] =$ ungualified guantifiers, (2) Q arithmetics of "pure", un<u>auantifiable ontological analifiers.</u> (3) U arithmetics, of (0)[<u>µ</u><sup>°</sup><sub>k⊕∑ u,u</sub><sup>°</sup>] ⊕ (0)[<u>µ</u><sup>°</sup><sub>j⊕∑ u,u</sub><sup>°</sup>] = '<u>quant</u>ifiable <u>qual</u>ifier<u>s / qual</u>ifiable <u>quant</u>ifier<u>s</u>', themsel<u>ves</u> already representing "complex unifications" of the Q & -- which asserts the 'multiplicational'/ "'divisional"" W\_arithmetical axioms-systems, & (4) the M\_arithmetics, complete dominance of the 'full zero' value over every of UNquantifiable Metrological unit qualifiers. This 7th other 'meta-number' value within the p H systems of arithmetical systems category is connoted, in 118 Seldonian dialectical arithmetic. All other values are "recessive". presentation, by the term Q\_\_\_\_\_\_ signifying explicitly, via 18 three subscripts, the 3 major preceding systems categories ut Let us then apply this candidate axiom to a classical, synthesizes/unifies. Because the preceding synthesis is founding problem of mathematical natural science, the connoted $\underline{U} \equiv \underline{\mathbf{g}}_{-\underline{U}} \equiv -|\underline{\mathbf{g}}_{-\underline{\mathbf{Q}}\underline{\mathbf{W}}}$ so $\underline{\mathbf{g}}_{-\underline{\mathbf{M}}\underline{\mathbf{Q}}\underline{\mathbf{W}}}$ is also connoted by problem of, e.g., 2 gravitating bodies, e.g., planets, that g\_which is then mnemonically & onomatopoeically nickare destined for collision, viz., planet Theia & planet named 1. A compact, dialectical-ideographical summary "proto-Earth", in the presently prevailing hypothesis of the Seldonian presentation of these arithmetics, expressed regarding the origin of the Earth/Moon sub-system of via the algebraic language of the wQ 'meta-numbers', is -our own home stellar/planetary system, the system of star Sol - our Solar System. In the idiom of the Newtonian gravitic force equation which provides our mathematical system-model for this hypothetical collisional system, the full, 3-dimensional "extended bodies" of our colliding orbs are modeled as "point-masses". This means that the



3-D "rigid body" of ... [continued next text image].

### Encyclopedia Dialectica Notation, Sign Design Specification:

Arithmetic's Finitary Quanto-Qualitative Zero ['Full Zero'] Sign,

#### continued

Background: Sign Design & Meaning [cont'd.] --

The version of this Seldonian 'presentation-meta-equation' nsed for the 'Usage/Application Example' presented herein is the one which has the first-order logic axioms-systems of arithmetic of the so-called "Real" numbers, rather than the first-order logic axioms-systems of the so-called "Whole" numbers, as its «arché» category, or starting category --



- whose 7th term thus represents, <u>not</u> the  $\underline{W}_{\underline{\mu}}$  systems, but the  $\underline{R}_{\underline{\mu}}$  systems.

R L is another 'ideographic name' of these systems. IT onnotes that, in such systems, the quantifiable qualifiers of systems U are «aufheben» subsumed by the Metrological gualifiers of the M\_systems. The 'meta-numerals' of the  $\bigcup_{n \in \mathbb{N}} \underbrace{\bigcup}_{n \in \mathbb{N}} systems have form \underbrace{U_n(\tau)}_{n}(\tau) \underbrace{u_n(\tau)}_{n} where in \underbrace{U_n(\tau)}_{n} \in \mathbb{R} is an$ ontological, '«monad»-ic' ['individual-«monads»-counting'] quantifier, specifying, for time period t, the representative number of units, i.e., of «monads», of nth kind -- any single unit of which is connoted by the ontological gualifier uonthat are extant in time period t. Its 'omicron crown', 'o', harking back to Diophantus' "syncopated" guantifiable unit symbol, µ°, signifies that U°, is a quantifiable qualifier. The «aufheben» subsumption/subordination/internalization/conversion of U by/into M in the |-= Q MI systems is represented, in the individual 'meta-numerals' of the **µ** arithmetics, by the 'subscriptization' of U's native ontological 'meta-numerals', Un(T)Uon, under[neath] the μ<sub>k</sub>(τ)μ°<sub>k</sub> -- 'script level' -- Metrological meta-numerals', for the kth "kind" of system 'vital sign' to be measured, thus yielding the syntax native to the new 'ideo ontology' of the <u>μ\_meta-numerals</u>', for example, μ(τ)μ°<sub>Σ μμ°</sub>, or, more generally, e.g., for the kth state-variable, or for the kth control parameter, of a given [meta-]dynamical system -- $\mu_k(\tau) \underline{\mu}^o_{k \oplus \underline{\Sigma}, \underline{u}, \underline{u}_n}^o$ . Now "it so happens" that this new, 7th, 'meta-numeral' syntax, iff a "convolute" version of the evolute product rule' used in/since the 2nd, Q\_ systems, is used in the L systems, captures the standardly today still-

"syncopated" content of "dimensional analysis". [cont'd.].

Usage/Application Example [cont'd.] --

[continued from previous] each of our two fully concrete planets is represented, in our mathematical model, by an abstract, "mathematical idealization" of it; by its own, single, "'O-D'" – <u>zero</u>-dimensional – moving point, in the form of a "mathematical point" to which a positive, <u>non-zero quantity of Mass is</u> attributed. This reflects the Newtonian finding that, for, e.g., spheroidal bod<u>ies</u>, the gravitic force manifests ≈ as if the Mass of that body were concentrated at its 'pointal' "center of mass".

This 'pointality' of planetary Mass representation has the following key consequence for this example, among its many other consequences: the length of the distance between two planets is measured "center-of-mass" to "center-of-mass"; 3-D "centroid" to 3-D "centroid"; point to point. Consequently, a collision of two planets, so modeled, means that their "centers of mass" coincide or are superimposed upon one another; that their two Masspoints become one, become a single point, a coalescence of the former pair of 'graviticly-interacting' Mass-points. Thus, a collision of two planets means, in this model, that the length of the distance between the planets becomes 0.

Let us, for this example, denote the <u>quantity</u> of units of <u>Mass</u> of proto-<u>Earth by</u> the <u>symbol</u>  $m_E$ , the <u>quantity</u> of units of <u>Mass</u> of planet Theia by  $m_T$ , & the <u>quantity</u> of units of <u>Length</u> separating the two planets by  $r_{ET}(t)$ , or  $r_{TE}(t)$ , indicated as a "function of <u>time</u>", because the distance between the two 'planet-center-points' will vary with <u>time</u>, &, ultimately, will shrink with <u>time</u> as the two planets "close-in" upon the moment of <u>their</u> collision,  $t_*$ . The "independent variable", which appears to "drive" our entire model, t, thus denotes the [varying/growing] quantity of units of abstract <u>time</u> to which each value of  $r_{ET}(t)$ , & each unique value of the overall gravitic force of attraction, F(t), between our two planets, correspond.

Our "purely" <u>quantitative equation</u> for this gravitic force, as a "function of time",  $F(t) \in \mathbb{R}$ , then becomes --

$$F(t) = Gm_Fm_T/r_{FT}(t)^2$$

-- in which G denotes the quantity of units of Newton's universal Gravitational constant, for its own specific units of measure:  $\sim(6.67)(10^{-8})$  if measured in units of [cm.<sup>3</sup>/gm. × sec.<sup>2</sup>]. We note, in passing, that the "squaring" of the  $r_{ET}(t)$  function in the denominator of the RHS of this equation makes it a <u>nonlinear equation</u>, because  $r_{FT}(t)$  is the "<u>un</u>known function", or "function

# Encyclopedia Dialectica Notation, Sign Design Specification: µ Arithmetic's Finitary <u>Quanto-Qual</u>itative Zero ['Full Zero'] Sign, ♥.

#### [continued]

| Background: Sign Design & Meaning [cont'd.]  | Usage/Application Example [cont'd.]   |
|--|---|
| But the <u>R</u> <u>L</u> systems "capture" "dimensional analysis"<br>in a <u>no-longer</u> . "syncopated", but <u>fully-ideographical, fully</u> -<br>arithmetical form. Yet, even in its conventional, syncopated<br>form, it is clear that "dimensional analysis" exemplifies a<br>highly <u>contra-Boolean</u> calculus. Thus, the unit of length<br>called "centimeter", standardly represented in "syncopated"<br>fashion by "cm.", is <u>contra-Boolean</u> , albeit in a <u>convolute</u><br>way, <u>not</u> in the <u>evolute</u> way of the <u>O</u> <u>imeta-numbers</u> , e.g.,<br>under <u>their</u> usual <u>double-«aufheben» gvolute</u> product<br>rule' axiom, viz.: cm. x cm. = cm. <sup>1</sup> x cm. <sup>1</sup> = cm. <sup>2</sup> , $\frac{1}{2}$ cm. <sup>1</sup> , | [continued from previous] <u>unknown</u> ", to be "solved for"<br>in order to "solve" this equation. The solution - the<br>solution function - for this equation would be an explicit<br>function, <u>generating</u> the <u>quantity</u> of gravitic <u>Force inter</u><br>these 2 planets, as a function of the distance between the<br>two 'planet-points', for every value of the time parameter,<br>t. Now, if we substitute, into this "purely" <u>quantitative</u><br>equation, for the <u>generic</u> , algebraic value t, the <u>specific</u><br>value of t which denotes the "instant of collision", calling<br>that value t <sub>*</sub> , then this <u>general</u> equation becomes the<br><u>specific</u> equation for the moment of collision of E & T |
| or, in more <u>pictographic</u> form: $ \mathbf{x}  = [\mathbf{m}, \frac{1}{4}]$ . To state<br>an equivalent of the 2 foregoing expressions in the language  | $F(t_*) = Gm_Em_T/r_{ET}(t_*)^2 = Gm_Em_T/0^2 = Gm_Em_T/0^2 = Gm_Em_T/0  "=""+00"$  |
| of the <u>R</u> <u><u><u><u>µ</u></u><u>axioms</u>-systems</u>, if w<u>e</u>, <u>standard</u>ly, assign the</u>  |   |
| meta-numbers' set, or space, as follows µ°y° then our  | number-space, <b>R</b> , since $\pm 00 \notin \mathbf{R}$ , or that the gravitic force<br>"between" the two planets' "centers of mass" becomes  |
| sought-after equivalent expression becomes $-\underline{\mu}_{\underline{\nu}_{3}}^{\circ}\otimes\underline{\mu}_{\underline{\nu}_{3}}^{\circ} =$  | "infinite" at the instant, t <sub>*</sub> , of their collision-coalescence.<br>"Infinite" gravitic force might seem to be the solution  |
| $\underline{\mu}^{\circ}_{\underline{\mu}^{\circ}_{3}} \underline{\oplus}_{\underline{\mu}^{\circ}_{3}} = \underline{\mu}^{\circ}_{\underline{\mu}^{\circ}_{3}}^{2} = \underline{\mu}^{\circ}_{\underline{2}\underline{\mu}^{\circ}_{3}} \notin \underline{\mu}^{\circ}_{\underline{1}\underline{\mu}^{\circ}_{3}}, per \text{ the } rule \text{ that } w\underline{e}$  | here, since the <u>gen</u> eric <u>quantity</u> of force units '''count''',<br>F(t), keeps escalating as the distance between the planet-   |
| an axiom of the <u><b>R</b></u> <u><u><u>u</u></u> axiom<u>s</u>-system<u>s</u>, &amp; stated generically</u>  | function, <b>r</b> <sub>ET</sub> ( <b>t</b> ), forming the denominator of the <b>F(t</b> )<br>function, <b>8</b> with that denominator "squared" to boot, the   |
| as follows: $\blacksquare \underline{\mu}^{\circ}_{\underline{\mu}^{\circ}_{n}} \otimes \underline{\mu}^{\circ}_{\underline{\mu}^{\circ}_{n}} = \underline{\mu}^{\circ}_{\underline{\mu}^{\circ}_{n}} \oplus \underline{\mu}^{\circ}_{\underline{n}} = [\underline{\mu}^{\circ}_{\underline{1}\underline{\nu}^{\circ}_{n}}]^{2} = \underline{\mu}^{\circ}_{\underline{2}\underline{\nu}^{\circ}_{n}}.$   | smaller the "count" of the units of length between the<br>two centers, for any given t value - if the Masses of the   |
| $w_{\underline{e}} \underline{standardy} \underline{assign} [()] other non-compound, offcalled "elementary" units as follows: for Mass, e.g., in unitsof grams - gm, ()Mo()uo o ; for Time in, e.g., units of$   | force units, $F(t)$ . The latter seems to grow without limit<br>as the distance separating the two planets, $r_{ex}(t)$ , drops   |
| <u>sec</u> onds - sec. (-) $\underline{\Gamma}^{\circ}$ (-) $\underline{\mu}_{\underline{\nu}_{1}}^{\circ}$ . With o <u>ur</u> "elementary" units  | toward <b>its</b> minimum value, <b>0</b> , <b>8</b> , perhaps, reaches that value "at" the "point" in time <b>t</b> = <b>t</b> <sub>*</sub> . Note that, at that   |
| of "metrology" thus defined, one can form key "compound" units of measure, viz.: for $\underline{V}$ elocity, $\underline{V}^\circ = \underline{L}^\circ / \underline{T}^\circ$ , in syncope   | "point", per the Newtonian idealization, there would no<br>longer be "two" planet-points, but rather, effectively<br>speaking, only a single mass-"point"; indeed, that's   |
| units of cm. per sec. <sup>1</sup> , or cm./sec. (-) $\underline{\mathbb{V}}^{\circ}$ (-) $\underline{\mathbb{\mu}}^{\circ}_{\mathfrak{Gl}\underline{\mathbb{U}}^{\circ}_{3}}$ -1 $\underline{\mathbb{U}}^{\circ}_{1}$ ;   | precisely what $\mathbf{r}_{ET}(\mathbf{t}_*) = 0$ means!<br>But our model's prediction of "infinite gravitic force" is   |
| for Acceleration, in cm. per sec. per sec. units, $\underline{A}^\circ = \underline{V}^\circ / \underline{T}^\circ$ ,  | sheer balderdash when it comes to empirically accurate<br>science, & scientific prediction. First of all, an "infinite"   |
| cm./sec. <sup>-</sup> (-) <u>A<sup>-</sup></u> (-) <u>U<sup>*</sup></u> <u>U<sup>0</sup></u> <sub>3</sub> -2 <u>U<sup>0</sup></u> <sub>1</sub> , &; for Force, $\underline{F}^{\circ} = \underline{M}^{\circ} \otimes \underline{A}^{\circ}$ ,<br>in units of gm. $\otimes$ cm. per sec. <sup>1</sup> per sec. <sup>1</sup> , or "dynes"   | gravitic force of attraction, if it could ever actually occur,<br>would presumably suck in the entire rest-of-the-universe,   |
| $[gm.] \otimes [cm./sec.^{2}] (\longrightarrow) \underline{E}^{\circ} (\longrightarrow) \underline{\mu}_{\underline{y}_{2}}^{\circ} \oplus \underline{y}_{2}^{\circ} - 2\underline{y}_{1}^{\circ}. Once we've$   | More practically, via induction upon the universal<br>empirical experience of humanity, collisions of Farthly   |
| such "compound" units of measure defined, we can apply   | bod <u>ies</u> of <u>Mass never gene</u> rate anything even remotely<br>resembling "infinite" forces. Instead, the gravitic force   |

#### Encyclopedia Dialectica Notation, Sign Design Specification: Arithmetic's Finitary Quanto-Qualitative Zero ['Full Zero'] Sign, continued Background: Sign Design & Meaning [cont'd.] --Usage [Application Example [cont'd.] -them to [re-]aualify, e.g., the standard equations of physics, [continued from previous] between the 2 bodies ceases to equations usually given only in a "purely"-quantitative, or exist, as the 2 bodies themselves typically cease to exist, "'<u>unqual</u>ified''', form, so that their <u>im</u>plicit '''metrical as such, in/during their collision. In a 2-body collision, [metrological] analifiers''' & 'ontic analifiers' are elided. as the 2 bodies close-in upon one another, & as their outer solid surfaces begin to interact/crash together, processes Thus, the standard, "purely"-quantitative Newtonian Force take place, & take over dominance, which are not at all equation F = MA -- wherein F and A are underscored since explicit in the Newtonian gravitics idealization/model/ they represent vectors oriented in 3-space, whereas M paradigm, & which, superseding that gravitics, induce a occurs without underscore, as it represents a Realcomplex unity combination, of coalescence & versus fragmentation, of dis-integration &/vs. re-integration, of valued scalar -- can be translated to the \_ [1 language, Mass, by way of which the formerly 2 bodies of Mass by being 'metrically re-qualified', yielding the new, more cease to be, & in which a more complex something else explicit 'quanto-qualitative/qualo-quantitative equation' -comes to be. In the specific case of our example, the $(F)[\underline{F}^{\circ}] = (M)[\underline{M}^{\circ}](\underline{A})[\underline{A}^{\circ}] = (F)[\underline{\mu}^{\circ}_{\underline{\mu}^{\circ}_{2}} \oplus \underline{\mu}^{\circ}_{3} - 2\underline{\mu}^{\circ}_{1}]$ former pair of co-orbital planets, Theia & proto-Earth, fragment/coalesce, at length, into a new ontology: that of $(\mathsf{M})\otimes[\underline{\mu}^{\circ}_{[\underline{1}\underline{\nu}^{\circ}_{3}]}]\otimes(\underline{A})\otimes[\underline{\mu}^{\circ}_{[\underline{1}\underline{\nu}^{\circ}_{3}-\underline{2}\underline{\nu}^{\circ}_{4}]}]$ the Earth/Moon sub-system of our Sol[ar] System. -- wherein ( ... ) parentheses enclose [metrological units The gravitic force between 2 such bodies will reach a quantifying] "pure" quantifiers, but [...] parentheses finite maximum force-units-"count", which we denote, enclose "metrological unit gualifiers", such that all algebraically, or generically, by A. [just] before the bodies, "factors" shown multiply ['S'] each other, or multiply & their 'inter-force', cease to exist as such. Since it is together, per an axiom of generalized multiplication. Once true that, whatever the specific value of A may be, it is, at such an axioms-system of arithmetic is in place, so as to any rate, finite, the model-error, or "residual", of our enable such fully-arithmetical, fully-ideographical 'metrical model's <u>prediction</u> for $\mathbf{t} = \mathbf{t}_{*}$ , the actually-observed quanto-qualifiers', or 'metrological qualo-quantifiers', to be value minus the model-predicted value, will be $\sim \overline{\Lambda} - \infty$ expressed, a new question arises: What value, in general, = -m: an "infinity residual"; a sudden, hypershould the [generalized] multiplication of a 'metrological discontinuously "infinite" model-error, even though the aualifier' by a ZERO auantifier produce/signify?--Newtonian model gives hugely-precise force predictions, $(X)[X_{\circ}] = (0)[X_{\circ}] = (0)[\pi_{\circ}^{[\overline{X}_{\circ}]}] = 3$ for most other values of t, e.g., as they approach t.

-- especially when this  $\mathbf{0} \otimes \underline{\mathbf{X}}^\circ$  value is encountered in the <u>denominator</u> of a[n, e.g., <u>nonlinear</u>] integro-differential equation &/or in the <u>denominator</u> of its solution function?

The Newtonian model gives an answer which is <u>INfinitely</u> <u>WRONG</u> for the F(t) "inter-force" as of t = t<sub>\*</sub> !

Our research has taken the direction resulting via our view that this product does not work best as a guantifier-dominant

result, e.g.,  $(\mathbf{0})[\mathbf{X}^\circ] = \mathbf{0}$ , or as a <u>analifier-dominant result</u>, e.g.,  $(\mathbf{0})[\mathbf{X}^\circ] = \mathbf{X}^\circ$ , but, on the contrary, as a combined, '<u>ananto-qualitative' or 'analo-quantitative' new kind</u> of zero; as a kind of ontological, <u>existential</u> zero, a zero which is the '''complex unity''' of a zero <u>quantifier</u> **%**/with a metrological, unit-of-measurement <u>qualifier</u>. This involves o<u>ur</u> intuitive feeling that a "zeroing-out" of so '<u>essence</u>-ial' a dynamical system attribute as one of its 'metrological units', one of its 'metrical <u>dimensions</u>', must signify a loss of <u>existence</u>, a kind of '<u>dis</u>-existentiation', for the system whose "<u>dimensional</u>" attribute(s) has(have) been so <u>nullified</u>. O<u>ur</u> axiom,  $\mathbf{P}$  ....(**0**)[ $\mathbf{X}^\circ$ ] =  $\mathbf{0}$  ...., means to us that the initial system-ontology is gone, but also that it has become, <u>not</u> some kind of ''<u>abstract nothing</u>ness''', but, on the contrary, a new, <u>determinate</u>, fully concrete condition/state. That is, the initial system modeled has <u>dialectically</u> negated <u>itself determinate</u>, producing a <u>determinate</u> new ontology, as well as, typically, <u>double</u>-«aufheben»-carrying-forward [i.e., both <u>internally</u> & <u>externally</u>] some of the initial system-ontology. However, this new ontology <u>cannot be expressed</u> within the language, & the <u>implicit</u> ontological assumptions/'''ontological commitments''' of the original model of that initial system. Thus, the new <u>full</u>zero <u>meta-number'</u>, **i**, is, in <u>our</u> view, a value which represents a familiar, <u>fully</u> concrete & <u>fully</u> determinate ontological 'something ness', but one which resides beyond the descriptive scope of the initial system-model, i.e., one that exists at/beyond the limits of the modeling capability of the initial system-model, thus '<u>dark</u>'/opaque to <u>that</u> model's language.

### Encyclopedia Dialectica Notation, Sign Design Specification:



continued

Usage / Application Example -- The Collision-Singularity of Theia & proto-Earth [continued].

What answer do we get if we 're-aualify' this Newtonian gravitic equation metrologically, attaching/multiplying-in the metrological unit qualifiers that are "counted" [including, as "counted", "rational" & "irrational" fracts' of those units] by each of the <u>auantifiers</u> -- F(t), G, m<sub>F</sub>, m<sub>T</sub> & r<sub>FT</sub>(t) - "contained" in the "purely"-<u>quantitative</u>, standard version of the Newtonian gravitic equation, given above?

[BTW, we name such a transformation using a 're-' suffix, instead of just calling it a [mere] "aualification", out of our deference to the cognitive psychohistory of Terran, human-phenomic mathematics, in which the full emergence of explicit 'proto-ideographic' symbols for arithmetical quantifiers originally occurred in explicit combination with the first now known emergences of 'proto-ideographical', separate symbols for ontological &[, in ancient Mesopotamia, later on] for metrological analifiers -- e.g., circa 250 C.E., in Diophantus's generic, "syncopated" arithmetical gualifier, µ°, 8, earlier, circa 3,000 B.C.E., in ancient Mesopotamia's impressed-in-clay sign '2'. These 'arithmetical, ideographical qualifier' symbols became elided in the development of mathematics, e.g., after the European Dark Ages, during & beyond the European Renaissance, we hold, due to the semi-conscious collective cognitive impacts of "the development of the exchange-value" [cf. Marx], &, especially, of the incipient semi-conscious cognitive-psychohistorical impact -- upon 'the human-phenome' -- of the emerging "law of [capital-]value", & of its "elementary form of value" [cf. Marx]. Thus, our 're-qualification' method represents a late-modern 'restoration of the arithmetical qualifiers' that were elided so long ago, beginning a redress, scientifically, of the historic, unconscious-ideological 'elision of the arithmetical analifiers' that arose, we hold, psychohistorically, as one of the cognitive, «mentalité» consequences of the emergence of "the protocapital-relation "'[cf. Marx], as, nascently, & still today, dominant global social relation-of-reproduction of humanity].

Such a 're-analification', of an R-based, "UNqualified'" version of such an equation, in effect, maps the R-numberspace-resident, "purely"-quantitative, standard-arithmetical gravitic equation, into the 'meta-number' space of the p H\_, 'quanto-gualitative', metrologically[-&-ontologically-]gualified, non-standard, dialectical arithmetic.

Via such a 're-aualification', we get the right answer, at last! We get rid of the Infinitely WRONG answer given us by the "purely"-guantitative version of that equation.

The 're-gualified' version of our "UNgualified" gravitic equation, given above, & evaluated at the "critical instant", i.e., at t<sub>\*</sub>, is presented 1st via a ≈ standard notation for metrological units, using curved parentheses ['(...)'] to enclose [metrical-]quantifiers, 'uncurved' brackets ['[...]'] to enclose 'metrical qualifiers', and '&' to denote the multiplication operation of 'metrical guantifiers' & 'metrical gualifiers', then interpreting [' C-3'] the result per the \_ H\_ space --

 $(F(t_*))\otimes[\underline{M}^{\circ}\underline{L}^{\circ}/\underline{T}^{\circ2}] = (G)\otimes[\underline{G}^{\circ}]\otimes(m_{F})\otimes[\underline{M}^{\circ}]\otimes(m_{T})\otimes[\underline{M}^{\circ}]/((r_{FT}(t_*)\otimes[\underline{L}^{\circ}])^2 =$  $(F(t_*))\otimes[\underline{M}^{\circ}\underline{V}^{\circ}/\underline{T}^{\circ 1}] = (G)\otimes[\underline{L}^{\circ 3}/\underline{M}^{\circ}\underline{T}^{\circ 2}]\otimes(m_F)\otimes[\underline{M}^{\circ}]\otimes(m_T)\otimes[\underline{M}^{\circ}]/((r_{FT}(t_*)^2\otimes[\underline{L}^{\circ}]^2) =$ cancellation  $(F(t_*))\otimes[\underline{M}^{\circ}\underline{A}^{\circ}] = (6.67 \times 10^{-8})[\underline{L}^{\circ}]/\underline{M}^{\circ}\underline{T}^{\circ2}](m_E)[\underline{M}^{\circ}]/(m_T)[\underline{M}^{\circ}]/((r_{ET}(t_*)^2\otimes[\underline{L}^{\circ2}]))$ cancellation  $(F(t_*))\otimes[\underline{M}^{\circ}\underline{A}^{\circ}] = (6.67 \times 10^{-8})\otimes[\underline{L}^{\circ 1}/\underline{T}^{\circ 2}]\otimes(m_E \times m_T)\otimes[\underline{M}^{\circ}]/((r_{FT}(t_*)^2) =$  $(F(t_*))\otimes[\underline{M}^{\circ}\underline{L}^{\circ}/\underline{T}^{\circ2}] = ((6.67 \times 10^{-8}) \times (m_F \times m_T)/((r_{FT}(t_*)^2)) \otimes [\underline{M}^{\circ}\underline{L}^{\circ}/\underline{T}^{\circ2}] =$  $(F(t_*))\otimes [F^\circ] = ((6.67 \times 10^{-8} \times m_F \times m_T)/(r_{FT}(t_*)^2) \otimes [F^\circ] \leftarrow 3$  $(F(t_*))\otimes \begin{bmatrix} \hat{\mu} \\ [e\hat{u}_2 e\hat{u}_3 - 2\hat{u}_1] \end{bmatrix} = ((6.67 \times 10^{-8} \times m_E m_T)/(r_{ET}(t_*)^2) \otimes \begin{bmatrix} \hat{\mu} \\ \mu \end{bmatrix} [e\hat{u}_2 e\hat{u}_3 - 2\hat{u}_1].$ 

# Encyclopedia Dialectica Notation, Sign Design Specification: Arithmetic's Finitary Quanto-Qualitative Zero ['Full Zero'] Sign,

[continued]

Usage / Application Example -- The Collision-Singularity of Theia & proto-Earth [continued].

For the moment, however, let's go back to the version that keeps the squared Length qualifier,  $[L^{\circ 2}]$ , with the denominator distance function,  $(\mathbf{r}_{FT}(\mathbf{t}_*))^2$ , equal to 'empty zero',  $\mathbf{0}^2$ , @  $\mathbf{t}_*$ , then applying o<u>ur</u> candidate axiom for **operations**-

$$(F(t_{*})) \otimes \left[ \stackrel{\hat{\mu}}{=} [ \oplus \stackrel{\hat{\mu}}{=} \oplus \stackrel{\hat{\mu}}{=} \oplus \stackrel{\hat{\mu}}{=} ] = ((6.67 \times 10^{-8} \times m_{E}m_{T}) \otimes \left[ \stackrel{\hat{\mu}}{=} [ \oplus \stackrel{\hat{\mu}}{=} \oplus \stackrel{\hat{\mu}}{=$$

-- so that, at t\*, the instant of "singularity", of idealized, 'Mass-point-superimposed-upon-Mass-point' collision, we get --

 $(F(t_*))\otimes \begin{bmatrix} \hat{0} \\ \mu \end{bmatrix}_{\left( \hat{a}_{2} \hat{u}_{2} \hat{a}_{3} \hat{u}_{3} - 2 \hat{u}_{1} \end{bmatrix}} = \mathbf{0}$ 

-- which we interpret as signifying the following: at [or even, in physical reality, in the time-period leading up to,] the moment of "singularity", t<sub>\*</sub>, Theia & proto-Earth cease to exist as such, because at/by that point in time, they transform themselves /each other -- the system that they, together, form, transforms itself -- into something else, into something qualitatively, ontologically new; something not provided for in/not expressible by our model-equations' local language' in either its ""re-gualified" or its "ungualified" forms, alike. That new something, the successor system to the proto-Earth/Theia system, is, at length, the Earth/Moon sub-system of our Solar System. The ontology of the predecessor system that Theia & proto-Earth, together, formed, is the ontology that is, solely, assumed in the implicit "model specification " of our F(t) model. That is the single ontology to which this model is exclusively "committed". But it is precisely that ontology that ceased to exist upon the collision of Theia & proto-Earth, "at" t = t\*. Hence, the "00" value for the gravitic force between the two "at" t = t\*. But that force, too, had ceased to exist, as those two planets ceased to exist. The value does not signify that Theia & proto-Earth disappear at that instant, leaving abstract nothingness in their, former, place. The value does not signify that an "abstract negation" [cf. Hegel] has taken place. On the contrary, the 'full zero' value signifies that an «aufheben» "'determinate [self-]negation"" [cf. Hegel] has taken place; that something fully concrete, but specifically different from the «species» of the predecessor reality, has taken its former place, but that this new something, this successor reality, e.g., this mutual coalescence/dis-integration of Theia & proto-Earth, cannot be expressed in the language, in the vocabulary, e.g., in terms of the Mass-points ontology, of our model, which, however, was able to describe, to a great degree of precision, the predecessor reality.

We do need an accompanying <u>new</u>  $\mu$  axiom, for such cases as those wherein the distance-squared denominator is left bare of its 'metrical <u>qualifiers</u>', i.e., with those <u>qualifiers</u> consolidated into the numerator, so that bare 'empty zero' arises in that denominator. That axiom is an ''inductive''' one, based upon the absence of objective ''infinite quantity'' in all known physical-empirical observations to-date. It is an  $\mu$  version of our 'Principle of Metafinity', asserting that, if a quantifier value of ' $\infty$ ', not a number in set  $\mu$ , occurs anywhere, in any  $\mu$  calculation, it is to be replaced by  $\phi$ .

# Encyclopedia Dialectica Notation, Sign Design Specification: µArithmetic's Finitary Quanto-Qualitative Zero ['Full Zero'] Sign,

[continued]

Usage / Application Example -- The Collision-Singularity of Theia & proto-Earth [continued].

Nevertheless, o<u>ur</u> candidate axiom remains a mere candidate, & is a focus of the Foundation's ongoing research within this Domain, because it entails some initially <u>un</u>songht, & initially, perhaps, <u>un</u>welcome, 'collateral consequences'. In particular, this candidate axiom seems to purchase 'deproblematized' divisions by 'empty zeros', at the price of making [e.g., numerator-resident] <u>multiplications</u> by 'empty zeros' more problematic in several contexts.

When the metrical unit for time, e.g., the sec., is multiplied by 'empty zero' -- (0)  $[\underline{T}^{\circ}] = 0$ ,  $0\underline{t}^{\circ} = 0$ , or  $0\underline{\mu}^{\circ}\underline{\mu}^{\circ} = 0$  --

as when the "'zero" of time is used to represent the past <u>beginning</u> of some [sub-]universe[-of-discourse], or the present present time, or the future end of some [sub-]universe[-of-discourse], then o<u>ur</u> interpretation would lead us to regard this as an 'ontological, existential nullification of time'.

In the case of **Ot**<sup>o</sup> nsed to represent a past <u>beginning</u>, o<u>m</u> interpretation would emphasize that there is some ontology, some <u>quality</u>, shared by all <u>futurity</u> of time thereafter, that is <u>not</u> shared by the <u>beginning</u> of time, **&/or** that <u>some</u> ontology, some <u>quality</u>, of the <u>beginning</u> of time, is <u>not</u> shared by all <u>futurity</u> of time thereafter, e.g., that the state of the total universe - the ontology of this universe - is different <u>at</u> the "moment" of the "Big Bang", than it is ever after.

In the case of **Ot**<sup>o</sup> used to represent the present presence of time, our interpretation would emphasize that there is some ontology, some <u>anality</u>, shared by all of <u>future</u> time, relative to this <u>present</u>, & shared by all of <u>past</u> time, relative to this <u>present</u>, that is <u>not</u> shared by this <u>present</u> time, &/or that there is some ontology, some <u>quality</u>, of this <u>present</u> of time, that is <u>not</u> shared by all of the [possible] future time & by all of the actualized past time, relative to this present time.

In the case of **Ot**<sup>o</sup> used to represent a future <u>end</u> of time for a given [sub-]universe[-of-discourse], o<u>ur</u> interpretation would emphasize that there is some ontology, some <u>quality</u>, shared by all of <u>past</u> time, relative to this future <u>end</u> time, including by the <u>present</u> moment of time, that is <u>not</u> shared by that future <u>end</u> of time, **%**/or that some ontology, some <u>quality</u>, of that future <u>end</u> of time, is <u>not</u> shared by all moments of time 'therebefore', including by the <u>present</u> moment of time.

With regard to the case of Ot o need to represent the present presence of time, our interpretation may be in good company, e.g., in that of the book <u>Time Reborn</u>, by Lee Smolin, who wrote therein "The most radical suggestion arising from this direction of thought is the insistence on the <u>reality</u> of the present moment and, beyond that, the principle that all that is <u>real</u> is so in a present moment." [p. 251, emphasis <u>added</u>] and "...my conviction that what is <u>real</u> is <u>real</u> in the present moment is related to my conviction that <u>analia</u> are <u>real</u>." [p. 270, emphases <u>added</u>]. What is "'dark'''/opaque to the <u>past and to the future in</u> the present is, precisely, <u>reality</u>. The <u>past is no longer real</u>. The <u>future is not yet real</u>. Whatever is still <u>real</u> about past presents is that of them which was carried forward into the present present, in the «aufheben» process of presentsreproduction. That of future presents already present in the present present are their present seeds as present potentiality.

Besides the species of 'permanent nullifications' of ontological/metrical units, such as the 'ontological, existential, nutual nullification' of planet Theia & of planet ''proto-Earth''' in our example, the  $(\mathbf{0})[\mathbf{X}^\circ]$ , or  $(\mathbf{0})[\underline{\mu}^\circ]_{[\mathbf{\Sigma}_{\mathbf{u}},\underline{\mu}^\circ]_{\mathbf{n}}}]$ value also occurs for another such species, that of 'momentaneous, transient, recurrent nullifications'. Consider, for example, your own breathing, right now. Most of your time, you are inhaling, or exhaling. But there is also a recurring momentaneous pause, [in]between inhalation & exhalation, that is neither inhalation nor exhalation, & that is also, in a sense, both inhalation and exhalation. That  $\mathbf{0} \otimes$  inhalations,  $\mathbf{0} \otimes$  exhalations pause might take the value

in a p <u>mathematical description</u> of your breath process. This valuation of the '<u>not-in</u>haling-&-<u>not-ex</u>haling' pause

emphasizes that this recurring finite panse in your breathing is gualitatively, ontologically different from both your inhalation & your exhalation; that it exhibits an ontology/guality [e.g., of "breathlessness"] different from & not shared by an ontology/guality [e.g., of movement] that is shared by both your inhalation & your exhalation, &/or that your inhalation & your exhalation share an ontology/guality, that is not shared by "the panses between your breaths". Or, consider the "alternating current" in the wires in the walls of your home, flow[ing] in one direction, then reversing its direction of flow[ing], e.g., 100 or 120 times during each sec. of time, &, therein, recurrently transiting a no flow[ing] condition, modeled as a moving thru/across the 0 current, 0 voltage point/line [axis], e.g., by the "purely"-guantitative  $\underline{V}$ oltage equation  $v(t) = V_{max} \times sin(\omega t)$ , 're-gualified' to  $\underline{v}^{\circ}(t) = (KV_{max}sin(\omega t))[\underline{\mu}^{\circ}_{[\oplus 1\underline{u}]_2 \oplus 2\underline{u}_3 - 3\underline{u}_1 - 1\underline{u}^{\circ}_4]$ ].

### Encyclopedia Dialectica Notation, Sign Design Specification: Arithmetic's Finitary Quanto-Qualitative Zero ['Full Zero'] Sign,

concluded

m Example -- The Collision-Singularity of Theia & proto-Earth [concluded]. Usage/Applicatio

This "sin(e)usoidal" mathematical model of the voltage variation, "with" time, in the wires in your walls, involves the voltage value crossing from the "plus" side to the "minus" side of the "quantity of voltage" axis, & next, crossing back from the "minus" side to the "plus" side of that same axis, 8, thus, recurrently crossing/passing-through the zero of the voltage units "count" -quantity with each such phase of the voltage's oscillation, many times per second.

Thus, these recurring, <u>momentaneous</u> occasions, of (0)  $[\underline{V}^{\circ}] = 0$ ,  $0\underline{v}^{\circ}(t) = 0$ , or  $0\underline{\mu}^{\circ}_{[\oplus 1\underline{\mu}^{\circ}_{2} \oplus 2\underline{\mu}^{\circ}_{3} - 3\underline{\mu}^{\circ}_{1} - 1\underline{\mu}^{\circ}_{4}]$ 

not signify that the circuit, &/or the voltage of the circuit, cease to exist permanently, are destroyed [permanently], or cease to manifest permanently. On the contrary, this transient, recurrent taking-on of the ±0 'empty zero' quantifier value in the course of v(t) in the R model, the "instantaneous" manifestation of the value of vo(t) in the unodel, is, per

our candidate axiom, an assertion to the effect that the moments of the reversing of the direction of current flow in the wire, in your wall; the moment(s) ""[in] between "' current flowing in the "positive" direction & flowing in the "negative" direction, &, likewise, the moment (s) "[in] between " current flowing in the "negative" direction & in the "positive" direction, are both gualitatively different, in their ontology, from all of the moments of "+", "positive" direction current flow, & from all of the moments of '-', "negative" direction current flow. It emphasizes that all of the "moments between" share an ontology, a guality [e.g., of 'flowlessness'], that all of the moments of "+", "positive" direction current flow, & that all of the moments of '-', "negative" direction current flow, do not share, & /or that all of the "moments between" do not share an ontology, a anality, that all of the moments of "+", "positive" direction current flow, & that all of the moments of '-', "negative" direction current flow, do share [e.g., 'flowingness'].

Our candidate axiom is founded upon our intuition that 'empty zero', 0, multiplying a metrological & /or ontological qualifier unit, X°, signifies a "nullification", not just of that unit, but of the entire [er]entity/dynamical system of which that unit, that "dimension", is an 'essence-ial' feature.

Our research continues to explore the [in]aptnesses & the [in]accuracies of that intuition.

In summary, it appears, in all of this, that, in a one-sided, "purely"-quantitative version of the language of mathematics, aualitative change -- ontological change -- change not just in the guantity)(ies) of the being(s) / unit(s) already extant, but also change in the new kind(s) of being(s) coming into being within the incident of singularity, although such 'kindchange' is always [meta-]FINITE, can be expressed only, and "INfinitely" inaccurately so, as "INfinite" quantitative change.

In a new, future, "all-sided" [cf. Marx] and explicitly 'quanto-qualitative' or 'qualo-quantitative', 'ideo-ontologically' expanded version of the language of mathematics, we expect that this limitation of past-to-present mathematical expression description can at last be at least partially lifted, and "psychohistorically" transcended.

Singularity, "mo" - escalation of <u>quantitative change</u>/increase in (an)(some) metrological <u>quantifier()s()</u> absolute value(s), apparently without limit -- is, we hold, 'the quantitative SHADOW of the qualitative'; of the ontological; of kinds-change, of change in ontology; of analitative change, that is, of ontologically revolutionary, 'metafinite' change.

#### Summary Comparison/Contrast of '<u>Full</u> Zero', , , and/versus '<u>Empty</u> Zero', O.

Inventing symbols for '<u>present</u>-ing' absence, including <u>present</u>ing such symbols for knowledge that is '<u>present</u>ly-absent', as if it were <u>present</u> [<u>present</u> as <u>present</u> absence], has been a richly beneficial cognitive strategy for our species. We see an earlier version of this strategy in the use of '**x**' as a symbol to <u>present</u> an initially-<u>un</u>known, or as-yet-<u>un</u>known, number, in the equations of ordinary algebra. Therein, the symbol **x** is <u>present</u> as if it were already known, for example, in the algebraic equation  $x^2 + 1 = 0$ . This strategy can also be seen in use in the domain of integrodifferential equations, e.g., in the use of the symbol '**x**(t)' to re<u>present</u> an <u>unknown "function</u> of time", t, that is to be solved-for by use of that very integrodifferential equation, an equation which <u>present</u>s the results of "differentiating" and/or of "integrating" that function to some order. Such an equation includes that <u>un</u>known function symbol, **x**(t)/dt = **x**(t)<sup>2</sup>'. And, of course, the symbol '**0**', here named '<u>empty</u> zero', is an especially valuable notational tool of longstanding in the history of arithmetic for '<u>present</u>ing an absence', e.g., a purely-quantitative, numerical absence; an absence of any and all numerical units in the given context.

O<u>ur</u> symbol **(**), named <u>'full</u> zero', represents a latter-day extension of that cognitive strategy, of <u>present</u>ing the <u>unknown</u>, and, more specifically, of symbolically <u>expressing</u> the locally/initially/temporarily <u>in</u>expressible. Moreover, **(**), and **(**), <u>'full</u> zero' and <u>'empty</u> zero', are linked, <u>'ideo-meta-gene</u>alogically'. This is because division by <u>'empty</u> zero', in the context of an arithmetically or algebraically <u>'qual</u>ified <u>quant</u>ifier', is a key way of computationally generating the <u>'full</u> zero' value.

The '**0**' and '**0**' symbols are linked together, in particular, again in the domain of integrodifferential equations, by the mathematical phenomenon of ["infinite"] finite-time division-by-zero "singularit<u>ies</u>", as well as <u>by</u> the physical phenomen<u>a</u> with which mathematical singularit<u>ies</u> are typically associated in cases of, e.g., integrodifferential equation[-system]s that are constructed to model physical process<u>es</u> and their dynamical systems.

Mathematical ["infinite"] singularit<u>ies</u> arise in integrodifferential equation<u>s</u> when denominator<u>s</u> in the <u>un</u>solved integrodifferential equation<u>s</u> themsel<u>ves</u>, and/or in the [often <u>un</u>known in closed-form] solution-function<u>s</u> which solve those equation<u>s</u>, contain, e.g., denominator-resident function<u>s</u> of <u>t</u>ime, **t**, that can take on the function-value **O** – thus inducing division by zero – at one or more <u>finite</u> value<u>s</u> of the <u>t</u>ime variable as "<u>in</u>dependent variable".

<u>Non</u>linear integrodifferential equations are particularly prone to such "singularit<u>ies</u>". This is because, e.g., often, the algorithm for the "differentiation" of the 'solution-function', the function that solves a given "differential" equation – the very procedure that generates that differential equation in the first place – places a *negative* integer power, or *negatively increments*, e.g., by **-1**, an already *negative* integer power, of a "function of time" imbedded in that solution-function. Thus (**1**) a "[sub-]function of time" is located in the denominator of the 'solution-function', (**2**) with that "solution-function" thus having a higher *positive* power overall when that component "time-function" is located *in that denominator*, so that (**3**) the solution-function appears on the Right Hand Side [RHS] of the differential equation with a power, i.e., with a *degree*, greater than **+1**, e.g., a *degree* of at least **+2**, thus (**4**) making the resulting differential equation, and (**5**) which, if, for (a) *finite* value(s) of the **t** ime "independent variable", **t**, that denominator-located "time-function" has function-value **0**, thus (**6**) causes a division by zero "infinite singularity". The *non*linearity-making higher-degree is linked to the denominator "function of time" that may have zero for at least one of its *finite* **t** function-values. However, if that *non*linear differential equation has been 're-qualified', with an 'arithmetical metrological *qual*ifier', or with an 'arithmetical ontological *qual*ifier', or with a product of the two, thus induc[t]ing that equation into the "space" of at least the **µ** 'dialectical arithmetic', then the result of that **0** division is *not* "infinity", or "undefined", or "meaningless". The result is, instead, the *finite 'quanto-qual*itative' value named '*full* zero'.

It might therefore be useful, at this point, to compare and contrast <u>'full</u> zero' and/versus <u>'empty</u> zero'. The value **0** signifies 'no[n]-number as a number; a 'no count' which yet '''counts''' [matters]; the [neo-]number that stands for the absence of any/all number-units in the given context.

This value, **0**, can appear as the result of the 'self-subtraction' of value<u>s</u> from all of the "standard" number-space<u>s</u>, but **N**, i.e., if  $\mathbf{w} \in \mathbf{W}, \mathbf{z} \in \mathbf{Z}, \mathbf{q} \in \mathbf{Q}, \mathbf{r} \in \mathbf{R}, \mathbf{c} \in \mathbf{C}$  ["<u>complex</u>" Number<u>s</u>],  $\mathbf{h} \in \mathbf{H}$  [<u>H</u>amilton Quaternion<u>s</u>],  $\mathbf{o} \in \mathbf{O}$  [Cayley-Graves <u>**0**</u>ctonion<u>s</u>/<u>**0**</u>ctave<u>s</u>], as well as for  $\mathbf{g} \in \mathbf{G}$  [<u>**G**</u>rassmann '<u>**G**</u>eometric Number<u>s</u>'], and noting that –

#### 

-- or --

#### Naturals I Wholes I Integers Rationals Reals Complexes Quaternions Cotonions -- then: w - w = z - z = a - a = r - r = c - c = h - h = o - o = a - a = 0.

signs locus-only *in*effability. It is an ideogramic language-sign signing a local breakdown/insufficiency of the "local"

ideographical language particular to a given 'model specification'. It is a sign for local model-language transcendence/-'exceedance' by phenomena once well-expressed by that language, up to the division-by-zero "singularity", but not expressible by it thereafter. It is a sign that does not mean non-existence/annihilation/reduction-to-nothingness/"abstract negation". Instead, this sign means *in*expressibility in the, thus *in*complete, "local" language, that had been well-usable to express the situation being mathematically-modeled, up to the moment-of-occurrence of that zero-division "singularity". Hence, the *dark opacity* of this 'full zero' symbol [for 'metrologically and/or ontologically [re-]qualified' integrodifferential equation-models in **µ**]. 'Full zero' signifies, not a nothingness, not an absence of all content, not 'content-lessness' at all, but, instead, a 'full[er]' content, a 'content*fulness*' that is so much richer, ontologically, than that from before the "singularity", that it cannot be described using the mathematical language at hand in any other way than by/as the 'full zero' symbol, or by some other symbol of equivalent meaning. The 'full zero' value can also appear as a result of the 'self-subtraction' of a value of, e.g.,

the  $\underline{\mu}$  dialectical arithmetic, i.e., the value:  $\mu_{j}(t) \otimes \underline{\mu}^{o}_{j} \otimes \underline{\mu}^{o}_{\underline{\Sigma}_{-k} u_{k} \underline{u}^{o}_{k}} - \mu_{j}(t) \otimes \underline{\mu}^{o}_{j} \otimes \underline{\mu}^{o}_{\underline{\Sigma}_{-k} u_{k} \underline{u}^{o}_{k}} = \mathbf{0}$ . But the primary and

most meaningful way that the 'full zero' value arises is through the ""nullification", via multiplication, by 'empty zero', of an 'arithmetical *ontological* qualifier', or of an 'arithmetical *metrological* qualifier', or of a product of these two kinds of 'arithmetical <u>qualifiers</u>', especially when such a '''nullification''' occurs in the denominator of a functional expression, creating a division-by-  $\frac{empty}{2}$ -zero' "singularity": X/(0) $\otimes \mu_{j}^{\circ} \otimes \mu_{j}^{\circ} \otimes \mu_{j}^{\circ} = 1/0 = 0$ , thus *no longer* "infinite".

Make no mistake, this 'full zero' value does **not** miraculously supply the new mathematical language, or the solutions to its new equations; the expanded mathematical '*ideo*-ontology'; the richer model specification, that could continue the accurate mathematical modeling past the time-point of such division-by-zero "singularity". But it can put an end to the kind of *defeatism* that many physicists and mathematicians express today, e.g.: "...at some specific time *the solution leaves the phase space*: it *literally ceases to exist*. Somewhat colloquially we say that *it blows up in finite time*, for often it ceases to exist by becoming arbitrarily large; the solution is carried off to infinity..... In general, if a solution fails to be defined for all values of the time variable t and instead stops at some finite instant t\*, we call t\* a singularity of the corresponding solution. ... In the n-body problem *singularities* occur when *collisions* between two or more particles take place.... Since force in Newton's gravitational attraction law is inversely proportional to the square of the distance and the distance between [point-]particle[s]...is zero at collision, the force becomes infinite and the equations describing the motion no longer make sense." [pp. 82-84, Celestial Encounters: The Origins of Chaos and Stability, by Florin Diacu and Philip Holmes, Princeton University Press, Princeton, New Jersey, **1996**.] It takes much "belief" to believe in the *EXTREME discontinuity* of modelequations that describe experience/experiment with such magnificent accuracy for, e.g., all other observed time-values, e.g., allowing for our space probes regularly to arrive, ~on time and ~on target, at distance planets, to be nearly right up to just one single "point in time", but then, suddenly, at that single "point", become infinitely inaccurate, predicting an "*infinite*" force that never is. The 'full zero meta-numeral' signs a *finitary* if 'qualo-quantitative' arithmetical value.

#### **Concluding Summary on Higher Dialectical Methods.**

Our higher dialectical methods can also encompass [meta-dynamical] system "<u>self</u>-determination", and also [meta-dynamical] system "self-control", as well as - and perhaps most crucially of all -- [meta-dynamical] system, 'ontically-revolutionary', 'self-bifurcation'". We expect that particularly the nonlinear integrodifferential equations [those with their function-unknown(s) occurring in terms of "degree" different from 1], in their various "orders of differentiation", or of integration, will figure prominently in the systems of [meta-]equations forming the higher 'dialectical meta-models' addressed by such "'higher dialectical methods'''. We so expect because of the rich 'mathematical phenomena' that **non**linear integro-differential equations can exhibit, in contrast to *linear* integro-differential equations, and that might serve as 'mathematical metaphors' for physical phenomena, e.g., with their multi-dimensional nonlinear waves/"solitons solutions", their multiple attractors/basins of attraction, 'boundaried' by their opposites, i.e., by separatrices/repellors; with their "heteroclinic orbit" trajectories and bifurcations, with their "homoclinic orbit" trajectories and bifurcations, with their dynamical-system "crises" and "explosive bifurcations", and with the *fractal* state-vector fields that *they* regularly exhibit.

#### Concluding Commentaries.

#### 1. The <u>Q</u> <u>Dialectical Method</u> -- A <u>Dialectical Unity</u> of '<u>Algorithmicity</u>' and/versus '<u>Heuristicity</u>'.

The purpose of this commentary is to call to your attention the <u>dialectic</u>al interconnexion among the '<u>ideo</u>-ontological' categor<u>ies</u> that, respectively, represent cases of <u>ALGORITHMIC</u> methods of solution of <u>gen</u>eral classes of problems, versus cases of <u>HEURISTIC</u> methods of solution of <u>gen</u>eral classes of problems, versus cases of what we will call '<u>ALGORITHMIC-HEURISTIC</u>' or '<u>HEURISTIC</u>-ALGORITHMIC' methods of solution.

It might be considered that the latter case has long been extant, since ancient time<u>s</u>, and is instantiated in ancient method<u>s</u> of iterative calculation of the value<u>s</u> of "purely"-<u>quant</u>itative "<u>ir</u>rational" number<u>s</u>. These include "Heron's Method", as well as the ancient Mediterranean method of «*anthyphairesis*». Such method<u>s</u> are "algorithmic", in that they involve exact mathematical recipe<u>s</u> for each of their iteration<u>s</u>. But these method<u>s</u> are also "heuristic" in that they provide, <u>not</u> a single, unique, and uniquely correct value, but a <u>potentially</u>-infinite [in Aristotle's sense] progressive sequence of [ever-improving] approximate value<u>s</u>, as <u>gen</u>erated by each further increment of their iteration.

However, the 'algorithmic-heuristic' that we have most in mind, here, is, of course, the ''purely''-qualitative method of solution for 'categorial [self-]combinatoric' problems which we call the  $\underline{NQ}$  dialectical method -- also known herein as 'The Universal Algorithmic-Heuristic Categorial-Combinatoric Ideographical Dialectical Method'.

A 'dialectogram' depicting this 'dialectic', plus a commentary on that 'dialectogram', are posted below.



| Commentary on Dialectogram for Algorithmicities vs. Heuristicities | Algorithms those Solution Method procedures exhibiting the quality or character which we have named 'algorithmicity' are exacting, and "infallible" when applied within their range( $\underline{s}$ ) of applicability, providing unique and correct solutions within (that) (those) range( $\underline{s}$ ). | <u>Heuristics</u> those Solution Method procedure <u>s</u> which exhibit <u>the quality</u> or character <u>which</u> w <u>e</u> name ' <u>heuristicity</u> ' are, on the contrary, <u>in</u> exact, approximate, and <u>fallible</u> , typically but <u>not</u> alway <u>s</u> leading only to <u>correct</u> solution, in part because they may sometimes <u>gen</u> erate <u>multiple possible</u> solution <u>s</u> , rather than a single, <u>uni</u> que solution. | "Algorithms are algorithmic", "heuristics are heuristic", and "never the twain shall meet" supposedly.<br>However, in at least one case in the case of the 'Seldonian <u>Q Dialectical Method'; the 'Universal Algorithmic Heuristic</u><br><u>Dialectical Method'</u> , the one that is exposited throughout these texts <u>the</u> "twain" <u>do</u> "meet". | They "meet" in this case because the <u>meta-model meta-equation</u> <u>generated</u> , by this <u>Method of Solution</u> , to model or map the content of a given ontological <u>Domain</u> , in this case in terms of the 'categorial-combinatoric algebra' <u>of</u> initially <u>un</u> known values/initially <u>un</u> known meanings/initially <u>un</u> known <u>definitions</u> of the 'category-descriptor' symbols that this Method <u>generates</u> is strictly <u>algorithmic</u> . However, the becoming-knowns, the solutions, as to the definitions of each of the categories described by those algebraic <u>un</u> known 'category-descriptor' symbols that this Method <u>generates</u> is strictly <u>algorithmic</u> . However, the becoming-knowns, the solutions, as to the definitions of each of the categories described by those algebraic- <u>un</u> known 'category-descriptors' is a matter of the knowledge and <u>intuition of</u> the model builder | The solution – the conversion of $the_N Q$ 'categorial <u>algebra</u> ' into $NQ$ 'categorial <u>arithmetic</u> ' – for each 'category-symbol' case,<br>the <u>identification</u> of an <u>algorithmically-generated</u> 'category-descriptor' symbol with a model-builder presently-known, or a<br>model-builder <u>expected-future</u> "(arithmoss) of (monads)", or ' <u>in</u> definite number of units of <u>definite kind</u> ', depends upon the<br>knowledge and <u>intuition</u> , the <u>semantics</u> known to, the model builder. Different model builders, e.g., with different knowledge-<br>hock and the semantics is an expected builder may so different noscible solutions. It may even be that as we forever | $\frac{1}{100} = \frac{1}{100} = \frac{1}$ | Outotations: "heuristics [is] a fancy word for 'informed guesswork'." [p. 131]*. An algorithm is: "a mechanical procedure for solving a problem in a finite number of steps (a mechanical procedure is one that requires no ingenuity). An example is the Euclidean algorithm for finding the highest common factor of two numbers. The term derives from the name of the Arab mathematician al-Kwarizmi." [p. 7]** | References: *Ian Stewart, <u>The Mathematics of Life</u> , Basic Books, New York (2011), pp. 124-137.<br>**David Nelson, editor, <u>Dictionary of Mathematics</u> , 2nd edition, Penguin Books, New York (1998). |
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| <u>alectic</u> : User <u>s</u> ' Manual. Edition                   | 2. 04 June 2022.  | N C N  | 3 4 9  |  | <b>1 1 2 2 4</b>  | Karl H. Seldon, f <u>or</u> Founda   | ation <u>Encyclopedia D</u>   | Dialectica (F. <u>E.D.)</u>  |

2. ''<u>Extraneous</u>''' <u>Q</u>-Algebraic Terms -- Categorial-Combinatoric Possibilit<u>ies</u> not [yet/ever] <u>Actual</u>ized for a Given, <u>Specific</u> <u>Domain</u>. Lagrange Equations Analogy.

# "'<u>Extraneous</u>''' NQ-Algebraic Terms: Combinatoric Possibilities <u>not</u> [yet/ever] <u>Actualized for a Given Domain</u>; Lagrange Equations Analogy.

The Encyclopedia Dialectica 'Organonic Algebraic Method' for survivage 'Dialectical Meta-Equations' is not entirely the same for surviva [Meta-]Systematic-Dialectical 'Meta-Equations' as it is for solving -- for the 'semantification' of the terms of -- [Psycho]Historical-Dialectical 'Meta-Equations'. 'Organonic Algebraic Method', as it is applied to the 'Qualitative [Meta-]Equations' of [Popular]Historical-Dialectics, to the n/ 'semantification' of each term of the progression-series/ "non-amalgamative sum" [cf. Musès] generated for each epoch,  $\tau$ , by a 'Dyadic Seldon Function meta-model' of that [Provint Mistorical-Dialectic, is a matter of mapping each term to its physically evident counterpart(s) in the empirical, external phenomenal world, if any such counterpart is known. This same 'Organonic Method', but as applied to [Meta-[Systematic-Dialectical, ''Method-of-Presentation''' 'Meta-Equations', for 'Dyadic Seldon Function meta-models', typically involves pedagogical choices, & stipulated pre-assignments of the meanings of at least the 'warché»-thesis' term, & perhaps also of some of the 'contra-thesis' terms, & perhaps even of some -- e.g., of the "culminating" -- full 'uni-thesis' terms, so that solution is a matter of filling-in definitions, identifying, or solving-for, the implied but initially, explicitly 'un[re-]cognized', ''algebraically unknown''', meanings of terms that are intermediate between the pre-stipulated mi the pre-assigned terms. For [Mear-]Systematic-Dialectical 'Dyadic Seldon Function Meta-Equations' &, perhaps even more strongly, for [Payedos] Historical-Dialectical 'Meta-Equations', such as the ones of both kinds that we are setting-up to solve herein, a kind of 'Meta-Lagrangian Principle' applies. This Principle arises via the 'Possibility-Space' interpretation of the gualitatively different 'ontological categories gualifiers-sums' that a 'Dradic Seldon Function' generates for each ≥ 1 value of its 'self-iteration parameter', its 'epoch parameter',  $\tau$ , or 'Step/Stage parameter', S. 1/2 means that not all of the possible, consecutive subscript '«gene»-ric' terms will actualize -- will necessarily be instantiated -- in any given, '«speci»-fic dialectical meta-model'. The Lagrange equations of motion of classical mechanics model a '«gene»-ric' dynamic system, a '«gene»-ric' "connected unechanical system", by means of "generalized coordinates" and "generalized velocities". Those equations' spectra of such "generalized" variables are intended to encompass all possible "moving material systems". But not all specific kinds of such systems will actually embody all of those possible variables. Thomas K. Simpson describes, as follows, the process by which James Clerk Maxwell derived the equations of electromagnetic field dynamics, using the Lagrange equations. Maxwell did so by honing down the full possible ensemble of terms of the latter to those that were actual for electromagnetic field dynamics: "... Maxwell approaches the construction of his own electromagnetic theory with a clear initial vision of the shape it must take. He does not begin with a collection of basic empirical results and seek a merely complete and convenient set of equations which will save the appearances. Maxwell knows at the outset that his theory must take the form of the equations of motion of a moving material system; these, as we have seen, are Lagrange's equations of motion, which in Maxwell's view simply explicate mathematically our a priori concept of matter in motion. A priori, Maxwell's equations are merely a special case of Lagrange's equations. Therefore, Maxwell's program for a "dynamical" approach to electromagnetism must be this: beginning with Lagrange's equations of motion, identify the generalized coordinates and velocities which characterize an electromagnetic ine by experiment which of the possible coefficients are actually operative in this particular science, and what relationships exist system, and then determ among the coefficients and the coordinates. Lagrange's equations, thus related to electromagnetism and sifted of inoperative terms, will be the basic equations of electromagnetism. At the same time, they will characterize in broad strokes a particular form of connected system." [Thomas K. Simpson, Maxwell's Mathematical Rhetoric: Rethinking the Treatise on Electricity and Magnetism, Green Lion Press [Santa Fe: 2010], pages 272-273, emphases added].

Similarly, the solutions of our 'dialectical meta-model meta-equations' may involve "inoperative terms", or "extraneous terms", which, though generically valid, do not apply for some special cases. Indeed, a crude initial metric for the relative ''fit-ness''' ranking of two different 'dialectical meta-models' of the same Domain, say a 'Dyadic Seldon Function meta-model' versus a '''Triadic''' one, is to compare the percentages of their total terms counts that are "inoperative" for each.

The '<u>ex</u>traneous ontological categor<u>ies</u>', represented by  $\underline{NQ}$ -algebraic/<u>un</u>solved '''<u>ex</u>traneous term<u>s</u>''', or ''<u>in</u>operative term<u>s</u>'', in an  $\underline{NQ}$  based term<u>s</u>-expansion/categorial progression, can arise because some combination<u>s</u> of <u>earlier</u> unit<u>s</u>, or «<u>monads</u>», mapped by some combination<u>s</u> of the epithet<u>s</u>/subscript<u>s</u> of <u>pre</u>viously-added «<u>arithmoi</u>»/categor<u>ies</u>, may <u>not</u> be viable.

That is, they may be <u>un</u>viable existentially, as in the case of <u>phys</u>ical «monads»' models.

They may be <u>un</u>viable '<u>ide</u>o-ontologically', as in the case of "purely" '<u>ide</u>o-ontological' models.

Or, for <u>dialectical</u> models which mix together/unify both species of 'ontologicity' – namely, '<u>phys</u>io-ontologicity' and '<u>ide</u>o-ontologicity' -- that is, for '<u>ide</u>o-<u>phys</u>io-ontological' <u>dialectical</u> models, they may be <u>un</u>viable <u>both</u> existentially and '<u>ide</u>o-ontologically'.

### **3**. Which <u>NQ</u> Method-Variant Builds the Better Model for your <u>D</u>omain?

While w<u>e</u> have identified some "purely" <u>quant</u>itative metric<u>s</u> that to some degree get at the "'fitness'" of a given <u>dialectical</u> <u>meta</u>-model' for its <u>**D**omain</u>, these metric<u>s</u> still miss out on much of that which makes one <u>'meta</u>-model <u>meta</u>-model is <u>**D**omain</u>, these metric<u>s</u> still miss out on much of that which makes one <u>'meta</u>-model <u>meta</u>-model is <u>**D**omain</u>.

Thus, in o<u>ur</u> view, it is, at <u>present</u>, ultimately the judgement of the model-maker which should prevail in deciding which one of two or more '<u>meta</u>-model<u>s</u>' provides the better '''fit''' for a given <u>**D***omain* -- <u>*quant*</u>itative '''fitness''' metric<u>s</u>' result<u>s</u> to the contrary notwithstanding.</u>

W<u>e</u> therefore recommend that <u>dialectic</u>al-model-maker<u>s</u> build at least one <u>dyad</u>ic and one <u>triad</u>ic <u>'meta</u>-model' for <u>their</u> <u>**D**omain</u>, and compare the two in term<u>s</u> of <u>their</u> <u>**D**omain</u> "fitness", etc., as part of <u>their</u> decision process regarding which <u>'meta</u>-model' to adopt. Perhaps a <u>dialectic</u>al-categorial function that hybridizes, or mixes together, both <u>dyad</u>ic <u>dialectic</u>al function<u>s</u> and <u>triad</u>ic <u>dialectic</u>al function<u>s</u> should also be tried. In certain case<u>s</u>, such as those involving the <u>dialectic</u>al <u>'meta</u>-modeling' of <u>individual</u> <u>**«monads**»</u>, even a <u>tetrad</u>ic <u>dialectic</u>al function is worth testing.

Some of the "'<u>quant</u>itative fitness metric<u>s</u>" that w<u>e</u> consult for o<u>ur</u> model adoption decision<u>s</u> include counting the number of categorial "<u>in</u>operative term<u>s</u>", i.e., of modeler-<u>un</u>solvable "'algebraic" 'category-symbol<u>s</u>', <u>gen</u>erated by a given '<u>meta</u>-model', and, 'contrastingly', counting the number of actual-<u>**D**omain feature-unit<u>s</u>, residing at the same level-of-<u>specificity</u> as that addressed by the "'candidate'" <u>**D**omain '<u>meta</u>-model', that are **not** captured in any of the "'algebraic" 'category-symbol' term<u>s</u> <u>gen</u>erated by that "'candidate'" <u>**D**omain</u> '<u>meta</u>-model'.</u></u>

#### 4. <u>On the Ineluctable</u> 'Homeomorphic Defect' of Models-in-«<u>Gene</u>»-ral.

A world map is *not* the same as the global terrain that it models. A world map is a many-to-one <u>re</u>construction of that terrain, typically projecting <u>many</u> features of that terrain onto each <u>single</u> feature of that therefore <u>partially</u> omissive, hence <u>partially</u> <u>defect</u>ive, map of that terrain. That is, a map is a "<u>homeomorphism</u>", and is therefore, in several ways, <u>un</u>representative of the real Earthly terrain that it "[partially <u>mis</u>-]represents". That <u>'un</u>representativity of a map, or model, to its real terrain is what we call an – often ineluctable -- *'homeomorphic defect* of that model.

Such a world map also contains textual, graphical, and other features which have no real, <u>*phys*</u>ical, tangible counterparts in the <u>*phys*</u>ical loci of our planet that they mark. E.g., lines of longitude and latitude, names of islands, continents, lakes, seas, oceans, and nation-states, lines marking borders between nation-states, legends specifying, e.g., the map's scale, etc., all inhere in this second category of map '<u>*un*</u>representativity'.

Both kind<u>s</u> of discrepanc<u>ies</u> -- (1) terrain detail<u>s</u> missing from map<u>s</u> of that terrain, and (2) "'artefact'" feature<u>s</u> of the map<u>s</u> of that terrain, "missing" from that <u>actual</u> terrain itself, that serve the inner working<u>s</u> of the map<u>s</u> alone, as tool<u>s</u> for enhancing *our* use of them -- contribute to the *'homeomorphic defect*' any such land map and/or sea map exhibits, as a human<u>s</u>-made model for the actual 'lithospheric' and 'hydrospheric' surface<u>s</u> of planet Terra.

Such defects are <u>in</u>escapable, although they can be mitigated, to some degree. However, note that there can be mutuallylimiting trade-offs between mitigating *type* (1) *defect and type* (2) *defect*. E.g., adding *more type* (2) *'artefact apparatus' defects* can be one of the ways by which *type* (1) *defects* may be mitigated.



#### **5**. Fourierian/Proudhonian '''Serialism''' and <u>the</u> <u>Q</u> <u>Dialectic</u> Method.

The  $\underline{NQ}$  Universal Algorithmic-Heuristic Categorial-Combinatoric Ideographical Dialectical Method, outlined herein, exhibits some features which are similar to those sought in works by Fourier and Proudhon. These similarities are evident in the description of their seeking by William Clare Roberts, in his book <u>Marx's Inferno</u><sup>1</sup>, as follows --

"There are in Proudhon's writings of the 1840s numerous invocations of the promise of an economic science that would reveal the tendency toward order in human society and catalyze the development of that order. In *Qu'est-ce que la propriété?* he summed up this prospective development by coining a phrase that would have a long life...: "the sovereignty of the will gives way to the sovereignty of reason and ends up being replaced by a *scientific socialism*." [*emphasis* added by K.S.]. Proudhon's notion of this incipient social science was heavily indebted to Charles Fourier's conception of the "*series*", *the <u>sum</u> of an ordered succession of elements [emphases by K.S.]*. The underlying idea is that successive "stages" or periods (*époques*) of history exhibit, in turn, *successive principles*, and that only at the end of the series will the opposed principles come into a harmonious interrelation. As Proudhon put it, "while in nature the synthesis of contraries is contemporaneous with their opposition, in society the antithetic elements seem to be produced at long intervals, and to be resolved only after long and tumultuous agitation. *Because science is supposed to grasp the series, it must proceed through the elements of the series in turn, showing how the partial <u>summation</u> of the series, including any element on its own, is self-contradictory and inadequate [emphases by K.S.].... Hence science, in Proudhon's sense, must proceed methodically, following a determinate path, and may be said to pass from appearances -- the partial aspects of the world presented by each <i>époque --* to the reality of the whole series. As Proudhon put it, "to explain the system of the world, ... one must leave the circle of appearances." This is the task Proudhon tried to accomplish...."

In his book <u>*Revolutionary Justice*</u>: *The Social and Political Theory of P.-J. Proudhon*<sup>2</sup>, Robert L. Hoffman further elucidates the "serialist" aspect of the Fourierian and Proudhonian ideolog*ies* --

"In his [Proudhon's] time scientific method had been well developed in practice, but no one had yet analyzed the essentials of the method as fully as was needed for further innovative work. Like most ... in the intellectual tradition stemming from the French Enlightenment, Proudhon is very much impressed with natural science's powers of discovery. He is especially drawn to the taxonomical accomplishments of biology, which do *not* [yet -- K.S.] rely on controlled experiment and mathematical analysis, as do developments in the physical sciences. He consciously tries to do the same kind of thing for social science. The elements of this taxonomy are to be discovered through the observation of social structure in historical development: "the experience of the past is the science of the future."

"These elements cannot be comprehended independently, but only when put together in a <u>synthesis</u>. To make the <u>synthesis</u> Proudhon tries at this time to adapt the "<u>serial method</u>" of Fourier, using it in <u>combination</u> with his own version of <u>dialectic philosophy</u> [emphases by K.S.]. ...both methods claim an empirical basis in the study of historical process .... ...his conception of humanity's growth through time is vital to his theory of society. The conception is one of man making himself through the course of history in a succession of stages [emphases by K.S.]. The stress on mankind's active role ... is essential: Proudhon rejects both fatalism and any idea that history is made by exceptional men or by God."

"His efforts at developing a systematic method turn upon determination of the mechanism by which these historical stages succeed one another. This would simultaneously define the essential character of social dynamics in any particular stage. In *Création de l'ordre he takes notions of <u>an ordered series of connected developments</u> from Fourier [emphases by K.S.], together with an idea of "antinomy" (contradiction) which comes from his reading of Kant, but differs from the German's conception. By these he describes a process of historical movement through the interaction of contradictory opposites. This method he further refines in the <i>Système des contradictions économiques*, with a pseudo-Hegelian dialectic employed to complete the theory."

"...Many of his [Proudhon's] thoughts about contradiction in society are astute, but he is not able to integrate them into a complete system. ...Marx's dialectical and historical materialism [K.S.: neither are Marx's terms] is similar in approach though not in execution, but he [Marx] knows better what a systematic social science should be."

 <sup>&</sup>lt;sup>1</sup>Willian Clare Roberts, <u>Marx's Inferno</u>: The Political Theory of <u>Capital</u>, Princeton: Princeton University Press, 2017, p. 36.
 <sup>2</sup>Robert L. Hoffman, <u>Revolutionary Justice</u>: The Social and Political Theory of P.-J. Proudhon, Urbana: University of Illinois Press, 1972, pp. 106-107.


Suppose that such a "series", as an "ordered succession of elements", and of elements which are also "successive principles", is formulated as a "<u>non</u>-amalgamative sum" of symbols. Suppose also that these symbols represent those "purely"-<u>qual</u>itative serial "elements" or "principles", as <u>qual</u>itatively-superposed' serial terms/signs. Suppose further that such a series is also a "non-reducing", "<u>non</u>-amalgamative series-sum" of such signs, each sign representing a <u>qual</u>itatively distinct, even all-others-opposing ontological <u>category</u>, i.e., an ontic <u>arithmos</u> [a <u>quantitatively-indefinite ontological "number</u>" - the <u>indefinite number</u> of ontological units of the given ontological category]. If so, then the descriptions, above, of Proudhon's sought "serial" method, also describe the F.<u>E.D.</u> Q dialectical method.

Note that these description<u>s</u> make no sense unless each successive "element" or "principle" denotes **not** an abstract, exact, "purely"-<u>**quant**</u>itative "number", but, instead, a **<u>qual</u>**itative [<u>ev</u>]entity; an <u>«arithmos</u>» of <u>«monads</u>» -- a ""number"' in the <u>**qual**</u>itative sense of an **ontological** <u>«arithmos</u>», made up out of an <u>in</u>definite/<u>un</u>known exact count or census of its own, definite, <u>specific</u>, characteristic <u>**qual**</u>ity of <u>«monads</u>». This means an <u>«arithmos</u>» that is thus ontologically, <u>**qual**</u>itatively different vis-a-vis the definite, <u>specific</u>, characteristic <u>**qual**</u>ity of the <u>«monads</u>» or <u>units</u> implicitly referred-to by **any other** such "element" or "principle", i.e., by **any other** such ontological category.

## 6. <u>Dialectic</u> is Categorial and [SELF-]Combinatoric.

Marxian, <u>demystified <u>dialectic</u>[al logic] is <u>categorial</u> -- **not** <u>propositional</u> in the sense of <u>formal</u> logic. In either its mode as systematic dialectic or its mode as historical dialectic, its content is, at root, a dialectical progression of ontological categor<u>ies</u>. Of course, that sequence of categor<u>ies</u> can be translated into a progression of proposition<u>s</u>, e.g., in a textual narration and elaboration of that dialectical categorial progression. But the ontological <u>categorial</u> progression remains the core content of dialectic.</u>

Moreover, dialectical categorial progressions are <u>combinatoric</u>. Subsequent, new, <u>un</u>precedented dialectical categor<u>ies</u>, in a given dialectical categorial progression, arising after that progression's starting category, emerge by "combination" of <u>precedent</u>ed categor<u>ies</u> in that progression. But it should **not** be thought that such "combination" means a merely external connection among mutually alien and disparate, separately self-subsistent categor<u>ies</u>. All categor<u>ies</u> in such a dialectical categorial progression are internally interconnected, and 'meta-genealogically' related, in a relation that traces back to the starting category of that progression, as 'ultimate ancestor category', and as "ever-present origin".

Furthermore, a dialectical ontological categorial progression depends, for its progress -- for its continuing disclosure of new ontology -- upon the '<u>contra</u>-Boolean' dialectical process and/or relation of '<u>self</u>-combination',  $\mathbf{x}[\mathbf{x}]\mathbf{x} = \mathbf{x}[\mathbf{+}]\Delta\mathbf{x}$ ,  $\mathbf{x}^2 \notin \mathbf{x}$ , opposing the Boolean  $\mathbf{x}^2 = \mathbf{x}$  -- the Boolean "fundamental law of thought" or "law of duality" -- typically by way of '*«aufheben» self*-meta-unit-ization'. Examples of this abound, including that of the 'self-combinatory', cosmo-<u>historical</u> irruption, by any sufficiently-densified *«arithmos»* of "sub-atomic particle" units, in their native context, from out of themsel<u>ves</u>, of atom units, in their native context, from out of themsel<u>ves</u>, of atom units, in their native context, from out of themsel<u>ves</u>, of atom units, in their native context, from out of themsel<u>ves</u>, of atom units, in their native context, from out of themsel<u>ves</u>, of atom units, in their native context, from out of themsel<u>ves</u>, of atom units, in their native context, from out of themsel<u>ves</u>, of molecule units, ..., or of the <u>contemporaneous</u> <u>co</u>-existence of higher units, word units, in everyday texts, together with <u>un</u>incorporated, separated individual letter units, such that each typical word unit is made up out of a heterogeneous multiplicity of <u>phon</u>etic, '<u>phon</u>ogramic' letter units.

The <u>mystified</u> dialectic of Plato, with its contra-empirical posit of an eternal, statical, absolutely immutable and immaterial realm of transcendental «<u>eide</u>» or «<u>ideac</u>», was nevertheless <u>categorial</u>. Plato's "kind<u>s</u>" «<u>eide</u>», e.g., his «<u>gene</u>», were <u>categorial</u>. They were also ontological, each "ruling" a "kind of being". They were even <u>arithmetical</u> -- as per o<u>ur</u> term '<u>«arithmos</u>»-etical', as well as «<u>asumbletoi</u>»: "<u>un</u>addable". He called them "the «arithmo<u>i</u> <u>eide</u>tikoi»". They were also <u>combinatoric</u>, but in an external, '<u>non-meta-genealogical</u>' way.

The <u>mystified</u> dialectic of Hegel, too, was <u>categorial</u> and <u>ontological</u>. Each of Hegel's major, mature philosophical work<u>s</u>, whether on «Logik», on «Natur», or on «Geist» [i.e., on humanity], including on 'philosophical socio-politicaleconomy' [e.g., Hegel's **1821** <u>Philosophy of Right</u>], takes the form of Hegel's narration of a dialectical progression of ontological categor<u>ies</u>, and of ontological categor<u>ies</u> which are <u>in</u>ternally <u>in</u>terconnected, 'meta-genealogically' related, and mutually <u>qual</u>itatively differentiated; <u>qual</u>itatively different from one from another. Hegel's categories are also "self-developing" and "self-determining" for human cognition.

Had it not been for Plato's emphasis on the term 'dialectic', the content of dialectic might possibly have come down to us as, precisely, per practices called '*categorial* [self-]*combinatorics*', based upon human observations of the categorial basis of human cognition. However, it is a telling point that so many of humanity's major thinkers -- e.g., Plato, Aristotle, Kant, Fichte, Schelling, Hegel, and Marx -- desired to associate their thinking, or at least aspects of their thinking, with the term "dialectic", despite the seemingly vast variability of the meaning of that term, in detail, in their hands, versus in the hands of the others who also adopted that name for [aspects of] their work, even demeaning connotations in Kant's case.

If there are but three ways in which deep change, e.g., '[physio-]ontological' historical change, can occur --

(1.) by the initial and initiating irruption of «arché-monad<u>s</u>» of a new ontic **D**omain itself, forming its «arché-arithmos»; (2.) by the irruption of <u>self</u>-hybrid neo-«monad<u>s</u>»' within an already initiated **D**omain, starting with the new «arithmos» of «monad<u>s</u>» formed by the <u>self</u>-hybridization' of that **D**omain's «arché-monad<u>s</u>»;

(3.) by the irruption of '<u>mere</u>-hybrid neo-«monad<u>s</u>»' -- i.e., of 'hybrid monadization' & 'monadic hybridization' -- within an already-established <u>**D**omain</u>, as a 'second-degree meta-«arithmos»', made up out of multiple 'first-degree «arithmo<u>i</u>»' or ontological categor<u>ies</u>, i.e., by various combination<u>s</u> among 'precedingly-irrupted' distinct kind<u>s</u> of '<u>self</u>-hybrid' older «monad<u>s</u>», sometime<u>s</u> including in those combination<u>s</u> some of the remaining <u>un</u>assimilated «arché-monad<u>s</u>» themsel<u>ve</u>s. -- then a 'categorial <u>self</u>-and-<u>other</u>-combinatorics can encompass, reconstructively <u>and even predictively</u> -- all three of these mode<u>s</u> of deep, ontological, kind-of-being change -- the <u>a</u>periodic irruption of new kind<u>s</u> of being in our cosmos. NB: Mode of 'onto-dynamasis' (**1**.) often results from culminating &/or **<u>D</u>omain**-transcending case<u>s</u> of mode (**2**.) or (**3**.), that begin within a prior **<u>D</u>omain**, but that exceed that prior **<u>D</u>omain**, in the launching of a new ontological **<u>D</u>omain**. If deep, ontological change, and deep, ontological progress arises from <u>monadic</u> combinatorics, including from <u>monadic</u> <u>'self-combinatorics</u>', as represented, per this method, and per other<u>s</u>, by <u>categorial</u> [<u>self-</u>]combinatorics, then <u>future</u> ontology-state<u>s</u> of our universe as a whole, and of its [<u>sub-</u>]**D**omain<u>s</u>, assuming that our past experience of monadic/categorial <u>combinatorics</u> will continue into the <u>future</u>, might be predictable, at least at the level of ontological categor<u>ies</u>.

That is, an algorithm that generates <u>new categorial</u> combinations, combining and <u>'self</u>-combining' the categor<u>ies</u> that have arisen in the most recent <u>past</u> – also taking into mind the <u>monadic</u> combinatorics and <u>'self</u>-combinatorics' that those new categorial [<u>self</u>-]combinations intimate -- might regularly, if **not** 'exceptionlessly', generate new symbols, connoting new 'categor<u>ies</u> of units' that might often <u>anticipate</u> new ontology that will <u>actually</u> manifest in the <u>future</u>.

This is the basis of o<u>ur</u> expectation<u>s</u> regarding the potential predictive power of the 'universal algorithmic-heuristic categorial-combinatoric ideographical dialectical method' that is presented herein.

## 7. Marx's own <u>Dialectical Method -- How Algorithmic Is It?</u>

W<u>e</u> regard the relative ease with which w<u>e</u> can model key aspects of Marx's outlines of contents, for the <u>Capital</u> portion of his critique of political economy, and for that critique as a whole, *albeit imperfectly* in both cas<u>es</u>, using the  $\underline{NQ}$  arithmetic for dialectic, via the 'dyadic dialectical function' and the 'triadic dialectical function' alike, to be *prima facie* 

evidence that Marx consciously employed *a kind of* heuristic algorithm in shaping 'content-structures' in his key texts.

W<u>e</u> do **not** believe that Marx's 'dialectical heuristic' was as <u>exactingly</u> algorithmic as any that would arise on the basis of an undergirding <u>generic</u> axiomatic arithmetic, such as the  $\sum_{n=1}^{n} Q_{n}$  generic axiomatic arithmetic.

However, further evidence of the <u>partial</u> 'algorithmicity' of Marx's dialectic arises from Marx's rather frequent references to "my dialectical method", in the <u>Grundrisse</u><sup>1</sup>, in his **1873** "Afterword to the Second German Edition"<sup>2</sup> of <u>Capital</u>, volume I, and in his letters<sup>3</sup>, including those letters in which Marx repeatedly states his intention to write a text on dialectical method, intended to make that method accessible for "the common reader".

Moreover, in *The Poverty of Philosophy*<sup>4</sup> of **1847**, Marx describes Hegel's dialectical method, in conjunction with that of Proudhon -- albeit in an ironic, satirical, and sarcastic mode -- as a *highly algorithmic* procedure, which suggests that Marx was aware of *the algorithmic dimension* of dialectic early-on, and that, in the fruition of Marx's own dialectical, immanent critique of Hegel's, "mystified", dialectic, Marx may have '*«aufheben»*-conserved' a realistic, *de*mystified version of that 'algorithmicity'; of '*Hegel's own algorithm for dialectic*'--

"If he [Proudhon] has the advantage over Hegel of setting problems which he reserves the right of solving for the greater good of humanity, he has the drawback of being stricken with sterility when it is a question of engendering a new category by dialectical birth-throes. What constitutes dialectical movement is the coexistence of two contradictory sides, their conflict, and their fusion into a new category. ..."

"It is of this absolute method that Hegel speaks in these terms: "Method is the absolute, unique, supreme, infinite force, which no object can resist; it is the tendency of reason to find itself again, to recognize itself in every object." (*Logic*, Vol. III.)... So what is this absolute method? The abstraction of movement. ... The purely logical formula of movement or the movement of pure reason. Wherein does this movement of pure reason consist? In posing itself, opposing itself, composing itself; in formulating itself as thesis, antithesis, synthesis; or, yet again, in affirming itself, negating itself and negating its negation."

"... But once it has managed to pose itself as a thesis, this thesis, this thought, opposed to itself, splits up into two contradictory thoughts -- the positive and the negative, the yes and the no. The struggle between these two antagonistic elements comprised in the antithesis constitutes the dialectical movement. The yes becoming no, the no becoming yes, the yes becoming both yes and no, the no becoming both no and yes, the contraries balance, neutralize, paralyze each other."

"The fusion of these two contradictory thoughts constitutes a new thought, which is the synthesis of them. This thought splits up once again, into two contradictory thoughts, which in turn fuse into a new synthesis. Of this travail is born a group of thoughts. This group of thoughts follows the same dialectic movement as the simple category, and has a contradictory group as antithesis. Of these two groups of thoughts is born a new group of thoughts, which is the synthesis of them."

"Just as from the dialectic movement of the simple categories is born the group, so from the dialectic movement of the groups is born the series, and from the dialectic movement of the series is born the entire system."

We have also the testimony<sup>5</sup> of Paul Lafargue regarding Marx's method which -- assuming that Paul Lafargue, as he himself noted, did *not* comprehend Marx's method with profundity -- sounds rather dialectical, even if only vaguely so:

<sup>&</sup>lt;sup>1</sup>[See, for example, Karl Marx, <u>*Grundrisse*</u>, *ibid.*, pp. **460-461**].

<sup>&</sup>lt;sup>2</sup>[Karl Marx, <u>*Capital*</u>, volume I, *ibid*., pp. **17-20**].

<sup>&</sup>lt;sup>3</sup>[See Marx to Engels, **16** January **1858**; Marx to Dietzgen, **09** May **1868**; Marx to Dietzgen, Dec. **1875**].

<sup>&</sup>lt;sup>4</sup>[Karl Marx, *The Poverty Of Philosophy*, International Publishers, New York, **1967**, pp. **112**; **107-108**].

<sup>&</sup>lt;sup>5</sup>[Paul Lafargue, "Reminiscences of Marx", in <u>Marx and Engels Through the Eyes of Their Contemporaries</u>, Progress Publishers, **1972**].

"He [Marx] saw not only the surface, but what lay beneath it. He examined all the constituent parts in their mutual action and reaction; he isolated each of those parts and traced the history of its development. Then he went on from the thing to its surroundings and observed the reaction of one upon the other. He traced the origin of the object, the changes, evolutions and revolutions it went through, and proceeded finally to its remotest effects. He did not see a thing singly, in itself and for itself, separate from its surroundings: he saw a highly complicated world in continual motion. His intention was to disclose the whole of that world in its manifold and continually varying action and reaction."

Paul Lafargue's description, above, is silent regarding the categorial character of Marx's method. It, therefore, rings as if that method addresses only the life of individual objects, the life of each one, separately, of the typically innumerable «*monads*» that constitute the 'implicitude' of their «*arithmoi*»: a dialectic of the «*monad*» alone. That is, it is *not* an '*«arithmos*»-etical' mode of analysis that Lafargue describes; *not* a categorial mode. But it is the purpose of the more abstract level of the dialectical, ontological categor<u>ies</u> to represent, <u>collectively</u>, <u>summarily</u>, the more concrete level of the «*monads*», and to proxy their movements. This is, in part, because the limitations of human cognitive capability make it, of course, impossible for the abstraction-<u>un</u>aided, categorially-<u>un</u>aided human mind to follow, concurrently, individually and in detail, the life-history of every single «*monads*» of every single key kind/*«arithmos*».

## 8. <u>Dialectically Modeling a Text's Writer's-Outline/Table of Contents</u>, <u>Prospectively</u>, during its Planning.

We have already seen, via our "'Paradigmatic Example", in the first section of this text, how the  $\mathbb{N}^{Q}$  dialectical method can be used to capture, i.e., to dialectically-mathematically *model*, <u>retro</u> spectively, significant portions of the well-ordered contents of a text -- including of the *table of* contents of a text -- that has already been written, and published. The text, in that case example, was Marx's <u>Capital</u>. Marx stated that he designed this text to be a "dialectically organized" treatise.\*

We have also seen, in our 'Second Marxian Example', later in that same section, how the NQ method can help to generate

hypothes<u>es</u> as to the "'subjunctive'", "would have been" content of a <u>pro</u>spective, dialectically-organized text, whose plan was never fully carried out, and whose plan was only ever outlined, by its planner, in the tersest of term<u>s</u>. That plan was, again, Marx's plan for his six(+) treatise '*critique of capitalist political-economics entire*', of which the four extant volumes of <u>Capital</u> were to have constituted only the first of these six(+) treatise<u>s</u>.

In this commentary, w<u>e</u> address the ways in which the  $\mathbf{v}_{\mathbf{v}}$  'universal algorithmic-heuristic categorial-combinatoric

*ideographical dialectical method* ' can be used, again, <u>pro</u>spectively, but so as to help an author -- who is in planning to compose a textual exposition of a certain subject-matter **D***omain* -- to generate, in advance, a "dialectically organized" outline for even the whole of that planned text, to help to guide that author in the actual writing of that text.

<u>Example 8.a</u>. For our first example of this <u>pro</u>spective, text-design use of the  $\mathbb{N}^{Q}$  dialectical method, let us consider the, rather technical, mathematical topic-area, or subject-matter <u>Domain</u>, of standard "<u>Linear Algebra</u>", D = LA.

So, therefore, let's begin our presentation-design for the "Linear Algebra" Domain with an outline-plan to first present the category of scalars, <u>S</u>. Let's call our planned exposition of this element "step **0**" of our presentation, and associate its single 'category symbol' content with the <u>generic</u>  $\mathbb{N}^{\mathbb{Q}}$  'dialectical meta-number'  $\mathbf{q}_1$ :  $\mathbf{S} \equiv \mathbf{q}_s$  [--)  $\mathbf{q}_1$ .

To derive our step **1** categorial content, which will comprise **2** categor<u>ies</u> total, with **1** <u>new</u> category, we need to solve for the <u>specific</u>, "<u>Linear Algebra</u>" category that corresponds to the <u>gen</u>eric  ${}_{NQ}$  'meta-numeral'  ${\bf q}_2$ . <u>Specific</u> subscript 's' corresponds to <u>gen</u>eric subscript '1'. Thus, the way to "add '1' – '''correspondingly''' -- to <u>gen</u>eric 'meta-numeral'  ${\bf q}_1$ , thus reaching to  ${\bf q}_2$ , is to add 's' to the corresponding <u>specific</u>, **D** = LA 'category symbol',  ${\bf q}_s$ , initially forming <u>one</u> <u>un</u>solved, 'algebraic-<u>un</u>known' second category-symbol:  ${\bf q}_{ss}$  [-)  ${\bf q}_{1+1} = {\bf q}_2$ .

Now, category-symbol ' $\underline{\mathbf{q}}_{ss}$ ' represents the net result of a single '''self-involution''' of the unit<u>s</u> of category  $\underline{\mathbf{q}}_{s}$ , thereby forming a new category, of higher unit<u>s</u>. Typically, the unit<u>s</u> of category  $\underline{\mathbf{q}}_{ss}$  will be '<u>meta</u>-unit<u>s</u>' of/to category  $\underline{\mathbf{q}}_{s}$  unit<u>s</u>. That is, each unit of category  $\underline{\mathbf{q}}_{ss}$  should be a 'meta-scalar', each one made up out of a <u>multiplicity</u> of  $\underline{\mathbf{q}}_{s}$ , "scalar", unit<u>s</u>.

Well, the "Linear Algebra" 'idea-objects' known as "vectors" would appear to "fill this bill". For example, consider the, "8-dimensional", "row vector" [1 9 9 9 1 1 2 5]. Is it *not* a 'meta-scalar' unit, made up out of a multiplicity of, in this individual case, 8 distinct scalar units, now become its <u>(sub-units</u>) or <u>(sub-elements</u>?

Therefore, let us solve ['|="] as follows:  $\underline{\mathbf{q}}_{ss}$  |=  $\underline{\mathbf{q}}_{v}$  [-)  $\underline{\mathbf{q}}_{2}$ , and design the categorial content 'consecuum-cumulum' of step 1 of our presentation so as to fulfill our "shorthand" representation of that content, namely ()  $\underline{\mathbf{q}}_{s} \oplus \underline{\mathbf{q}}_{v}$ ().

<sup>\*[</sup>Letter, Marx to Engels, **31** July **1865**].

To derive our step 2 categorial content, which will comprise 4 categor<u>ies</u> total, including 2 <u>new</u> categor<u>ies</u>, we need to solve for the <u>specific</u>, "<u>Linear Algebra</u>" categor<u>ies</u> that correspond to the <u>generic</u>  ${}_{NQ}$  'meta-numeral<u>s</u>'  $\underline{\mathbf{q}}_{3}$  and  $\underline{\mathbf{q}}_{4}$ . <u>Specific</u> subscript 's' corresponds to <u>generic</u> subscript '1'. Thus, the way to "add '1' – "'correspondingly''' -- to the subscript of, e.g. <u>generic</u> 'meta-numeral'  $\underline{\mathbf{q}}_{2}$ , is to add 's' to the <u>most advanced</u> corresponding <u>specific</u>,  $\mathbf{D} = \mathbf{LA}$  category-symbol's subscript from step 1, namely  $\underline{\mathbf{q}}_{V}$  [--)  $\underline{\mathbf{q}}_{2}$ , thereby forming <u>two un</u> solved, 'algebraic-<u>un</u>known', <u>third</u> and <u>fourth</u> category-symbol<u>s</u>:  $\underline{\mathbf{q}}_{VS}$  and  $\underline{\mathbf{q}}_{VSS}$ .

Now, category  $\mathbf{q}_{VS}$  [--)  $\mathbf{q}_3$  should be about how unit<u>s</u> of  $\mathbf{q}_V$  [--)  $\mathbf{q}_2$  and  $\mathbf{q}_S$  [--)  $\mathbf{q}_1$  combine. W<u>e</u> therefore solve this category-symbol as signing the category and topic of "'Vector/Scalar Operation<u>s</u>'", e.g., including the rule<u>s</u> for the multiplication of a <u>V</u>ector by a <u>S</u>calar [and of a <u>S</u>calar by a <u>Vector</u>, as per  $\mathbf{q}_{SV}$  [--)  $\mathbf{q}_3$ ].

Our prior solutions place a kind of 'consistency-constraint' on our solution for algebraic-<u>unknown category-symbol</u>

We have already solved/defined  $\underline{\mathbf{q}}_{ss} \models \underline{\mathbf{q}}_{v}$ . Thus, the 'ss' component of  $\underline{\mathbf{q}}_{vss}$  should also be replaced by 'v'. This yields a <u>part</u>ial ['<u> $\partial$ </u>'], still ''<u>bi</u>-vocal''', solution:  $\underline{\mathbf{q}}_{vss} \underline{\partial} \models \underline{\mathbf{q}}_{vv}$ .

Now, category-symbol ' $\mathbf{g}_{vv}$ ' represents part of the net result of a second '''self-involution''' of the unit<u>s</u> of category  $\mathbf{g}_{s}$ , thereby forming yet a new category, of higher unit<u>s</u>. Typically, the unit<u>s</u> of category  $\mathbf{g}_{vv}$  will be '<u>meta</u>-unit<u>s</u>' of/to the category  $\mathbf{g}_{v}$  unit<u>s</u>. That is, each unit of category  $\mathbf{g}_{vv}$  should be a 'meta-vector', each one made up out of a <u>multiplicity</u> of  $\mathbf{g}_{v}$ , "**vector**", unit<u>s</u>, now become **its** '<u>sub</u>-unit<u>s</u>' or '<u>sub</u>-element<u>s</u>'.

Well, the "Linear <u>Algebra</u>" 'idea-objects' known as "two-dimensional matrices" would appear to "fill this bill". For example, consider the, "square", "<u>Matrix</u>" --

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Is it *not* a 'meta-vector', made up out of a multiplicity of -- a "stack" or "pile" of -- in this individual case, **3** distinct "row vector" 'sub-elements', or, alternatively, made out of a "deck" of **3** distinct, juxtaposed "column vector" 'sub-elements?

Therefore, let us solve as follows:  $\underline{\mathbf{q}}_{\mathbf{V}\mathbf{V}} \models \underline{\mathbf{q}}_{\mathbf{M}} \models \underline{\mathbf{q}}_{\mathbf{q}}$ , and design the categorial content 'consecuum-cumulum' of step 2 of our presentation so as to fulfill our "shorthand" representation of that content, namely ()  $\underline{\mathbf{q}}_{\mathbf{s}} \oplus \underline{\mathbf{q}}_{\mathbf{V}} \oplus \underline{\mathbf{q}}_{\mathbf{V}\mathbf{s}} \oplus \underline{\mathbf{q}}_{\mathbf{M}}$  ().

To derive our step **3** categorial content, which will comprise **8** categor<u>*ies*</u> total, with **4** <u>*new*</u> categor<u>*ies*</u>, we need to solve for the <u>speci</u>fic, **D** = "<u>Linear Algebra</u>" categor<u>*ies*</u> that correspond to the <u>gen</u>eric  $\mathbf{NQ}$  'meta-numeral<u>s</u>'  $\mathbf{q}_{\mathbf{5}}$ ,  $\mathbf{q}_{\mathbf{5}}$ ,  $\mathbf{q}_{\mathbf{5}}$ ,  $\mathbf{q}_{\mathbf{5}}$ , and  $\mathbf{q}_{\mathbf{8}}$ .

<u>Specific</u> subscript 's' corresponds to <u>gen</u>eric subscript '1'. Thus, the way to "add '1' - "" correspondingly" -- to the subscript of <u>gen</u>eric 'meta-numeral'  $\mathbf{q}_4$  is to add 's' to the <u>most advanced</u> corresponding <u>specific</u>,  $\mathbf{D} = \mathbf{LA}$  category symbol's subscript from step 2,  $\mathbf{q}_{\mathsf{M}}$  [-)  $\mathbf{q}_4$ , initially forming *four <u>new</u>*, <u>un</u>solved, 'algebraic-<u>un</u>known' category-symbols, the *fifth*, *sixth*, *seventh* and *eighth* category-symbols of this categorial progression:  $\mathbf{q}_{\mathsf{MSS}}$ ,  $\mathbf{q}_{\mathsf{MSSS}}$  and  $\mathbf{q}_{\mathsf{MSSSSS}}$ .

Category  $\underline{\mathbf{q}}_{MS}$  [---)  $\underline{\mathbf{q}}_{5}$  should be about how units of  $\underline{\mathbf{q}}_{M}$  [---)  $\underline{\mathbf{q}}_{4}$  and  $\underline{\mathbf{q}}_{S}$  [----)  $\underline{\mathbf{q}}_{1}$  combine. We therefore solve this categorysymbol as signing the category and topic of "'Matrix/Scalar Operations''', e.g., including the rules for the multiplication of a Matrix by a Scalar, as per  $\underline{\mathbf{q}}_{SM}$  [-----)  $\underline{\mathbf{q}}_{5}$  [and the rules for the "multiplication" of a Scalar by a, Matrix, as per  $\underline{\mathbf{q}}_{MS}$  [-----)  $\underline{\mathbf{q}}_{5}$ ].

Our prior solutions place a kind of 'consistency-constraint' on our solution for algebraic-<u>unknown category-symbol</u>

We have already defined/solved  $\underline{\mathbf{q}}_{ss} \models \underline{\mathbf{q}}_{v}$ . Thus, the 'ss' component of  $\underline{\mathbf{q}}_{MSS}$  should also be replaced by 'v'. This yields a <u>part</u>ial [ $\underline{\mathbf{a}}$ ], still ''<u>bi</u>-vocal''', solution:  $\underline{\mathbf{q}}_{MSS} \underline{\partial} \models \underline{\mathbf{q}}_{Mv}$ . Category  $\underline{\mathbf{q}}_{Mv} \models \underline{\mathbf{q}}_{6}$  should be about how units of categor<u>ies</u>  $\underline{\mathbf{q}}_{M} \models \underline{\mathbf{q}}_{4}$  and  $\underline{\mathbf{q}}_{v} \models \underline{\mathbf{q}}_{2}$  combine. We therefore solve this category-symbol as signing the category and topic of '''Matrix/Vector Operations''', e.g., including the rules for the multiplication of a Vector by a Matrix,  $\underline{\mathbf{q}}_{Mv} \models \underline{\mathbf{q}}_{6}$ .

Our prior solutions also place a 'consistency-constraint' on our solution for algebraic-<u>un</u>known category-symbol  $\mathbf{q}_{MSSS}$ . Again, we have already defined/solved  $\mathbf{g}_{SS} \models \mathbf{g}_{V}$ . Thus, the initial 's' component of  $\mathbf{q}_{MSSS}$  should also be replaced by 'v'. This yields a '<u>tri</u>-vocal' <u>part</u>ial solution:  $\mathbf{g}_{MSSS} \underline{\partial} \models \mathbf{g}_{MVS}$ . Thus, category  $\mathbf{g}_{MVS} \models \mathbf{g}_{T}$  should be about how units of  $\mathbf{g}_{M} \models \mathbf{g}_{4}$  and of  $\mathbf{g}_{V} \models \mathbf{g}_{2}$  and of  $\mathbf{g}_{S} \models \mathbf{g}_{1} = \mathbf{g}_{MVS}$ . Thus, category symbol as signing the category and the topic of ''Matrix/Vector/Scalar Operations''', e.g., of 'eigenvector/eigenvalue equations' of the form 'm×v = s×v', e.g., for those cases of Matrices, Vectors, and Scalars for which 'matrix times vector equals scalar times same-vector'.

Now, category-symbol ' $\underline{\mathbf{q}}_{MSSSS}$ ' represents part of the net result of a third '''self-involution''' of the unit<u>s</u> of category  $\underline{\mathbf{q}}_{s}$ , thereby, per o<u>ur</u> interpretation, forming a <u>new</u> category, of yet <u>higher</u> [more 'determination<u>s</u>-rich'] unit<u>s</u>.

Because we have already, earlier, defined/solved  $\mathbf{g}_{SS} \models \mathbf{g}_{V}$ , consistency with that earlier solution requires that we replace each occurrence of  $\mathbf{s}_{SS}$  in  $\mathbf{g}_{MSSSS}$  by  $\mathbf{v}'$ . This yields the <u>tri</u>-vocal <u>part</u>ial solution  $\mathbf{g}_{MSSSS} \underline{\partial} \models \mathbf{g}_{MVV}$ . Because we have already, earlier, defined/solved  $\mathbf{g}_{VV} \models \mathbf{g}_{M}$ , consistency with that earlier solution requires that we replace the one occurrence of  $\mathbf{v}_{V}$  in  $\mathbf{g}_{MVV}$ , by  $\mathbf{v}_{M}$ . This yields the <u>bi</u>-vocal <u>part</u>ial solution  $\mathbf{g}_{MVV} \underline{\partial} \models \mathbf{g}_{MM}$ .

Typically, the unit<u>s</u> of category  $\underline{\mathbf{q}}_{MM}$  will be '<u>meta</u>-unit<u>s</u>' of/to the category  $\underline{\mathbf{q}}_{M}$  unit<u>s</u>. That is, each unit of category  $\underline{\mathbf{q}}_{MM}$  should be a 'meta-matrix', each one made up out of a heterogeneous <u>multiplicity</u> of  $\underline{\mathbf{q}}_{M}$ , "matrix", unit<u>s</u> as <u>its</u> <u>sub</u>-unit<u>s</u>.

Well, the "Linear Algebra" 'idea-objects' known as "three-dimensional arrays" would appear to "fill this bill". For example, consider a "stack", or a "deck", of *three* "two-dimensional", "square", "<u>Matrices</u>", as layers, "stacked", each atop the other, or "decked", each next to the other --

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Is that "stack" or "deck" of *three* "two-dimensional", "square" matrix "layer<u>s</u>" not a 'meta-matrix', made up out of a heterogeneous multiplicity of -- in this individual case -- **3** distinct "two-dimensional" "matrix" '<u>sub</u>-element<u>s</u>"?

Therefore, let us name such 'meta-matrices' '''<u>Arrays</u>''', and solve as follows:  $\mathbf{\underline{q}}_{MM} \models \mathbf{\underline{g}}_{A} \models \mathbf{\underline{g}}_{B}$ , and then design the categorial content 'consecuum-cumulum' narrative of step **3** of our systematic presentation so as to fulfill our "shorthand" representation of that content, namely  $-\mathbf{\underline{D}}_{3} = (\mathbf{\underline{g}}_{S})^{2^{3}} \mathbf{\underline{\partial}} \models (\mathbf{\underline{g}}_{S} \oplus \mathbf{\underline{g}}_{V} \oplus \mathbf{\underline{g}}_{VS} \oplus \mathbf{\underline{g}}_{MS} \oplus \mathbf{\underline{g}}_{MV} \oplus \mathbf{\underline{g}}_{MVS} \oplus \mathbf{\underline{g}}_{A}$ ().

These steps and solutions are visualized via the images posted on the next four pages. The first image presents an eight dialectical species 'dialectogram' for this <u>systematic</u> dialectic, or <u>method of presentation</u> dialectic, in 'Platonian format'. That is, its format is such that the vertically higher category-unit "circle" represents the more <u>general</u>, more abstract category, while those "circles" below that higher "circle" represent more complex, more determinations-rich, more 'thought-concrete' categor<u>ies</u>. The second image provides a 'solution specification', for our step **3** solution. The third image presents the  $\underline{D}_3$  series as a *pro forma* table of contents for a text on "Linear Algebra". The fourth and final image presents an 'octadic dialectogram' for the <u>systematic</u> dialectical <u>method of presentation</u> of the  $\underline{D}_3$  equation-solution in step-by-step 'Marxian\* format', i.e., with its ever higher "circles" representing ever more 'thought-concrete' categor<u>ies</u>.

<sup>\*[</sup>Marx, <u>Grundrisse</u>, ibid., pp. **100-101**].



#### Commentary on the 'dialectogram' above.

The 'dialectogram' above illustrates both the '<u>merely</u>-hybrid' and the '<u>self</u>-hybrid' categor<u>ies</u> of our systematic dialectic of linear algebra, to presentation step **3**. It depicts the four '<u>merely</u>-hybrid' categor<u>ies</u> of this octadic dialectic --  $\mathbf{q}_{VS} \oplus \mathbf{g}_{MV} \oplus \mathbf{g}_{MVS}$ .

It also depicts the three <u>'self</u>-hybrid' categor<u>ies</u> --  $\mathbf{q}_{ss}$  |-=  $\mathbf{q}_{v}$ ,  $\mathbf{q}_{vv}$  |-=  $\mathbf{q}_{M}$ , and  $\mathbf{q}_{MM}$  |-=  $\mathbf{q}_{A}$ . And, of course, it begins, at its lower <u>L</u>eft-<u>H</u>and <u>S</u>ide [LHS] by depicting the '*«arché*»-category' or *starting <u>ide</u>o*-ontic category of this dialectic, <u>Scalars</u>:  $\mathbf{q}_{s}$  [---)  $\mathbf{q}_{1}$ .

The above description addresses the particular,  $\mathbf{D} = \mathbf{LA} \underline{\mathbf{D}}omain$ -<u>specific</u> content of this 'dialectogram'. But this 'dialectogram' also instances a more <u>gen</u>eral principle of dialectic. That principle is the key to our 'Unified Theory of Universal Dialectic'. It is the <u>pictorial principle of what we</u> call '<u>Bi</u>-Axial Dialectic'.

'Vertical Dialectic' is o<u>ur</u> term for the 'upward' <u>speci</u>es of <u>aufheben</u>' meta-unit-icity'. This 'vertical' <u>speci</u>es is the <u>speci</u>es of 'meta-unit-icity' by which the "circle<u>s</u>" below, in such -- 'Platonian format' -- 'dialectogram<u>s</u>', e.g., the <u>relative</u> 'species circle<u>s</u>', as 'categorogram<u>s</u>' depicting categor<u>ies</u> grasped as unit<u>s</u> in their own right [as already 'meta-unit<u>s</u>' of the unit<u>s</u> that they represent] are <u>aufheben</u>negated as separate, but are also <u>aufheben</u>-conserved, and are also <u>aufheben</u>-celevated, via <u>abstraction</u>, or <u>gen</u>eralization, to their convergence/merger into/loss of <u>separate</u> identity in the single, relative <u>Gen</u>os category-as-unit above them. 'Horizontal Dialectic' is o<u>ur</u> term for the 'rightward' <u>species</u>' flow of <u>aufheben</u>" meta-unit-ization'. In this <u>speci</u>es of dialectic, as depicted in this kind of 'dialectogram', an earlier-presented <u>category</u>, depicted as to the right of the earlier-presented <u>category</u>, are <u>aufheben</u>" meta-unit<u>s</u>' to/of the unit<u>s</u> of the earlier-presented category, to its left. Thus a vector as unit is a 'meta-unit' of multiple scalar<u>s</u> as its [<u>sub</u>-]unit<u>s</u>. A "2-D" matrix as unit is a 'meta-unit' of multiple vector<u>s</u> as its [<u>sub</u>-]unit<u>s</u>. A "3-D" array as unit is a 'meta-unit' of multiple "2-D" matric<u>ces</u> as its [<u>sub</u>-]unit<u>s</u>. When both of these <u>species</u> of dialectic, 'Vertical' and 'Horizontal', are present in a 'dialectogram'-de<u>pict</u>ed dialectic, we have an instance of the "dialectical synthesis"' or ""complex unity"' of these two <u>species</u> of dialectic: **Bi-Axial Dialectic**'.

#### The Meta-Monadic -«Aufheben», Systematic Dialectic of Standard, Linear-Algebraic Mathematical Objects.

Our Solution ['+='] to our step La<sup>S</sup>2= 3 Dialectical-Algebraic Meta-Equation for this Ideo-Systematics, Dialectical Inventory/Taxonomy of D = LA Ideo-Ontology.



#### Commentary on the 'text-image' above.

The 'text-image' above provides a compact summary <u>speci</u>fication of o<u>ur</u> solution for <u>S</u>tep 3 [ $_{LA}s_2 = 3$ ] of this '<u>dyad</u>ic taxonomic/systematic dialectic' method of presentation for the <u>Domain</u> of Standard Linear Algebra, D = LA.

The '<u>Meta-Monad</u>ic'-«Aufheben», <u>Systematic Dialectic of Standard</u>, <u>Linear-Algebraic Mathematical Objects</u>. Model-<u>Gen</u>erated High-Level Table of Contents for a <u>Systematic</u> Textbook on <u>Linear Algebra</u>: Method of Presentation Dialectic Exemplified.



#### Commentary on the 'text-image' above.

The 'text-image' above deploys the step 3,  $\underline{\mathbf{D}}_3 = (\mathbf{Q}_{\mathsf{S}})^2 \underline{\partial} = (\mathbf{Q}_{\mathsf{S}} \oplus \mathbf{Q}_{\mathsf{V}} \oplus \mathbf{Q}_{\mathsf{VS}} \oplus \mathbf{Q}_{\mathsf{MS}} \oplus \mathbf{Q}_{\mathsf{MS}} \oplus \mathbf{Q}_{\mathsf{MV}} \oplus \mathbf{Q}_{\mathsf{MVS}} \oplus \mathbf{Q}_$ 



#### Commentary on the 'dialectogram' above.

The 'dialectogram' above illustrates both the '<u>merely</u>-hybrid' and the '<u>self</u>-hybrid' categor<u>ies</u> of o<u>ur</u> systematic dialectic of Linear <u>Algebra</u>, but this time in <u>s</u>tep-by-<u>s</u>tep 'Marxian Format', from <u>s</u>tep  $_{LA}s_2 = 0$  through <u>s</u>tep  $_{LA}s_2 = 3$ . This format means that the category-representing '''circle<u>s</u>'''/ellipse<u>s</u> placed higher in this depiction are systematically *later to be presented*, and more complex, more determination<u>s</u>-rich, more composite, and more 'thought-concrete' than the category-representing ''''/ellipse<u>s</u> placed beneath them. In each next <u>s</u>tep after <u>s</u>tep 0, the content of the previous <u>s</u>tep(<u>s</u>) is repeated/conserved, to remind the user, and the presentee<u>s</u>, that the content of the preceding <u>s</u>tep<u>s</u> is presupposed as retained in the mind<u>s</u> of the presentee<u>s</u> if the additional material of that next <u>s</u>tep is to be fully learnable/assimilable/'comprehendable' by them. The <u>units</u> or «monad<u>s</u>» that are '''inside''' the category '''circle<u>s</u>'''/ellipse<u>s</u> representing the lower categories, <u>inside</u> the '''circle<u>s</u>'''/ellipse<u>s</u> representing the lower categories, <u>inside</u> the '''circle<u>s</u>'''/ellipse<u>s</u> representing the lower categories, <u>inside</u> the '''circle<u>s</u>'''/ellipse<u>s</u> representing the lower categories.

Note that, thus, this 'dialectogram' diagram almost directly visualizes the *«aufheben»* 'meta-unit-icity' -- the 'nestedly' <u>contained</u> series of '<u>qual</u>o-fractal' scales and elements -- wherein the '<u>partial</u>-containment' relation-sign expression, ' $\mathbf{X} \sqsubseteq \mathbf{Y}$ ', signifies that *all* units of  $\mathbf{Y}$  contain units of  $\mathbf{X}$ , but that *not all* units of  $\mathbf{X}$  are contained in units of  $\mathbf{Y}$  --

### <u>S</u> I⊏ <u>V</u> I⊏ <u>M</u> I⊏ <u>A</u>.

-- or --

#### Scalars I Vectors Matrices Arrays.

**Example 8.b.** For our second example of this <u>pro</u>spective, text-design use of the  ${}_{NQ}$  dialectical method, let us consider the, rather <u>prosaic</u>, subject-matter **D**omain of the <u>contemporary</u> system of "<u>Written/Printed English</u>", **D** = WPE. W<u>e</u> see  $\mathbf{q}_{/LYWPS{TMA}}$  as the intuitive, most-complex, most-composite category of the **D** = WPE "<u>Written/Printed English</u>" **D**omain. Therein, **L** stands for the <u>'ideo-physio-ontological' category</u> of [e.g., <u>phonetic</u>] characters or "<u>Letters</u>"; then **Y** for the <u>'ideo-physio-ontological' category</u> of "<u>SYllables</u>"; <u>W</u> for the <u>'ideo-physio-ontological' category</u> of "<u>Words</u>"; <u>P</u> for the <u>'ideo-physio-ontological' category</u> of "<u>Phrases</u>" and clauses; <u>S</u> for the <u>'ideo-physio-ontological' category</u> of "<u>Sentences</u>"; <u>¶</u> for the <u>'ideo-physio-ontological' category</u> of "<u>Maragraphs</u>"'; <u>T</u> for the <u>'ideo-physio-ontological'</u> category of "<u>Texts</u>"'; <u>M</u> for the <u>'ideo-physio-ontological' category</u> of "<u>Maragraphs</u>"'; <u>T</u> for the <u>'ideo-physio-ontological'</u> category of "<u>Texts</u>"'; <u>M</u> for the <u>'ideo-physio-ontological' category</u> of "<u>Maragraphs</u>"'; <u>T</u> for the <u>'ideo-physio-ontological'</u> gives our best 'starting category of "<u>Archives</u>". W<u>e</u> hold that  $\underline{A} \otimes \underline{M} \otimes \underline{F} \otimes \underline$ 

systematics of <u>Domain</u> D = WPE. So, therefore, let's begin our presentation-design for the "<u>Written/Printed English</u>" <u>Domain</u> with a plan to first present the category of [e.g., <u>phon</u>etic] character<u>s</u>, <u>L</u>. Let's call our planned exposition on this element "step **O**" of our presentation, and associate its single 'category symbol' content with the <u>gen</u>eric <u>NQ</u> 'dialectical

meta-number'  $\underline{\mathbf{q}}_1$ :  $\underline{\mathbf{L}} \equiv \underline{\mathbf{q}}_1$  [—)  $\underline{\mathbf{q}}_1$ .

To derive our 'dyadic function systematic-dialectical model' **s**tep **1** categorial content, which will comprise **2** categor<u>ies</u> total, including **1** <u>new</u> category, we need to solve for the <u>specific</u>, "<u>Written/Printed English</u>" category that corresponds to the <u>gen</u>eric  ${}_{NQ}$  'meta-numeral' **g**<sub>2</sub>. <u>Specific</u> subscript '<sub>L</sub>' corresponds to <u>gen</u>eric subscript '<sub>1</sub>'. Thus, the way to "add '<sub>1</sub>' - "correspondingly" -- to <u>gen</u>eric 'meta-numeral' **g**<sub>1</sub> is to add '<sub>L</sub>' to the corresponding <u>specific</u>, **D** = LA 'category symbol', **g**<sub>L</sub>, initially forming *one <u>un</u>solved*, 'algebraic-<u>un</u>known', '<u>bi</u>-vocal' <u>second</u> category-symbol: **g**<sub>LL</sub>. Now, category-symbol '**g**<sub>LL</sub>' represents the net result of a *first* "self-involution" of the unit<u>s</u> of category **g**<sub>L</sub>, thereby forming a <u>new</u> category, of <u>higher</u> [more complex] unit<u>s</u>. Typically, category **g**<sub>LL</sub> unit<u>s</u> will be '<u>meta</u>-unit<u>s</u>' of/to category **g**<sub>L</sub> unit<u>s</u>. That is, <u>each</u> typical unit of category **g**<sub>LL</sub> should be a 'meta-letter', made up out of a <u>multi</u>plicity of **g**<sub>1</sub>, "letter", unit<u>s</u>.

Well, the "<u>Written/Printed English</u>" entit<u>ies</u> known as "<u>syllables</u>" would appear to "fill this bill". For example, let's consider the following syllables units: 'writ', 'ten', 'print', 'ed', 'eng', and 'lish'. Is not each a '<u>meta</u>-letter <u>meta</u>-unit', each one made up out of a typically <u>heterogene</u>ous <u>multi</u>plicity of -- <u>distinct</u> -- <u>letter-of-the-English-alphabet</u> units? Therefore, let us solve\* as follows:  $\underline{\mathbf{q}}_{LL} \models \underline{\mathbf{q}}_{Y} \models \underline{\mathbf{q}}_{2}$ , and design the categorial content 'consecuum-cumulum' of step **1** of our presentation so to fulfill our "shorthand" representation of that content, namely  $\underline{\mathbf{D}}_{1} = (\underline{\mathbf{q}}_{S})^{2^{1}} \models (\underline{\mathbf{q}}_{V} \oplus \underline{\mathbf{q}}_{V})$ .

To derive our step 2 categorial content, which will comprise 4 categor<u>ies</u> total, with 2 <u>new</u> categor<u>ies</u>, we need to solve for the <u>specific</u>, "<u>Written/Printed English</u>" categor<u>ies</u> that correspond to the <u>gen</u>eric  ${}_{NQ}$  'meta-numeral<u>s</u>'  ${}_{g}$  and  ${}_{g}$ . <u>Specific</u> subscript '<sub>L</sub>' corresponds to <u>gen</u>eric subscript '<sub>1</sub>'. Thus, the way to "add '<sub>1</sub>' & then '<sub>2</sub>', "'correspondingly'', to the subscript of <u>gen</u>eric 'meta-numeral'  ${}_{g}$  & then to the subscript of <u>gen</u>eric 'meta-numeral'  ${}_{g}$  is to add '<sub>L</sub>' & then '<sub>L</sub>' to the <u>most advanced</u> corresponding <u>specific</u>, D = WPE 'category symbol' subscript from step 1, i.e. to the '<sub>Y</sub>' of  ${}_{q}$ . These two actions generate <u>two</u> initially <u>un</u>solved, 'algebraic-<u>un</u>known' <u>third</u> and <u>fourth</u> category-symbols:  ${}_{q}$  and  ${}_{q}$  and  ${}_{q}$ . Category  ${}_{q}$  (-)  ${}_{g}$  should be about how there can be unit<u>s</u> of WPE which are <u>both</u> unit<u>s</u> of  ${}_{q}$  (-)  ${}_{g}$  and unit<u>s</u> of  ${}_{q}$  (-)  ${}_{g}$ . We therefore solve this category-symbol as signing the <u>exceptional</u> category, or category of exception<u>s</u>, which we name "'single-letter syllable<u>s</u>''', e.g., the syllable 'a' in the word "amendment". In the exceptional case<u>s</u> of this rare category, a syllable is **not** "made up out of a <u>multi</u>plicity of letter<u>s</u>", but, instead, consists of only a <u>single</u> letter.

Our prior solution <u>s</u> place a kind of 'consistency-constraint' on our solution for algebraic-<u>unknown category-symbol</u>  $\mathbf{g}_{\mathbf{YLL}}$ .

<sup>\*[</sup>This solution is a different, more detailed solution for this **Domain** than the one which we presented in Chapter 7, vol. 2 of <u>A Dialectical Theory of Everything</u>.].

We have already solved/defined  $\underline{\mathbf{q}}_{\mathbf{LL}} \models \underline{\mathbf{q}}_{\mathbf{Y}}$ . Thus, the 'LL' component of  $\underline{\mathbf{q}}_{\mathbf{YLL}}$  should also be replaced by '<sub>Y</sub>'. This yields a <u>part</u>ial ['<u> $\partial$ </u>'], still '<u>bi</u>-vocal', solution:  $\underline{\mathbf{q}}_{\mathbf{YLL}} \underline{\partial} \models \underline{\mathbf{q}}_{\mathbf{YY}}$ .

Now, category-symbol ' $\mathbf{g}_{\gamma\gamma}$ ' represents part of the net result of a *second '''<u>self</u>-involution''' of the unit<u>s</u> of category \mathbf{g}\_{\mathbf{l}}, the one forming a <u>new 'self-hybrid'</u> category, of <u>higher</u> unit<u>s</u>. Typically, the unit<u>s</u> of category \mathbf{g}\_{\gamma\gamma} will be <u>'meta</u>-unit<u>s</u>' of/to the category \mathbf{g}\_{\gamma} unit<u>s</u>. That is, <i>each* unit of category  $\mathbf{g}_{\gamma\gamma}$  should be a 'meta-syllable', with each 'meta-syllable' unit typically made up out of a heterogeneous <u>multiplicity</u> of  $\mathbf{g}_{\gamma\gamma}$ , mere-syllable, unit<u>s</u>, now as that meta-syllable's sub-unit<u>s</u>. Well, the "<u>Written/Printed English</u>" entit<u>ies</u> known as "word<u>s</u>" would appear to "fill this bill". For example, consider the English *word* "syllable". It is 'made up out of three, distinct, "heterogeneous", syllable<u>s</u> -- 'syl', and 'la', and 'ble'. Is not the word 'syllable' a '<u>meta</u>-syllable unit, made up out of a heterogeneous multiplicity of three distinct syllable<u>s</u> / unit<u>s</u>? Then, shouldn't  $\mathbf{q}_{\gamma\gamma}$  be solved as meaning the category of <u>words</u>? Thus, let us solve:  $\mathbf{q}_{\gamma\gamma} | = \mathbf{q}_w [-] \mathbf{q}_4$ , and design our categorial content 'consecuum-cumulum' narrative exposition of <u>step</u> 2 of our presentation so as to fulfill our "shorthand" symbolic abbreviation of that content, namely  $\underline{D}_2 = (\mathbf{p}_{\mathbf{q}}(\mathbf{p}^2)^2 \underline{\partial}] = (\mathbf{p}_{\mathbf{q}} \oplus \mathbf{q}_v \oplus \mathbf{q}_{v_1} \oplus \mathbf{q}_{w_1})$ .

To derive our <u>step 3</u> categorial content, which will comprise 8 categor<u>ies</u> total, with 4 <u>new</u> categor<u>ies</u>, we need to solve for the <u>specific</u>, "<u>Written/Printed English</u>" categor<u>ies</u> corresponding to <u>gen</u>eric  ${}_{NQ}$  'meta-numeral<u>s</u>'  $\underline{\mathbf{q}}_{5}$ ,  $\underline{\mathbf{q}}_{6}$ ,  $\underline{\mathbf{q}}_{7}$ , and  $\underline{\mathbf{q}}_{8}$ . <u>Specific</u> subscript '<sub>L</sub>' corresponds to <u>gen</u>eric subscript '<sub>1</sub>'. Thus, to "add '<sub>1</sub>', '<sub>1+1</sub>', '<sub>1+1+1</sub>', and finally '<sub>1+1+1+1</sub>' to, e.g., the subscript of <u>gen</u>eric 'meta-numeral'  $\underline{\mathbf{q}}_{4}$ , is to add '<sub>L</sub>', <u>repeatedly</u>, to the <u>most advanced</u> corresponding <u>specific</u>,  $\mathbf{D} = \mathbf{WPE}$  'category symbol' subscript from step 2, i.e., to the '<sub>w</sub>' of  $\underline{\mathbf{q}}_{w}$ , forming <u>four</u> initially <u>un</u>solved, 'algebraic-<u>un</u>known' category-symbol<u>s</u>, the <u>fifth</u>, <u>sixth</u>, <u>seventh</u> and <u>eighth</u> category-symbol<u>s</u>:  $\underline{\mathbf{q}}_{wL}$ ,  $\underline{\mathbf{q}}_{wLLL}$  and  $\underline{\mathbf{q}}_{wLLL}$ .

Now, category  $\underline{\mathbf{q}}_{\mathsf{WL}}$  [--)  $\underline{\mathbf{q}}_{\mathbf{5}}$  should be about how there can be unit<u>s</u> of  $\mathbf{WPE}$  which are <u>both</u> unit<u>s</u> of  $\underline{\mathbf{q}}_{\mathsf{W}}$  [--)  $\underline{\mathbf{q}}_{\mathbf{4}}$  and unit<u>s</u> of  $\underline{\mathbf{q}}_{\mathsf{W}}$  [--

Our prior solutions place a kind of 'consistency-constraint' on our solution for algebraic-<u>unknown category-symbol</u>

We have already defined  $\mathbf{q}_{LL} \models \mathbf{q}_{\mathbf{Y}}$ . Thus, the '<sub>LL</sub>' component of  $\mathbf{q}_{WLL}$  should also be replaced by '<sub>**Y**</sub>'. This yields a still '<u>*bi*</u>-vocal', and therefore still only <u>*part*</u>ial, solution:  $\mathbf{q}_{WLL} \underline{\partial} \models \mathbf{q}_{WY}$ . Category  $\mathbf{q}_{WY} \models \mathbf{q}_{\mathbf{6}}$  should be about how there can be units of **WPE** which are <u>*both*</u> units of  $\mathbf{q}_{W} \models \mathbf{q}_{\mathbf{4}}$  and units of  $\mathbf{q}_{\mathbf{7}} \models \mathbf{q}_{\mathbf{2}}$ . We therefore solve this category-symbol as signing the <u>*exceptional*</u> category, or category of exceptions, which we name "single-syllable words", e.g., the word "name" and the word "word". In the exceptional cases of this somewhat rare category, a word is *not* "made up out of a <u>*multi*</u>plicity of syllables", but, instead, consists of only a <u>*single*</u> syllable.

Our prior solutions also place a 'consistency-constraint' on our solution for algebraic- $\underline{un}$  known category-symbol  $\underline{q}_{will}$ .

Again, we have already defined  $\underline{\mathbf{q}}_{\mathsf{LL}} \models \underline{\mathbf{q}}_{\mathsf{Y}}$ . Thus, the initial ' $_{\mathsf{LL}}$ ' component of  $\underline{\mathbf{q}}_{\mathsf{WLLL}}$  should also be replaced by ' $_{\mathsf{Y}}$ '. This yields a '<u>*tri*</u>-vocal' <u>*part*</u>ial [ $\underline{\mathbf{0}}$ '] solution:  $\underline{\mathbf{q}}_{\mathsf{WLL}} \underline{\partial} \models \underline{\mathbf{q}}_{\mathsf{WYL}}$ . Category  $\underline{\mathbf{q}}_{\mathsf{WYL}} \models \underline{\mathbf{q}}_{\mathsf{T}}$  should be about how there can be units of  $\mathbf{WPE}$  which are, *all at once*, units of  $\underline{\mathbf{q}}_{\mathsf{W}} \models \underline{\mathbf{q}}_{\mathsf{q}}$ , units of  $\underline{\mathbf{q}}_{\mathsf{Y}} \models \underline{\mathbf{q}}_{\mathsf{q}}$  and units of  $\underline{\mathbf{q}}_{\mathsf{L}} \models \underline{\mathbf{q}}_{\mathsf{I}}$ . We therefore solve this category-sign as signing the <u>exceptional</u> category, or category of exceptions, which we name "single-letter-syllable words". In this <u>**D**omain</u>, <u>redundantly</u>, this category is the pair-«*arithmos*» consisting of the <u>word</u> "a" and the <u>word</u> "I". In the exceptional case<u>s</u> of this rare category,  $\mathbf{q}_{WYL}$  [--)  $\mathbf{q}_7$ , a word is *not* "made up out of a <u>multiplicity</u> of syllable<u>s</u>", but, instead, consists of only a <u>single</u> letter, which also serves as a <u>single</u> syllable. Note that, for the contemporary English language, this category is equivalent to, and <u>redundant</u> with, category  $\mathbf{q}_{WL}$  [--)  $\mathbf{q}_5$ .

Now, category-symbol ' $\mathbf{g}_{\mathsf{wLLLL}}$ ' represents part of the net result of a *third '''<u>self</u>*-involution''' of the unit<u>s</u> of category  $\mathbf{g}_{\mathsf{L}}$ , thereby forming a <u>new</u> category, of <u>higher [meta-]</u>unit<u>s</u>. Because we have already, earlier, solved/defined  $\mathbf{g}_{\mathsf{LL}} \models \mathbf{g}_{\mathsf{Y}}$ , consistency with that earlier solution requires that we replace <u>each</u> occurrence of ' $_{\mathsf{LL}}$ ' in ' $\mathbf{g}_{\mathsf{wLLLL}}$ ' by ' $_{\mathsf{Y}}$ '. This yields a still '<u>*tri*</u>-vocal' <u>part</u>ial solution  $\mathbf{g}_{\mathsf{wLLL}} = \mathbf{g}_{\mathsf{WYY}}$ . Because we have already, earlier, solved/defined  $\mathbf{g}_{\mathsf{YY}} \models \mathbf{g}_{\mathsf{W}}$ , consistency with that earlier solution requires that we replace the one occurrence of ' $_{\mathsf{YY}}$ ' in ' $\mathbf{g}_{\mathsf{WYY}}$ ' by ' $_{\mathsf{W}}$ '. This yields a still '<u>*tri*</u>-vocal' <u>part</u>ial solution requires that we replace the one occurrence of ' $_{\mathsf{YY}}$ ' in ' $\mathbf{g}_{\mathsf{WYY}}$ ' by ' $_{\mathsf{W}}$ '. This yields a <u>part</u>ial solution/definition of a '<u>self</u>-hybrid' category which is <u>still</u> '<u>bi</u>-vocal':  $\mathbf{g}_{\mathsf{WYY}} \partial = \mathbf{g}_{\mathsf{WW}}$ . Typically, the unit<u>s</u> of category  $\mathbf{g}_{\mathsf{WW}}$  will be '<u>meta</u>-unit<u>s</u>' of/to the category  $\mathbf{g}_{\mathsf{W}}$  unit<u>s</u>. I.e., <u>each</u> unit of category  $\mathbf{g}_{\mathsf{WW}}$  should be a '<u>meta</u>-word', each '<u>meta</u>-word' unit made up out of a typically hetero<u>gene</u>ous <u>multip</u>licity of  $\mathbf{g}_{\mathsf{W}}$ , "word", sub-unit<u>s</u>.

Well, the "<u>Written/Printed English</u>" entit<u>ies</u> known as "phrase<u>s</u>" would appear to "fill this bill". For example, consider the English *phrase* 'made up out of'. It is 'made up out of' four, distinct, "heterogeneous", word<u>s</u> -- 'made', and 'up', and 'out', and 'of'. Is this *phrase* unit not a '<u>meta</u>-word' unit, made up out of a heterogeneous multiplicity of word [<u>sub-</u>]unit<u>s</u>? Therefore, let us name such '<u>meta</u>-word<u>s</u>' "<u>Phrases</u>", and solve as follows:  $\mathbf{q}_{WW} \models \mathbf{q}_{P} \models \mathbf{q}_{P} \models \mathbf{q}_{P} \models \mathbf{q}_{P} \models \mathbf{q}_{P} \models \mathbf{q}_{P} \models \mathbf{q}_{W} \oplus \mathbf{q}_{WV} \oplus \mathbf{q}_{WV} \oplus \mathbf{q}_{WV} \oplus \mathbf{q}_{WV} \oplus \mathbf{q}_{P} \oplus \mathbf{q}_{P} ()$ .

Subsequent '<u>self</u>-iteration<u>s</u>' of this procedure, beyond <u>setep 3</u>, all the way to <u>setep 8</u>, yield the following additional content, in term<u>s</u> of '<u>self</u>-hybrid' categor<u>ies</u>, eliding mention of the many <u>merely</u>-hybrid categor<u>ies</u> --

- The new <u>'self</u>-hybrid' category-symbol of <u>s</u>tep 4 is  $\mathbf{q}_{pp}$ , which we solve as  $\mathbf{q}_{pp} \models \mathbf{g}_{s} \models \mathbf{g}_{16}$ : <u>sentences</u>, as the category of <u>'meta-phrase' units</u>, each one typically made up out of a heterogeneous multiplicity of phrase units.
- The new '<u>self</u>-hybrid' category-symbol of <u>s</u>tep 5 is <u>q</u><sub>ss</sub>, which w<u>e</u> solve as <u>q</u><sub>ss</sub> |= <u>q</u><sub>1</sub>[-) <u>q</u><sub>32</sub>: <u>¶aragraphs</u>, as the category of '<u>meta</u>-sentence' units, each one typically made up out of a heterogeneous multiplicity of <u>sentence units</u>.
- The new <u>'self</u>-hybrid' category-symbol of <u>s</u>tep 6 is  $\mathbf{q}_{\P\P}$ , which we solve as  $\mathbf{q}_{\P\P} \models \mathbf{q}_{\mathsf{T}} \models \mathbf{q}_{\mathsf{T}}$
- The new <u>'self</u>-hybrid' category-symbol of <u>s</u>tep 7 is  $\mathbf{q}_{TT}$ , which we solve as  $\mathbf{q}_{TT} \models \mathbf{q}_{M} \models \mathbf{q}_{128}$ : <u>Meta-texts</u>' as the category of 'multi-partitioned, sectioned <u>'meta-text' units</u>, each typically made up out of a heterogeneous multiplicity of <u>text units</u>', whose species include 'multi-chapter books', 'multi-divisioned reports', 'multi-part legislation', etc.
- The new '<u>self</u>-hybrid' category-symbol of <u>s</u>tep 8 is <u>g</u><sub>MM</sub>, which w<u>e</u> solve as <u>g</u><sub>MM</sub> |= <u>g</u><sub>A</sub> [−) <u>g</u><sub>256</sub>: <u>many-meta</u>-text
   <u>Archives</u>, as the category of indexed '<u>collections</u> of <u>meta</u>-text' <u>units</u>, <u>each</u> typically made up out of a heterogeneous multiplicity of '<u>meta</u>-text <u>units</u>', and whose speci<u>es</u> include public librar<u>ies</u>, private librar<u>ies</u>, private law librar<u>ies</u>, book museum<u>s</u>, governmental document depositor<u>ies</u>, etc., etc.

Some of the -- outstanding -- "exceptional" '<u>merely</u>-hybrid' categor<u>ies</u> that arise by <u>step 8</u> in this, by then, **256**-term<u>s</u>/categor<u>ies</u> categorial progression/categor<u>ies</u>-series, <u>and beyond</u>, per o<u>ur</u> solution<u>s</u>, include --

- The <u>s</u>tep 5 category of 'single word sentences',  $\underline{\mathbf{q}}_{sw}$  [---)  $\underline{\mathbf{q}}_{20}$ .
- The <u>step 5</u> category of 'single phrase sentences', **g**<sub>sp</sub> [--) **g**<sub>24</sub>.
- The <u>s</u>tep 6 category of 'single sentence paragraphs',  $\underline{\mathbf{q}}_{\mathbf{q}S}$  [--)  $\underline{\mathbf{q}}_{\mathbf{48}}$
- The <u>s</u>tep 7 category of 'single paragraph texts',  $\mathbf{q}_{T_{1}}$  [---)  $\mathbf{q}_{96}$
- The <u>s</u>tep 9 category of, e.g., a '<u>single book</u>/many cop<u>ies</u> thereof inventory/commercial stock',  $\underline{\mathbf{q}}_{AM}$  [---)  $\underline{\mathbf{q}}_{384}$ .

This 256-term -- 256-category - abbreviated [....'] dialectical categorial series for the step 8 'dialectical equation' --

 $\underline{\mathbf{D}}_{8} = \left( \left| \underline{\mathbf{q}}_{S} \right| \right)^{2^{8}} \underline{\partial} | = \left( \left| \underline{\mathbf{q}}_{L} \oplus \underline{\mathbf{q}}_{Y} \oplus \underline{\mathbf{q}}_{YL} \oplus \underline{\mathbf{q}}_{W} \oplus \underline{\mathbf{q}}_{WL} \oplus \underline{\mathbf{q}}_{WY} \oplus \underline{\mathbf{q}}_{WYL} \oplus \underline{\mathbf{q}}_{P} ... \oplus \underline{\mathbf{q}}_{S} ... \oplus \underline{\mathbf{q}}_{T} ... \oplus \underline{\mathbf{q}}_{T} ... \oplus \underline{\mathbf{q}}_{M} ... \oplus \underline{\mathbf{q}}_{M} ... \oplus \underline{\mathbf{q}}_{M} \right)$ 

-- can be deployed as a nine-chapter *pro forma* table of contents, or writer's working outline, for a prospective, e.g., book 'meta-text' [thus a <u>new</u> constituent of M], providing a systematic presentation of the system of written/printed English, viz. --

Chapter I. Letters, or, e.g., phonetic, characters.  $[\underline{q}_1 \rightarrow \underline{q}_1]$ .

Chapter II. S<u>Y</u>llables.  $[\underline{q}_{\gamma} [-) \underline{q}_{2}]$ .

Section II.1. Exceptions to the Definition: Single Letter SY llables.  $[\underline{q}_{y_1} [-) \underline{q}_{y_2}]$ .

Chapter III. Words.  $[\underline{q}_{W} [-) \underline{q}_{A}]$ .

Section III.1. Exceptions to the Definition: Single <u>L</u>etter <u>W</u>ords. [ $\underline{\mathbf{q}}_{WI}$  [-)  $\underline{\mathbf{q}}_{S}$ ].

Section III.2. Exceptions to the Definition: Single SY lable Words.  $[\underline{q}_{WY} [-] \underline{q}_{6}]$ .

Chapter IV. Phrases and Clauses.  $[\underline{q}_{p} [-) \underline{q}_{g}]$ .

Chapter V. Sentences.  $[\underline{\mathbf{q}}_{5} [\rightarrow] \underline{\mathbf{q}}_{16}]$ .

Chapter VI.  $\underline{\P}$ aragraphs.  $[\underline{\mathbf{q}}_{\underline{\P}} [-) \underline{\mathbf{q}}_{32}].$ 

Chapter VII. Texts.  $[\underline{q}_{T} [-) \underline{q}_{64}].$ 

Chapter VIII. Books ['Meta-Texts'], etc. [**q**<sub>M</sub> [---) **q**<sub>128</sub>].

Chapter IX. Archives: Libraries, etc.  $[\underline{q}_{A} [ \rightarrow ] \underline{q}_{256}]$ .

It may be interesting to speculate as to what may come in the <u>future</u>, beyond  $\underline{\mathbf{q}}_{A}$ , and beyond presentation-<u>s</u>tep 8, and even as to what may be already, <u>'fract</u>ionally', emergent in **our** own time, in this <u>Domain</u> of <u>Written/Printed English</u>". Can we -- predictively -- solve for the category-symbol  $\underline{\mathbf{q}}_{AA}$  [--)  $\underline{\mathbf{q}}_{512}$ ? Might that symbol aptly denote a <u>'Meta</u>-Library', that is, a '<u>[meta-]</u>Library unit <u>of</u> Library unit<u>s</u>', perhaps internet-resident, by which a qualified "borrower", regardless of that "borrower's" location on Earth, or even beyond Earth, e.g., located on an Earth-orbiting space-station, would be able to access, e.g., digitally, the holdings of many different librar<u>ies</u>, located at many different places across the globe?

FYI: W<u>e</u> hope, in the not-too-distant future, to offer a software application – an "app" -- which its user can apply to construct a systematic-dialectical content<u>s</u>-plan – a systematic <u>pro</u>spective table of content<u>s</u>/writer's working outline -- for a planned subject-matter **D**omain exposition, via this app querying that user to enter response<u>s</u> regarding key feature<u>s</u> of that **D**omain <u>as that user sees it</u>.

Once again, the *'universal dialectical architectonic*' of dialectical, *«aufheben*» 'chain-*partial-<u>containment</u>*' ['□, i.e., of *«aufheben*», dialectical '<u>meta</u>-unit-icity', is abundantly in evidence, in this example too --

LICYICW ICP ICS IC¶ ICT IC M ICA.

-- or --

<u>Letters</u>  $\sqsubseteq$  <u>Sentences</u>  $\sqsubseteq$  <u>Sentences</u>  $\sqsubseteq$  <u>Meta-Texts</u>  $\sqsubseteq$  <u>Meta-Texts</u>  $\sqsubseteq$  <u>Archives</u>.

### <u>Example 8.c</u>. <u>Musics</u> of <u>Symphonic</u> <u>Form</u> [D = msf].

For o<u>ur</u> third example of this <u>prospective</u>, composition-design use of the <u>Q</u> dialectical method, let us consider the

**Domain** of '<u>musics</u> of <u>symphonic form</u>'. A composer of symphon<u>ies</u> might, in preparing to compose a next, new symphony, select units from the systematic categorial progression below as a kind of "list" of categor<u>ies</u> of symphonic resources from which to draw upon for an initial, "rough draft" of 's planned symphonic composition.

In planning a symphonic composition, a composer might benefit from considering the categor*ies* of musical units or elements that are to be desired as the components of the, e.g., four movements of which that symphonic composition is to be composed, thus outlining, in advance, the high-level "form", or 'content-structure', of that intended symphonic work.

 $W_{\underline{e}}$  suppose that many symphonic composer<u>s</u> engage style<u>s</u> of musical composition by which they do just that, at some stage in their construction of a symphony. The following 'taxonomic-dialectic' of symphonic musical resource<u>s</u> may or may **not** offer a more systematic inventory of those resource<u>s</u> than are typically marshalled by composer<u>s</u> of such style<u>s</u>.

Throughout this text we have called your attention to a 'universal dialectical architectonic' that we have observed, ubiquitously, throughout the **D**omains of 'exo-human Nature' and of human Nature alike: the <u>historical</u> '«aufheben» <u>part</u>ial containment', «aufheben» '<u>meta</u>-unit-ization' <u>process</u>, and <u>systematic</u>, present-<u>relation</u>s-exhibiting structural phenomenon of 'meta-unit-icity'. This artistic **D**omain, of '<u>musics of symphonic form</u>', is no exception!

*Our* experience of such music may be, typically, of an unbroken flow of complex sound<u>s</u>, since any discrete time/sound boundar<u>ies</u>, within that flow of sound -- albeit broken by silence<u>s</u> of varying duration -- may feel blurred and nebulous. Even so, musical flow is standardly conceived and composed with a 'nestedly' contained [' $\square$ '\*] series of '<u>qual</u>o-fractal' scale<u>s</u> and element<u>s</u> in mind:

#### $\underline{\mathcal{M}} \Vdash \underline{\mathcal{H}} \Vdash \underline{\mathcal{C}} \Vdash \underline{\mathcal{F}} \Vdash \underline{\mathcal{P}} \Vdash \underline{\mathcal{R}} \Vdash \underline{\mathcal{M}} \Vdash \underline{\mathcal{S}} \Vdash \underline{\mathcal{V}} \Vdash \underline{\mathcal{V}}$

-- or --

<u>Notes</u> I⊏ c<u>Hords</u> I⊏ <u>Cells</u> I⊏ <u>Figures</u> I⊏ <u>Phrases</u> I⊏ <u>peR iods</u> I⊏ <u>Melodies</u> I⊏ <u>Sections</u> I⊏ <u>moV ements</u> I⊏ <u>sYmphonies</u>.

The following eleven texts/images lay out this 'ideo-physio-ontological' systematic-dialectic of music.

\* [An expression of the form ' $\chi \Vdash \chi'$  isgnifies, for us, the '*evolute*, *partial* containment' of [some of] the [former] units of the  $\chi$  inside of *each* unit of the  $\chi'$  not the '*con*volute, *total* containment', i.e., of every unit of  $\chi$  inside some unit of  $\chi'$ , as would be expressed by ' $\chi \sqsubset \chi'$ . That is, we expect some of the units of the  $\chi$  to remain *externally «aufheben»-conserved*, *out*side of the units of category  $\chi'$ . For more regarding the *Encyclopedia Dialectica* concepts of the '*evolute*' versus the '*con*volute' versus the '*co*volute' spec*ies* of the [idealized] dialectical, *«aufheben»* process, see p. **34**, herein.]



# Commentary On 'Dialectogram': 'The «Arché»-Dialectic of Music'.

The Seldonian 'dialectogram', of the module immediately preceding this commentary-module, depicts the 'dialectical syllogism' that constitutes, that arrives at our category of musical ''Notes'''. That category serves as the «arché»-category or starting category of a '512-adic', 512 categorial-term dialectical series, expositing and explaining the categorial 'content-structure' of 'music of symphonic form'. That 512-fold categorial progression forms the main focus of this part, on the human 'knowledge-form' that is modern music, within the category of "contempory fine arts". The latter category forms the «arché»-category of the '32-adic', 32 categorial-term dialectic of human knowledge/deology modalities overall -- the dialectical categorial progression which organizes the entire encyclopedic subject-matter, here, of ''human Nature'''. It does so by presenting the categorial progression of the 'sapience' of Homo sapiens sapiens -- of ''humanity, the knowers'''.

The cognitive formation of this «arché»-category of "Motes" arises from a noticing of the 'intra-duality' at the heart of music -- the internal opposition, and internal reconciliation, and temporal alternation, of musical sounds versus musical silences.

The «arché»-category of *this* triadic dialectic is the category that we name "'Tones'' - of vocal- or instrument-*gene*rated sounds, each of a given pitch, and "held" for a definite duration. The human mind's reflection of this category upon itself criticizes the *ina*dequacy of this category, by itself, to encompass this core of all music. A *thought-experiment* that begins with the *thought* that tones constitute the *totality* of music, quickly self-corrects that *thought*, via the realization that the tones in any instance of music cannot exist without the silence before the first tone, and the silence after the last tone, and the silence in-between every pair of tones, including of chords, within the body of that work of music. To make this point ''*in extremis'*'', *one* may see that no audible tone can have been "held", without a break into relative silence, from ever since the proverbial "beginning of time", by any human maker. And, even once such a tone has broken out into its sounding, by act of a human maker, from and after some finite duration of initial silence, that tone cannot be "held", steadily, without an break into relative silence, for *all futurity*. Nor would any such interminable "holding" of a single tone, or of a single chord, be **"humanly**, *musically meaningful*, even were **if humanly** *feasible*.

Relative musical <u>silence</u>, 'musical <u>not</u>-sound', the determinate negation and opposite of musical <u>sound</u>, makes <u>musical sound</u> possible, and <u>musical sound</u>, 'musical <u>not-silence</u>', the determinate negation and opposite of musical <u>silence</u>, makes <u>MUSICAL silence</u> possible.

The 'uni-category' arising from this opposition of musical sound, as «arché»-category, versus musical silence, as its 'counter-category' and 'contra-category', is the category of '''<u>Yotes'</u>'' as we define it here, the category of 'intra-dual' musical units, consisting of a tone of a certain pitch and held for a finite, typically brief, duration, followed immediately by a cessation of that tone, for some -- typically different and shorter -- finite duration, until the sounding of the next tone, or of the next chord, begins. What we mean by a ''<u>'</u>ote'' unit is such a 'sound-silence pair'. And the category representing the indefinite number -- the «arithmos» -- of all possible such 'sound-silence pairs' that are available to modern music becomes, as already noted above, the «arché»-category for the ensuing, and far more voluminous, dialectical progression of categor/es/«arithmoi» of other kinds of musical units, arrayed in a monotonically escalating 'ualo-fractal' ''degree''', that is our systematic-dialectical, taxonomic, combinatoric method of presentation for the musical resources, of modern 'music of symphonic form'-in-general, available to contemporary composers.

Perhaps this 'warchés-ic' '<u>dialectic</u> of music', depicted in the foregoing 'dialectogram', should be regarded as a case of the classic ''<u>Being</u>-<u>)Nothing</u>-<u>Becoming</u>''' <u>dialectic</u> that Hegel asserted as the warchés-<u>dialectic</u> -- the warchés-<u>tri</u>ad -- of all <u>dialectic</u>al <u>«Logik</u>». For, without the relative musical ''nothingness''' of musical silence, no work of music, as a holding-down of a single tone or chord *ad nauseam*, could ''become'' -- could ''develop'''. The ''becoming''' as ''development''' of a musical performance depends upon an interplay, an interaction, an alternation -- an ''<u>oscillation</u>''' -- of musical <u>sounds</u> & musical <u>silence</u>s of varying finite durations.

Quotation: Composer John Paynter -- "...the dramatic effect of silence has long been appreciated by composers." [p. 61].\*

\*Reference: Paynter, J. and Aston, P. (1970), Sound and Silence, Cambridge University Press.

# Our Stipulated «Arché» Category, & Our Solutions for 9 Successor 'Self-Hybrid' Categories of Musical Units:

The similar but not Pitch-identical Notes.
In the silences of "Tones". Necessarily also, for Note distinguishability, encompasses the silences between Notes. Each Note is a Tone held for some time, plus a duration of silence.

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₽<sub>4</sub>⇔<mark>▶</mark>♀゚゚ = <mark></mark>₽

=-1

E. e.

An «arithmos» of '<u>Notes</u> [[made] <u>OF</u>] <u>Notes</u>', or '<u>Notes</u> of 2nd degree"; a category of '<u>meta-Notes</u>', each one made up out of a heterogeneous <u>multiplicity of typically, 3 or more Notes</u>, i.e., made up of <u>Notes</u> sounded <u>concurrently</u> -- a category made up out of <u>cHords</u>. <u>CHordal</u> experience relies partly on the "intervals", the "spaces", the "gaps", the 'musical <u>distance</u>' between each pair of <u>Notes</u> in the given <u>cHord</u>.

I= An «arithmos» of 'c Hords [[made up] OF] c Hords', or 'c Hords of 2nd degree"; a category of 'meta-c Hords', each one made up out of a heterogeneous multiplicity of, typically, 3 or more c Hords, i.e., made up of c Hords sounded successively, i.e., the category of Cells as [developable] melodic fragments.

= An «arithmos» of '<u>Cells</u> [[made up] <u>OF</u>] <u>Cells</u>', or '<u>Cells</u> of 2nd degree": a category of '<u>meta-Cells</u>', each one made up out of a heterogeneous <u>multiplicity of 2 or more Cells</u>, i.e., made up of <u>Cells</u> sounded successively, i.e., the category of <u>Figures</u> or motifs as background or foreground, repeatable thematic components.

I == An «arithmos» of 'Figures [[made up] OF] Figures', or 'Figures of 2nd degree"; a category of 'meta-Figures', each one made up out of a heterogeneous multiplicity of 2+ Figures, i.e., made up of Figures sounded successively, i.e., the category of Phrases as melodic components, each ending with the musical punctuation of a cadence.

An «arithmos» of 'Arases [[made up] OF] Arases', or 'Arases of 2nd degree"; a category of 'meta-Arases', each one made up out of a heterogeneous multiplicity of usually 2 Arases, i.e., made of Arases sounded successively. The category of pe Aods as melodic components, an antecedent, then a consequent, both with the same opening Figure.

— An «arithmos» of '<u>Melodies</u> [[made up] <u>OF</u>] <u>Melodies</u>', or '<u>Melodies</u> of 2nd degree"; a category of '<u>meta</u>-pe<u>Riods</u>', each one made up out of a <u>heterogeneous</u> <u>multiplicity</u> of pe<u>Riods</u>, i.e., made of pe<u>Riods</u> sounded <u>successively</u> -- the category of <u>Melodies</u>.

An «arithmos» of '<u>M</u>elodies [[made up] <u>OF</u>] <u>M</u>elodies', or '<u>M</u>elodies of 2nd degree"; a category of '<u>meta-</u><u>M</u>elodies', each one made up out of a heterogeneous <u>multiplicity of <u>M</u>elodies</u>, i.e., made of <u>M</u>elodies sounded successively -- the category of <u>Sections of Symphonic Movements</u>.

# Our Solutions for the Successor 'Self-Hybrid' Ontos of Musical Units [continued & concluded] --



I= An «arithmos» of 'Sections [[made up] OF] Sections', or 'Sections of 2nd degree"; a category of 'meta-Sections', each one made up out of a heterogeneous multiplicity of Sections, i.e., made of Sections sounded successively -- the category of symphonic mo Vements.

An «arithmos» of 'moVements [[made up] OF] moVements', or moVements of 2nd degree"; a category of 'meta-moVements', each one made up out of a heterogeneous multiplicity of, often 3 or 4, moVements, i.e., made of moVements sounded successively -the category of the sYmphonies themselves.

<u>The</u> 'meta-equation' outlined in the preceding text-image & via the 2 solution-assertions, above, expresses a <u>taxonomic</u>, systematically-ordered <u>presentation</u>, by way of a categorial-combinatoric <u>inventory</u>, of the musical resources available to composers of modern <u>music</u> of symphonic form.

The main purpose of this 'meta-equation meta-model' is to explicate the way in which the ''universal''' 'meta-«monad»-ological content-structure principle' of «aufheben» dialectic is instanced in the Domain of modern s Imphonic music.

While the musical terms -- notes, chords, cells, figures, phrases, periods, melodies, sections, & movements -- all as components of **music of symphonic form**, have become somewhat standardized by now, the exact definitions of these terms have not. There remains ambiguity, overlap, and disagreement regarding their definitions, among experts -- for some of these terms more than for others of them.

In framing o<u>ur solutions</u> -- o<u>ur</u> '''definition-assertions</u> '''[' $\models$ "] -- above, we sought to eliminate any such overlaps, and to define each 'self-hybrid' category of musical units in "pure" form, meaning excluding extreme cases and categorial mere-hybridizations from the core self-hybrids' definitions, letting the combinatorics of the merely-hybrid categor<u>ies</u> address those special cases.

Thus, for example, we omit cases where a single musical Cell might be interpreted as constituting a musical Figure from category  $\mathbf{q}_{\mathbf{f}}[-)\mathbf{q}_{\mathbf{g}}$ . We leave such cases of ''one Cell Figures ''' to a sub-«species» of our solution -- or '''definition-assertion ''' -- for category  $\mathbf{q}_{\mathbf{f}C}[-)\mathbf{q}_{\mathbf{12}}$ , by its connotation of the elevation of Cell units up into the level of Figure units. We limit our solved meaning for category  $\mathbf{q}_{\mathbf{f}}[-)\mathbf{q}_{\mathbf{g}}$  to Figure units that are «aufheben» negation/elevation/conservation 'meta-unit-izations' of Cell units, i.e., to Figure units that consist of more than one Cell unit. Likewise, with respect to possible interpretations of a given musical peRiod unit as constituting a ''one peRiod Melody unit'', our solution-assertion for the category-symbol  $\mathbf{q}_{\mathbf{g}} \vdash \mathbf{q}_{\mathbf{g}} \vdash \mathbf{q}_{\mathbf{g}} \vdash \mathbf{q}_{\mathbf{g}} \vdash \mathbf{q}_{\mathbf{g}}$ , limits our category for Melody units to Melody units that are dialectical, «aufheben» negation/elevation/conservation 'meta-unit-izations, i.e., to Melody units made up of more than one peRiod unit. We leave cases of [purported] ''one peRiod Melody''' units to one of the sub-«species» of our solution for ''algebraic/<u>unsolved</u>''' category-symbol  $\mathbf{q}_{\mathbf{g}} \vdash \mathbf{q}_{\mathbf{g}}$  (-)  $\mathbf{q}_{\mathbf{g}}$ , via its connotation of elevation of peRiod units up into the level/'<u>qualo</u>-fractal scale' of <u>M</u>elody units.

So too regarding occasional definitions of musical Sections in a way which includes Symphonic movements.



# <u>Commentary on the</u> 'Dialectogram' for: '<u>The Dialectic</u> of Music'.

The 'meta-equation' expanded in the next five modules expresses a taxonomic, systematically-ordered presentation of a categorial-combinatoric catalogue of the musical resources available to composers of musics of symphonic form. The main purpose of this 'meta-equation meta-model' is to explicate the way in which the '''universal''' 'meta-equation and "-ological content-structure principle' of eaufheben" dialectic is instanced in the Domain of modern symphonic music.

The preceding 'dialectogram' aims at conveying, in systematic, 'onto-taxonomic' order, key 'self-hybrid' categories of musical 'ideo-physio-ontology' that represent & name the various levels of the elements or units that combine to constitute the 'content-structure' of all musics of symphonic form, starting from the first category, that of the fundamental musical units known as Notes, as «arché» category, & ending with the 512th category, that of the musical units called symphonies.

Of course, the 'dialectical meta-model' that generates the progression of 'category-symbols' that appear in this 'dialectogram' is a general one -- a generic model for 'musics of symphonic form'-in-general -- & the non-amalgamating sum of these symbols for qualitatively-different, ontologically-different categories, or «arithmoi» ['indefinite numbers'] of musical units of the different kinds, as we have noted already above, requires a 'possibility-space' of 512 dimensions. What this means is that all 512 potential constituents of, or potential musical-structural resources for, any typical classical symphonic work are combinatorially possible constituents of every such symphony, but that, typically, some of these possible categoria combinations -- & even one or more of the 10' self-hybrid self-combinations' presented explicitly in the last 'dialectogram' -- may not be actualized in any given specific, individual symphony [i.e., in a symphon; expendence work, as a whole as itself a higher unit].

However, it is often surprising to us how even some of the most extreme, exceptional, "tale of the distribution" combinations, spanning large numbers of 'selfhybrid', 'gualo-fractal levels or scales', have been instantiated in individual symphony-like units, at least once. Such is the case for one of the most extreme scaleranges within this 'meta-model', the case of the "algebraic unknown" 'category-symbol' g<sub>1,10</sub>, which has the levels or scales of the musical elements of categories g<sub>1,10</sub>, g<sub>1,2</sub>, g<sub>2,1</sub>, g<sub>2,2</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, which has the levels or scales of the musical elements of categories g<sub>1,10</sub>, g<sub>1,20</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, which has the levels or scales of the musical elements of categories g<sub>1,10</sub>, g<sub>1,20</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, g<sub>2,10</sub>, we "interpret", or "including such a 'one-Mote Symphonic mothement, was indeed created by Elliot Carter in his Eight Endes and a Fantasy. Other sub-speciess for which we solve this 'category-symbol' include a symphonic mothement with one or more one-Mote "or maments" or "decorations", before it and after it.

There is a vertical 'qualitative gradient' of rising determinateness, rising complexity, rising 'thought-concreteness', and rising '''contextuality'''/contextual richness in this 'dialectogram' diagram. That '''gradient'' begins, at its minimum, with the vertically lowest <u>specific</u> 'category-pictogram' in that 'dialectogram', with the category of musical Notes units. That '''gradient'' begins, at its minimum, with the vertically lowest <u>specific</u> 'category-pictogram' in that 'dialectogram', with the category of musical Notes units. That '''gradient'' begins, at its minimum, with the vertically lowest <u>specific</u> 'category-pictogram' in that 'dialectogram', with the category of musical Notes units. That '''gradient'' - the most 'de-contextualized' -- category, and its units, in this ''categorial series'''' 'categories-series''' for 'musics of gramphonic form'. That '''gradient'' - ends with the category of symphonics of this series of **512** units-representing categories -- or «arithmols. \''indefinite numbers'' -- of musical units of the different kinds. This final category for this 'meta-model', also includes, saufheben»-'''contains''', and organizes all of the less complex categories in this series, and, <u>implicity</u>, all of their units as well. A reader suggested an extended categorial progression, with <u>symphonic composers</u> as its next 'meta-monadic' category, which we plan to implement in the next edition. The 'merely hybrid' categories of this categorial series, or categorial progression, combine units of the main, 'self-hybrid' categories, both the 'dialectogram'. Their 'category-symbol' subscripts <u>specify</u> the <u>unique</u> subset of 'self-hybrid' category-symbols' in the 'dialectical meta-model' series, are not explicitly depicted in the 'dialectogram'. Their 'category-symbol' but orthogram', but nated only by triples of ellipsis dots, '...', placed between each possible pair of 'dialectical meta-model' series, are addition signs, '\De', forming a repeated symbol' \De'...\De'.

Quotation: "phrase A division of a melody that has been compared to one line of a poem. It is larger than the smallest possible division, called a FIGURE or *motif*, but it is not a complete musical thought, which is called a PERIOD." [p. 314]. *Note* the *Figures*—)*Periods*—)*Periods*—)*Melodies progression implied* in this quote.

Reference: Christine Ammer, The Harper Dictionary of Music, second edition, Harper & Row, Publishers, New York, 1987.



\* 'Dyadic Expansion' assumed.

\*\*The equality-relation is not complete, here, because 'Location-in-Totality-Taxonomy labels', 2, h, and mif have been removed from the RHS.

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| 9 mer:    | ₩<br>₩ <u>₩₽₽₩</u>                             | € 9<br><i>METN</i>             | ⊕Ŷ<br><del>M₽FC</del>          | ⊕ Ĵ<br>M₽FCN               | € 3 MPFCH          | €9<br>MPFCIIN            | € g MR                              | ⊕ |
| 9 MRN     | ⊕ 9 man  | €9.<br>MRIN                    | €9 MRC                         | • g macn                   | € g                | €9 MRCHN                 | € g MRF                             | ⊕ |
| 3 MRP.    | ₩ <sup>⊕</sup> <sup>©</sup> <sub>MRFN</sub>    | € g                            | €<br>€                         | € g MRFCN                  | € .                | €.                       | € g MRP                             | ⊕ |
| 9 MRP.    | ₩ <sup>⊕</sup> <sup>9</sup> <sub>MR271</sub>   | € g MRENN                      | €<br>⊕<br><sup>9</sup><br>MRPC | € g                        | ⊕ 9 MRPCH          | € g MRPCIN               | ⊕ Ĵ                                 | ⊕ |
| 9 MRP     | D G MRPFN                                      | € 9 MRPTHN                     | €<br>€                         | • 9 MRPTCN                 | € 9 MRPTCH         | €9<br>MRPFCHN            | € 3 s                               | ⊕ |

| Expansion of | the 'Content-Struc             | ture' Musical Resol | urce <mark>s</mark> /Unit <u>s</u> ' <u>Meta</u> -  | Model <u>Meta</u> -Equati  | on', <u>f</u> or <u>Present</u> atio | $mal  \underline{step}_{mif} \mathbf{S}_2 = 10$                                 | [continued].        | 2 |
|--------------|--------------------------------|---------------------|---|--|--------------------------------------|---|---------------------|---|
| 9.5N         | <b>⊕</b> 9€<br>55 <del>1</del> | ⊕.<br>€             | ⊕૱<br>\$  | ⊕9}, <sub>scw</sub>  | ФЭ́з <sub>сн</sub>                   | €9.   | <b>⊕</b> 3€<br>55F  | ⊕ |
| 3.           | €<br>€<br>SFH                  | €.<br>SFHN          | € G   | €<br>€<br>SFCN   | € 3 SFCH                             | €9  | <b>⊕</b> ઊ <u>_</u> | ⊕ |
| 3. SPEN      | € g                            | €.<br>Gesener       | €9.   | €9.<br>SPCN  | € g                                  | €9,<br>\$ | ⊕.<br>G. SPF        | ⊕ |
| 3 SEN        | €.                             | € g                 | €<br>€<br>SPFC  | € 3  | ФЭ<br>зарасни                        | €9  | €9.                 | ⊕ |
| BSRN         | € g                            | €.<br>GSRHN         | € g   | • g  | € g                                  | €9  | € g                 | ⊕ |
| SRFN         | €.<br>G.SRFH                   | €.<br>G.SRFHN       | €.<br>GSRFC   | €<br>⊕<br>G}srfon  | € G.                                 | €.  | ⊕ĝ <sub>s®®</sub>   | ⊕ |
| SREN         | €<br>€<br>SRPH                 | € g                 | €.<br>€   | €<br>€<br>SRPCN  | € 3                                  | €9<br>SRPCHN  | €.<br>SRPF          | ⊕ |
| SRPTN        | €.<br>SRPTH                    | €.                  | €<br>€<br>SRPFC   | €.<br>SRPFCN   | € 3                                  | €9<br>SRPFCHN   | €9.55M              | ⊕ |
| 9. SMN       | €Э                             | € 3<br>SMHN         | ФЭ́змс  | €<br>€<br>SMCN   | ФЭ́змсн                              | €9<br>SMCHN   | € 9.<br>SMF         | ⊕ |
| Besman       | ФЭд <sub>змтн</sub>            | €<br>€<br>SMTHN     | €<br>€<br>SMFC  | €<br>SMFCN   | € 3 SMFCH                            | €.<br>SMFCHN  | €9.<br>SMP          | ⊕ |
| BSMPN        | ФЭ́з <i>ѕм</i> ₽н              | €<br>€<br>SMEHN     | <b>⊕</b> .<br>€<br>\$ | €.<br>€.<br>\$ | ФЭ.<br><i>змрсн</i>                  | €9<br><i>SMPCHN</i>   | €.<br>€<br>SMPF     | ⊕ |
| BSMPTN       | €.                             | €.                  | €<br>€<br>SMPFC   | €<br>€<br>SMPFCN   | € 9.<br>SMPFCH                       | €<br>€<br>SMPFCHN   | € g.                | ⊕ |
| 3 SMRN       | €9.<br>SMRH                    | € g                 | €9<br>SMRC  | • G SMRCN  | € g                                  | €9  | € g                 | ⊕ |
| SMRFN        | € G                            | • g                 | € g   | € 3 SMRFON   | € G SMRFCH                           | € 3 SMRFCHN   | € 3 SMRP            | ⊕ |
| S.SMRPN      | € 3<br>SMRPH                   | € .<br>SMRPHN       | € 3<br>SMRPC  | € 3.<br>SMRPCN   | € 3 SMRPCH                           | €9<br>SMRPCHN   | € 3<br>SMRPF        | ⊕ |
| SMRPTN       | €9<br>SMRPTH                   | €9<br>SMRPTHN       | €<br>SMRPFC   | €<br>€<br>SMRPFCN  | €<br>SMRPFCH                         | ФЭ.<br>SMRPFCHN   | <b>₽</b> Ŝ~         | ⊕ |

| Expansion of t | he 'Content-Structi  | ure' Musical Resour    | rce <mark>s</mark> /Unit <u>s</u> ' <u>Meta</u> -M | Iodel <u>Meta</u> -Equation      | n', <u>f</u> or <u>Present</u> ation | al <u>s</u> tep <sub>=:/</sub> S <sub>2</sub> = 10 [ | continued].             | 3 |
|----------------|--|------------------------|--|----------------------------------|--------------------------------------|--|-------------------------|---|
| 9              | <b>Φ</b> ઉ   | <b>⊕</b> Ŷ             | <b>⊕</b> ઊ <mark>,≁</mark> ℃                       | <b>₽</b> Ŷ <u>*0</u> *           | €9                                   | €9   | <b>⊕</b> ĝ <sub>₩</sub> | ⊕ |
| 3 TAN          | €.   | • 9                    | ● ③  | <b>₽</b> ͡Ҙ                      | • 3                                  | €<br>€   | <b>⊕</b> ĝ              | ⊕ |
| 3 ter          | ФЭд  | ⊕ 9.                   | <b>⊕</b> ③   | €.                               | € g                                  | € 3 vacues   | <b>⊕</b> Ĵ              | ⊕ |
| 3 TOPEN        | € 3  | • g                    | € G  | • g                              | € g                                  | € 3  | ⊕Ĵ                      | ⊕ |
| 3              | €9   | €€                     | €G   | €9                               | • g                                  | • 3  | €€                      | ⊕ |
| 3 TRFN         | €.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽. | €Ŷ <mark>ŧRIH</mark> N | €<br>€   | €9                               | €.                                   | €.   | ⊕ĝ <mark>,rœ</mark>     | ⊕ |
|                | €<br>€<br>\$   | ₽Ĵ<br>₽₽₽₽₽₽           | ⊕<br>Ĵ<br>€®₽₽₽₽                                   | ⊕ĝ <mark><sub>™®®CN</sub></mark> | €9                                   | € 3  | ⊕Ĵ                      | ⊕ |
|                | € 3  | €.                     | €.   | • G                              | € 3 vapren                           | €.   | €9,<br>19M              | ⊕ |
| 3 romer        | <b>⊕</b> 3   | € 3                    | € g  | € g                              | € 9 PMCH                             | € 3  | ⊕9                      | ⊕ |
| 3 TOMPN        | €.   | € .                    | €<br>€   | € 3 COMFON                       | € 9 vmrch                            | €.   | €9.                     | ⊕ |
| 3 man          | ФЭдимен  | € g                    | €.   | € G                              | Ф Э.                                 | € 3 VMPCHN   | €9                      | ⊕ |
|                | €.   | €.                     | ⊕9}  | €.                               | €.                                   | €.   | € 9. 1-3MR              | ⊕ |
| B MRN          | € g  | • Gumenen              | • 9 MRC  | € g                              | € 3                                  | € 3 UMRCHEN  | € 9 vmRF                | ⊕ |
| . MRFN         | €.   | € g                    | ● 3  | €9                               | € 3 IMRFCH                           | €.   | €9                      | ⊕ |
|                | € g  | €.                     | € 3 UMRPC  | € 9 IMRPON                       | € 3                                  | € 3 UMRPCHN  | € .                     | ⊕ |
|                | €.   | €.                     | € 3  | ФЭд<br>имартся                   | € 3                                  | €.   | <b>⊕</b> ĝ              | ⊕ |
|                |  |                        |  |                                  |                                      |  |                         |   |

| Expansion of the | he Musical Resourc         | ces/Units 'Content-  | Structure' ' <u>Meta</u> -M  | lodel <u>Meta</u> -Equation          | n', <u>f</u> or <u>Present</u> ation | $\underline{s}tep_{ms} \mathbf{S}_{2} = 10 [co$ | ncluded].                     | 4 |
|------------------|----------------------------|--|--|--------------------------------------|--------------------------------------|---|-------------------------------|---|
| 9 ISN            | <b>⊕</b> Ŷ                 | <b>⊕</b> Ŷ   | <b>⊕</b> ઉ} <u>≁%</u>  | €<br>€<br>€                          | €.                                   | €<br>€<br>€                                     | <b>⊕</b> ③                    | ⊕ |
| Brisger          | €9<br>•                    | €.   | €<br>€<br>₽<br>₽<br>₽<br>₽   | €<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽ | €<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽      | €<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽                 | <b>⊕</b> ઊ <mark>,43</mark> ₽ | ⊕ |
| 3 War            | €9<br><b>15</b> 21         | €9.  | €<br>€<br>€  | €9<br><u>*\$\$\$</u>                 | € 9                                  | €<br>€<br>€                                     | €9,<br>15₽F                   | ⊕ |
| 3 VSPTN          | €9.<br><b>1</b> /3₽1H      | €9   | €<br>€   | €<br>€<br>€<br>€                     | € 9                                  | €.  | €9.                           | ⊕ |
| 9 13RN           | €.                         | @<br>€<br>€<br>€   | €<br>€<br><sup>1</sup> /SRC  | €<br>€<br>€                          | € g                                  | €.  | €.<br>€<br>\$                 | ⊕ |
| 3 VSRIM          | €.                         | € G  | €<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽                               | €9                                   | €.                                   | €.  | €9                            | ⊕ |
| 3 ISRON          | €.                         | €.   | @<br>€<br>€<br>€<br>€  | €.                                   | € 9                                  | €.  | <b>⊕</b> Ŷ                    | ⊕ |
| 3 ISRPTN         | €<br>€<br>€                | €.   | €.   | € 9 ISRPFCN                          | € 3                                  | €.  | €9.                           | ⊕ |
| 3 VISMON         | €9                         | € G  | €<br>€   | €9                                   | € 3                                  | €9.   | €9                            | ⊕ |
| 3 VISMEN         | €9.<br><i>VSMFH</i>        | €.<br>€  | €<br>€<br>€  | €<br>€<br>€                          | €.                                   | €9<br><del>VSMFCHN</del>                        | €9,<br>*****                  | ⊕ |
| 3 VSMEN          | ФЭд<br><u> <i>VSM</i>₽</u> | € 3 USMPHN   | € 3 VSMPC  | € 9 USMPCN                           | € 3 VSMPCH                           | € 3   | € 3 ISMPT                     | ⊕ |
| BUSMPTN          | €9<br><b>1</b> /35/10979   | €.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽.<br>₽. | €<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽<br>₽ | €9                                   | €.                                   | €<br>€  | €9                            | ⊕ |
| 3 I'SMRN         | € g                        | €.   | €.   | € Q USMRCN                           | € 9 ISMRCH                           | € 3   | € 9 1SMRF                     | ⊕ |
| BUSMRFN          | €.                         | €.   | €.   | €<br>€                               | €.                                   | €.  | €.                            | ⊕ |
| BUSMRON          | €.                         | € 9  | €.   | € 3 ISMRPCN                          | € 3                                  | € 3   | ● 9 13MRPT                    | ⊕ |
| BUSMRPTN         | €.                         | €.   | € 3 ISMRPFC  | € 3 VSMRPFCN                         | € 9                                  | €.  | <i>,</i> €9, .                |   |

<u>Example 8.d.</u> Hypothesis: <u>'The Dialectic of Nature</u> 'as <u>THE</u> Totality, mapped using "Dark Energy" as <u>Arché</u>»  $[D = \forall]$ . For our fourth example of the composition-design uses of the <u>Q</u> dialectical method, let us consider the <u>D</u>omain of the

dialectical 'content-structure' of a <u>pro</u>spective work on the <u>singular Historical 'Dialectic</u> of Nature' in <u>its</u> totality -- the <u>dialectic</u> of <u>self</u>-development of the <u>better-known universe</u>, with <u>also</u> of some of <u>its</u> still-only-<u>partially-known</u> aspects, to-date. The four 'text-images', that follow the two 'text-images' below, present <u>our partial</u> solution for the **512** terms of that <u>knowns/partially-knowns</u> '<u>Dialectic</u> of Nature dialectical meta-equation', with "Dark Energy" as its «arché» ontic category, and with "Dark Matter" as its 'first <u>contra</u>-category', when that meta-equation's dyadic 'self-involution function' is iterated to its **10**th 'cosmo-historical epoch' [counting epoch  $\tau_2 = 0$ ], i.e., to  $\tau_2 = 9$ . The final two 'text-images'

of this section de<u>pict</u> the <u>Encyclopedia Dialectica</u> "'Universal Taxonomy''' that arises from this 'HISTORICAL-<u>Dialectical Dialectic</u> of Nature <u>Meta-Equation</u>', and from its counterpart, the 'SYSTEMATIC-<u>Dialectical Dialectic</u> of Nature <u>Meta-Equation</u>', the latter for our <u>present</u> cosmos, known and/or only <u>dknown</u>. Thus, for us, the table of contents which these '<u>Meta-Models</u>' <u>map</u> is the table of contents for our planned universal <u>Dialectical Encyclopedia</u> <u>itself</u> -- <u>Encyclopedia Dialectica</u> -- its contents-table to be organized per that '''Universal Taxonomy'''. These partial solutions involve the following hypothes<u>es</u> as to the nature of "Dark Energy", and as to the nature and origin of "Dark Matter", as well as of the nature and origin of space itself, and of time itself.

One of our major criticisms of our 'Dialectical Theory of Everything'/ "Dialectic of Nature" '' 'meta-equation metamodel', as we initially presented it\*, in **2010**, is the following. Therein, pre-**n**uclear "particles", **n**, were assigned as the «arché» ontological-category, i.e., with "non-composite" fermions and bosons as the cosmological «arché arithmos», solving for their 'first contra-category', **g**<sub>nn</sub>, denoting "composite" fermions & bosons, i.e., as '**s**ub-atomic/pre-atomic' endo-nucleus "particles", e.g., protons and neutrons, and, then, solving for **q**<sub>ss</sub> as "<u>a</u>toms", and for all '<u>self</u>-hybrid' ontological categor<u>*ies*</u> thereafter as deriving from  $\underline{\mathbf{q}}_{ss} \models \underline{\mathbf{a}}$ , especially  $\underline{\mathbf{q}}_{aa} \models \underline{\mathbf{m}}$ . Thus, this 'cosmo-ontological category' of molecules, seems to exclude electrons, a species of «genos» n, from their key role as a constituent of "<u>a</u>tom<u>s</u>". Electro-neutral "<u>a</u>tom<u>s</u>" -- as opposed to naked atomic nucle<u>i</u>, i.e., completely-ionized ion<u>s</u> -- should be <u>**q**</u><sub>sn</sub>, not **g**<sub>es</sub>. But, in that initial 'meta-model', the ''self-involutively-derived''' 'meta-genealogy' of the rest of our known 'cosmos-ontology' arises, per our solutions then, from successively ever-higher-degree ''self-involutions'' of **g**\_\_\_, not from such "self-involutions" of  $\underline{q}_{sn}$ . This defect is at least partially removed, in different ways, by (1) an <u>n</u>-as-«arché»-category 'meta-equation' using the 'triadic dialectical function' -- as opposed to the 'dyadic dialectical function' of our original 'meta-model' -- which we have exemplified, in the systematic-dialectical mode, in the 'Triadic/Systematic Dialectical Method' section, above, or (2) by selecting **r** as «*arché*» category, such that  $\mathbf{r} \equiv \mathbf{n} \& \mathbf{s}$ , via, again, a '*dyad*ic dialectical function', or (3) by recourse to a 'mixed, triadico-dyadic dialectical function', again with **n** as «arché» category, but with 're-«arché»-ization' upon <u>a</u>, as we term this procedure, as in the 'dialectical meta-equation' --

-- which we mentioned, above, in the sub-section on <u>our</u> 'Triadic/Historical Dialectical Method'. However, there is an even *deeper defect*, as we see *it*, in <u>our</u> initial ''<u>Dialectic of Nature</u>''' <u>'meta</u>-model'. This *deeper defect* afflicts also all of the later ''<u>Dialectic of Nature</u>''' <u>'meta</u>-model<u>s</u>', noted above, which we introduced to transcend the *defect* of the missing <u>a</u>tomic electrons in <u>our</u> original  $D = \forall$  <u>'meta</u>-model'. This *deeper defect* is the absence of any account, in any of these <u>'meta</u>-model<u>s</u>', as to the origin(<u>s</u>) of space-[and-of-]time itself [themselves], i.e., an *omission* of the *primary* 'cosmo-ontological background' of all other known 'cosmological ontology'. All of these <u>'meta</u>-model<u>s</u>' merely make abstraction from the existence of "time" and of "space". Or they merely blithely take for granted their existence, as (a) 'cosmological ontolog(y)(*ies*), <u>outside offexternal to/not covered by</u> those <u>'meta</u>-model<u>s</u>' of -- therefore <u>not quite</u>! --  $\forall$ , "Everything". They also give no account of the origin(<u>s</u>) of the "four fundamental interaction<u>s</u>" that are recognized by contemporary <u>phys</u>ics, including, of course, of the "'gravitic''' [cf. Asimov, 'Foundation heptalogy'] interaction. The <u>'Dialectical Theory of</u> *Everything'*/ ''<u>Dialectic of Nature</u>''' <u>'meta-equation meta-model</u>' presented in this section, is designed to address those deeper defects regarding space/time and gravitational interaction origins. This new <u>'meta</u>-model <u>meta</u>-equation' does so by positing "Dark Energy", or, better, "<u>Unknown-Source ANTI-Gravity</u>"\*\*, as the deepest presently-discernible, *Oknown* cosmic «arché»-category, and "Dark Matter", or, better, "<u>Unknown-Source GRAVITY</u>"\*\*, as the 'cosmo-ontological first <u>contra</u>-category'. In doing so, because both "Dark Energy" and "Dark Matter" are "known" to modern science only to a most rudimentary degree, we have had recourse to quite speculative hypothes<u>es</u> as to their nature<u>s</u>.

<sup>\*[</sup>F.<u>E.D.</u>, <u>A Dialectical "Theory of Everything</u>", volume **0**, F.<u>E.D.</u> Press, Star<u>s</u>' End, New York, and Terminious, California, **2010**.].

**<sup>\*\*</sup>**[We have adopted these two terms from a discourse by Neil deGrasse Tyson.]

<u>**Present</u></u>ly, o<u>ur</u>-hypothesis is that "Dark Energy", as initially the sole \partialknown ontic content of our cosmos, is "pure" <u>time</u>, in the sense of the <u>self</u>-expansion of "pure" <u>space</u> -- space empty, initially, of [mass-]energy of any [other] [\partial]known kind; empty, initially, of any "Dark Matter"/"ordinary", "standard model" 'Bright Matter" "particles". "Dark Energy" as this <u>self</u>-expansion of space, forms a natural, universal, cosmological "clock"', but <b>not** a "perfect" clock, in human term<u>s</u>, because the expansion of, e.g., the "radius" or "diameter" of our cosmos does **not** exhibit a steady rate. Initially, it <u>accelerates</u>. I.e., we also guess that the initial "cosmological inflation", when the "radius" of space was soon growing at a rate, or "velocity", massively exceeding light velocity, was **not** due to any hypothetical "inflaton field", but, instead, was the initial manifestation of "Dark Energy" itself. The initial period of this <u>accelerated</u> "cosmological inflation" is believed, per current consensus, to have lasted from 10<sup>-36</sup> sec. after the "Big Bang", to between 10<sup>-33</sup> sec. and 10<sup>-32</sup> sec. Following that period, per that consensus, the universe continued to expand, but at a **much** slower velocity.</u>

We further hypothesize that physical space is *not* any **R<sup>3</sup>**-like "continuum", but is, instead, a 'contiguum' of <u>somewhat</u> discrete 'units of space', '«monads» of space', or ''quanta of space'''. And that the tendency of each such unit to escalating rates of "mitosis" -- of self-replication/self-reproduction -- is the process behind so-called "Dark Energy". Thus, even physical space is an [albeit 'trans-Pythagorean'] '«arithmos» of «monads»', a '''population''', partially echoing, unexpectedly, the, partly qualitative, sense of "number" that prevailed during the psychohistorical epoch of Ancient humanity. But this 'particulate-ness' of physical space resides at a scale beyond the power of resolution of most or all of contemporary scientific technology. We may tentatively name these '"particles" of space', the ""particles" of "Dark Energy" itself, 'spandetrons'. A faction of physicists finds promise for other aspects of theory-progress in such a 'monadicity' of space: "...there is good evidence that the quantum theory of gravity will...engender big violations of locality....the violations of locality forced on us by quantum gravity are precisely what are needed to explain the nonlocality brought on by quantum entanglement. ... we must unify the geometrical picture of spacetime given by general relativity with quantum physics. There is...theoretical evidence that...a quantum theory of gravity will require space...to [be] discrete....we regard thermodynamics as [emerging] from averages over large collections...whose individuals follow different laws. ... when locality and space itself emerges from averaging... it is inevitable that locality will be [violated]."\* Additionally, we posit a principle, internally-related to a classical principle, stated as "*Nature abhors a vacuum*.", or, for us, as '*Nature abhors nothingness*.' This additional principle we state as '*Nature abhors infinity*.' The significance of this principle in the context of our 'Nature-Dialectic: "Dark Energy" as «Arché»' hypothesis is as follows. Although, if "Dark Energy" in its initial, "cosmological-inflationary" manifestation, expanded the radius of our cosmos at a rate or "velocity" far in excess of the velocity of light, this does not, we hold, mean that its rate of expansion of space could accelerate without bound, "to infinity"; that its "limit" was "infinity". We hold that this rate of expansion encountered a *finite*, immanent limit, a limit immanent to the 'substance of space'; a 'self-resistance', a 'self-braking', and, thus, met with a 'self-opposition', that arose from the nature of the '«monads» of space' themselves. Beyond a certain threshold, for these «monads» ' 'rate of self-reproduction', or rate of "'self-mitosis" -- the colossal rate of selfexpansion of "pure" physical space -- met a physical barrier in the physical substance of these «monads» themselves, and in their ensemble. That escalating rate began to do a kind of "damage" to these «monads» -- to physical space itself -producing a kind of distortion in them, and in it -- in their «arithmos» -- a kind of bending, a kind of warping, stress, strain, and deformation. This warping, we hypothesize, set the stage for the later "crinkliness" of the crinkled "cosmic web" itself. It may also help to explain the apparently too-early/too-rapid formation of supermassive and intermediate mass "black holes". In Einstein's General Theory of Relativity, gravity is the 4D curvature of space-time. In the context of ordinary matter, or 'Bright Matter', as well as in the context of "Dark Matter", this "bending" of space-time is associated with matter, i.e., with "mass-energy", concentrations, and is in a sense locally proportional to the local 'massenergy-density' thereof. But efforts to identify "Dark Matter" with "particles", whether some of those of the [presently] "Standard Model of Particle Physics", or with similar "particles", beyond that "Standard Model", have been mounted for many years, and have so far failed to bear fruit. We suppose that the first manifestation of the gravitational interaction in cosmos-history was 'particle-less', that it was a curving of space-time initially not associated with any "particulation" of the "Standard Model" kind, or of similar kinds. We suppose further that this first manifestation of 'proto-gravity' was also the first manifestation of "Dark Matter", as "pure" space-time curvature/bending, i.e., as 'contra-Euclidean spandetrons ' deformation, brought about by the prior extreme effects of "Dark Energy". We hold that "Dark Energy", in its hyperacceleration of space-growth, i.e., in its extremity of the spatial self-expansion rate, gave birth to "Dark Matter". Signing for the 'cosmo-ontological category' of "Dark Energy"/spatial self-expansion by x, and for the [self-]opposing 'cosmoontological category' of "Dark Matter"/spatial [<u>self</u>]<u>C</u>ontraction by <u>C</u>, <u>our</u> hypothesis is:  $\tau_2 = \mathbf{0} \rightarrow \tau_2 = \mathbf{1} \Rightarrow \mathbf{X}^1 \rightarrow \mathbf{X}^1$ 

# $\underline{\mathbf{X}}^{2}, \ \frac{1}{\xi} \ \underline{\mathbf{X}}^{1}; \ \underline{\mathbf{X}}^{2} = \underline{\mathbf{X}} \iff \underline{\mathbf{X}} = \underline{\mathbf{X}}^{1} \iff \underline{\mathbf{\Delta}}\underline{\mathbf{X}}^{1} \mid = \underline{\mathbf{X}} \iff \underline{\mathbf{C}} \quad [\longrightarrow \underline{\mathbf{q}}_{1} \models ] \underline{\mathbf{q}}_{2}.$

\* [Lee Smolin, lead article, "Space: The Final Illusion", <u>Scientific American</u> Magazine, 29:3, Spring 2020, p. 7, emphasis <u>added</u>] <u>Dialectic: Users' Manual. Edition 2. 04 June 2022.</u> by Karl H. Seldon, for Foundation <u>Encyclopedia Dialectica</u> [F.<u>E.D.]</u> Note that  $\underline{C} \notin \underline{X}$  and, moreover, that  $\underline{C} \models \underline{X}$ : <u>C</u>ontraction *opposes* e<u>x</u>pansion. Note also here the potential *«aufheben»* "meta-monad-ization" character of this process of formation of "Dark Matter"/"pure" spatial deformation/"pure" gravity from the «monad<u>s</u>» of "Dark Energy". Each '<u>meta</u><sup>1</sup>-«monad»' of "Dark Matter" -- each element of spatial deformity/-warping -- would be made up out of a heterogeneous multiplicity of deformed '<u>meta</u><sup>0</sup>-«monad<u>s</u>»' as [<u>self</u>-]deformed unit<u>s</u> of "Dark Energy"/"pure" space; [<u>self</u>-]deformed <u>group</u>s/assemblages of spandetron units.

The next question that arises, for us, for this speculative hypothesis is: ¿What mechanism, given this proposed character of "Dark Energy" as *«arché»* 'cosmo-ontological category', and of "Dark Matter" as the first offspring of "Dark Energy", in this 'meta-*gene*alogy' of our cosmos, should one hypothesize for the origin of 'Bright Matter' "Elementary Particles"?

We are, in the main, pursuing, as the secondary hypothesis to <u>our</u> primary hypothesis, that 'Bright Matter' arose, **not** from the 'complex unification', 'dialectical synthesis', or '<u>allo</u>-hybridization' of 'Dark Matter'' units with 'Dark Energy'' units, but from the '<u>auto</u>-hybridization' of the 'Dark Matter'' units themsel<u>ves</u>. Thus, for the hypothesized self-movement of/from this <u>meta</u>-model's 'ontic epoch **1**',  $_{\tau}\tau_{2} = \mathbf{1}$ , into its 'ontic epoch **2**',  $_{\tau}\tau_{2} = \mathbf{2}$ , we solve [ $\cdot = \cdot$ ] as follows --

$$\sqrt[3]{\tau_2} = \mathbf{1} \rightarrow \sqrt[3]{\tau_2} = \mathbf{2} \Rightarrow \mathbf{\underline{x}}^{2^1} \rightarrow \mathbf{\underline{x}}^{2^2} \notin \mathbf{\underline{x}}^{2^1}; \ \mathbf{\underline{x}}^{2^2} = \langle \mathbf{\underline{x}} < \mathbf{\underline{x}} \rangle^2 = \langle \mathbf{\underline{x}} \rangle^2 = \langle \mathbf{\underline{x}} < \mathbf{\underline{x}} \rangle^2 =$$

-- wherein  $\mathbf{q}_{cx} \models \mathbf{w}$  stands for the category of the complex unity and integration, or dialectical synthesis, of  $\mathbf{C}$  and/with  $\mathbf{x}$ . I.e.,  $\mathbf{q}_{w} \equiv \mathbf{w}$  symbolizes the "'cosmic  $\mathbf{w}$ eb'" by which the combined presence of "Dark Matter" and "Dark Energy" weaves together galaxy 'macro-unit<u>s</u>', plus their '*ever-more-*macro <u>meta</u><sup>**n**</sup>-unit<u>s</u>'-- "galactic cluster<u>s</u>", "galactic supercluster<u>s</u>", "galactic filament<u>s</u>", "void<u>s</u>", etc. Local concentration<u>s</u>, or 'densification<u>s</u>', of "Dark Matter",  $\mathbf{q}_{c}$ , support galaxy-formation, while "Dark Energy",  $\mathbf{q}_{x}$ , drives these local "'island<u>s</u>"' of ''Dark Matter-Energy '''/'Bright Matter-Energy ' ever further apart, and, <u>lately</u>, <u>again</u>, apart at an <u>accelerating</u> rate. The resulting combined effect of  $\mathbf{q}_{c}$  &  $\mathbf{q}_{x}$  is denoted by  $\mathbf{q}_{cx} \models \mathbf{q}_{w} \equiv \mathbf{w}$ . Typical galaxy formation is also anchored by "super-massive" 'Dark Hole<u>s</u>', at the core of each typical galaxy, made up out of, per <u>our</u> hypothesis, a hypothetical, <u>finitary</u>, trans-neutronium "'phase''' of "massenergy" which w<u>e</u> name 'holonium'. W<u>e</u> refer to "Black Holes" as 'Dark Hole<u>s</u>', instead, because the now expected, protracted 'self-evaporation' of such formation<u>s</u>, via their emission of, <code>s</code> "black body", "Hawking Radiation", implies that they are **not** wholly and absolutely "Black", or emission-less, as was earlier widely believed.

The 'cosmo-ontological category'  $\underline{\mathbf{q}}_{cc}$  |=  $\underline{\mathbf{r}}$  represents 'Bright Matter', the «*arithmos*» of "Elementary Particles", that is, the cosmological-ontological category of the "non-composite"-and-"composite", bosonic and fermionic "particles", whose own sub<sup>1</sup>-categories include those of the *units* known as Higgs "particles", photons, gluons, mesons, electrons, quarks, protons and neutrons, etc. They are, in general, responsive to electrostatic charges, and/or to electromagnetic radiation -- to photons; to light. Hence, we call them "Bright". We have no exposition-worthy hypothesis, as yet, as to the mechanism by which the [self-]interactions, or 'intra-actions', within sufficiently "concentrated", 'densified', e.g., [proto-]galactic, clouds of "Dark Matter", give birth to the first 'Bright Matter' "Elementary Particles" - that is, give birth to the first-born sub-categories of the  $\mathbf{r}$  'physi[c]o-ontological category'. We are still [re]searching for a mechanism which would account for the  $\underline{c}^2 = \underline{c} <+> \underline{\Delta c}$  |=  $\underline{c} <+> \underline{r}$  component of our '*meta*-model *meta*-equation', beginning from its epoch  $_{\forall}\tau_{2} = 2$  equation, with <u>r</u> corresponding to the <u>NQ</u> <u>generic</u> 'arithmetical ordinal <u>qual</u>ifier' <u>q</u><sub>4</sub>, thus hypothesized to be the fourth-born 'cosmo-ontological category' of this '*meta*-model', and of its epoch  $\tau_2 = 2$  model. Our primary hypothesis is, then, that, not the, 'hyper-hypothetical', "inflaton field", but "Dark Energy" itself, first filled our nascent cosmos with "Dark Matter", as "space-time curvature", once "Dark Energy's" rate of expansion of the "volume" of the cosmos breached its limiting, albeit already superluminal, "velocity". "Dark Energy's" paradoxical "energy density" of "empty" space apparently remains constant – 'undilutable' -- per unit volume of space, whereas other "mass-energy density", whether 'Bright' or "Dark", becomes diluted as the "volume" of the cosmos increases via "Dark Energy's" [self-]operation. This "dilution" effect means that the <u>Counter-expansive</u>, <u>Contractive</u> effect of "Matter", both "Dark" and 'Bright', *weakens* as the "Dark Energy"-driven expansion of the cosmos continues. As a result, we hypothesize, the rate of expansion of the cosmos eventually returns to its early-cosmos-like peak acceleration mode. Recent astrophysical observations/measurements indicate, so far, that our cosmos is back in its accelerated expansion mode, today, once again.

This suggests a possibility that, instead of a "Big Rip" of the very fabric of space-time, resulting from long-continued, uninterrupted, monotonic acceleration of spatial expansion, as some physicists have predicted, there might eventually transpire, instead, albeit only over a vast interval of cosmos-scale time, a 'drepetition' of what happened in the early cosmos. But this 'dre-petition' would arise at a higher "*quant*itative scale" of 'cosmo-spatial' "volume", and, at least initially, at a higher '*qual*itative scale' of *extant* cosmological ontology, than prevailed in that earlier [first] "'petition'". This could mean a renewed sudden flooding of the cosmos with *Contra*-expansive "space-time curvature", i.e., with "pure gravity", i.e., with "Dark Matter". Perhaps this flooding would be followed by a renewed burgeoning of 'Bright *Matter*' [and of 'Bright <u>Anti-Matter</u>'] as well, from out of the most concentrated condensations of *new* "Dark Matter". Such a flooding *into* our cosmos, *from within* our cosmos, of new "thermodynamic free energy", would upset traditional thermodynamic expectations, e.g., of monotonically ever-increasing cosmological entropy. If the 'excession' of the limit of <u>spatial</u> self-expansion velocity precipitated 'Dark Matter-Energy' into our cosmos once before, when cosmological space was "pure" – empty of "'Matter-Energy'', but already containing 'Dark Matter-Energy' and also 'Bright Matter-Energy', precipitate an increment of new 'Dark Matter-Energy' into our cosmos, a second time? If it happened once, could it happen again?

One might even wonder if our cosmos will not propagate itself, over a vast interval of cosmological time, as and via, a helically-partially-recurring, 'expansively-recursive/cumulative', whorl/"bounce" of <u>ac</u>celerated expansion, up to the velocity limit of such expansion, followed by a 'self-infusion' of "Dark Matter" into the cosmos, followed by a slowing down, a <u>de</u>celeration, of that expansion, due to this presence and "gravity" of that <u>new</u> "Dark Matter", until, once again, that expansion, even though slowed down, has sufficiently "diluted" that 'matter-energy' once more, causing the spatial self-expansion to <u>re-ac</u>celerate once again. If so, because it would recur in a cosmological context already teeming with "Dark Matter", and with 'Bright Matter', this new irruption itself, or its 'ontological hybridization' with what in our cosmos preceded its irruption, might produce something ontologically new and unprecedented. That is, the results of this latter-day [re-]irruption of new 'Matter-Energy' might include (a) new and "'higher''' kind(<u>s</u>) of "'mass-energy'''.

This might be especially so if advanced intelligent civilizations, e.g., of a '<u>meta</u><sup>n</sup>-human', n > 1 ontological category, and having sustained technological progressivity and continuity, over the millennia of millennia between the present epoch and that of this second mass-energy [re-]infusion, had become able to predict the timing of this second 're-irruption' of "free energy", and to prepare for it – to prepare to <u>survive</u> and to <u>harness</u> it. Such a speculation confronts us with the vision of a Phoenix-like, serially self-renewing, self-resuscitating, ever self-advancing cosmos, in a process of something like "eternal progression". The cosmos would self-propagate as a 'temporal <u>qualo-quanto</u>-fractal', expanding its <u>scale</u> <u>qual</u>itatively – ontologically – as well as quantitatively, up to and by each 're-irruption', but still characterized by a partial mutual similarity among the 'meta-epochs' of each whorl, turning from accelerated, back to decelerated, self-expansion.

Set forth at the end of this discussion is a **512**-term version of our whole-cosmos 'meta-equation'. Even this, o<u>ur</u> concluding, 9<sup>th</sup> 'self-iteration' of its '"Dark Energy" «arché», herein, i.e., for its epoch  $\sqrt{\tau_2} = 9$  equation, reaches to but ~one epoch before the 'ontology-state' of our present cosmos. It ends with the advent of what <u>we</u> hold to be the '<u>cosmo</u>-ontology' -- *not* just the *Terran* ontology -- of 'human[oid]ity'. But this equation would still cover only one whorl of such a cosmological progression of 'self-resurging big surge<u>s</u>'.

The **3**rd 'self-iteration' of this 'meta-equation' is for the movement of/from 'cosmo-ontological epoch **2**',  $_{\forall}\tau_{2} = 2$ , into 'cosmo-ontological epoch **3**',  $_{\forall}\tau_{2} = 3$ . We desolve ['d]-='] its new terms as follows --

$$\sqrt[4]{\tau_2} = 2 \rightarrow \sqrt[4]{\tau_2} = 3 \Rightarrow \underline{\mathbf{X}}^{2^2} \rightarrow \underline{\mathbf{X}}^{2^3} \notin \underline{\mathbf{X}}^{2^2}; \underline{\mathbf{X}}^{2^3} \approx \underline{\mathbf{X}}^8 \approx \langle \times \underline{\mathbf{X}} < + \times \underline{\mathbf{C}} < + \times \underline{\mathbf{M}} < + \times \underline{\mathbf{r}} < \rangle^2, ::$$

$$\underline{\mathbf{X}}^{2^3} \quad \underline{\partial} |= \langle \times \underline{\mathbf{X}} < + \times \underline{\mathbf{C}} < + \times \underline{\mathbf{M}} < + \times \underline{\mathbf{r}} < + \times \underline{\mathbf{q}}_{rx} < + \times$$

Because science, today, comprehends so little about "*Dark Energy*" and "*Dark Matter*", all of the term<u>s</u> – all of the 'category-symbol<u>s</u>' – that involve  $\underline{\mathbf{x}}$  and/or  $\underline{\mathbf{c}}$  in combination with the character<u>s</u> representing better-known ontological categor<u>ies</u> -- categor<u>ies</u> like  $\underline{\mathbf{r}}$  for "particles", and  $\underline{\mathbf{a}}$  for " $\underline{\mathbf{a}}$  tom<u>s</u>" -- inherit some of the '<u>un</u>known-ness' of  $\underline{\mathbf{x}}$  and  $\underline{\mathbf{c}}$ . That is, 'category-symbol<u>s</u>' like  $\underline{\mathbf{q}}_{rx}$ ,  $\underline{\mathbf{q}}_{rc}$ , and  $\underline{\mathbf{q}}_{rcx}$ ,  $\underline{\partial}$ ]= $\underline{=} \underline{\mathbf{q}}_{rw}$ , first appearing in this <u>meta</u>-model's model for *epoch* 3,  $_{\forall}\tau_{2} = 3$ , are hard to *solve for*, as they sign interaction<u>s</u>, and interaction<u>s</u>' result<u>s</u>, for actualit<u>ies</u> of well-known category/«*monad*<u>s</u>»,  $\underline{\mathbf{r}}$ , with "*Dark Energy*" and/or with "*Dark Matter*", about which <u>we</u> are still largely in the "Dark".

What do we really know, as yet, of any general impact of "Dark Energy", and/or of "Dark Matter", upon 'Bright Matter-Energy' "particles", "atoms", "molecules", pre-eukaryotic "cells", eukaryotic "cells", asocial "multi-[eukaryotic-]cellular, 'meta-biotic' organisms", animal [and plant] "societies", and human[oids]-led 'meta-societies'?

Thus, those of the many term<u>s</u>/'category-symbol<u>s</u>' of this '<u>meta</u>-model', for its epoch  $\forall \tau_2 = 9 \mod 1$  -- as set forth in detail at the end of this discussion, below -- in which the ontological category/«*arithmos*» of <u>human[oid]s</u>, i.e., of their '<u>meta-societies</u>', first emerges, if they include <u>x</u>'s <u>and/or <u>C</u>'s among their subscript<u>s</u>, typically therefore must remain mysterious -- <u>un</u>solved-for at present -- within this '<u>meta</u>-model'. And so they must continue to remain, until scientist<u>s</u> discern more about the <u>nature</u> of "<u>Dark Energy</u>", and about the <u>nature and origin</u> of "<u>Dark Matter</u>", whether or <u>not</u> this <u>meta</u>-model's grounding, **D** =  $\forall$  hypothesis, is corroborated by further/future observational and/or other evidence.</u>

In overview then, regarding the "'*Everything*"' '<u>meta</u>-equation'-narration above, and its  $\sqrt{\tau_2} = 9$  component equation, detailed below, let <u>us</u> note the following. In the 'meta-<u>gen</u>ealogy' of our cosmos that <u>we</u> envision, <u>we</u> hypothesize that "*Dark Energy*", <u>x</u>, "'begat"" "*Dark Matter*", <u>c</u>, and that, then, in turn, <u>c</u> "'begat"" <u>r</u>, 'Bright "Elementary Particle" Matter-Energy', including *at least* the "pa<u>r</u>ticle<u>s</u>" of the "Standard Model of Particle Physics". This is how <u>we</u>, per o<u>ur</u>  $D = \forall$  (*Regenerist* ' hypothesis, have integrated the two, newer, '*cosmo-physio*-ontological' categor<u>ies</u> of <u>x</u> and <u>c</u> into <u>our</u> predecessor 'cosmo-ontological meta-<u>gene</u>alogy' hypothesis, per which <u>r</u> "'begat"" <u>a</u>, <u>a</u> "'begat"" <u>m</u>, and then that, at least on planet Terra, <u>m</u> "'begat"" <u>p</u>, <u>p</u> "'begat"" <u>e</u>, <u>e</u> "'begat"" <u>b</u>, <u>b</u> "'begat"" <u>l</u>, and, finally, to-date, <u>l</u> "'begat"" <u>h</u>.

Per this '*Regenerist*' hypothesis, in particular, but also per what is already known about "*Dark Energy*" and "*Dark Matter*", as forming, together, the primary 'self-duality', or 'intra-duality', of our cosmos, in the F.<u>E.D</u>. sense of those terms, is its tendency to anti-gravitic self-expansion versus its <u>C</u>ounter-tendency to gravitic self-<u>C</u>ontraction. The F.<u>E.D</u>. research community has an "'old saying": '*Dialectic is the cause of time*. '*Intra-duality' is the cause of dialectic*.' If the '*Regenerist*' hypothesis expressed herein is corroborated by further/future evidence/observation/experiment, then this hypothesis will give a new, more literal, and somewhat unexpected-by-us, meaning to that, our "old saying".

The  $\sqrt{\tau_2} = 9$  epoch, i.e., the **10**<sup>th</sup> natural-historical epoch, four 'image-page' equation, posted below, is an  $\sqrt{Q}$  – i.e., a first <u>E.D.</u> 'arithmetic for dialectic' language-expressed/-formulated – 'dialectical equation', an equating between *unity* and *diversity*. The aspect of *unity* is posited on the left-hand side [LHS] of this 'dialectic equation'. It signs a 9-fold <u>symbolic</u> '''self-involution''' of the stipulated single, original, *«arché-arithmos»*; of the symbol representing the ontological category of ''Dark Energy''. The aspect of *diversity* is posited on the RHS of this 'dialectic equation'. That right-hand side consists of a consecutively-ordered, non-amalgamative, non-reducing «<u>a</u>sumbletoi» sum of **512** ontic 'category-symbol<u>s</u>', the cumulative consecutive yield of 9 successive epoch<u>s</u> of *«arché-arithmos»/subsequent-self-hybrid «arithmos»* '''self-involution'''. It models an *actual*, 'self-recursive', cosmological, *physical* '''self-involution''', that

By way, then, of summary, this  $_{\forall}\tau_2 = 9$  equation-model envisions a "pure" space bursting into being, launching a vast and 'self-iterating' *«aufheben»* movement, beginning with the self-accelerated self-expansion of that "pure" space itself, then soon folding upon itself in its response to the 'excession' of its own velocity of self-expansion, and self-in-folding 'self-iteratively' from there on, and from then on, until, with but one further 'self-iteration', it would encompass 'cosmo-ontology' of today, plus a prediction, or 'category-symbolic pre-construction', as to our cosmological-ontological future.

*«aufheben»* transforms, or concurrently negates/conserves/uplifts – the monadic ontological content(s) of our cosmos.

It is, perhaps, a bit early in the 'meta-evolution' of Terran humanity to seriously consider any potential practical, technological applications of such very recent discover<u>ies</u> -- of still largely <u>unknown</u> 'factualit<u>ies</u>' -- e.g., of "Dark Energy" and of "Dark Matter". However, speculatively, we notice that the development of (a) "field machine(s)", capable of generating "Dark Energy" and "Dark Matter" effects, might be 'harnessable' to achieve a <u>superluminal</u> interstellar "warp drive" more plausible than the Alcubierre warp drive. Such a, warp-driven, faster-than-light interstellar craft might use "dark energy" effects to expand space behind it, and, concurrently, "dark matter" effects to contract space in front of it. Such a "warp drive" design should **not** be afflicted with the requirement for speculative, so-far-unobserved "negative mass", "negative energy-density" exotic matter. It might also escape the hypothesized "Hawking radiation" incineration of its occupants, and the speculative preclusions or instabilities of a -- so far <u>un</u>achieved – "final" theory of "quantum gravity", that may afflict, hypothetically, the Alcubierre design. The faster-than-light "self-propagation" of a starship by such a "Dark Energy" / "Dark Matter" engine might analogize to the "self-propagation", at "merely" light-speed, of electromagnetic radiation itself, wherein, e.g., a changing electric field induces a changing, traveling, magnetic field, which then toggles back to/alternates with inducing a changing, traveling electric field, which then.... The "Dark Matter" space- $\underline{C}$  ontraction ahead might also coordinate concurrently with, or [overlappingly] alternate with, the "Dark Energy" space- $\underline{C}$  pansion behind, in a continual 'co-generation', or even in a continual 'mutual-generation'.

It may be of interest to consider what is presently observed/believed about "*Dark Energy*" and of "*Dark Matter*", in the context of o<u>ur</u> 'Meta-Darwinian' hypothesis. This hypothesis is the positive fruition of o<u>ur</u> dialectical, immanent critique of the ideological adulterations in standard scientific Darwinian theory. What w<u>e</u> name *Dialectical Meta-Darwinism*' not only critiques such individual-atomistic, social-atomistic, human-society-denying ideological abominations as ruling-class "Social Darwinism". It also critiques the confinement of the core Darwinian principle to DNA-based biology. Too, and relatedly, it critiques the ideological connotations of a key Darwinian term: "natural selection". This term feigns an analogy between the "artificial selection" enacted by human agents – human subjects -- e.g., during the Neolithic epoch, and since, in their "domestication" of non-human social animal and plant species. But there is no agent, no subject, of "natural selection" to which to analogize the human agents of such "artificial selection", unless we invoke, e.g., "God" as that agent, or subject. Thus, in a move so characteristic of modern, capitalist ideolog<u>ies</u> in general, "natural selector" of a given natural formation that is expanding in the space-time it occupies, and/or in its mass-energy share, is that formation itself. Not some fictitious external "selector", but that formation itself, via the rate of self-reproduction that it <u>sustains</u>, is the real agent of its "selection", of its growing share of physical reality. It is the "subject-object-identical" of its own "fitness".

Such is also seen in the habitually-repeated formulations of ideology-infected scientists who state that "the laws of nature" somehow "govern" the physical world of our experience and experiment. But how can miniscule physical components of the physical world – e.g., chalk marks on blackboards, and the pools of dried ink in printed texts, including equations – which symbolically embody, at best, *descriptions* of aspects of the physical world that hold true, largely, and including predictively, so far, for all human experience and experiment to-date, suddenly "grow legs", become agents or subjects, and jump out of their chalk board, off of the printed page, out into the larger world, pushing things around to accord with their assertions? Physical causes "govern" the world, themselves included, *not* any "law of nature" <u>pseudo</u>-subjects; not any equational «Geist<u>es</u>», or ghosts. For science as such, it must be the dynamics of physical that actuality "govern" the content of scientific texts and equations, *not* the other way around! Yet many scientific minds are still haunted by such.

*There is no* 'selector' agent to impose "natural selection" as an operation, upon a given species, by another, selecting, entity, from outside of that species. What there is, instead, is a self-developing field of natural formation<u>s</u>, eventually including human-social formation<u>s</u>, that exhibit varying <u>sustained</u> rate<u>s</u> of self-reproduction. Those formation<u>s</u> which <u>sustain</u> the highest rate<u>s</u> of self-reproduction are the "'fittest" in o<u>ur</u>, 'Meta-Darwinian', sense. Over time, at least within their native 'qualo-fractal' scale, those higher rate self-reproducer<u>s</u> tend to end up occupying the largest share<u>s</u> of space-time and of mass-energy density, relative to less "'fit", lower self-reproduction -- gene-reproduction -- or is based upon other process<u>es</u>. An <u>onto</u>logical formation that persists through time in exhibiting a greater sustained '<u>onto</u>-mass' than another such formation, whether observed to actively reproduce itself, like the atom<u>s</u> continually in expanded self-reproduction by, e.g., stellar nucleosynthesis, or whether it seems merely to persist unchanged after its "birth", is "'fitter"', in term<u>s</u> of o<u>ur</u> 'Meta-Darwinian' theory, than that other formation.

Well, where do "Dark Energy" and of "Dark Matter", as it were, "fit" into this, 'Meta-Darwinian', picture?

Current estimate<u>s</u> put the "*Dark Energy*" share of the mass-energy density of our universe at about **70%**, and that share is rapidly expanding via, per o<u>ur</u> hypothesis, the 'meta-mitotic' self-replication of the unit<u>s</u> of space that drives the, recent and presently self-accelerating, expansion of the "volume" of space-time. Also per those estimate<u>s</u>, the cosmological 'onto-mass/energy' share of "*Dark Matter*" is about **25%**. The share of ordinary, '*Bright Matter*' is about **5%**.

W<u>e</u> had long hypothesized a 'quasi-hyperbolic' envelope for the 'reality-share<u>s</u>' associated with the consecutive order of 'cosmo-ontological' categor<u>ies</u> in o<u>ur</u> original 'dialectic of nature meta-model'. That 'meta-model' posited sub-nuclear "particle<u>s</u>", the <u>non</u>-composite fermion<u>s</u> and boson<u>s</u>, as its «*arché*» ontological category, and posited nuclear sub-atomic "particle<u>s</u>", or <u>composite</u> fermion<u>s</u> and boson<u>s</u>, as its 'first <u>contra</u>-category'. We now see that envelope as extending even further back in cosmological-scale time. It extends to the new «*arché*» ontological category of o<u>ur</u> revised 'dialectic of nature meta-model'. That new, revised 'meta-model', as presented above, posits "*Dark Energy*" as its «*arché*» category – as its 'cosmo-ontological starting category' – and "*Dark Matter*" as its 'cosmo-ontological first <u>contra</u>-category'.



| Historical Dialectic   | of Nature Hypothesis  | for "Dark Energy" as «   | Arché» [commenced].   |  |   | ≈* <b>{</b> <sup>1</sup> <b>0</b> <sup>∨</sup> / <sub><b>x</b></sub> }  | 512 ≈** <sup>§512</sup>  | -≡  |
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| ©<br>♪x  | ⊕ <sup>©</sup> c  | ⊕ <sup>®</sup> cx  | Φ <sup>ĝ</sup> r  | <b>∲</b> <sub>rx</sub> ∨   | <b>Ø</b> Ŷ <sub>rc</sub>  | <b>Ø</b> <sup>®</sup> <sub>rcx</sub>  | ⊕ <sup>®</sup> a   | ₽   |
| ax   | <b>⊕</b> <sup>ĝ</sup> ac                                    | <b>⊕</b> <sup>ĝ</sup> acx  | ⊕Ŷar  | <b>Ø</b> Ŷarx  | <b>⊕</b> <sup>§</sup> arc   | <b>⊕</b> <sup>9</sup> arcx  | ⊕Ŷm  | �   |
| <b>B</b> mx  | <b>⊕</b> <sup>ĝ</sup> mc                                    | <b>⊕</b> <sup>ĝ</sup> mcx  | ⊕Ŝmr  | <b>Ø</b> Ŷ <b>mrx</b>  | <b>∲</b> <sup>®</sup> mrc   | <b>∲</b> <sup>mrcx</sup>  | ⊕ <sup>ĝ</sup> ma  | ♦   |
| max  | <b>⊕</b> <sup>ĝ</sup> mac                                   | <b>⊕</b> <sup>9</sup> macx   | <b>∲</b> ¶mar   | <b>⊕</b> <sup>ĝ</sup> marx   | <b>∲</b> <sup>¶</sup> marc  | <b>∲</b> <sup>marcx</sup>   | ⊕Ŝp  | ♦   |
| ĝ <b>⊳</b> px  | Φ <sup>ĝ</sup> pc   | <b>⊕</b><br><b>pcx</b>   | ∲Ŷpr  | <b>Ø</b> Ŷprx  | <b>∲</b>  | <b>∲</b>  | ⊕ <sup>ĝ</sup> pa  | ♦   |
| pax  | <b>⊕</b> <sup>ĝ</sup> pac                                   | <b>⊕</b> <sup>ĝ</sup> pacx   | <b>⊕</b><br><sup>®</sup> par  | <b>Ø</b> Ŷparx   | <b>⊕</b><br><sup>®</sup> parc   | <b>Ø</b> Ŷparcx   | ⊕Ŷpm   | �   |
| pmx  | Φ <sup>Ŷ</sup> pmc  | ₽Ŷpmcx   | ⊕ <sup>®</sup> pmr  | <b>⊕</b> ∯pmrx   | <b>∲</b> <sup>¶</sup> pmrc  | <b>∲</b> <sup>pmrcx</sup>   | <b>∲<sup>®</sup>pma</b>  | ₽   |
| <b>Pmax</b>  | <b>Ø</b> Ŷpmac  | <b>Ф<sup>©</sup>pmacx</b>  | <b>⊕</b> ∯pmar  | <b>⊕</b> <sup>ĝ</sup> pmarx  | <b>∲</b> ¶pmarc   | <b>∲∲</b> pmarcx  | ⊕Ŝ <sub>e</sub>  | ₽   |
| 9 ex   | €   | €  | ¢Ŷer  | <b>⊕</b> <sup>®</sup> erx  | <b>⊕</b> <sup>®</sup> erc   | <b>Ø</b> <sup>ĝ</sup> ercx  | ⊕ <sup>ĝ</sup> ea  | ₽   |
| eax  | <b>⊕</b> <sup>ĝ</sup> eac                                   | <b>⊕</b> <sup>ĝ</sup> eacx   | <b>⊕</b> Ŷ <mark>ear</mark>   | <b>Ø</b> Ŷearx   | <b>Ø</b> Ŷearc  | <b>Ø</b> 9earcx   | ⊕ <sup>ĝ</sup> em  | �   |
| 9 emx  | € <sup>®</sup> emc  | <b>⊕</b> <sup>ĝ</sup> emcx   | ⊕Ŷ <mark>emr</mark>   | <b>Ø</b> Ŷemrx   | <b>∲</b> emrc   | <b>Ø</b> <sup>9</sup> emrcx   | <b>⊕</b> <sup>ĝ</sup> ema  | �   |
| emax   | <b>⊕</b><br>emac  | <b>⊕</b><br><sup>●</sup><br><sup>●</sup><br><sup>●</sup><br><sup>●</sup><br><sup>●</sup><br><sup>●</sup><br><sup>●</sup><br><sup>●</sup>   | <b>∲<sup>®</sup>emar</b>  | <b>⊕</b><br><b>emarx</b>   | <b>∲</b> emarc  | <b>∲</b> emarcx   | ⊕Ŝ <sub>ep</sub>   | ♦   |
| epx  | ⊕ <sup>®</sup> epc  | ⊕ <sup>(a)</sup> epcx  | ⊕Ŷ <mark>epr</mark>   | <b>Ø</b> Ŷ <mark>eprx</mark>   | <b>⊕</b> Ŷ <mark>eprc</mark>  | <b>Ø</b> <sup>Ŷ</sup> eprcx   | ⊕ <sup>ĝ</sup> epa   | �   |
| 9<br>epax  | <b>⊕<sup>©</sup>epac</b>                                    | <b>⊕</b><br>epacx  | <b>∲<sup>®</sup>epar</b>  | <b>Ø</b> Ŷ <mark>eparx</mark>  | <b>∲</b> eparc  | <b>∲</b> eparcx   | <b>∲<sup>®</sup>epm</b>  | ♦   |
| epmx   | <b>⊕</b> <sup>ĝ</sup> epmc                                  | <b>⊕</b> <sup>®</sup> epmcx  | <b>∲</b> epmr   | <b>⊕</b><br><b>epmrx</b>   | <b>∲</b> epmrc  | <b>∲</b> epmrcx   | <b>⊕</b> <sup>Ŷ</sup> epma   | ♦   |
| epmax  | <b>⊕</b><br><b>epmac</b>                                    | <b>Ф<sup>©</sup>epmacx</b>   | <b>∲<sup>®</sup>epmar</b>   | <b>⊕</b><br>epmarx   | <b>∲<sup>®</sup>epmarc</b>  | <b>∲<sup>®</sup>epmarcx</b>   | ⊕ <sup>®</sup> ⊳b  | �   |
|  |   |  |   |  |   |   |  |   |
| Historical Dia   | lectic of Nature Hy   | oothesis for "Dark E   | inergy" <mark>as</mark> «Arché»   | -Category, to Nature   | al-Historical epoch   | $_{\forall}\tau_{2} = 9 [continued]$  | ].   | 2   |
| Historical <u>Dial</u>   | ectic of Nature Hyp<br>⊕<br>∳bc                             | oothesis for "Dark E   | inergy" as «Arché»  | -Category, to Nature   | al-Historical epoch   | $\sqrt[3]{\tau_2} = 9$ [continued<br>(0, 1)]  | ].<br>∲Ŝp <mark>ba</mark>  | 2   |
| Historical <u>Dial</u>   | ectic of Nature Hyp<br>⊕<br>⊕<br>⊕<br>⊕<br>⊕<br>⊕<br>bac    | Dothesis for "Dark E   | inergy" as «Arché»  | -Category, to Nature<br>Discrete Statements<br>Discrete   | al-Historical epoch   | v <sup>t</sup> <sub>2</sub> = 9 [continued<br>⊕<br>⊕<br>brcx<br>⊕<br>barcx  | <sup>₽</sup> <sup>ĝ</sup> ⊳ba<br>Ф <sup>ĝ</sup> ⊳ba  | 2<br>♦  |
| Historical <u>Dial</u>   | ectic of Nature Hyp<br>⊕<br>⊕<br>bc<br>⊕<br>bac<br>⊕<br>bac | Dothesis for "Dark E   | ûnergy" as «Arché»<br>∲∮br<br>∲∮bar<br>∲∮bar                            | Category, to Nature<br>⊕<br>⊕<br>⊕<br>barx<br>⊕<br>⊕<br>barx   | al-Historical epoch<br>⊕<br>⊕<br>⊕<br>barc<br>⊕<br>⊕<br>bmrc                                      | v <sup>7</sup> 2 = 9 [continued<br>⊕<br>⊕<br>⊕<br>⊕<br>barcx<br>⊕<br>⊕<br>barcx   | Φ <sup>ĝ</sup> ,ba<br>Φ <sup>ĝ</sup> ,bm<br>Φ <sup>ĝ</sup> ,bm   | 2   |
| Historical Dial<br>bbx<br>bax<br>bbax<br>bmx<br>bmax   | ectic of Nature Hyp   | Dothesis for "Dark E   | énergy" as «Arché»<br>∲<br>∲<br>br<br>∲<br>bar<br>∲<br>bmr<br>∲<br>bmar | Category, to Nature  | al-Historical epoch<br>⊕<br>⊕<br>⊕<br>barc<br>⊕<br>bmrc<br>⊕<br>bmarc                             | v <sup>7</sup> 2 = 9 [continued   | Φ <sup>ĝ</sup> ,ba<br>Φ <sup>ĝ</sup> ,bm<br>Φ <sup>ĝ</sup> ,bm<br>Φ <sup>ĝ</sup> ,bma<br>Φ <sup>ĝ</sup> ,bp  | 2<br></td   |
| Historical Dial<br>bbx<br>bbax<br>bbax<br>bbmx<br>bbmax<br>bbmax   | ectic of Nature Hyp   | Dothesis for "Dark E   | mergy" as «Arché»   | Category, to Nature  | al-Historical epoch<br>⊕<br>⊕<br>⊕<br>barc<br>⊕<br>bmrc<br>⊕<br>bmarc<br>⊕<br>bmarc<br>⊕<br>bmarc | v <sup>7</sup> 2 = 9 [continued<br>⊕<br>⊕<br>⊕<br>⊕<br>barcx<br>⊕<br>⊕<br>bmrcx<br>⊕<br>⊕<br>bmarcx<br>⊕<br>⊕<br>bmarcx | P <sup>Q</sup> →ba P <sup>Q</sup> →bm P <sup>Q</sup> →bma P <sup>Q</sup> →bma P <sup>Q</sup> →bp P <sup>Q</sup> →bpa   | 2   |
| Historical Dial<br>bbx<br>bbax<br>bbmx<br>bbmax<br>bbpx<br>bpax  | ectic of Nature Hyp   | Image: style="text-align: center;">Dark E         Image: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: center;">Image: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: style="text-align: center;">Image: style="text-align: style: style="text-align: style="text-align: styl  | overgy " as «Arché»   | Category, to Nature<br>Derived States<br>Derived S | al-Historical epoch   | v <sup>t</sup> <sub>2</sub> = 9 [continued  | P <sup>Q</sup> →ba P <sup>Q</sup> →bm P <sup>Q</sup> →bma P <sup>Q</sup> →bpa P <sup>Q</sup> →bpa P <sup>Q</sup> →bpa P <sup>Q</sup> →bpm  | 2   |
| Historical Dial<br>bbx<br>bbax<br>bbmx<br>bbmx<br>bbmax<br>bbpx<br>bpax<br>bbpax<br>bbpmx  | ectic of Nature Hyp   | Image: style="text-align: center;">Dark E         Image: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: center;">Image: style="text-align: style="text-align: style="text-align: center;">Image: style="text-align: style  | mergy" as «Arché»   | Category, to Nature<br>Derived States<br>Category, to Nature<br>borx<br>Derived States<br>borx<br>Derived States<br>borx   | al-Historical epoch   | v <sup>t</sup> <sub>2</sub> = 9 [continued  | P <sup>Q</sup> →ba P <sup>Q</sup> →bma P <sup>Q</sup> →bma P <sup>Q</sup> →bpa P <sup>Q</sup> →bpa P <sup>Q</sup> →bpa P <sup>Q</sup> →bpm P <sup>Q</sup> →bpma                      | 2<br></td   |
| Historical Dial<br>bbx<br>bbax<br>bbmx<br>bbmx<br>bbmax<br>bbpx<br>bbpax<br>bbpmx<br>bbpmax  | ectic of Nature Hyp   | <pre>pothesis for "Dark E</pre>  | mergy " as «Arché»  | Category, to Nature<br>Derived States<br>Category, to Nature<br>Derived States<br>Derived States<br>Deri | al-Historical epoch   | v <sup>t</sup> <sub>2</sub> = 9 [continued  | P <sup>Q</sup> →ba P <sup>Q</sup> →bm P <sup>Q</sup> →bma P <sup>Q</sup> →bpa P <sup>Q</sup> →bpa P <sup>Q</sup> →bpm P <sup>Q</sup> →bpma P <sup>Q</sup> →bpma P <sup>Q</sup> →bpma | 2   |
| Historical Dial<br>bbx<br>bbax<br>bbmx<br>bbmax<br>bbpx<br>bbpax<br>bbpax<br>bbpmax<br>bbpmax<br>bbpmax  | ectic of Nature Hyp   | Image: solution of the site of | mergy " as «Arché»  | Category, to Nature<br>Derived States<br>Category, to Nature<br>Derived States<br>Derived States<br>Deri | al-Historical epoch   | v <sup>t</sup> <sub>2</sub> = 9 [continued  |  | 2   |
| Historical Dial<br>bbx<br>bbax<br>bbmx<br>bbmax<br>bbpx<br>bbpax<br>bbpax<br>bbpmx<br>bbpmax<br>bbpmax<br>bbcax  | ectic of Nature Hyp   | Dothesis for "Dark E  | mergy " as «Arché»  | Category, to Nature<br>Category,   | al-Historical epoch   | v <sup>t</sup> <sub>2</sub> = 9 [continued  |  | 2   |
| Historical Dial<br>bbx<br>bbax<br>bbmx<br>bbmx<br>bbmax<br>bbpx<br>bbpax<br>bbpax<br>bbpmax<br>bbmax<br>bbcx<br>bbeax<br>bbeax<br>bbeax                                      | <pre>tectic of Nature Hyp</pre>                             | Image: solution of the site of | mergy " as «Arché»  | Category, to Nature  | al-Historical epoch   | v <sup>t</sup> 2 = 9 [continued   |  | 2   |
| Historical Dial<br>bx<br>bax<br>bax<br>bmx<br>bmax<br>bpmx<br>bpax<br>bpmx<br>bpmax<br>bbmax<br>bemax<br>beax<br>beax<br>beax<br>bemax                                       | <pre>tectic of Nature Hyp</pre>                             | Image: solution of the site of | mergy " as «Arché»  | Category, to Nature  | al-Historical epoch   | v <sup>t</sup> 2 = 9 [continued   |  |   |
| Historical Dial<br>bx<br>bax<br>bax<br>bmx<br>bmax<br>bpx<br>bpax<br>bpax<br>bpax<br>bpmx<br>bpmax<br>bemax<br>beax<br>beax<br>beax<br>bemax<br>bemax                        | <pre>tectic of Nature Hyp</pre>                             | Dothesis for "Dark E  | mergy " as «Arché»  | Category, to Nature  | al-Historical epoch   | v <sup>t</sup> 2 = 9 [continued   |  |   |
| Historical Dial<br>bx<br>bax<br>bmx<br>bmx<br>bmax<br>bpx<br>bpax<br>bpax<br>bpmx<br>bpmx<br>bpmax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax                     | <pre>tectic of Nature Hyp</pre>                             | Dothesis for "Dark E  | mergy " as «Arché»  | Category, to Nature  | al-Historical epoch   | v <sup>t</sup> 2 = 9 [continued   |  | $\begin{array}{c} 2 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $ |
| Historical Dial<br>bx<br>bax<br>bax<br>bmx<br>bmax<br>bpmx<br>bpax<br>bpmx<br>bpmx<br>bpmax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax<br>bemax | <pre>tectic of Nature Hyp</pre>                             | Dothesis for "Dark E  | energy " as «Arché»   | Category, to Nature  | al-Historical epoch   | v <sup>z</sup> <sub>2</sub> = 9 [continued  |  | $\begin{array}{c} 2 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $ |

| Historical <u>Dia</u>   | <u>alectic</u> of Nature <mark>Hy</mark>     | pothesis for "Dark                       | Energy" <mark>as</mark> «Arché   | »-Category, to Natur   | ral-Historical epoch  | $\tau_{\gamma} \tau_{2} = 9 [continued]$  | <b>d</b> ].  | 3  |
|---|--|--|--|--|---|---|--|--|
| 9 ex  | <b>Ø</b> ₽ℓc                                 | <b>⊕</b> Ŷ <sub>ℓcx</sub>                | ¢Ŷℓr   | ¢Ŷℓrx  | <b>Ø</b> Ŷℓrc   | <b>⊕</b> <sup>®</sup> ℓrcx  | \$Ŷ <sub>ℓa</sub>  | ₽  |
| elax  | <b>Ø</b> Ŷℓac                                | <b>Ø</b> Ŷℓacx                           | ∲Ŷlar  | <b>⊕</b> <sup>9</sup> ℓarx   | <b>⊕</b> <sup>®</sup> ℓarc  | <b>⊕</b> <sup>®</sup> ℓarcx   | <b>Ø</b> Ŷℓm   | ₽  |
| a lemx  | <b>⊕</b> ¶ <sub>ℓmc</sub>                    | <b>⊕</b> ¶ <sub>ℓmcx</sub>               | ∲Ŷℓmr  | <b>∲</b> ¶ <sub>ℓmrx</sub>   | <b>⊕</b> ¶ <sub>ℓmrc</sub>  | <b>⊕</b> ¶ <sub>ℓmrcx</sub>   | <b>⊕</b> <sup>ĝ</sup> ℓma  | ₽  |
| <b>emax</b>   | <b>⊕</b> ¶ <sub>ℓmac</sub>                   | <b>⊕</b> ¶ <sub>ℓmacx</sub>              | <b>∲</b> ¶ <sub>ℓmar</sub>   | <b>∲</b> <sup>®</sup> ℓmarx  | <b>⊕</b> Ŷ <sub>ℓmarc</sub>   | <b>⊕</b> ¶ <sub>ℓmarcx</sub>  | ₽ŶĮp   | ₽  |
| €<br>ℓpx  | ₽Ŷ <sub>ℓpc</sub>                            | <b>⊕</b> <sup>®</sup> ℓpcx               | ∲<br>∲ℓpr  | ΦŶℓprx   | <b>⊕</b> Ŷ <sub>ℓprc</sub>  | <b>⊕</b> <sup>®</sup> ℓprcx   | <b>⊕</b> Ŷ <sub>ℓpa</sub>  | ₽  |
| lpax  | <b>⊕</b> <sup>ĝ</sup> ℓpac                   | <b>⊕</b> <sup>§</sup> ℓpacx              | <b>⊕</b> ¶ <sub>ℓpar</sub>   | <b>Ø</b> Ŷℓparx  | <b>⊕</b> Ŷ <sub>ℓparc</sub>   | <b>⊕</b> <sup>®</sup> ℓparcx  | <b>⊕</b> Ŷ <sub>ℓpm</sub>  | �  |
| €<br>€<br>¢pmx  | ₽Ŷℓpmc                                       | <b>⊕</b> <sup>§</sup> ℓpmcx              | <b>∲</b> %   | ∲Ŷℓpmrx  | <b>⊕</b> Ŷ <sub>ℓpmrc</sub>   | <b>⊕</b><br><sup>®</sup> ℓpmrcx   | <b>∲</b> <sup>ℓpma</sup>   | �  |
| epmax   | <b>⊕</b><br><sup>®</sup> ℓpmac               | <b>⊕</b> <sup>®</sup> ℓpmacx             | <b>∲</b> %   | <b>∲</b> <sup>®</sup> ℓpmarx   | <b>⊕</b><br><sup>●</sup> ℓpmarc   | <b>⊕</b><br><b>€</b><br><b>pmarcx</b>   | €Ŷℓe   | ₽  |
| lex   | ₽Ŷ <sub>lec</sub>                            | <b>⊕</b> Ŷ <sub>lecx</sub>               | ₽Ŷler  | <b>⊕</b> Ŷ <sub>lerx</sub>   | <b>⊕</b> Ŷ <sub>lerc</sub>  | <b>⊕</b> <sup>ĝ</sup> ℓercx   | <b>⊕</b> Ŷ <sub>lea</sub>  | ₽  |
| 9 leax  | <b>⊕</b> Ŷ <sub>ℓeac</sub>                   | <b>⊕</b> Ŷ <sub>ℓeacx</sub>              | <b>⊕</b> Ŷ <sub>lear</sub>   | <b>⊕</b> Ŷ <sub>learx</sub>  | <b>⊕</b> Ŷ <sub>learc</sub>   | <b>⊕</b> <sup>ĝ</sup> <sub>ℓearcx</sub>   | €Ŷlem  | ₽  |
| lemx  | <b>Ø</b> €lemc                               | <b>⊕</b> <sup>ĝ</sup> ℓemcx              | ∲§ <sub>lemr</sub>   | <b>Ø</b> Ŷℓemrx  | <b>⊕</b> Ŷ <sub>lemrc</sub>   | <b>⊕</b> <sup>®</sup> ℓemrcx  | <b>⊕</b> Ŷ <sub>lema</sub>   | ₽  |
| lemax   | <b>Ø</b> € lemac                             | <b>⊕</b> <sup>ĝ</sup> ℓemacx             | <b>∲</b> <sup>¶</sup> lemar  | <b>∲</b>   | <b>∲</b> <sup>€</sup> emarc   | <b>⊕</b><br>€emarcx   | €Ŷℓep  | �  |
| lepx  | <b>⊕</b><br>€                                | <b>⊕</b> <sup>ĝ</sup> ℓepcx              | ₽Ŷlepr   | €  | <b>⊕</b> Ŷ <sub>ℓeprc</sub>   | <b>⊕</b> <sup>®</sup> ℓeprcx  | <b>⊕</b> Ŷ <sub>ℓepa</sub>   | �  |
| lepax   | €<br>€                                       | <b>⊕</b><br><sup>®</sup> ℓepacx          | <b>⊕</b> Ŷ <sub>ℓepar</sub>  | <b>∲</b><br>€eparx   | <b>∲</b> <sup>€</sup> eparc   | <b>⊕</b><br><sup>(</sup> eparcx)  | €Ŷℓepm   | �  |
| lepmx   | <b>⊕</b><br>€epmc                            | <b>⊕</b> <sup>ĝ</sup> ℓepmcx             | <b>∲</b> ¶ <sub>lepmr</sub>  | <b>∲</b> <sup>ℓepmrx</sup>   | <b>∲</b> <sup>ℓepmrc</sup>  | <b>⊕</b> <sup>®</sup> ℓepmrcx   | <b>⊕</b> Ŷ <sub>ℓepma</sub>  | �  |
| epmax   | <b>⊕</b><br>€<br>epmac                       | <b>Ф</b> <sup>Ŷ</sup> <sub>ℓepmacx</sub> | <b>∲</b> %   | <b>⊕</b><br>Ŷ<br>ℓepmarx   | <b>⊕</b><br><sup>¶</sup> ℓepmarc  | <b>⊕</b><br><sup>®</sup> ℓepmarcx   | ₽Ŷℓb   | �  |
|   |  |  |  |  |   |   |  |  |
| Historical Dial   | lectic of Nature Hyp                         | othesis for "Dark E                      | 'nergy" <mark>as</mark> «Arché»-   | Category, to Nature  | ul-Historical epoch   | <sub>∀</sub> τ <sub>2</sub> = 9 [continued  | and concluded].  | 4  |
| Historical <u>Dial</u>  | ectic of Nature Hyp<br>⊕ €ℓbc                | othesis for "Dark E                      | ûnergy" <mark>as</mark> «Arché»-<br>Ф <sup>©</sup> }ℓbr  | Category, to Nature  | Al-Historical epoch   | v <sup>τ</sup> 2 = 9 [continued<br>Φ <sup>9</sup> ℓbrex                               | and concluded].  | 4  |
| Historical Dial   | ectic of Nature Hyp<br>∲<br>ℓbc<br>∳<br>ℓbac | othesis for "Dark E                      | inergy" as «Arché»-  | Category, to Nature  | Historical epoch<br>↓<br>↓<br>↓<br>brc<br>↓<br>barc   | $\Phi^{\widehat{\Theta}}_{\ell} \ell brex$ $\Phi^{\widehat{\Theta}}_{\ell} \ell brex$ | and concluded].  | 4<br>♦   |
| Historical <u>Dial</u>  | €ctic of Nature Hyp                          | othesis for "Dark E                      | İvergy" as «Arché»-<br>⊕ <sup>®</sup> }ℓbr<br>⊕ <sup>®</sup> ℓbar<br>⊕ <sup>®</sup> ℓbar   | Category, to Nature  | <ul> <li>Definition of the second secon</li></ul>   |   | and concluded].<br>⊕ <sup>§</sup> ℓba<br>⊕ <sup>§</sup> ℓbm<br>⊕ <sup>§</sup> ℓbm  | 4<br>�<br>�  |
| Historical Dial   | €ctic of Nature Hyp                          | ethesis for "Dark E                      | İvergy" as «Arché»-<br>♥ <sup>®</sup> ℓbr<br>♥ <sup>®</sup> ℓbar<br>♥ <sup>®</sup> ℓbmr<br>♥ <sup>®</sup> ℓbmr   | Category, to Nature  | <ul> <li>Definition of the second secon</li></ul>   |   | and concluded].  | 4  |
| Historical Dial   | ectic of Nature Hyp                          | <pre>#hesis for "Dark E</pre>            | İvergy" as «Arché»-  | Category, to Nature  | <ul> <li>d-Historical epoch</li> <li>\$\Phi^{\heta}_{Lbrc}\$</li> <li>\$\Phi^{\heta}_{Lbarc}\$</li> <li>\$\Phi^{\heta}_{Lbmrc}\$</li> <li>\$\Phi^{\heta}_{Lbmarc}\$</li> <li>\$\Phi^{\heta}_{Lbmrc}\$</li> </ul>  | <pre>v<sup>v</sup><sub>2</sub> = 9 [continued</pre>                                   | and concluded].  | <ul> <li>4</li> <li></li> /ul> |
| Historical Dial   | <pre>lectic of Nature Hap</pre>              | <pre>#hesis for "Dark E</pre>            | İvergy" as «Arché»-<br>♦<br>↓ lbr<br>♦<br>↓ lbar<br>♦<br>↓ lbmr<br>♦<br>↓ lbmr<br>♦<br>↓ lbmr<br>♦<br>↓ lbmr<br>♥<br>↓ lbmr<br>♥<br>↓ lbmr<br>♥<br>↓ lbmr  | Category, to Nature  | <ul> <li>d-Historical epoch</li> <li>\$\Phi\$ {brc}</li> <li>\$\Phi\$ {barc}</li> <li>\$\Phi\$ {barc}</li> <li>\$\Phi\$ {bmrc}</li> <li>\$\Phi\$ {bmrc}</li> <li>\$\Phi\$ {bmrc}</li> <li>\$\Phi\$ {bprc}</li> <li>\$\Phi\$ {bparc}</li> </ul>  | <pre>vr2 = 9 [continued</pre>   | and concluded].  | 4  |
| Historical Dial<br>tbx<br>tbax<br>tbax<br>tbmx<br>tbmx<br>tbpx<br>tbpx<br>tbpax<br>tbpax  | <pre>lectic of Nature Hyp</pre>              | <pre>#hesis for "Dark E</pre>            | İvergy" as «Arché»-  | Category, to Nature<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbarx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ tbmrx  | <ul> <li>d-Historical epoch</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> <li>\$\Phi^{\heta}_{barc}\$</li> </ul>   | <pre>vr2 = 9 [continued</pre>   | and concluded].         Image: Conclusion of the second symmetry of the second s  |  |
| Historical Dial<br>tbx<br>tbax<br>tbax<br>tbmx<br>tbmx<br>tbmax<br>tbpx<br>tbpax<br>tbpax<br>tbpax  | <pre>lectic of Nature Hyp</pre>              | <pre>#hesis for "Dark E</pre>            | <pre>Dergy " as «Arché»- Dergy " as «Arché»-</pre>   | Category, to Nature<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (barx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (barx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bmarx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bparx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bpmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bpmarx)   | <ul> <li>d-Historical epoch</li> <li>\$\Phi^{\heta}_{barc}\$</li> </ul>  | <pre>v<sup>v</sup><sub>2</sub> = 9 [continued</pre>                                   | and concluded].<br>$\Phi^{\hat{q}}_{\hat{l}} ba$<br>$\Phi^{\hat{q}}_{\hat{l}} bm$<br>$\Phi^{\hat{q}}_{\hat{l}} bma$<br>$\Phi^{\hat{q}}_{\hat{l}} bpa$<br>$\Phi^{\hat{q}}_{\hat{l}} bpm$<br>$\Phi^{\hat{q}}_{\hat{l}} bpma$<br>$\Phi^{\hat{q}}_{\hat{l}} bpma$  |  |
| Historical Dial<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block<br>block | <pre>lectic of Nature Hyp</pre>              | <pre>#hesis for "Dark E</pre>            | <pre>Dergy " as «Arché»- Dergy " as «Arché»-</pre>   | Category, to Nature<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (barx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (barx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bmarx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bpmrx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bpmarx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bpmarx<br>$\Phi^{\hat{\oplus}}_{\hat{b}}$ (bpmarx)   | <ul> <li>d-Historical epoch</li> <li>\$\Phi^{0}_{barc}\$</li> </ul>   | <pre>v<sup>v</sup><sub>2</sub> = 9 [continued</pre>                                   | and concluded].<br>$\Phi^{\hat{q}}_{\hat{l}} ba$<br>$\Phi^{\hat{q}}_{\hat{l}} bm$<br>$\Phi^{\hat{q}}_{\hat{l}} bma$<br>$\Phi^{\hat{q}}_{\hat{l}} bpa$<br>$\Phi^{\hat{q}}_{\hat{l}} bpma$<br>$\Phi^{\hat{q}}_{\hat{l}} bpma$<br>$\Phi^{\hat{q}}_{\hat{l}} bpma$   |  |
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Dialectic: Users' Manual. Edition 2. 04 June 2022.



Encyclopedia Dialectica 'Dialectic of Nature' Universal Taxonomy of Cosmological Ontology ["what there is"] as [ $\overline{\partial}$ Known to-Date [Plannian Format].

<u>'Meta-Genealogy' Gap in our 'Self-Resurging Big Surge Cosmological Hypothesis'</u>, AKA 'Regenerist Hypothesis'. <u>Un</u>like the versions of o<u>ur</u> 'Theory of [Not-Quite-]Everything Known to Modern Science' that begin with <u>r</u> or with <u>n</u> as <u>«arché</u>»-category -- i.e., with "'Standard Model pa<u>r</u>ticle<u>s</u>''' in general, or with just the pre-<u>n</u>uclear "<u>non</u>-composite" fermion<u>s</u> and boson<u>s</u>, as 'starting-category' -- o<u>ur</u> newer hypothesis has a '<u>meta</u>-genealogy gap'. O<u>ur</u> newer hypothesis, of course, encompasses a cosmological-historical, 'singular dialectic of Nature' which encompasses much more than did o<u>ur</u> previous hypothes<u>es</u>. That newer hypothesis encompasses also the origin of 'pure space' itself – ""pure"' in the sense of being initially devoid of "Standard Model" "'pa<u>r</u>ticle-matter'', and even devoid of <u>NON</u>-"Standard Model" "Dark Matter'''. It encompasses also the origin of 'pure-time' as "'Dark Energy''', i.e., '''clocked''' as the self-acceleratory <u>self</u>-expansion of, initially '''pure''', physical space. It encompasses, as well, an origin hypothesis for "pure gravity" as the initial form of, '''non-standard-pa<u>r</u>ticulate''', '''Dark Matter''' – '''pure''' because not grounded in any <u>new</u> kind of ''<u>standard</u> pa<u>r</u>ticle''. However, this hypothesis fails to be comprehensively '<u>meta</u>-genealogical', whereas o<u>ur</u> previous hypothes<u>es</u>, based/'«arché»-ed' in <u>r</u> or in <u>n</u>, were, both, '<u>meta</u>-genealogical', and each <u>comprehensively</u> so.

This fact may intimate interesting new hypothes<u>es</u> that might be necessary to render "'Dark Energy" and "'Dark Matter'" too as <u>meta</u>-genealogical', i.e., as <u>both</u> somehow **«aufheben**»-"'contained" inside "<u>non</u>-composite" fermions and boson<u>s</u> – i.e., inside quark<u>s</u> and gluon<u>s</u> – and, thus, also, as <u>present</u>ly contained within our very own human bod<u>ies</u>, just as are quark<u>s</u> and gluon<u>s</u>, at the very, nuclear, root of our bodily "'substance'". O<u>ur</u> new hypothesis already asserts an **«aufheben**» 'meta-unit-ization' "'containment'" of the 'unit<u>s</u> of "'pure space'"/"'Dark Energy'" inside the first warped-space-**«monads**», the 'meta-unit<u>s</u>' of "'Dark Matter'". Nonetheless, presently, o<u>ur</u> new hypothesis does **not** account for a full, 'self-iterated' **«aufheben**» process throughout the natural-historical epoch<u>s</u> of the known, or partially-known, 'singular dialectic of nature', all the way to the <u>present</u> [we are, of course, limited in our knowledge of this dialectic, so far, to planet Earth, at least for its later epoch<u>s</u>, i.e., for those ontic epoch<u>s</u> that irrupt "prokaryotic" living cell<u>s</u>, "eukaryotic" living cell<u>s</u>, and what follows from them, after them, and beyond them, in both o<u>ur</u> old and o<u>ur</u> new hypothes<u>es</u> – limited at <u>present</u> to planet Terra. Of course, we do not <u>as yet</u> have any empirical/scientific evidence that these higher ontolog<u>ies</u> have arisen on any other planet<u>s</u>, or otherwise-elsewhere than on Earth].

That is, we cannot yet point to a way in which the hypothesized 'space-units' of the "'Dark Energy" ontology, and the hypothesized 'warped-space meta-units' of the "'Dark Matter" ontology, are, somehow, 'meta-«monad»-ically' within, «aufheben»-contained inside the higher units of every subsequent, extant 'self-hybrid' ontological category, from atoms, or from "composite" fermions and bosons, all of the way up the 'qualo-fractal scale' of our cosmos, to humanity and, perhaps, to beyond humanity. This is all because we do **not** understand the natural-historical, cosmological transition from the densest parts of "Dark Matter" into the first 'Bright Matter'. We can at least note that this represents a naturalhistorically 'contexted' case of 'The Einstein Problem'\*, the still-un solved problem of a "Unified Field Theory", unifying electromagnetism and gravity, explaining the *first* conversion of ["Dark Matter"] gravity into ['Bright Matter'] electromagnetism. We can point to "sub-atomic particles" – e.g., electrons, protons, and neutrons – and argue that the «monads» of their r «arché»-category are «aufheben»-conserved – are ingredient – at ever deepening levels, in the «monads» of every single subsequent 'self-hybrid' ontological category, all the way up to the presently most advanced *known* Earth [ $\Theta$ ?] ontology, that of human societies, and of the living human bodies which that 'socio-ontology' "contains". All of this higher known ontology, in the deepest analysis of it of which present science is capable, "contains" atoms made up out of electrons and protons, and neutrons, or, if we take **n** as our deeper-than-**r** «arché»-ontology, is made up out of "prenuclear"" "non-composite particles" -- electrons, quarks, gluons, etc. .... But we do not yet possess a knowledge that would explain how, e.g., human societies, and the living human bodies that they "contain", as well as all of the other, priorly-arisen 'self-hybrid cosmo-ontos', are <u>ultimately</u> "made up out of" both "Dark Energy" and "Dark Matter". "Dark Energy" constitutes the "room" which our bodies "occupy" or in which they "take place"/inhere/'take space'. "Dark Matter", many scientists hold, surrounds and flows through our bodies, in copious quantities, continually, every second of every day, apparently without interacting with our gluons, quarks, photons, electrons, protons, neutrons, etc. But we do not know that, or how, patches of "Dark Energy" units, already «aufheben»-contained in "Dark Matter" units, are «aufheben»-incorporated inside -- «aufheben»-contained in -- each of the "non-composite fermions and bosons" that make up our individual bodies at their deepest-known levels. This includes **not** knowing how "Standard Model" matter units - i.e., how [with the exception of neutrinos, actually or potentially] 'Bright Matter' units, or "Standard Model of Particle Physics particles" - «aufheben», 'meta-«monad»-ically' contain "Dark Matter" units as their sub-units.

Hypothes<u>es</u> are born to die, and, thereby, to advance us toward better theory. The CMB test is yet another test which the 'Self-Resurging Big Surge'/'Regenerist' hypothesis will confront. Can any version of the 'Regenerist' hypothesis fit the presently-observed frequency, and energy-density distribution, of the Cosmological Microwave Background?

<sup>\*[</sup>Hints toward a possible solution may be found, for example, in works of the late Mendel Sachs, e.g., in his **1986** *Quantum Mechanics from General Relativity*.]
## 9. An <u>Q Dialectical Model of this Text: Schleiermacherian "Dialectic" or 'Dialectic of the Dialectic Itself</u>"?

There was a very bourgeois/monarchist brand of "dialectic" that emerged, in Germany, leading up to the time of the continent-wide revolution( $\underline{s}$ ) of **1848**. It was formulated by the theologian and philosopher Friedrich Schleiermacher<sup>1</sup>. It was a consciously and militantly anti-Hegelian form of "dialectic". It featured prominently a preservation and expanded reproduction of dualit<u>ies</u> or opposition<u>s</u> – and an absolute absence of "dialectical synthesis" or of the overcoming of dualit<u>ies</u>, or of the reconciliation of contrar<u>ies</u>. Its adherent<u>s</u> tended to passionately support the Prussian monarchy in the anti-monarchical, democratic-republican, *mainly pro*-capitalist uprising<u>s</u> of **1848**.

Two of those most influenced by this Schleiermacherian dialectic were the mathematical genius<u>es</u> Hermann Grassmann<sup>2</sup>, the creator of a remarkable 'Geometrical Arithmetic' for a geometry of 'self-escalating' dimensionality, still incompletely explored to this day, and his brother Robert Grassmann<sup>3</sup>, a pioneer of algebraic mathematical logic. These two brothers also together published a pro-monarchical newspaper during the **1848-1849** period, calling for a monarchical German unification and a constitutional monarchy.

Hermann Grassmann's 'Geometrical Arithmetic' is remarkable and unprecedented for the '<u>ide</u>o-ontologically dynamical' dimensional <u>non</u>-closure of its space. Its operation<u>s</u> among geometrical idea-object<u>s</u> of a given dimensionality generate geometrical <u>ide</u>a-object<u>s</u> of higher dimensionality. Operation<u>s</u> among a given '''generation''' of object<u>s</u> dimensionally expand the actualized Grassmannian geometrical space, by adding to it such object<u>s</u> of higher dimensionality. Per it, the product of two finite-distance-separated point<u>s</u> is a finite-length line. The product of two finite-length line<u>s</u> is a finite area plane. The product of two finite-area plane<u>s</u> is a finite <u>3</u>-dimensional volume. The product of two finite <u>3</u>-dimensional geometrical <u>ide</u>a-object<u>s</u> is an object of greater than three dimension<u>s</u>, and so on. Grassmann's 'Geometrical Arithmetic' is [thus] also remarkable for refusing to limit itself to three Euclidean spatial dimension<u>s</u>. Robert Grassmann's work in algebraic logic independently reproduced, for its <u>e</u>lement<u>s</u>, key feature<u>s</u> of Boole's algebra of logic, including Boole's "*law of duality*" or "*fundamental law of thought*": "**ee = e**". But it also explored beyond Boolean algebra, positing, as a possibility -- for a logic-algebra of "binding" or of "combinations" -- an anticipation, in the only such case of which w<u>e</u> are aware, of a fundamental axiom\_[axiom \$7], and of a fundamental theorem, respectively, of the <u>NQ</u> 'arithmetic for

dialectic<sup>4</sup> -- " $\mathbf{e} + \mathbf{e} = \mathbf{e}$ " ["inner joining"], and " $\mathbf{e} \neq \mathbf{e}$ " ["outer weaving"].

Hermann Grassmann, in collaboration with Robert, published an <u>'ideo</u>-systematic', <u>'ideo</u>-taxonomic' classification of the sub-fields of the *entire* field of modern mathematics. They did so by applying, to maths., a key 'constructural' principle of Schleiermacherian "dialectic", called the *"positive double relative opposition*". It is based upon the 'cross-contrast' of sub-fields dominated by *the principle of <u>discreteness</u>*, <u>versus</u> those dominated by *the principle of <u>continuousness</u>*. This contrast was ""crossed"" with the contrast of mathematics sub-fields dominated by *a principle of <u>equality</u> versus* those dominated by *a principle of <u>equality</u> versus* those dominated by *a principle of <u>in</u>equality*. This Schleiermacherian "dialectic" 'content-structure' is often depicted as<sup>5</sup> --

|            | discrete      | continuous  |
|------------|---------------|---|
| equality   | theory of     | theory of <i>intensive</i> magnitudes   |
|            | number        | (theory of functions, differential and integral calculus)                               |
| inequality | combinatorics | theory of <i>extensive</i> magnitudes (i.e., Hermann Grassmann's "extention theory", or |
| -          |               | 'Geometrical Arithmetic')   |

-- which Hermann Grassmann describes in the introduction to his book on **n**-dimensional geometric "*extension theory*", subtitled <u>A New Branch of Mathematics</u><sup>6</sup>. Grassmann wrote out that book *circa* **1844**, in his hometown of Stettin, in *Germany-to-be*, while Marx, in Paris, France, wrote his, by now world-famous, "Economic-Philosophic Manuscripts".

<sup>&</sup>lt;sup>1</sup>[See, for example, Friedrich Schleiermacher, *Dialectic or, The Art of Doing Philosophy*, Scholars Press, Atlanta, **1996**. This English translation contains only a fraction of Schleiermacher's writings on his version of "dialectic"].

<sup>&</sup>lt;sup>2</sup>[See Hans-Joachim Petsche, <u>Hermann Graßmann</u>: Biography, English translation by Mark Minnes, Birkhauser Verlag AG, Boston, 2009].

<sup>&</sup>lt;sup>3</sup>[See pp. 117-130 in Hans-Joachim Petsche, <u>Hermann Graßmann</u>: Biography, ibid.].

<sup>&</sup>lt;sup>4</sup>[See Volker Peckhaus, *Robert and Hermann Grassmann's Influence on the History of Formal Logic*, p. 224, in <u>From Past to Future</u>: Graßmann's Work in Context, proceedings of the Graßmann Bicentennial Conference, September 2009, Birkhauser, 2011.

Core axioms: http://www.dialectics.info/dialectics/Applications\_files/F.E.D.\_\_Core\_Axioms\_of\_the\_Seldonian\_First\_Arithmetic\_for\_Dialectic\_\_14MAY2018.jpg;

Q fundamental theorem: http://www.dialectics.info/dialectics/Applications files/F.E.D., Simple Direct Deductive Proof of the Seldonian Fundamental Law of Dialectic, From the nQ Axioms, 14MAY2018.jpg].

<sup>&</sup>lt;sup>5</sup>[See p. 237 in Hans-Joachim Petsche, <u>Hermann Graßmann</u>: Biography, ibid.].

<sup>[</sup>See pp. 26-27 in Hermann Grassmann, <u>A New Branch of Mathematics</u>, English translation by Lloyd C. Kannenberg, Open Court, Chicago, 1995].

Hermann's brother Robert too used this kind of, "dialectical", 'content-structure'/ *contra*-structure', that he called, again, a "*positive double relative opposition*", and which he also called a "*chiasma*" [cf. T. S. Eliot's dialectical "crisscross"<sup>7</sup>], which he defined, in his <u>*Theory of Scientific Discovery*</u>, viz.: "A unity can be transformed into two contrasting terms when the two sides of two oppositions respectively are present in every one of the two oppositions, but connected in the first, and opposed in the second, in short, connected crosswise. This amounts to saying that the two contrasting terms in the unity are generated by a chiasma of two oppositions, by connecting two oppositions crosswise."<sup>8</sup> What might be disturbing about this is that the 'content-structure' of the main body of the present book may appear, superficially, to embody this "*positive double relative opposition*", "*chiasmic*" 'constr<u>u</u>cture', and 'constr<u>i</u>cture', as follows --

| <u><b>D</b>omain</u> ' <u><b>DIALECTIC</b>'</u> | SYSTEMATIC DIALECTIC                | HISTORICAL DIALECTIC                 |
|---|-------------------------------------|--------------------------------------|
| <b>Dyad</b> ic Function                         | <b>Dyadic Systematic Dialectics</b> | <b>Dyadic Historical Dialectics</b>  |
| <b>Triadic Function</b>                         | Triadic Systematic Dialectics       | <b>Triadic Historical Dialectics</b> |

This construct admits of "'Historical Dialectic<u>s</u>''' as the 'contra-category', or 'antithesis category', opposing the category of "'Systematic Dialectic<u>s</u>''', the '**arché**»-category', or 'thesis category'. But it offers **no** place for a '<u>uni</u>-category' or 'dialectical synthesis category', as "'complex unity''' of "'Systematic Dialectic<u>s</u>''' and "'Historical Dialectic<u>s</u>'''. However, w<u>e</u> are **not** promulgating any 'synthesis-less' so-called "dialectic". W<u>e</u> do **not** see any "dialectic" that elides "'dialectical synthesis''' -- that omits the crucial *«tertium quid*»; the '''hybrid''' or '<u>uni</u>-category'; the ''hybridizing''' and dualism-transcending ''complex unity''', of a 'thesis category' and/with its 'antithesis category' -- as any kind of "'dialectic of the dialectic itself' in its totality. In this book, w<u>e</u> have so far omitted, **not** just a latter one, but the latter two of the categor<u>ies</u> of '''dialectic''' according to o<u>ur</u> 'dialectic of the dialectic itself'. W<u>e</u> have done so because the algorithmics of the latter two kind<u>s</u> of o<u>ur</u> dialectic, and, especially, the mathematical formulation thereof, are still a matter of ongoing exploration by o<u>ur</u> research collective. The complete picture of o<u>ur present</u> view of '''dialectic''' as of the <u>present</u> time in human history, is better rendered as:

| <u>D</u> omain  | SYSTEMATIC        | HISTORICAL        | <u>META</u> -SYSTEMATIC | [PSYCHOHISTORICAL |
|-----------------|-------------------|-------------------|-------------------------|-------------------|
| DIALECTIC       | DIALECTIC         | DIALECTIC         | DIALECTIC               | DIALECTIC]        |
| <u>Dyadic</u>   | <u>Dyadic</u>     | <u>Dyadic</u>     |                         |                   |
| Function        | <b>Systematic</b> | Historical        | ، ،<br>• • •            | · · ·             |
|                 | <b>Dialectics</b> | <b>Dialectics</b> |                         |                   |
| <u>Triad</u> ic | <u>Triad</u> ic   | <u>Triad</u> ic   |                         |                   |
| Function        | Systematic        | Historical        | ، ،<br>• • •            | ۰ ° • •           |
|                 | <b>Dialectics</b> | <b>Dialectics</b> |                         |                   |

The next twenty 'dialectograms' and 'text images', presented below, describe, in more detail, the four-category, 'dialectic of the dialectic itself' dialectical categorial progression that we hold to be necessary to make the **Domain** of dialectic widely graspable as of the <u>present</u> human-historical epoch. In brief, '<u>Meta</u>-Systematic Dialectic' is about the dialectics of systems-progressions -- categorial progressions in which the ontological categories also represent [<u>meta</u>-]systems as their units. These [<u>meta</u>-]systems-as-units may '<u>speci</u>-alize' as the following: (1) e.g., 'pre-human/exo-human', 'Nature-al' '(<u>physi</u>o-systems', i.e., '<u>iheo</u>-ontological systems'. They may '<u>speci</u>-alize', instead, as (2) humans-made "pure" '<u>ide</u>o-systems', i.e., '<u>ide</u>o-ontological systems', such as many mathematical axioms-systems. Or, they may '<u>speci</u>-alize' as (3) [<u>parially</u>-]humans-made '<u>ideo-physio-systems'</u>, i.e., '<u>ideo-physi</u>o-ontological systems', such as, for example, monetary coinage, and paper currency systems. That is, '<u>Meta</u>-Systematic Dialectic' is about the dialectics' of dynamical '<u>meta</u>-systems' -- each '<u>meta</u>-system' unit being made up out of a hetero<u>gen</u>eous multiplicity of *mere* system units, in the form of a 'dialectical categorial progression' «qua» a 'systems-progression'. '<u>Meta</u>-Systematic Dialectic-like', another aspect being more '<u>Systematic Dialectic</u>-like'. In its more human-historical aspect, **g**<sub>HS</sub> is the <u>interconnection</u> of *two or more* <u>past</u>, or <u>past</u> & <u>present</u>, '''<u>Systematic Dialectics</u>''' via an '''<u>Historical Dialectical</u>''' account that bridges the gulf between the two; that explains how the self-reproduction process <u>inside</u> each earlier, e.g., human-social system, or social formation of the original to be increated birty or process <u>inside</u> each earlier, e.g., human-social system, or social formation of the original to progression or social formation of the original to progression or social progressin the progression or social progression were the two; that explai

between the two; that explains how the self-reproduction process *inside* each earlier, e.g., human-social system, or social formation, at length, *'exceeds itself'*, into the irruption of the self-reproduction process *inside* its consecutive next human-social system/formation, typically a successor system with higher *'Meta*-Darwinian Fitness' than that of the predecessor system which birthed it.

<sup>&</sup>lt;sup>7</sup>[See pp. 142-143 in J. S. Brooker, <u>T. S. Eliot's Dialectical Imagination</u>, John Hopkins U. Press, 2018]. <sup>8</sup>[See p. 154 in <u>Hermann Graßmann</u>: Biography, ibid.].

Fuller Tabulation of the 'Dialectic of Dialectic Itself': 4 Species 'Dialectical Meta-Equation' Formation-Functions.

| Domain                           | Domain DIALECTIC: The E.D. 'Dialectic of Dialectic Itself' |                         |                              |                                 |  |  |  |  |  |  |  |
|----------------------------------|--|-------------------------|------------------------------|---------------------------------|--|--|--|--|--|--|--|
| Dialectical<br>Function <u>s</u> | SYSTEMATIC<br>DIALECTIC                                    | HISTORICAL<br>DIALECTIC | META-SYSTEMATIC<br>DIALECTIC | [PSYCHOHISTORICAL<br>DIALECTIC] |  |  |  |  |  |  |  |
| <u>Dyadic</u>                    | <b>Dyadic</b>  | <u>Dyadic</u>           |                              |                                 |  |  |  |  |  |  |  |
| <b>Dialectic</b> al              | Systematic   | Historical              | ٤ ,                          | ٤ ٢                             |  |  |  |  |  |  |  |
| <b>Functions</b>                 | <b>Dialectics</b>  | <b>Dialectics</b>       | • • •                        | • • •                           |  |  |  |  |  |  |  |
| <u>Triad</u> ic                  | <u>Triad</u> ic  | <u>Triad</u> ic         |                              |                                 |  |  |  |  |  |  |  |
| <b>Dialectic</b> al              | Systematic   | Historical              | ٤ ,                          | ٤ ٢                             |  |  |  |  |  |  |  |
| <b>Functions</b>                 | <b>Dialectics</b>  | <b>Dialectics</b>       | • • •                        | • • •                           |  |  |  |  |  |  |  |
| <u>Triad</u> ico- <u>Dyad</u> ic | Mixed Degree   | Mixed Degree            |                              |                                 |  |  |  |  |  |  |  |
| <b>Dialectical</b>               | Systematic   | Historical              | ۶ ، ۲<br>• • •               | ۶ ، ۲<br>• • •                  |  |  |  |  |  |  |  |
| <b>Functions</b>                 | <b>Dialectics</b>  | <b>Dialectics</b>       |                              |                                 |  |  |  |  |  |  |  |
| <u>Tetradic</u>                  | <u>Tetrad</u> ic   | <u>Tetradic</u>         |                              |                                 |  |  |  |  |  |  |  |
| <b>Dialectical</b>               | Systematic   | Historical              | د ،<br>• • •                 | 6           •                   |  |  |  |  |  |  |  |
| <b>Functions</b>                 | <b>Dialectics</b>  | <b>Dialectics</b>       |                              |                                 |  |  |  |  |  |  |  |

The fuller tabulation, above, <u>dialectically</u> 'ordinalizes' the four [almost-]present/predicted species of the F.<u>E.D.</u> '<u>dialectic of</u> <u>dialectic itself</u>', ''crossed''' with a <u>dialectical</u> ordering of the four main species of the <u>dialectical functions</u> that we use to form '<u>dialectical meta-model meta-equations</u>' -- i.e., '''crossed''' with '<u>the DIALECTIC of the dialectical functions</u>'. A fuller exposition of this table's content is beyond the scope of this introductory users' manual, and involves aspects of the <u>E.D.</u> 'universal algorithmic-heuristic dialectical method' that are still in R & D within the F.<u>E.D</u>. research collective.



Dialectic: Users' Manual. Edition 2. 04 June 2022.

## Commentary On The Systematic Dialectic of the 'Dialectical Functions'.

This 'first <u>uni-category</u>' of this dialectic arises from the mutual critique of  $\underline{\mathbf{t}} \otimes \underline{\mathbf{d}}$ , i.e., from the critique of their very *opposition* itself:  $\underline{\mathbf{t}} \otimes \underline{\mathbf{d}} = \underline{\mathbf{q}}_{\mathbf{t}} \otimes \underline{\mathbf{q}}_{\mathbf{d}} = \underline{\mathbf{q}}_{\mathbf{d}} \oplus \underline{\mathbf{q}}_{\mathbf{td}} \models \underline{\mathbf{d}} \oplus \underline{\mathbf{m}}$ . We solve  $\underline{\mathbf{q}}_{\mathbf{td}}$  as a category of '<u>mixed</u> dialectic functions':  $\underline{\mathbf{q}}_{\mathbf{td}} \models \underline{\mathbf{q}}_{\mathbf{m}} \equiv \underline{\mathbf{m}} [--) \underline{\mathbf{q}}_{\mathbf{3}}$ . Finally, the 'second <u>contra-category</u>' arises from the self-critique of  $\underline{\mathbf{t}}$  as a claim to be the last 'self-hybrid' category of <u>Domain dime</u>:  $\underline{\mathbf{t}} \otimes \underline{\mathbf{t}} = \underline{\mathbf{q}}_{\mathbf{t}} \otimes \underline{\mathbf{q}}_{\mathbf{t}} = \underline{\mathbf{q}}_{\mathbf{t}} \oplus \underline{\mathbf{q}}_{\mathbf{tt}} \models \underline{\mathbf{t}} \oplus \underline{\mathbf{e}}$ . That is, We solve  $\underline{\mathbf{q}}_{\mathbf{tt}}$  as/by the category of the '<u>tetradic</u> dialectical functions', such that  $\underline{\mathbf{q}}_{\mathbf{tt}} \models \underline{\mathbf{q}}_{\mathbf{e}} \equiv \underline{\mathbf{e}} [--) \underline{\mathbf{q}}_{\mathbf{t}}$ . Thus,  $\underline{\mathbf{d}}^{2} \models \underline{\mathbf{d}} \oplus \underline{\mathbf{t}} \oplus \underline{\mathbf{m}} \oplus \underline{\mathbf{e}} [--) \underline{\mathbf{q}}_{\mathbf{t}} + \underline{\mathbf{q}}_{\mathbf{s}} + \underline{\mathbf{q}}_{\mathbf{s}} + \underline{\mathbf{q}}_{\mathbf{s}} + \underline{\mathbf{q}}_{\mathbf{s}}$ , a '''<u>non-amalgamative sum</u>''' of category-symbols.

Quotations: "Now that the triplicity, adopted in the system of Kant -- a method rediscovered, to begin with, by instinctive insight, but left lifeless and uncomprehended -- has been raised to its significance as an absolute method, true form is thereby set up in its true content, and the conception of science has come to light." [G.W.F. Hegel, Phenomenology of Mind, translated by J. B. Baillie, Harper [NY: 1967], pp. 107-108, emphases added by F.E.D.].

"...Kant did *not* apply *the infinitely important form* of *triplicity* -- with him it manifested itself at first only as a *formal* spark of light -- to the *genera* of his *categories* (*quantity*, *quality*, etc.), but only to their *species* which, too, alone he called *categories*. Consequently he was unable to hit on the *third* to *quality* and *quantity*." Note: Per Hegel's «*Logik*», that "*third*" is "*measure*", an «*arithmos*» of *quantifiable qualitative «monads» of measure*, or *units of measurement*; i.e., of '*dimensional unit qualifiers*' -- F.E.D. [Hegel, *Science of Logic*, translated by A. V. Miller, Humanity Books [Amherst, NY: 1969], p. 327, *emphases added by* F.E.D.].

"Any <u>division</u> is to be considered <u>genuine</u> when it is determined by the Concept. So <u>genuine</u> <u>division</u> is, first of all, <u>tripartite</u>; and then, because particularity presents itself as <u>doubled</u>, the <u>division</u> moves on to <u>fourfoldness</u> as well. In the sphere of spirit <u>trichotomy</u> predominates, and it is one of Kant's merits to have drawn attention to this." [Hegel, <u>The Encyclopedia Logic</u>, Hacket [NY: **1991**], p. **298**, <u>emphases added by F.E.D.</u>].

Note that the historical-dialectical instance of the 'mixed/combined, *triadico-dyadic* dialectical function' category, as

described above, cited earlier [p. 110], namely  $\underline{\forall}(\tau) = \langle \cdot \underline{\mathbf{n}} \rangle^3 \langle \cdot \rangle \langle \cdot \underline{\mathbf{a}} \rangle^2^{\tau} \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \rangle$ , presupposes utilizing the <u>'meta</u>-genealogical evolute product rule' axiom-variant, rather than the 'double-conservation <u>«aufheben</u>» evolute product rule' axiom-variant, via the axiom<u>s</u>-system<u>s</u> category of the <u>wQ</u>, not the <u>NQ</u>, 'arithmetic<u>s</u> for dialectic'.\*

The fuller tabulation, above, and the 'dialectogram', above, both stop at presentation step **2**, i.e., stop with the  $2^2 = four$  categor<u>ies</u> of 'dialectical functions' depicted in that 'dialectogram' -- the '<u>dyadic</u>', the '<u>triadic</u>', the combined/'<u>triadico-dyadic</u>', and the '<u>tetradic</u>'.

Further 'self-iteration' of this 'dyadic function'-based '<u>meta</u>-model <u>meta</u>-equation', e.g., for **s**tep **3** of this systematic dialectic of the <u>Encyclopedia Dialectica</u> 'dialectical functions', would invoke, presumably, further mixed-function categor<u>ies</u> -- 'tetradic/dyadic', 'tetradic/triadic', and 'tetradic/triadic/dyadic' -- and, also for **s**tep **3**, a 'pentadic function'. Such would also venture beyond the <u>present</u> experience and knowledge of the F.<u>E.D</u>. research collective.

So far, we have found some 'dialectical <u>meta</u>-modeling' efficacy for '<u>tetradic</u> dialectical functions' -- mostly for the dialectical processes of individual «monads», **not** for their «arithmoi» or for the ontological categories in which they inhere. But we have so far found **no** uses, in 'dialectical <u>meta</u>-modeling <u>meta</u>-equations', for functions beyond the '<u>tetradic</u> dialectical function' in this dialectical progression of the <u>ideo</u>-ontological categories about dialectical functions.

The 'meta-genealogical evolute product rule' is defined, via the generic 😡 'arithmetic for dialectic' symbols, as follows: gn [x] gm 🖡 gn [+] gm [+] gn+m.

Also assumed for the mixed 'meta-model' stated above is the solution  $\underline{\mathbf{g}}_{sn}$   $|=\underline{\mathbf{a}}$ , which encompasses combinations of protons & neutrons of  $\underline{\mathbf{s}}$  & electrons of  $\underline{\mathbf{n}}$ ].

<sup>\*[</sup>The  $\mathbf{Q}$  axiom<u>s</u>-system<u>s</u> category unifies arithmetic<u>s</u> of  $\{\underline{\mathbf{q}}_w\}$  '<u>un</u>quantifiable <u>qualifier <u>meta</u>-number<u>s</u>' built upon the <u>W</u> arithmetic, s.t.  $\mathbf{W} = \{\mathbf{0}, \mathbf{1}, \mathbf{2}, \mathbf{3}, \dots\}$ .</u>

# '``[a] dialectic'''.

001

The units, or «monads» of the category, or «arithmos», of "<u>dialectics</u>", are, within the limits of the expressive capabilities of the NQ 'First <u>Dialectical</u> Arithmetic/Algebra', "<u>categorial progressions</u>" - <u>'progressions</u> of categories', or of «arithmoi», that exhibit an «aufheben» 'content-structuring'.

"A dialectic" is any process <u>RESEMBLING</u> a scientific, streamlined idealization of a productive <u>human thought-process</u>, individual or collective. "A dialectic" is a 'self-dialogue'/internal 'intra-dual' <u>monologue</u>, a 'duo dialogue', or an even more-<u>multi</u>-than-duo "<u>multi</u>logue''; a productive <u>multi-part(y)/multi-voice discussion, debate, inquiry, or negotiation, about definitions/truths/reality</u>, for a <u>Domain</u> of <u>human experience</u>, or is any process that s, or that <u>resembles</u>, such a "<u>dialogic</u>" process, of [self-literated, <u>cumulatively</u> progressive, [immanent] <u>critique</u>. A typical <u>dialectic</u> "<u>dialogical</u>" process unit features an opening assertion about the reality, or whole <u>Domain</u>, of <u>human experience</u>, that is the focus, or topic, of the whole <u>dialogue</u> collective inquiry, which we call the '«<u>arché</u>»-thesis', & which is asserted by one first voice, either in the case of a single-person '<u>self-dialogue</u>, or of a '<u>multi-person</u>' chorus/forum. This first assertion, because of both its promise of aptly grasping <u>human experience</u>, and its inadequacy, vis-a-vis its <u>Domain</u>, elicits a second thought in that single persons or from a second voice in that chorus/forum, which we call the 'jest contra-thesis'. It voices an assertion which [«aufheben»-]retains/incorporates some part of the initial promise of the first assertion, but which also

This second assertion is typically itself also inadequate, or "one-sided" [cf. Mars], vis-a-vis the first assertion, emphasizing the opposite onesidedness to the one-sidedness that the first assertion emphasizes, and also vis-a-vis the reality or Domain of human experience that is the topic, or focus, of the whole discussion, because this second assertion emphasizes serving as a corrective to/critique of only/mainly the weakest, most inadequate aspect(s) of that first assertion, and this emphasis thus <u>de</u>-emphasizes/alienates/loses part of the truth-aptness, the stronger aspect(s), of that first assertion.

The second assertion therefore elicits, in its turn, a third thought in that single party, or from a third voice in that chorus/forum [which could even be the first voice, or the second voice, sounding again, but this time, ''changing its tune'' in response to its proximate experience of the conjunction/- contradiction of the first assertion and the second assertion], in an assertion which does greater justice to the truth-aptness(g) of both the 1st assertion & & the first assertion, by integrating the two into a new, 're-singular', 're-univocal', more truth-adequate, more experience-apt assertion, which we call the first uni-thesis'. Both the first assertion and the second assertion remain present in memor(y)[ies], & perhaps also in other, e.g., external, records.

If inadequacies -- incompletenesses or discrepancies -- remain, in the Domain knowledge of the single party, or of the parties assembled, in that third assertion, vis-a-vis the available human experience of the reality or Domain in question, then this discussion/dialectic/song may go on, in further new voices and assertions, beyond this third voicing/assertion, until NO further voicing/assertions are elicited, in that single party, or multi-party assembly/chorus/forum, i.e., until a final assertion/formulation satisfies/silences the knowledge/experience of the part(y)(ies), ending their song.

"Categorial progressions ", 'progressions of categories', as models of **Domains** of **human experience**, of either their <u>present</u>, 'sent-from-the-<u>past</u>', or approximately <u>synchronic</u>, '<u>meta-anatomy</u>' and 'meta-<u>physiology</u>', or of their historical, <u>dia</u>chronic formation-process(<u>es</u>) [«bildung»], are modeled upon the foregoing <u>idealization</u> of <u>human dialog</u> (<u>«dia-logos»</u>: "'<u>inter</u>change of words'']. They thus involve a 'first, or «arché», category, which progresses, by an <u>internal</u>, immanent drive, of 'intra-duality', to a partially improved/corrected "state"/ 'dynate', consisting of 'first, <u>«arché»</u>category ⊕ first <u>contra</u>-category , and which then, next, 'self-progresses' further, to the cumulative "state" / 'dynate', consisting of 'first, <u>«arché»</u>category ⊕ first <u>contra</u>-category ⊕ first <u>uni</u>-category', and may even progress cumulatively beyond even that <u>tripartite</u> 'dynate'. Such '' evolute''' categorial progressions constitute the units, or «monads», whose own category, or «arithmos», and whose 'collective name', is ''<u>'dialectic</u>S''''.

# **<u>Dialectics-in-General.</u>**

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The «genos» of Dialectics -- 'Dialectics-in-gene-ral' -- is that of 'gualo-fractal ontological content-structures', that are also 'qualo-peanic' progressions of scales, levels, stages, or epochs, etc., formed as 'archéonic consecua' of such scales, launching from known starting-scales [«arché»], such that each successor 'self-hybrid' scale is an «aufheben», or 'self-«aufheben»', concurrent termination/conservation/elevation of [part of] its predecessor 'self-hybrid' scale, & in which each such scale is similar to every other such scale, forming 'content-structures' characterized by qualitative mutual similarity among all scales levels/stages. Scales populate as progressions of initially new/unprecedented ontological categories, or kinds, of «arithmoi», or of "indefinite numbers", of units / individuals. Such units / «monads» are grasped mentally as external 'physio-facts' / 'physioontology', &/or as 'ideo-facts'/ 'ideo-ontology'. The 'qualo-fractal content-structure' that they construct/embody may be grasped as a .../«genos»/«species»/... taxonomy, a systematics ordering /immanent classification of an «arché»-scale & of its 'contra-/-meta-progeny' scales. The «aufheben» action-initiating agency / subject-ivity', that engenders such contentstructures', is the collective agency of the «monads» of each «arithmos», physically, or, for "pure" 'ideo-systems', in their mental "embodiment" by human minds, with either grasped as a 'subject-verb-object-identical', 'self-reflexive/self-refluxive eventity', whose 'self-as-subject-versus-self-as-object self-duality' leads to its quantitatively expanded [self-]reproduction, until a critical «monad»-ic "density" threshold breaches in a 'metafinite singularity', irrupting as gualitatively, ontologically-expanded [self-]reproduction. The «aufheben» "original accumulation" of the successor self-hybrid scale-«arithmos»/collective-of-«monads», thereby forms a "formal subsumption" of its immediate predecessor 'self-hybrid' scale, as well as of all/any previous scales, hybrid & 'self-hybrid' alike. The «monads» of this subsuming successor 'self-hybrid' scale are typically 'meta-«monads» of the «monads» of the predecessor self-hybrid' scale. Each successor self-hybrid' scale also later tends to "hybridize" with its "others", with its immediate-predecessor 'self-hybrid' scale, & with all/any other, e.g., earlier extant or earlier-presented scales, 'self-hybrid' & merely hybrid alike, thereby achieving its own 'reproductive accumulation', via ongoing conversions of some of the «monads» of all previous scales into its own «monads»/scale, producing a 'real subsumption' of all previous ontology by latest, 'meta-meristemal', "vanguard" 'self-hybrid' ontology. Such 'peanic', 'qualo-fractal scale-regressed /progressed, self-similar, archéonic-consecua content-structures' may be traversed, by human attention, in ascent order, or in descent / reverse order. *Synchronic scales, of already-produced/self-reproducing systems, are standardly present*[ed] in systematic order; categorial, 'meta-anatomical'/ 'meta-physiological', self-reproductive order. Longer-term, diachronic scales present themselves in chronological order-of-genesis/inclusiveness: in actual /historical order of appearance [cf. Chardin].

# "<u>Dialectical Processes</u>"

A ''<u>Dialectical Process</u>''', in F.<u>E.D</u>.'s usage of that phrase, is a [<u>dia</u>chronic] process <u>driven by [self-]iterated «aufheben» operations</u>. <u>Specifically, It is a [self-]iterated</u> alternation of an '<u>auto</u>-«aufheben» operation', one of '<u>auto</u>-combination', followed by an '<u>allo</u>-«aufheben» operation', one of '<u>allo</u>-combination', in that <u>ord</u>er, **&**, <u>generally, recurrently so, via the renewed self-operation of each, as cognized, categories</u>series 'consecuum-cumulum' result of each earlier such <u>self</u>-operation.

The '<u>auto</u>-«aufheben» <u>self</u>-operation' of the «arché», ''<u>thesis</u>''' ontology of such a <u>dialectic</u> process is, typically, a process of 'meta-<u>monad</u>-ization', of 'meta-<u>unit</u>-ization', of 'meta-<u>element</u>-ization', or of 'meta-<u>holon</u>-ization' [et. Arthur Koestler] of & by the «monads», units, elements, or ''holons''' that constitute that «arché-arithmos», & which are the agents, or subjects, of this process, yielding, as cognized, new '<u>contra</u>-thesis' categories. Thereinafter, in <u>gen</u>eral, the '<u>auto</u>-«aufheben» <u>self</u>-operation' within the result of the initial & of subsequent such [<u>self</u>-]iterations, is the formation of the '<u>meta</u><sup>n+1</sup>-units' that constitute each subsequent '<u>self</u>-hybrid' ontological «arithmos», by the <u>self</u>-action of the '<u>meta</u><sup>n</sup>-units' that constitute the <u>immediate predecessor 'self</u>-hybrid' ontic «arithmos».

The always <u>auto</u>-«aufheben»-subsequent '<u>allo</u>-«aufheben<u>s</u>»' are '<u>dialectical</u> [<u>part</u>ial or full] '''<u>synthesis''' combinations</u> of «arché» **&/**or of other, subsequent '<u>self</u>-hybrid' ontological «arithmoi», of the differing degrees of 'meta-<u>unit</u>-ization' so far extant, by which the latest-extant '<u>self</u>-hybrid<u>s</u>' «arithmos» '''uplifts them''', '''elevating''' them up into <u>its own</u> '<u>qual</u>o-fractal' level/scale, thereby «aufheben» negating/conserving them.

# "<u>Dialectical Relations</u>"

004

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A "'<u>Dialectical Relation</u>"', in F.<u>E.D</u>.'s usage of that phrase, means a [ $\approx$ <u>syn</u>chronic] interconnection between, or among, the ontological «arithmoi», the kinds of being, inherent in a given <u>Domain</u>, or in the universal <u>Domain</u>, D =  $\forall$ ; ensembles of actual, external reality units, or of <u>human</u>, mental-construct units, which are represented, in <u>human minds</u>, and in t<u>he</u> '<u>human phenome</u>' <u>generally</u>, by ontological categor<u>ies</u>.

This -- <u>dialectical</u> -- kind of interconnection typically takes the form of a relationship of «aufheben» '<u>meta</u>-unit-<u>icity</u>', of '<u>meta</u>-«monad»-<u>icity</u>', or of '<u>meta</u>-holon-<u>icity</u>', between, or among, various '<u>qual</u>o-fractal' scales, or '<u>qual</u>o-<u>quant</u>o-fractal' scales, or 'levels of order or of organization', that are represented, in <u>dialectical</u> methods, by the consecutive '<u>self</u>-hybrid' categories, only, in a <u>dialectical</u> ontological categorial progression that serves to ''analyze''' the ontological content of the <u>D</u>omain at issue.

These ≈<u>syn</u>chronic, broadly-<u>present</u>-time <u>dialectic</u>al relations are products of preceding, <u>dia</u>chronic -- e.g., historical -- <u>dialectic</u>al processes, i.e., are products of <u>past</u> 'Nature-al', including '<u>human-Nature-al'</u>, activities of units of ontological «arithmoi», including of '<u>ideo-ontological'</u> «arithmoi» -- units, «monads», or holons that conduct processes of «aufheben» '[<u>self-]meta-unit-ization</u>', of '[<u>self-]meta-</u>«monad»-<u>ization</u>', or of '[<u>self-]meta-</u> holon-<u>ization</u>', that, to some degree, congeal, and crystallize, later, as <u>dialectic</u>al relations.

For two examples: both molecules & atoms in the star-making "molecular clouds", & letters in words, stand in such «aufheben», or <u>dialectical</u>, relations to one another -- molecules as made of atoms, i.e., as 'self-«aufheben»-ations' of atoms; words as 'made of' letters.



method. In this sort of theory we move in a step-by-step fashion from simple and abstract categories to those that are complex and concrete, with dialectical logic providing the warrant for each transition. ... At the conclusion of the linear progression of categories we once again arrive at the initial starting point. But it has now been apprehended in thought. If dialectical logic is rigorously adhered to, the move from one category to the next is not ad hoc. The linear progression of immediate unity to one of difference, and from there to a category of unity-in-difference, is not a more formal schema, imposed by Hegel externally. It is instead "the absolute method ... [which] does not behave like external reflection but takes the determinate element from its own subject matter, since it is itself that subject matter's immanent principle and soul." In this way the object realm of experience has been reconstructed in thought. "\*

Reference: \*Tony Smith, The Logic of Marx's Capital: Replies to Hegelian Criticisms, State University of New York Press [Albany: 1990], pp. 7-8, emphases added.







### Karl Seldon on Psychohistorical Dialectics. Quotation: "Our 'Psychohistorical Dialectics' is about [dialectical] theories of error regarding other [dialectical] theories. The goal of our 'psychohistorical-dialectical method' is to correct the errors of the "historical-dialectical" theories upon which it operates, manifesting as the construction of a new, more adequate "historical-dialectical theory", one that includes a 'psychohistorical explanation' of the errors of its predecessor theor(y)(ies) in terms of 'psychohistorical-material conditions' that prevailed during the epoch(s) in which those theories/ideologies arose. Those 'psychohistorical-material conditions' include the "social forces of production", the "social relations of production", and the state of the 'human phenome/human genome complex unity' then prevailing. Although our 'psychohistorical dialectical' theories of error do not shrink from exploring critiques per criteria which are external to those of the theory-objects being reviewed and celebrated/criticized, they are, in the main, about immanent critique." "'<u>Psychohistorical Dialectics</u>', solving for $\mathbf{q}_{\mu\mu}$ , involves the 'intermutual' <u>confrontation</u> between two or more distinct, opposing "'<u>Historical Dialectics</u>'' theories, theorizing "'the same''' <u>Domain</u>, in **our** sense thereof, or between two or more theories that can be interpreted as <u>implicitly</u> "'historical-dialectical''', even if they are not <u>explicitly</u> so, and/or even if they were not 'intendedly' so by their theorizers." "These two or more 'historical-dialectical' theories may have originated in two or more different, past historical epochs." "They may have originated each in the same past historical epoch." "They may have originated, one (or more) in a past historical epoch, the other(s) in the present historical epoch." "Or, they may have both/all originated in the present historical epoch. Indeed, one of those theories may be the theory [initially] held by the 'celebrator'/critic of those present theories of the same, given Domain." "In any of these cases, our 'psychohistorical dialectical method' involves an in-depth, detailed, immersive "collision" between [, or among], these two [or more] "historical-dialectical" categorial-progression-form theories, all for the same Domain." "If this Method is successful, the result is a ""third(+)", new, higher, richer, better, more predictively accurate "historicaldialectical"" theory of the given Domain, one which achieves a ""dialectical synthesis" of the two or more contradictory dialectical theories or systems whose 'intermutually' critiquing interactions gave rise to this new[er] theory of that Domain." "In the latter case cited above, in which both/all same-Domain theories to be celebrated/critiqued arise in the present epoch of their reviewer/celebrant/critic, and in which one of those theories is the one then [once] held by that reviewer/celebrant/critic, the successful operation of this method yields an improvement in the theory [once] held by that reviewer/celebrant/critic."\* Seldonisms, Part 3, E.D. Archives

**Concluding Note on 'Psychohistorical <u>Dialectics</u>'. It should be noted that the irruption into existence of the '<u>ide</u>o-unit<u>s</u>' that would constitute the «***arithmos***», and the '<u>ide</u>o-ontological' category, that w<u>e</u> name '<b>Psychohistorical <u>Dialectics</u>**' is a matter of a <u>pre</u>diction, or '<u>pre</u>-construction', hypothesis, by u<u>s</u>, about a <u>future</u>, not-yet-[fully-]<u>present</u>, new '<u>ide</u>o-ontology'.

 $W_{\underline{e}}$  do hold it true that Karl Marx 'protoically' presaged this, for us, expected, new category of dialectic, by applying his dialectical method of immanent and 'exo-immanent' critique to historical theor<u>ies</u>/ideologies, such as those exhibited in the tradition of classical political economy, that were **not** <u>explicitly</u> historical-<u>dialectical</u> theor<u>ies</u>/ideologies, or that were 'outrightly' <u>un</u>dialectical, e.g., abstract-negation-based, ideologies, or even, e.g., radically dualistic ideologies.

But '*Psychohistorical <u>Dialectics</u>*' proper is about the immanent critique, and about the 'inter-mutual', 'exo-immanent' critique, of *two or more* historical-<u>dialectical</u> theor<u>ies</u> of the same <u>Domain</u>, that are *potentially* ideology-infected, *not* just about *two or more* historical theor<u>ies</u>/ideologies in <u>general</u>, e.g., including <u>explicitly</u> <u>un</u>dialectical ideologies.

Whether in the form  $\mathfrak{P}_{\Psi}$  or  $\mathfrak{P}_{\Psi}$ , *Psychohistorical <u>Dialectics</u>' is about '<u>de</u>-ideologization', e.g., <u>via</u> the immanent critique, and '<u>exo</u>-immanent' critique, of <u>both</u>/all of the <u>dialectical</u>, same-<u>Domain</u>, <u>Domain-H</u>istory theor<u>ies</u> or models being 'intermutually confronted', <u>per</u> \mathfrak{P}\_{HH} or \mathfrak{P}\_{HH}, whether <u>both</u>/all of those <u>Historical-Dialectical</u> theor<u>ies</u> hail <u>both</u>/all from the <u>past</u>, or <u>one</u>/some from the <u>past</u> and <u>one</u>/some from the <u>present</u>, or both/all from the <u>present</u>.* 

## **DEFINITION**: '<u>dialectic</u>al [<u>meta</u>-]equations'.

A '<u>Dialectical</u> [<u>Meta-</u>]Equation', in F.E.D.'s usage of that phrase, expresses a <u>dialectical</u> [<u>meta-</u>] model of a given <u>D</u>omain, contained within the universal <u>D</u>omain, or a <u>dialectical</u> [<u>meta-</u>]model of the universal <u>D</u>omain itself, as the whole,  $D = \forall$ , expressing a '<u>Dialectical</u> Theory of Everything', as formulated in the language of the <u>NQ</u> '<u>dialectical</u> <u>ideography/</u>«characteristica universalis»', via, e.g. the '<u>Dyadic</u> Function', or the '<u>Triadic</u> Function'. This means <u>an equating between unity</u> & <u>diversity</u>; an equality relation between <u>unity</u>, as «arché» category, <u>self-in</u>voluted to a definite <u>non</u>linear degree, and diversity, as an ontological categorial series. That series' categor<u>ies</u>-count is exactly equal to the degree of the <u>self-in</u>volution of the «arché» category. Grasp it as abstract potentiality, originating seed, or ultimate ancestor of the <u>D</u>omain mapped thereby, viewed ≈<u>syn</u>chronically or <u>dia</u>chronically.

With respect to the quote, below, from Marx's "Introduction to the Critique of Political Economy", in his Foundations of the Critique of Political Economy, the «arché» category "unity" is the "abstract determination" into which the full, but "chaotic", conception distilled along the "first path". The "second path" is generated by the n-fold self-involution of that "unity", signed  $\alpha$ , leading to mental representation of the real concrete by means of a 'qualitative superposition', or "'sum''', of n terms, each representing a distinct ontic category, as a determination, or as a composite of multiple determinations, each as solved ['='] by the user & creator of the given model of the Domain at issue.

For the 'Dyadic Functions', the root 'dialectic equation' is  $\underline{\alpha}^2 = \underline{\alpha} + \underline{\Delta\alpha} \equiv \underline{\mathbf{g}}_{\alpha} + \underline{\mathbf{g}}_{\alpha\alpha} \coloneqq \underline{\alpha} + \underline{\beta}$ . For the 'Triadic Functions', the root 'dialectic equation' is  $\underline{\alpha}^3 = \underline{\mathbf{g}}_{\alpha} + \underline{\mathbf{g}}_{\alpha\alpha} + \underline{\mathbf{g}}_{\alpha\alpha\alpha} \coloneqq \underline{\alpha} + \underline{\beta} + \underline{\mathbf{g}}_{\beta\alpha}$ .

Quotation: "The concrete is concrete because it is the concentration of many determinations, hence unity of the diverse. It appears in the process of thinking, therefore, as a process of concentration, as a result, not as a point of departure, even though it is the point of departure in reality and hence also the point of departure for observation [Anshauung] and conception. Along the first path the full [but "chastic"  $-F_{\underline{E},\underline{D}}$ ] conception was evaporated to yield an abstract determination; along the second, the abstract determination leads toward a reproduction of the concrete by way of thought ...,the method of rising from the abstract to the concrete is...,the way in which thought appropriates the concrete is as the concrete in the mind."

Reference: Karl Marx, <u>Grundrisse</u>, ibid., p. 101, emphasis added by F.<u>E.D.</u>

$$\frac{Dialectical (Meta-Model Meta-Equation)}{Dialectic al (Meta-Model Meta-Equation)} -- The Systematic Dialectic of the Dialectic Itself,to presentation step  $_{\#}s_{2} = 3$ .  
$$\frac{3}{h} + \binom{*}{_{s_{2}^{n}}} = (3 + 3 + 3)^{2^{s_{2}^{n}}} \cdot \frac{3}{h} + \frac{3}{_{s_{2}^{n}}} = (3 + 3 + 3)^{2^{s_{2}^{n}}} \cdot \frac{3}{h} + \frac{3}{_{s_{2}^{n}}} = (3 + 3)^{2^{3}} \approx (3 + 3$$$$

\* 'Dyadic Expansion' assumed.

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# **Commentary On '<u>The Dialectics Meta</u>-Equation'**.

The 'Historical Dialectic of the Dialectic Itself' as we have covered it, so far, in this progression of 'text-images', ends with its third epoch [if we count epoch  $_{\parallel}s_{2} = 0$  as its first epoch], its epoch  $_{\parallel}s_{2} = 2$ , consequently consisting of  $2^{2} = 4$  categories of kinds of dialectic.

The 'dialectical equation' in the 'text-image' immediately preceding this one, ends with a fourth epoch, epoch  ${}_{\parallel}s_{2} = 3$ . It therefore consequently consists of  $2^{3} = 8$  categor<u>ies</u> of kind<u>s</u> of dialectic.

But, if the category that we name 'Psychohistorical Dialectics' has only recently formed, and, even then, still to only a ''fractional''' extent, arguably debuting first in the works of Karl Marx [regarding which, see the quotations below], then the four additional categories must, we hold, be said to belong to our expected future of 'the Domain of Dialectics Itself', D = #.

In o<u>ur</u> view, the definitions/solutions for these 4 categor<u>ies</u>, with category-symbols  $\mathbf{g}_{\Psi \mathcal{S}}$   $\mathbf{g}_{\Psi \mathcal{S}}$   $\mathbf{g}_{\Psi \mathcal{S}}$ ,  $\mathbf{$ 

 $\mathbf{g}_{\mathbf{u}_{\mathbf{c}}} \coloneqq$  The uplift or *«aufheben»* elevation of  $\boldsymbol{\mathcal{S}}$  into the  $\underline{\Psi}$  level, the critique/assimilation of  $\boldsymbol{\mathcal{S}}$  by  $\underline{\Psi}$ ;

 $\mathbf{g}_{\Psi_{\mathcal{H}}} \models$  The uplift or *«aufheben»* elevation of  $\mathcal{H}$  into the  $\Psi$  level, the critique/assimilation of  $\mathcal{H}$  by  $\Psi$ ;

 $\mathbf{g}_{\Psi \mathcal{M}} \coloneqq$  The uplift or *«aufheben»* elevation of  $\mathcal{M}$  into the  $\Psi$  level, the critique/assimilation of  $\mathcal{M}$  by  $\Psi$ ;

The self-critique/self-subsumption of  $\Psi$ , as occasioned, e.g., by the mutual encounter of two+ distinct 'planetary polis' civilizations, each with a <u>d</u> disparate theor<u>ies</u>-history, even if one 'planetary polis' among them gave birth to the other(s), hence each with its own version of  $\Psi$ , that both/all need to be 'inter-mutually' reconciled, thus '<u>meta</u>-psychohistorically'.

### Quotations:

1. "It can be seen that the history of *industry* and industry as it *objectively* exists is an *open* book of the *human faculties*, and a human *psychology* which can be sensuously apprehended."

2. "The crude materialism of the economists who regard as the *natural properties* of things what are social relations of production among people, and qualities which things obtain because they are subsumed under these relations, is at the same time just as crude an idealism, even fetishism, since it imputes social relations to things as inherent characteristics, and thus mystifies them."

3. "Then comes the period of social revolution. ... In considering such transformations the distinction should always be made between the material transformation of the economic conditions of production, which can be determined with the precision of natural science, and the legal, political, religious, aesthetic, or philosophic -- in short, ideological -- forms in which men become conscious of this conflict and fight it out."

References: 1. Marx. Early Writings. Economic and Philosophical Manuscripts, 1844, ibid., p. 162; 2. Marx. «Grundrisse», 1857-8, ibid., p. 687; 3. Marx. Preface. «Zur Kritik...», 1859, ibid., p. 44.

#### <u>he DUAL Dialectic of the Dialectic Itself.</u> the Historical Dialectic aspect of this DUAL Dialectic oth SYSTEMATIC-Dialectical and HISTORICAL-Dialectical at once. «Genos», Domain D = # Dialectic-in-General -δ. Generic Dialectic --Qualo-Peanic, «Aufheben» Qualo-Peanic Progression Archéonic Consecua The 'Dyadic Seldon Function' of the g «Arché» Argument <\$\$<sup>20</sup> = <\$\$<sup>1</sup> ŝ locus of [ 'tetradic' ] categorial units' 'meta-«monad»-icity 949 «species» 1 «species» 2 «species» 3 «species» 4 Meta-Systematic \_# System[at]ic t Historical ł **Psychohistorical** ł # ~# **Dialectics Dialectics** <sup>3</sup>S **Dialectics** <sup>3</sup>H 3 M **Dialectics** 3 Ψ Ð Ð Ð hv: 4 0 ⊕ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ ( )<sup>2"</sup> (Ì)<sup>2\*</sup>

# <u>Commentary</u> On The 'Dialectogram' Entitled: '<u>The DUAL Dialectic of the Dialectic Itself</u>'.

Because 'the <u>historical</u> dialectic of the dialectic itself', and 'the <u>systematic</u> dialectic of the dialectic itself', have the same 'ordinality' and <u>gen</u>eral 'content-structure', we have produced, in the immediately foregoing diagram, a <u>single</u> 'dialectogram' to represent both of these aspects or dimensions of 'dialectic dialectic', or of 'the dialectic of the dialectic of the dialectic itself', to epoch  $_{\#}\tau_{2} = 2$ , and to get  $_{\#}s_{2} = 2$ , respectively, which represent, we hold, the <u>present</u>ly full extent of the 'dialectical speciation' of 'the dialectic itself', and even a little more than that, since the 4th category of dialectic, '<u>psychohistorical</u> dialectics', is still only nascent and fractionally-<u>present</u> to-date, in o<u>ur</u> view.

We signify this '<u>dual</u> dialectic' of 'the dialectic itself' by using, for its 'dialectogram', <u>neither</u> the 'pictive elements' and the ideograms 'of angular motif', by which we signal ''<u>historical</u> dialectic''', <u>nor</u> the 'pictive elements' and the ideograms 'of curvaceous motif', that we use to signal ''<u>systematic</u> dialectic'''.

Instead, we use the 'pictive elements' and ideograms 'of 'rectangular motif' to sign a "genos" of 'generic dialectic' that encompasses <u>both</u> "<u>'historical</u> dialectic'' and "<u>'systematic</u> dialectic''; that signifies the results of the humanmental abstraction of what the two have in common.

The rectangular box<u>es</u> beneath the bo<u>xes</u> representing the four species of dialectic present a selection of particular-<u>Domain</u> cases of dialectic that we address in the sequel. Their 'rectangular motif' is meant to signify that both the ''<u>historical dialectic</u>'' of each of those <u>Domains</u>, and the ''<u>systematic dialectic</u>'' of each, are 'co-intended'.

Regardless of which aspect or dimension of 'the dialectic of the dialectic' is the momentary focus of interpretation of this 'dialectogram', the <u>gen</u>eric naming of each <u>speci</u>es of dialectic still holds. Thus, the dialectical <u>speci</u>es category of ''s<u>ystematic</u> dialectics''' is the 'starting category', or '«arché»-category', for both of these dialectics. The category of ''<u>historical</u> dialectics''' is the 'first <u>contra-category</u>'. The category of '<u>meta-systematic</u> dialectics'' of this 'dialectic of dialectic'. And the category of '<u>psychohistorical</u> dialectics' is its 'second <u>contra-category</u>'.



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| <u>Commentary</u> on 'Dialectogram' for Historical vs. Systematic <u>Dialectic</u> <u>O</u> Parallelisms.   |
|---|
| The 'dialectogram' immediately preceding this commentary emphasizes the parallelisms between the categories, and the categorial progressions, of "historical dialectics" vs. of "systematic dialectics", for the very case of 'the dialectic of the dialectic itself'.  |
| Both categorial progressions, for example, feature three categories, with the same names "systematic dialectics", "historical dialectics", and "meta-systematic dialectics", and in the same order the order in which they were just given.   |
| These parallelisms are real, and revealing. However, the <u>non</u> -parallelisms between " <i>historical dialectics</i> " and " <i>systematic dialectics</i> " should also be emphasized.  |
| In the case of the <i>present</i> example, of <i>the dialectic of the dialectic itself</i> ', it can be readily seen that the historical «arché»-category of <i>"systematic dialectics</i> ", which we trace back to the dialectic according to Plato, and according to Plato's Socrates character in the <i>Platonic Dialogues</i> <sup>1</sup> , is not the same as is <i>qual</i> itatively and <i>'ideo</i> -ontologically' very different from the <i>present</i> category of "systematic dialectic", e.g., as according to Tony Smith <sup>2</sup> . Plato's systematic, <i>'ideo</i> -taxonomic' dialectic is about the <i>present</i> only as   |
| a supposedly <u>un</u> varying, transcendental <u>present</u> , that never changes, eon after eon, for all eternity. Plato's, historically '«arché»-ic' version of "systematic dialectic" is about his taxonomic <i>«arithmos»</i> structure of his imagined <i>«eide»</i> ; concerns his posited <i>«arithmos eidetikos»</i> . Tony Smith's "systematic dialectic" is about the <i>historical present</i> of capitalism, and this "systematic dialectic" could arguably also be applied to explicate the <i>past presents</i> of the several <i>qual</i> itatively, <i>'socio</i> -ontologically' different kind <u>s</u> of society that preceded capitalism, in a view of history as ever-changing & as generally, cumulatively progressing, <i>not</i> eternally <u>un</u> changing.  |
| Likewise, " <i>historical dialectics</i> ", e.g., as we evoke it herein, is no longer the mystified and procrustean superimposition of preconceived idealist categories that Hegel exhibited and originated in his " <i>philosophy of history</i> " lectures <sup>3</sup> .   |
| <ol> <li><b>Outdotions:</b></li> <li>"Matural number," - F.E.D.] differ from objects of sense in being everlasting and unchanged, from the <i>eide</i>, on the other hand. in being many and alike, while an <i>eidos</i> is each by itself one only." there are [thus] three kinds of <i>arithmoti</i>. (1) the <i>arithmos eidetikos</i> idea-number, (2) the <i>arithmos aisthetos</i> sensible number. (<i>jarady</i>) these, the <i>arithmos mathematikos</i>, or <i>monadikos</i> mathematical or monadic number."</li> <li>"none of these considerations changes the fact that a dialectical logic taken over from Hegel provides the architectonic of <i>Capital</i>. None of them changes the fact that the stages in the dialectic progression are derived systematically rather than historically. And none of them changes the fact that the stages in <i>Capital</i>. None of the categories in <i>Capital</i> is as rigorously systematic as that found in the <i>Grundrisse</i> or [<i>A Contribution to</i>] <i>The Critique ofPolitical Economy</i>."</li> <li>"The only Thought which Philosophy brings with it to the contemplation of History, is the simple conception of <i>Reason</i>; that Reason is the Sovereign of the World; that the history of the world, therefore, presents us with a rational process."</li> </ol> |
| Referencess: 1. Jacob Klein, Greek Mathematical Thought and the Origin of Algebra, Dover, NY, 1968, p. 91; 2. TonySmith, The Logic of Marx's Capital, SUNY Press, Albany, NY, 1990, p. 33; 3. G. W.F. Hegel, The Philosophy of History [circa 1831], Dover, NY, 1956, Introduction, p. 9.   |

### **10**. *Vertical <u>Dialectics</u>', versus 'Horizontal <u>Dialectics</u>', versus '<u>Bi</u>-Axial <u>Dialectics</u>'.*

In the F.<u>E.D</u>. 'Unified Theory of Universal Dialectics', the core dialectical attribute, i.e., the «aufheben» process and relation of '<u>meta</u>-unit-ization', '<u>meta</u>-«monad»-ization', or '<u>meta</u>-holon-ization', constitutes the <u>uni</u>fying dialectical principle of both the Marxian 'horizontal dialectics' of 'dialectical <u>speci</u>ation', for, e.g., «arché»-<u>speci</u>es into 'contra-<u>speci</u>es' and on into '<u>uni-speci</u>es', and beyond, plus the <u>de</u>mystified Platonian 'vertical dialectics' of the '''«<u>gen</u>e»ralization''', or of the '''abstraction''', as also «aufheben» '<u>meta</u>-unit-ization' of, e.g., <u>multi</u>ple dialectical speci<u>es</u> categor<u>ies</u>, as units in their own right, into their <u>single</u> «<u>gen</u>os» category unit as their '<u>meta</u>-unit'. The 'dialectogram' and commentary below, together, summarize this 'dialectic of dialectics', whose «arché»-<u>speci</u>es category is o<u>ur</u> category of 'vertical dialectics', whose first '<u>contra-speci</u>es' category is o<u>ur</u> category of 'horizontal dialectics', and whose unified 'uni-<u>speci</u>es' category is o<u>ur</u> category of '<u>bi</u>-axial dialectics'. This 'dialectogram' is, in itself, also an example, an instant <u>speci</u>men, of the '<u>bi</u>-axial dialectics' <u>speci</u>es -- that of the concurrent <u>uni</u>ty of ''horizontal''' and '''vertical''' dialectic.

# <u>The Dialectic</u> of the <u>E</u>.<u>D</u>. '<u>Unified Theory of Universal Dialectic</u>s': Single <u>Tri</u>ad -- '«<u>arché</u>»-category'; '<u>contra</u>-category'; '<u>uni</u>-category'.



The diagram above, that describes the dialectic of 'dialectograms-in-«<u>gen</u>e»-ral' -- the dialectic of the two different kinds of dialectic that o<u>ur</u> 'dialectograms-in-«<u>gen</u>e»-ral' portray -- is itself a particular instance of a 'dialectogram'. This 'dialectogram' diagram thus "falls under" itself, is itself covered in what it itself describes. It is itself a 'dialectogram', one that is thus '*about itself*' as well as being about all other such <u>pictures</u> or 'dialectograms'. It is a diagram that describes itself as well as describing other such diagrams. It is a case among all of the cases to which it applies. It is '<u>other</u>-describing', as are typical diagrams, but it is also <u>self</u>-describing, as being one particular instantiation of the many and diverse particular instantiations, as well as of the '<u>gen</u>e»-rality', the <u>gen</u>os», of <u>tri</u>adic+ 'dialectograms' that it addresses. It is thus also '<u>self</u>-exemplifying'. The leftmost lower circle addresses the whole movement of upward convergence of the lines of <u>gen</u>eralization, connecting from the three lower circles to the one circle above them. The middle lower circle addresses the whole rightward movement from the leftmost lower circle to the middle lower circle to the rightmost lower circle. The rightmost lower circle addresses the conjunction, in this 'dialectogram' diagram, and in others such, of both the upward movement of convergence, or of 'dialectical <u>speci</u>ation', and/with the rightward movement of 'dialectical <u>speci</u>ation'.

# Commentary: 'HORIZONTAL & VERTICAL DIALECTIC COMBINED' -- 'BI-AXIAL DIALECTIC'.

merely implicit, or suppressed, but, on the contrary, as representing, instead, mutual 'co-explicitude' about the 'co-ensuing' of both of these 2, which are one-sidedly the concrete, empirical referents of the series of 'dialectograms' just presented, as either representing 'VERTICAL Dialectic' alone, i.e., with We mean, by the name 'BI-AXIAL Dialectic', the '''dialectical synthesis''', or the '''complex unity''' -- the 'unit-category' -- of/for our two prior 'ideoontological' categories, the category of 'VERTICAL Dialectic', and the category of 'HORIZONTAL Dialectic'. We mean a view that no longer views HORIZONTAL Dialectic left merely implicit, or suppressed, or as representing only HORIZONTAL Dialectic, with 'VERTICAL Dialectic' left different qualitatively to the point of being opposites, as dimensions of Dialectic.

their 'meta-unit-icity' are the ontological categories as units themselves. Those category-units are represented pictographically in these 'dialectograms' each by its own 'category-box', e.g., by the several «species» boxes coalescing, vertically, into the single «Genos» box, from within their own level, into In the generic 'VERTICAL Dialectic', the units of the *«arithmos»* [= '*quantitatively-indefinite-NUMBER*'] of units that are '*«aufheben»-al' due to* dialectical, 'meta-unit-icity', the fact that each such 'category-unit' is also already, implicitly, an «arithmos», an 'indefinite NUMBER', of its own the next level above them/theirs in terms of abstractness. This upward 'meta-unit-icity' constitutes a kind, a VERTICAL kind, of «aufheben», or constituent units, of its own ""elements"", of its own "logical individuals", or of its own mutually similar, like-kind «monads» notwithstanding. In generic diachronic 'HORIZONTAL Dialectic', it is those very '''logical individuals''', or units, of each 'starting category', at the «species» level, for example, which 'self-waufheben's self-hybridize/self-meta-unit-ize' to form units of the next, successor 'self-hybrid' (species) category/ (arithmos)/presentation's/ presenter's discourse, to lift up into each next level/ layer/ qualo-fractal scale of the present [sub-]totality being explicated, some of the indefinite-NUMBER relative to that starting category/ «arithmos» / indefinite-NUMBER. These units then, next, typically ' «aufheben-hybridize' with units of the priorly-presented level are found to be already embedded / "aufheben»-contained" in the higher units constituting that next higher level. category/ «arithmos» / indefinite-<u>NUMBER</u>. In generic *synchronic 'HORIZONTAL Dialectic', when presentees' attentions are motivated, by the* ontological-categorial mere-hybridization/partial synthesis may then ensue, until a 'full mere-hybridization/synthesis' of all extant earlier-born the earlier units-kind, to form the units of the next 'merely-hybrid', or '[partial] synthesis' category/ «arithmos»/ indefinite-NUMBER. Further self-hybrid ontological categories / «arithmoin / indefinite-NUMBERS irrupts, followed by irruption of the next 'self-hybrid units' ontological

dialectograms' of 'curvaceous motif', representing '''Systematic Dialectics''', or '<u>Syn</u>chronic Dialectics', and the 'dialectograms' of 'angular motif', curvaceous motif, Systematic-Dialectic dialectograms' and the 'angular motif', Historical Dialectic dialectograms', is to be elaborated further along The 'rectangular motif' of a foregoing series of 'dialectograms' suggests that what these 'dialectograms' assert '''ranges over''' both the forthcoming representing 'Historical Dialectics', or 'Diachronic Dialectics', which, in these cases, may not always be exactly the case. The distinction between the in this series of presentations.

Both The HORIZONTAL Dialectic dialectogram, & THe 'BI-AXIAL Dialectic dialectogram', presented earlier, use 'dialectical-algebraic' symbols & meta-]equations, that are absent in The still-earlier-presented 'VERTICAL Dialectic dialectogram'. These symbols serve to map, ideographically, the pictography of these 'dialectogram' diagrams. A key objective of this presentation as a whole is to elucidate the pathway to, and the content of, the axiomatic undergirding of 'The Seldonian First Dialectical Arithmetic' that makes these 'Dialectical-Algebraic content-forms' work.

Dialectics', that can also serve to summarize the whole series of modules on 'The [Meta-] Fractal Pathway to the Seldonian Mathematics for Dialectics'. The immediately-succeeding module presents a 'dialectogram' entitled 'The Dialectic of the Encyclopedia Dialectica Unified Theory of Universal

### **11**. Can Our Two <u>Q</u> <u>Dialectical Models</u>, for Our Two Paradigmatic Marxian Examples, Become One?

In the opening section of the main body of this book, we presented two successive "paradigmatic", Marxian examples of the  $\mathbf{NQ}$  dialectical method and of its 'dialectical <u>meta</u>-model <u>meta</u>-equations'. The first was a systematic-dialectical,

<u>dyad</u>ic model of certain key features of the [*table-of-*]contents of Marx's <u>Capital</u>. The second was a systematic-dialectical <u>dyad</u>ic model of Marx's six(+) planned treatises [named for the broadest categories] of his Critique of Political Economy <u>Domain</u> overall.

But the content addressed by these two dialectical models overlap, if only partially. "Capital" names the '*«arché»*-category', and the '*«arché»*-treatise', of Marx's overall plan. Indeed, Marx was able to complete, before his death, only large parts of this first of the six(+) treatises in his overall plan, the "Capital" treatise, in his <u>Capital</u>, volumes I-IV.

The question thus arises for us: Can these two, overlapping,  $\mathbf{Q}$  dialectical models be meaningfully merged into just one,

into a single dialectical model? Such would make the deeper *«arché»* of the *Capital* model also the *«arché»* for Marx's planned *Critique of Political Economy overall*, the *«arché»* for all of the planned six(+) treatis<u>es</u>. That *«arché»* would be the "Elementary Form...of Value" – the very essence of "the exchange-value". Such a <u>uni</u>fied model might also result in a more detailed "<u>pre</u>diction"/ <u>pre</u>-construction' of the likely [*table-of-*]contents of that entire Critique. O<u>ur</u> answer: YES! -- but, this time, using the <u>triad</u>ic function. However, grasping this model demands a deep study of <u>Capital</u>, vol. I.

The '*«arché»*-category' or 'starting category' for our first paradigmatic example was the category of <u>C</u>ommodit<u>ies</u>, denoted by  $\underline{\mathbf{q}}_{C}$  [--)  $\underline{\mathbf{q}}_{\mathbf{1}}$ . But, although w<u>e</u> did **not** mention it in that opening section, the category of <u>C</u>ommodit<u>ies</u> is **not** the deepest '*«arché»*-category' of Marx's <u>Capital</u>. Marx notes, in his Preface to the First German Edition of <u>Capital</u>, volume I, that "...in bourgeois society the commodity-form of the product of labour -- or the <u>value-form</u> of the <u>commodity</u> -- is the economic cell-form."\* When we look into what Marx means by "the value-form of the commodity", we find that the earliest, simplest, most abstract such "value-form of the commodity" is what Marx calls the "Elementary or Accidental Form of Value", which Marx presents in Section 3. -- "The Form of Value or Exchange-Value" -- part A., of Chapter I., "Commodities", of PART I, "Commodities and Money", of <u>Capital</u>, volume I: "*The Productions-process of Capitals*".

This category, of the "Elementary Form" of 'Commodity-[*Exchange*-]Value', is the *singular <u>dialectical</u> «archa<u>i</u>», the ultimate <i>premise*, upon which rests the entire systematic-dialectical categorial-progression and '*qualo*-fractal' edifice of the four volume<u>s</u> of Marx's <u>Capital</u> as he planned it.

What we propose is to build a systematic-dialectical, triadic we model equation which combines our two "paradigmatic"

dialectical model<u>s</u>, and which rests the entire six(+) treatise edifice of Marx's planned '*Critique of Capitalist Political*-*Economics Overall*' upon Marx's category of the "Elementary or Accidental Form of Value" as ultimate '*dialectical categorial premise*'. But why do w<u>e</u> think that this one category is the appropriate premise for Marx's entire Critique?

When we go to inspect Marx's exposition of this category in *Chapter I.*, Section 3.A. of <u>*Capital*</u>, volume I, we find that the units of this category are simple, barter-*like* abstractions from the C—M—C' unit of simple, contemporary <u>M</u>oney-mediated circulation of <u>Commodities</u>, but with the <u>Monies</u> category abstracted-out, leaving only: C—C'. This "Form" is a category of ""exchange-equations", per which a definite <u>quant</u>ity ( $\mathbf{c}_j$ ) of the units of a given <u>kind</u> of commodity, C [ $\underline{\mathbf{C}}_j$ ], will [' $\Leftarrow$ '] exchange for a typically <u>different</u> definite <u>quant</u>ity ( $\mathbf{c}_k$ ) of the units of a, <u>qualitatively different</u>, other use-value commodity-kind, C' [ $\underline{\mathbf{C}}_k$ ]:  $\mathbf{c}_i \underline{\mathbf{C}}_i \neq \mathbf{c}_k \underline{\mathbf{C}}_k$ .

Such "'exchange-equation<u>s</u>"" form the uttermost root of "Exchange-Value"; of the incessant, endlessly-repeated equating of <u>qualitatively different</u> thing<u>s</u>, <u>apparently</u> by means of "pure" <u>quant</u>ity alone. Per Marx, the deeper root of this equation is a common <u>qual</u>ity or "substance", known as "the <u>quant</u>ity of <u>abstract labor-time present</u>ly socially necessary to <u>re</u>produce the object"", but one that is totally <u>un</u>known to most of the human practitioner<u>s</u> of 'exchange-value-exchange'. W<u>e</u> hold that this typically <u>un</u>conscious but incessantly practiced and rehearsed 'equating of disparate <u>qual</u>it<u>ies</u>, enacted <u>apparently</u> by means of "pure" quantity alone', is also the uttermost root of 'the money-mind', and, moreover, of the 'capital-mind', of the [monetary-]'profit-mind' -- of the pervasive «mentalité» of modern humanity, and the very deepest "'psychohistorical'" root of "'Modernity'" itself; of the pervasive, peculiar, and often perverse relationship to the whole category of "'the <u>quant</u>itative"' that characterizes humanity in the epoch of capital as prime social relation of production.

<sup>\*[</sup>See p. 8 in *Capital*, New World, volume I, *ibid.*, *emphasis added* by K.S.].

Marx, at the end of a major outline, in the <u>Grundrisse</u>, on his **6**(+) treatise<u>s</u> plan for his 'Critique of Political-Economics Overall', describing content<u>s</u> of either the "World Market" treatise, or, perhaps, of its sequel, wrote: "Finally, the world market. Encroachment of bourgeois society over the state. Crises. Dissolution of the mode of production and form of society based on exchange value."\* To o<u>ur</u> reading, this means the <u>concrete</u> transcendence of the present kind of society, capitalist society, whose ultimate root <u>un</u>conscious civilizational paradigm and 'human-<u>phen</u>omic meme' is captured by Marx's "<u>E</u>lementary Form of [Commodity Exchange-]Value" category. That category therefore form<u>s</u> the deepest '«arché»- category' for his 'Critique of <u>Capitalist</u> Political-Economics Overall', & also for the entire historical epoch of capitalism.

So, what would a unified  $\mathbf{wQ}$ -dialectical model [ $\mathbf{wQ}$  because  $\mathbf{q}_0$  is needed] of <u>Capital</u> together with the other five(+) treatises of Marx's planned 'Critique of <u>Capitalist</u> Political-Economics Overall' look like? And, first of all, how would one build it? The key, as we see it, is to shift the solution for the term/category-symbol  $\mathbf{g}_{KK}$  from  $\mathbf{g}_{KK}$  [ $\mathbf{-\equiv g}_E$ , signifying the immanent <u>self</u>-critique and <u>self</u>-«aufheben» of capitalism/of the "capital-relation" as predominant "social relation of production", to  $\mathbf{g}_{KK}$  [ $\mathbf{-\equiv g}_L$ , with  $\mathbf{g}_L$  signing the Marxian category of 'Landed Properties', as first opposite category to that of 'Kapitals'.

So, with that change in solution in mind, let us start 'self-iterating' our new '«arché»-category', denoted  $\underline{\mathbf{g}}_{\mathbf{E}}$  [--)  $\underline{\mathbf{g}}_{\mathbf{1}}$ , and now signifying the Marxian category of the "*Elementary Form*" of 'Commodity-[*Exchange*-]Value', *step-by-step*. Starting from step *CPE*  $\mathbf{s}_{\mathbf{2}} = \mathbf{0}$ , and solving for the new ''algebraic *un*known''' 'category-symbol terms' so *gene*rated, *term-by-term*, i.e., *category-by-category*, let's see if that procedure constructs a *single plausible* dialectical model encompassing both *Capital*, '*reconstructively*', and also, "predictively", or ''*preconstructively*''', the other  $\mathbf{5}(+)$  planned treatises in Marx's '*Critique of Capitalist Political-Economics Overall*' **Domain**, the treatises that Marx never even got to draft.

Given the "**Elementary Form**" of "Commodity-Value' category, denoted by  $\mathbf{g}_{E} [-] \mathbf{g}_{1}$ , as our starting category<sup>1</sup>, and as the sole 'socio-ontological' categorial content of presentation **s**tep **0** for the **D** = *CPE* **D***omain*, how do we get to the next, second 'algebraic <u>un</u>known category-symbol' in this categorial progression model of our presentation, and how do we solve it? Well, we know that this next category-symbol ties to  $\mathbf{g}_{2}$  in the wQ <u>gen</u>eric arithmetic for dialectic. We also know that adding **1** "Whole numbers" unit to the subscript of the <u>gen</u>eric wQ *«arché» '<u>meta</u>-numeral' ties to adding the "<i>«arché»-category*' subscript epithet to the subscript of the  $\mathbf{g}_{1}$ -tied  $\mathbf{g}_{E}$ , the '*«arché»-category*' symbol for **D***omain CPE*. Note that 'next-ness' or *juxtaposition* of epithet<u>s</u>, i.e., of 'categorial determination<u>s</u>', in subscript<u>s</u> of 'category-symbols<u>s</u>' interpreting those <u>gen</u>eric '<u>meta</u>-numeral<u>s</u>' for a particular **D***omain*, signifies ''addition''', *not* ''multiplication'''. Therefore, if  $\mathbf{g}_{E} [-] \mathbf{g}_{1}$ , then  $\mathbf{g}_{EE} [-] \mathbf{g}_{1+1} = \mathbf{g}_{2}$ , and our next, second 'category-symbol' for this  $\mathbf{D} = CPE$  **D***omain* presentation-model is  $\mathbf{g}_{EE}$ . But how do we "solve for", <u>bi</u>-vocal,  $\mathbf{g}_{EE}$ , by identifying it as a <u>uni</u>vocal category symbol for a category that is actually part of Marx's presentation in his <u>Capital</u>?

Well, category  $\mathbf{g}_{EE}$  would generally be expected to be a category of <u>meta</u>-unit<u>s</u> to the unit<u>s</u> constituting category  $\mathbf{g}_{E}$ , thus defining category  $\mathbf{g}_{EE}$  as a *supplementary opposite* category to category  $\mathbf{g}_{E}$ . Each unit of category  $\mathbf{g}_{EE}$  would typically be made up out of a heterogeneous multiplicity of unit<u>s</u> of category  $\mathbf{g}_{E}$ . And, indeed, if we look to Marx's consecutive next sub-section in the same section which opens with category  $\mathbf{g}_{E}$ , namely, next sub-section B., we find exposition of the category Marx names the "Total or EXpanded Form of Value"<sup>2</sup>. Inspection of Marx's expression for the unit<u>s</u> making up this category reveals each to be a chain of exchange-equation<u>s</u>, a series of unit<u>s</u> of the Elementary Value-Form, strung together by value equivalence relation<u>s</u>. Thus, our solution is  $\mathbf{g}_{EE} \models \mathbf{g}_{X} \models \mathbf{g}_{Z}$ . How then, do we get to the next 'algebraic category symbol <u>un</u>known', corresponding to <u>generic</u> <u>meta</u>-number'  $\mathbf{g}_{Z}$ , and how do we solve it? We know that  $\mathbf{g}_{XE} \models \mathbf{g}_{Z} \models \mathbf{g}_{Z}$ , so what, in term<u>s</u> of Marx's [*table of*] content<u>s</u>, could  $\mathbf{g}_{XE}$  correspond to? It would generally be expected to mean a category whose unit<u>s</u> are 'complex unit<u>ties</u>' of the unit<u>s</u> of category  $\mathbf{g}_{X}$  and the unit<u>s</u> of category  $\mathbf{g}_{E}$ .

<sup>\*[</sup>See p. 264 in <u>Grundrisse</u>, ibid.].

<sup>&</sup>lt;sup>1</sup> [Karl Marx, *Capital*, volume I, Part I, Commodities and Money, Chapter I., Commodities, Section 3. The Form of Value or Exchange-Value, *A.*, *Elementary or Accidental Form of Value*.].

<sup>&</sup>lt;sup>2</sup>[Karl Marx, *Capital*, volume I, Part I, Commodities and Money, Chapter I., Commodities, Section 3. The Form of Value or Exchange-Value, *B.*, *Total or Expanded Form of Value*.].

And, indeed, if we look to Marx's consecutive next sub-section in the same section which opens with category  $\underline{\mathbf{q}}_{E}$ , namely next sub-section *C*., we find an exposition of the category that Marx names "The <u>G</u>eneral Form of Value"<sup>2</sup>. Inspection of Marx's expression for the units making up this category reveals each to be an 'inverted combination' of his expressions for the units of category  $\underline{\mathbf{q}}_{E}$ . Therefore, o<u>ur</u> solution is  $\underline{\mathbf{q}}_{XE} \models \underline{\mathbf{q}}_{G} \models \underline{\mathbf{q}}_{G} \models \underline{\mathbf{q}}_{G}$ . Our category-symbols' categorial progression model to this point looks like this:  $\mathbf{D} \approx \underline{\mathbf{q}}_{E} \sim \oplus \sim \underline{\mathbf{q}}_{X} \sim \oplus \sim \underline{\mathbf{q}}_{G}$  [*wherein* ' $\sim \oplus \sim$ ' *denotes* '*dialectical*, *oppositional addition*']. In terms of the <u>triad</u>ic function, this signs the categorial content of presentation <u>s</u>tep <sub>CPE</sub> **s**<sub>2</sub> = **1** --

So far, so good. But the next two 'category-symbols' -- generated by iterating the same procedure by which we arrived at category two,  $\underline{\mathbf{q}}_{\mathbf{x}}$ , and category three,  $\underline{\mathbf{q}}_{\mathbf{G}}$  -- are  $\underline{\mathbf{q}}_{\mathbf{GE}}$  for category four, and  $\underline{\mathbf{q}}_{\mathbf{GEE}} \underline{\partial} |= \underline{\mathbf{q}}_{\mathbf{GX}}$  for category five. W<u>e</u> do **not** find these two categories registered in Marx's table of contents. Category **q**<sub>ce</sub> should be solved, in our view, as the category  $\underline{\mathbf{q}}_{G}$  critique, and the  $\underline{\mathbf{q}}_{G}$  assimilation, and the  $\underline{\mathbf{q}}_{G}$  «aufheben» elevation, and the  $\underline{\mathbf{q}}_{G}$  subsumption, of the category  $\underline{\mathbf{q}}_{\mathbf{r}}$ . Category  $\underline{\mathbf{q}}_{\mathbf{r}}$  should be solved, in o<u>ur</u> view, as the category  $\underline{\mathbf{q}}_{\mathbf{r}}$  critique, and the  $\underline{\mathbf{q}}_{\mathbf{r}}$  assimilation, and also as the  $\underline{\mathbf{q}}_{\mathbf{r}}$ *«aufheben»* elevation, plus the  $\underline{\mathbf{q}}_{\mathbf{c}}$  subsumption, of category  $\underline{\mathbf{q}}_{\mathbf{x}}$ . In part, this would mean that, in the case of category  $\mathbf{q}_{cF}$ , a '<u>de</u>-abstraction of category  $\mathbf{q}_{F}$ , made by adding back the more complex determination 'c', i.e., the recognition that the "equivalent" pole of the expressions of the  $\underline{\mathbf{q}}_{\mathbf{F}}$  units should, at this stage, be grasped as, no longer just as an "any old", "Accidental", or random commodity-kind "particular equivalent", but as a "General Equivalent" commodity-kind. I.e.,  $\{c_i \underline{C}_i \in c_k \underline{C}_k\}$  units of category  $\underline{q}_E$  became the  $\{c_i \underline{C}_i \in \underline{g}(\underline{C}_i) \underline{G}\}$  units of category  $\underline{q}_{CE}$ . Category  $\underline{q}_{CE}$  would mean a  $\underline{de}$ -abstraction of category  $\underline{q}_{x}$ , again by adding back the more complex determination  $\underline{c}_{c}$ , i.e., the recognition that the "equivalent" pole of the exchange expressions of the  $\underline{\mathbf{q}}_{\mathbf{x}}$  units should now, by this step, be grasped as, no longer just "any old", or a random "particular equivalent", kind of commodity, but as a "General Equivalent" kind of commodity. I.e., the  $\{c_i\underline{C}_i \neq c_i\underline{C}_i \text{ or } \neq c_k\underline{C}_k \text{ or } \neq c_k\underline{C}_\ell \text{ or } \neq c_m\underline{C}_m \text{ or } \neq \&c_1...\}$  units of category  $\underline{q}_x$  would now be re-recognized as the  $\{\underline{\mathbf{gG}} \neq \underline{\mathbf{c}}_i \underline{\mathbf{C}}_i \text{ or } \neq \underline{\mathbf{c}}_k \underline{\mathbf{C}}_k \text{ or } \neq \underline{\mathbf{c}}_\ell \underline{\mathbf{C}}_\ell \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{C}}_m \text{ or } \neq \underline{\mathbf{c}}_m \underline{\mathbf{c}}_m \mathbf{c}_m \mathbf{$ such categories in his text, but they do belong to our, strictly-algorithmic, lockstep model of that text, and are of interest as stages in the movement of "ascent", back from the deepest-down, most abstract, simplest category of **Domain CPE**, namely  $\underline{\mathbf{q}}_{\mathbf{F}}$ , up into ever more '<u>de</u>-abstracted', 'thought-concrete', complex/composite categor<u>ies</u>. It is even possible that Marx was aware of the 'systematicity' of these two categorial combinations, but felt that they were details of too little incremental explanatory value to impose upon his readers with them, given an already very difficult Chapter I., section 3. However, for our model as a model of Marx's text, these two terms are extraneous, null-category terms, which are part of the 'homeomorphic defect' of o<u>ur</u> model <u>as</u> such. Not so with our sixth category, symbolized by  $\mathbf{q}_{\text{CVF}} \underline{\partial} = \mathbf{q}_{\text{CC}}$ . The latter category-symbol stands for the self-critique, the «aufheben» self-elevation, as well as self-subsumption of category  $\underline{\mathbf{q}}_{c}$ . In category  $\underline{\mathbf{q}}_{c}$  any commodity can serve as the  $\underline{\mathbf{G}}$  eneral Equivalent commodity for all <u>other</u> commodities -- as the use-value and sensuous substance in which they can express their exchange-value, their 'proto-price'. Any commodity, by assuming the role of General Equivalent, becomes the "equivalent form" side, or RHS pole, as a definite number of units of category **q**<sub>c</sub>. But **q**<sub>cc</sub> signifies recognition of the *canalization*, or 'meta-unit-ization', or <u>monopolization</u> of the General Equivalent aspect of each commodity-kind unit, in the historical *present*, into the *single* commodity-kind unit that eventually monopolizes the role of General Equivalent, and that thus becomes the "Money-commodity", set apart from all <u>other</u> commodit<u>ies</u>, as "substance" of the <u>Monies</u> category, as the "<u>Money Form</u>"<sup>4</sup> of value. <u>It</u> is described in the next sub-section after the "General Form of Value" sub-section, C., i.e., in sub-section D. It is the category of the units of Money; of the "universal equivalent", e.g., of the commodity-kind named [monetized] "gold"; the category of the "Price Form" of value. <u>It</u> leads us to this solution:  $\mathbf{q}_{\mathbf{GG}} \models \mathbf{q}_{\mathbf{M}}$ . I.e., <u>it</u> leads us to the 'socio-ontological', 'social relation of [societal self-re-]production' category of "Monies", as category 6 in our categorial progression presentation model. With the 2 'null categor<u>ies</u>' of this model so far, 're-solved' to  $\mathbf{O}' \equiv \mathbf{q}_0$ , our categorial progression has grown to --

## $\mathbf{D} \approx \underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{X} \oplus \underline{\mathbf{q}}_{G} \oplus \underline{\mathbf{q}}_{GE} \oplus \underline{\mathbf{q}}_{GX} \oplus \underline{\mathbf{q}}_{M} \underline{\partial} | = \underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{X} \oplus \underline{\mathbf{q}}_{G} \oplus \bigoplus \oplus \underline{\mathbf{q}}_{M} | = \underline{\mathbf{q}}_{E} \oplus \underline{\mathbf{q}}_{X} \oplus \underline{\mathbf{q}}_{G} \oplus \underline{\mathbf{q}}_{M}.$

<sup>3</sup>[Karl Marx, *Capital*, volume I, Part I, Commodities and Money, Chapter *I.*, Commodities, Section 3. The Form of Value or Exchange-Value, sub-section *C.*, *The General Form of Value*.]. <sup>4</sup>[Karl Marx, *Capital*, volume I, Part I, Commodities and Money, Chapter *I.*, Commodities, Section 3. The Form of Value or Exchange-Value, sub-section *D.*, *The Money Form*.]. Now, nothing in this model corresponds <u>specifically</u> to <u>Chapter I</u>.'s Section 4., entitled "The Fetishism of Commodities and the Secret Thereof", or to <u>Chapter II.</u>, entitled "Exchange". That this model is missing any term<u>s</u> corresponding <u>specifically</u> to these two textual components is part of the 'homeomorphic defect' of this model <u>qua</u> model of Marx's actual textual content. However, for <u>Chapter III.</u>, entitled "Money, or the Circulation of Commodities", all three of its sections have individual term or category-symbol correspondences in the further expansion of <u>our</u> categorial progression. The next category of <u>Domain CPE</u>, the 7th such category, corresponds to the <u>gen</u>eric 'meta-numeral' <u>**q**</u><sub>7</sub>. The <u>wQ</u> "''algebraic", <u>un</u>solved, <u>specific</u> form of this as a <u>Domain CPE</u> category is <u>**q**</u><sub>ME</sub>. This category symbol symbolizes, for us, a cognitive act of the '<u>de</u>-abstraction of category <u>**q**</u><sub>E</sub>, by adding back the more complex, more concrete determination '<u>M</u>', i.e., the recognition that the rightmost, "equivalent" pole of the expressions of the <u>**g**</u><sub>E</sub> units should, at this stage in the progress of <u>our</u> model exposition, now be grasped as, no longer just as an "any old", "Accidental", or random commoditykind "particular equivalent", but "universal equivalent" commodity-kind -- <u>M</u>oney-commodity kind, e.g., monetized gold.

Thus, the  $\{c_j\underline{C}_j \neq c_k\underline{C}_k\}$  unit<u>s</u> of the category  $\underline{\mathbf{q}}_E$  "<u>E</u>lementary Form of Value" become the  $\{c_j\underline{C}_j \neq \mathbf{m}(\underline{C}_j)\underline{M}\}$  unit<u>s</u> of category  $\underline{\mathbf{q}}_{ME}$ , just as, earlier in this model categorial progression exposition, but *not* as part of Marx's exposition, the  $\{c_j\underline{C}_j \neq c_k\underline{C}_k\}$  unit<u>s</u> of category  $\underline{\mathbf{q}}_E$  became the  $\{c_j\underline{C}_j \neq \underline{\mathbf{g}}(\underline{C}_j)\underline{\mathbf{G}}\}$  unit<u>s</u> of category  $\underline{\mathbf{q}}_{GE}$ . The unit<u>s</u> of category  $\underline{\mathbf{q}}_E$  are "*measure-of-value* like", albeit in a particular, "Accidental" form. Those unit<u>s</u> relate/equate the value of  $\mathbf{c}_j$  unit<u>s</u> of commodity-kind  $\underline{C}_j$  to the value of  $\mathbf{c}_k$  unit<u>s</u> of commodity-kind  $\underline{C}_k$ , as a "particular equivalent" '*proto-price*' for kind of commodity  $\underline{C}_j$ . The unit<u>s</u> of category  $\underline{\mathbf{q}}_{ME}$  express the "universal equivalent", or <u>Money-price</u>, of  $\mathbf{c}_j$  unit<u>s</u> of commodity-kind  $\underline{C}_j$ , e.g., as  $\mathbf{m}(\underline{C}_j)$  unit<u>s</u> of, e.g., <u>Monetized</u> gold. Thus w<u>e</u> find that category  $\underline{\mathbf{q}}_{ME}$  connotes the "function of <u>Money</u>" topic and category of Section 1. of Chapter *III*.: <u>Money</u> as "The Measure of Values", and w<u>e</u> so solve for  $\underline{\mathbf{q}}_{ME}$  [—)  $\underline{\mathbf{q}}_7$ .

The next category, the eighth category, corresponds to the <u>gene</u>ric 'meta-numeral'  $\underline{\mathbf{q}}_8$ . The '''algebraic''' -- <u>un</u>solved -form of this as a <u>**D**omain CPE-speci</u>fic category is  $\underline{\mathbf{q}}_{MX}$ . This category symbol connotes, for us, a further '<u>de</u>-abstraction of category  $\underline{\mathbf{q}}_X$ , by adding back the more complex, more 'thought-concrete' determination '<sub>M</sub>' [---)  $\underline{\mathbf{q}}_6$ , i.e., by way of the recognition that the "equivalent" pole of the expressions of the  $\underline{\mathbf{q}}_x$  [---)  $\underline{\mathbf{q}}_2$  units should, as of this stage in the progress of our model exposition, now be grasped as, no longer just as an "any old", or a "random" commodity-kind "particular equivalent", but as the "universal equivalent" commodity-kind -- the <u>M</u>oney-commodity kind, e.g., again, monetized gold.

Thus, the  $\{c_i\underline{C}_i \neq c_i\underline{C}_i or \neq c_k\underline{C}_k or \neq c_l\underline{C}_l or \neq c_m\underline{C}_m or \neq \&c...\}$  units of the category  $\underline{q}_x$  further concretize to the  $\{\mathbf{m}\underline{\mathbf{M}} \neq \mathbf{c}_{\mathbf{i}}\underline{\mathbf{C}}_{\mathbf{i}} \text{ or } \neq \mathbf{c}_{\mathbf{k}}\underline{\mathbf{C}}_{\mathbf{k}} \text{ or } \neq \mathbf{c}_{\ell}\underline{\mathbf{C}}_{\ell} \text{ or } \neq \mathbf{c}_{\mathbf{m}}\underline{\mathbf{C}}_{\mathbf{m}} \text{ or } \neq \mathbf{c}_{\mathbf{k}}\underline{\mathbf{C}}_{\mathbf{k}}...\}$  units of new category  $\underline{\mathbf{q}}_{\mathbf{M}\mathbf{X}}$ , just as, earlier in this model exposition, but *not* as part of Marx's exposition, the  $\{c_i\underline{C}_i \neq c_i\underline{C}_i \text{ or } \neq c_k\underline{C}_k \text{ or } \neq c_k\underline{C}_\ell \text{ or } \neq c_m\underline{C}_m \text{ or } \neq \&c_...\}$  units of category  $\underline{\mathbf{q}}_{\mathbf{x}}$  became the  $\{\underline{\mathbf{gG}} \in \underline{\mathbf{c}}_{\underline{\mathbf{i}}} \underbrace{\mathbf{c}}_{\mathbf{j}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{k}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} \underbrace{\mathbf{c}}_{\mathbf{m}} or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} or or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} or or \in \underline{\mathbf{c}}_{\underline{\mathbf{k}}} or or \in \underline{\mathbf{c}}$ "chained" units of category **q**<sub>x</sub> are "circulations of commodities like". They express the potential, latent in this valueform, for a money-mediated "simple circulation of commodities", albeit, as q<sub>v</sub>, only in a statical, 'proto-price<u>s</u>-list' form[*at*]. Those units relate/equate the value of <u>quantity</u> c, units of commodity-kind  $\underline{C}_{i}$  to the value of definite <u>quantities</u> of a whole series of other commodity-kind units, presaging the C-M-C' process-form, or human-agents' praxis-form, of the "simple circulation of commodit<u>ies</u>", as mediated by <u>Monies</u>. The units of category  $\underline{\mathbf{q}}_{MX}$  express the <u>Monetary</u> basis of that "simple circulation of commodities". Thus we find that category  $\underline{\mathbf{q}}_{MX}$  connotes the "function-of- $\underline{\mathbf{M}}$  oney" meaning of the topic and category of Sec. 2. of Chapter III .: Money as "The Medium of Circulation". So, we so solve for  $\mathbf{q}_{MX}$  [--)  $\mathbf{q}_{\mathbf{R}}$ . By the '*qual*itative superposition' of this category, the C---C' «*arché*» view of exchange-value has been '<u>de</u>-abstracted' and expanded to the C-M-C' process-form view, or human-personifications' praxis-view, of the "simple circulation of commodit<u>ies</u>", as '<u>Medium</u>-ated' by <u>Monies</u>. Category  $\mathbf{q}_{MX}$  [-)  $\mathbf{q}_{R}$  is the <u>net</u> result of the Monies 'allo-«aufheben»' critique, including the '«aufheben»-elevation', and '''real subsumption''', by Monies, of the "EXtended Form of [Commodity-]Value" value-form, the <u>net</u> product of the  $\mathbf{q}_{\mathbf{M}} \otimes \mathbf{q}_{\mathbf{X}}$  <u>'allo</u>-«*aufheben*»' critique-operation.

The next category, the 9th category, corresponds to the <u>gen</u>eric 'meta-numeral'  $\underline{\mathbf{q}}_{9}$ . The '''algebraic''' -- or <u>un</u>solved -form of this as the <u>Domain-specific CPE</u> category is  $\underline{\mathbf{q}}_{MG}$ . This category sign connotes, for u<u>s</u>, a further '<u>de</u>-abstraction' of category  $\underline{\mathbf{q}}_{G}$ , by adding back the more complex, more 'thought-concrete' determination '<sub>M</sub>', i.e., by way of explicitly recognizing that the "<u>General Equivalent</u>" pole of the expression<u>s</u> of the  $\underline{\mathbf{q}}_{G}$  unit<u>s</u> should now, as of this stage in the progress of o<u>ur</u> model exposition, be grasped as, no longer just an ensemble of unit<u>s</u> in which each commodity-kind alternatingly plays the role of "<u>G</u>eneral Equivalent" for all of the <u>other</u> commodity-kind<u>s</u>, but as the supercession/replacement, of each of those unit<u>s</u> of the alternating "<u>G</u>eneral Equivalent" commodity-kind<u>s</u>, by the <u>single</u> <u>M</u>oneycommodity kind, e.g., again, by monetized <u>G</u>old, as "Universal Equivalent".

Thus, the  $\{\{c_j\underline{C}_j, c_k\underline{C}_k, c_\ell\underline{C}_\ell, ...\} \Rightarrow c_i\underline{C}_i\}, \{\{c_i\underline{C}_i, c_k\underline{C}_k, c_\ell\underline{C}_\ell, ...\} \Rightarrow c_j\underline{C}_j\}, \{\{c_i\underline{C}_i, c_j\underline{C}_j, c_\ell\underline{C}_\ell, ...\} \Rightarrow c_k\underline{C}_k\}, ...\}$  units of  $\underline{\mathbf{q}}_G$  become the  $\{\{c_j\underline{C}_j, c_k\underline{C}_k, c_\ell\underline{C}_\ell, ...\} \Rightarrow \mathbf{m}\underline{M}\}, \{\{c_i\underline{C}_i, c_k\underline{C}_k, c_\ell\underline{C}_\ell, ...\} \Rightarrow \mathbf{m}\underline{M}\}, \{\{c_i\underline{C}_i, c_j\underline{C}_j, c_\ell\underline{C}_\ell, ...\} \Rightarrow \mathbf{m}\underline{M}\}, ...\}$  units of category  $\underline{\mathbf{q}}_M$ , the <u>net</u> result of the '*«aufheben*» critique/*subsumption*' [· $\otimes$ '] of category  $\underline{\mathbf{q}}_G$  by category  $\underline{\mathbf{q}}_M$ ; of  $\underline{\mathbf{q}}_M \otimes \underline{\mathbf{q}}_G$ .

The unit<u>s</u> of category  $\underline{\mathbf{q}}_{G}$  are "means of payment <u>like</u>". They express the potential, latent in this value-form, for the function of money as "Means of Payment", which is the topic, and the category, of *Chapter III*., Section 3., sub-section b. With definite quantit<u>ies</u> of the unit<u>s</u> of the "money-commodity" category, or <u>Monies</u> category, serving as universal equivalent for the value<u>s</u> of all <u>other</u> commodit<u>ies</u>, <u>M</u>oney's potential as universal "Means of Payment" is outered. Thus w<u>e</u> find that category  $\underline{\mathbf{q}}_{MG}$  connotes the "function-of-<u>M</u>oney" meaning of the topic and category of Section 3. b. of *Chapter III*.: <u>M</u>oney as "Means of Payment", and so solve for  $\underline{\mathbf{q}}_{MG}$  [—)  $\underline{\mathbf{q}}_{\mathbf{0}}$ .

Our category-symbols categorial progression model to this point now looks like this --

## $\mathbf{D} \approx \underline{\mathbf{q}}_{\mathrm{E}} \oplus \underline{\mathbf{q}}_{\mathrm{X}} \oplus \underline{\mathbf{q}}_{\mathrm{G}} \oplus \underline{\mathbf{q}}_{\mathrm{GE}} \oplus \underline{\mathbf{q}}_{\mathrm{GX}} \oplus \underline{\mathbf{q}}_{\mathrm{M}} \oplus \underline{\mathbf{q}}_{\mathrm{ME}} \oplus \underline{\mathbf{q}}_{\mathrm{MX}} \oplus \underline{\mathbf{q}}_{\mathrm{MG}}.$

In terms of the <u>triad</u>ic <u>'self-involution of the</u> «arché»' function – i.e., of the function for the <u>'unpacking</u>/<u>'explicitization</u>' of the <u>implicit</u> content of the «arché»-category -- this represents the categorial content of presentation  $\underline{s}_{2} = 2$  --

 $\left( {}^{\flat} \underline{\mathbf{q}}_{E} {}^{\flat} \right)^{3^{2}} \approx \ \underline{\mathbf{q}}_{E}^{\phantom{a}9} \approx \ \underline{\mathbf{q}}_{E} \oplus \ \underline{\mathbf{q}}_{X} \oplus \ \underline{\mathbf{q}}_{G} \oplus \ \underline{\mathbf{q}}_{GE} \oplus \ \underline{\mathbf{q}}_{GX} \oplus \ \underline{\mathbf{q}}_{ME} \oplus \ \underline{\mathbf{q}}_{ME} \oplus \ \underline{\mathbf{q}}_{MX} \oplus \ \underline{\mathbf{q}}_{MG}.$ 

In terms of the English names of Marx's categor<u>ies</u>, this means -- <u>Elementary Value-Form</u> plus/vs. <u>eXtended Value-Form</u> plus/vs. <u>General Value-Form</u> plus [null] plus/vs. <u>Money Value-Form</u> plus/vs. <u>Measure of Value</u> function of <u>Money plus/vs</u>. <u>Medium of Circulation function of Money plus/vs</u>. <u>Means of Payment function of Money</u>.

Note that ' $\mathbf{q}_{ME} \oplus \mathbf{q}_{MX} \oplus \mathbf{q}_{MG}$ ' may be solved as representing three different nuance<u>s</u> of a, <u>collective</u>, '<u>Monies</u>-mediated circulation of commodities <u>qual</u>itative superposition', with all "simple circulation" sequence<u>s</u>, {C-M-C'}, as its unit<u>s</u>. All three 'Marxian function<u>s</u> of <u>Monies</u>' are involved in the '<u>Monies</u>-mediated circulation of commodities', even  $\mathbf{q}_{MG}$ .

The next two categor<u>*ies*</u>,  $\underline{\mathbf{q}}_{MGE}$  [--)  $\underline{\mathbf{q}}_{10}$  and  $\underline{\mathbf{q}}_{MGEE}$   $\underline{\hat{\boldsymbol{\rho}}}|= \underline{\mathbf{q}}_{MGX}$  [--)  $\underline{\mathbf{q}}_{11}$ , are '<u>M</u>oney-ization<u>s</u>' of what w<u>e</u> previously "solved" as null categor<u>*ies*</u>,  $\underline{\mathbf{q}}_{GE}$  and  $\underline{\mathbf{q}}_{GX}$ , respectively, so w<u>e</u> will default-solve  $\underline{\mathbf{q}}_{MGE}$  and  $\underline{\mathbf{q}}_{MGX}$  as also null or empty, 'homeomorphic defect' categor<u>*ies*</u> for this model of Marx's textual content-progression in <u>*Capital*</u>, volume I.

With category  $\underline{\mathbf{q}}_{MGXE} \underline{\partial} = \underline{\mathbf{q}}_{MGG} \underline{\partial} = \underline{\mathbf{q}}_{MM} = \underline{\mathbf{q}}_{\mathbf{M}}$ , we reach a major watershed and hiatus in the dialectic progress of this categorial progression. That is because this category,  $\underline{\mathbf{q}}_{MM}$ , connotes the <u>'self</u>-subsumption' of the <u>Monies</u> category, by way of a <u>'self</u>-subsumption' of its units. This category sends attention to the next higher <u>'self</u>-hybrid' category-rung in the scaled self-similarity edifice, the <u>'qual</u>o-fractal tower', of <u>contemporary</u> -- capitalist -- "social relations of production" socio-ontological' categor<u>ies</u>. The "'algebraic''' -- <u>un</u>solved -- category symbol  $\underline{\mathbf{q}}_{MM}$  signifies, for us, a category, or *«arithmos»*, of those <u>higher</u> [<u>meta</u>-]units that *«aufheben»* "contain", conserve, and elevate, but also transform, money units, into their <u>'meta</u>-units', the units of a <u>higher</u>, more complex, more composite, less abstract/simplified, more 'thought-concrete' category-*«arithmos»* of present-day human-social life. Each unit of category  $\underline{\mathbf{q}}_{MM}$  should be made up out of a multiplicity of units of category  $\underline{\mathbf{q}}_{MM}$ .

It is the *units* of «<u>Kapitals</u>» that are "'made of <u>M</u>oney'", e.g., of the "<u>net</u>" <u>M</u>oney-profits accumulated at the end of each of the past accounting periods of the existence of a given "'individual «<u>Kapital</u>»'" *unit*, even if only as "money of account". Thus, we solve --  $\mathbf{g}_{MM} \models \mathbf{g}_{K} \models \mathbf{g}_{L2}$ .

This  $\underline{\mathbf{G}}_{\mathbf{K}}$  category corresponds to Part II of <u>*Capital*</u> volume I, *Chapter IV*. Part II is entitled "The Transformation of Money into Capital". Chapter *IV*. is the first chapter of Part II, entitled "The General Formula for Capital". The category of «<u>*Kapitals*</u>» therein emerges as the sequence of 'human-agental', 'human-praxical' exchange-process<u>es</u>, among the personification<u>s</u> of <u>Commodities</u> vis-a-vis the personification<u>s</u> of <u>Monies</u>, of a '<u>contra</u>-sequence', at first hidden within the "<u>simple</u> circulation of Commodit<u>ies</u>" sequence, '...C—M—C'—M—C''—M—C'''—M—C''', i.e., the '<u>inverse</u>-sequence': '...M—C—M'(C'—M''(C')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''(C'')—M'''), with, typically/crucially, M < M' < M'' < M''' < M''').

However, after this point, o<u>ur</u> model ceases to capture <u>any</u> of the remaining content of <u>Capital</u>, volume I, all of which is "production [of capital]/labor" and "accumulation of capital" content. [Table of] contents correspondences with the further category-symbols of our model jump to <u>Capital</u>, volume II, where, once again, many of the high-level categor<u>ies</u> of the volume II table of contents 'circulation value-forms' are again captured by our model. For example, the rest of Part II of <u>Capital</u>, volume I is **not** captured, i.e., Chapter V., entitled "Contradictions in the General Formula of Capital", is not captured. Chapter VI., entitled "The Buying and Selling of Labor-Power" too is **not** captured. Nor are Part III, "The Production of <u>Absolute</u> Surplus-Value", Part IV, "Production of <u>Relative</u> Surplus-Value", Part V, "The Production of <u>Absolute and Relative</u> Surplus-Value", **nor** Part VI, "Wages", **nor** Part VII, "The <u>Accumulation</u> of Capital", **nor** the final Part of <u>Capital</u>, volume I, Part VIII, "The So-Called Primitive <u>Accumulation</u>".

It is well to delve for the cause(s) of this hiatus. For Marx, working to produce an *immanent* critique of the capitalist ideology-infected science of classical "Political Economy", it was important to begin his critique from where political economists generally began their theory/ideology, with exchange-value, not with use-value. Marx does mention the prior history of use-value, in the third of the opening paragraphs of *Capital*, volume I.\* But, for Marx, the "Elementary Form of Commodity Value", as the deepest, most abstract, and simplest root of exchange-value, was the right place to begin -the correct '*«arché»*-category' for his progression of capitalist "social relations of production" categories. And, as exchange-value is the root of the capitalist "circulations-process of capitals", it was well to let the circulation-valueforms unfold systematically in his narrative, until it reached the «Kapitals» circulation-form, whose "contradictions" forced recourse to the "sphere of production". Marx's readers were experientially familiar with the daily "'life-world" of capitalism, even if, to begin with, only "chaotically" so. Their experience typically included at least some familiarity with "production" as well as with "circulation", and with "production" that employs wage-laborers. So an evidentiary basis for Marx's Parts II-VIII resort to "the sphere of capital production [and of capital accumulation]", so as to solve the "contradictions" in the circulation form [ula] of «Kapital», was/is available, empirically, in his typical reader's memory -in the consciousnesses of Marx's readers -- even if only "chaotically" so, as a basis of and support for this necessary recourse to "production". However, for a heuristic dialectical method such as ours, one that is also algorithmic, if, e.g., labor and its production are *not* already *explicit* in the '*«arché»*-category' of the **Domain**, then they will *not* become explicit in the later 'mere hybridizations' and 'self-hybridizations' - in the 'self-involutions' -- of that '«arché»-category'.

W<u>e</u> plan, in a later publication, to 'exposit' way<u>s</u> whereby the wage-labor, capital production, and capital accumulation categor<u>ies</u> of <u>Capital</u>, volume I, might be captured, <u>algorithmically</u>, via a  $_{WQ}$  model whose '«*arché*»-category' was that

of the <u>Appropriation</u>, by <u>human labor</u> -- not yet 'determinated'-as/limited-to <u>wage</u> labor -- of products of '<u>exo</u>-human Nature' in their raw, <u>un</u>refined forms, e.g., in the <u>contemporary</u> '''extractive industr<u>ies</u>''', encompassing even agriculture as well as mining, and including the mining of gold, with the first '<u>self</u>-hybridization' of this category representing the category of the <u>production</u>, by <u>human labor</u>, again not <u>yet</u> concretized as <u>wage</u> labor, of <u>Goods</u>, i.e., of <u>use-values</u>, not <u>yet qual</u>ified as commodit<u>ies</u>, or as <u>money-priced</u>, or as "<u>capital</u> good<u>s</u>", etc. Of course, the table of contents modeled by such <u>A<sup>2s</sup></u> and <u>A<sup>3s</sup></u> '<u>meta</u>-model <u>meta</u>-equation<u>s</u>' might invite a <u>re</u>writing and updating of <u>Capital</u>, plus even an actual drafting and publication of o<u>ur</u> version of five(+) other Marxian treatise<u>s</u>, in a comprehensive <u>present</u>ation of a Marxian 'Critique of Capitalist Political-Economics Entire' <u>Domain</u>, prompting and provoking, perhaps, a resumption and a continuation/extension of Marx's work in the present century.

For the present, let us inspect, per o<u>ur</u> solution<u>s</u>, the capture<u>s</u> and **non**-capture<u>s</u> of content<u>s</u> of <u>Capital</u>, volume II, and of <u>Capital</u>, volume III, in the further iteration<u>s</u> of our <u>triad</u>ic '<u>meta</u>-model'.

<sup>\* [</sup>Karl Marx, Capital, volume I, Part I, Commodities and Money, Chapter I., Commodities, Section 1. The Two Factors of a Commodity: Use-Value and Value, NW, 1967, pp. 35-36].

<u>Capital</u>, vol. II, is entitled, in a more literal translation of the German original, "'The Circulation<u>s</u>-process of Capital<u>s</u>. ''. This is in contrast, and in supplementary opposition, to <u>Capital</u>, vol. I as "'The Production<u>s</u>-process of Capital<u>s</u>. ''. Vol. II begins with a Part I, "'The Metamophos<u>es</u> of Capital and Their Circuit<u>s</u>"'. The opening chapter of that Part, <u>Chapter I.</u>, is entitled "The Circuit of <u>Money</u>-Capital"\*. <u>Chapter II</u>. is entitled "The Circuit of <u>Productive</u> Capital"\*, and is, thus, **not** captured by o<u>ur</u> model-equation. <u>Chapter III</u>. is entitled "The Circuit of <u>Commodity</u>-Capital"\*. <u>Chapters IV</u>., V., and VI., concluding this first Part, are also **not** <u>ex</u>plicitly captured by o<u>ur</u> model-equation. But Chapters I. and III. are captured.

*Chapter I.*, the chapter on Marx's "*Money*-<u>Capital</u>" category [ $K_M$ ], is mapped by  $\mathbf{q}_{KM}$  [—)  $\mathbf{q}_{18}$ , whereby "M—C—M" is <u>'de</u>-abstracted' to "'K<sub>M</sub>—C—K<sub>M</sub>"", as <u>net</u> product of the 'dialectical, <u>allo</u>-«aufheben» critique operation' denoted by  $\mathbf{q}_{K} \otimes \mathbf{q}_{M}$ . The category-sign  $\mathbf{q}_{KM}$  signs the «aufheben» subsumption of the <u>Monies</u> category by the «<u>Kapitals</u>» category.

Chapter III., the chapter on Marx's "Commodity-Capital" category ['K\_'], is captured by the whole sub-series of terms 13,

**14**, and **15** -- ()  $\underline{\mathbf{q}}_{KE} \sim \oplus \sim \underline{\mathbf{q}}_{KEE} \sim \oplus \sim \underline{\mathbf{q}}_{KEEE}$  ()  $\underline{\partial} = () \underline{\mathbf{q}}_{KE} \sim \oplus \sim \underline{\mathbf{q}}_{KX} \sim \oplus \sim \underline{\mathbf{q}}_{KG}$  () -- as a '<u>qual</u>itative superposition', which covers nuance<u>s</u> of the Marxian category of "Commodity-Capital", as '<u>socio</u>-ontological' category, and as "social relation of production". Thereby, "M—C—M" is '<u>de</u>-abstracted to ""M—K<sub>c</sub>—M"". The three Marxian '''Value-Form<u>s</u> of Commodit<u>ies</u> " are now updated to being <u>present</u> also as three Marxian '''Value-Form<u>s</u> of Commodity-«<u>Kapitals</u>»", as the <u>net</u> product of the 'dialectical, <u>allo</u>-«aufheben» critique operation' denoted by  $\underline{\mathbf{q}}_{K} \otimes () \underline{\mathbf{q}}_{E} \sim \oplus \mathbf{q}_{K} \sim \underline{\mathbf{q}}_{C}$  ().

Thus, the *actual* order of the "Commodity-Capital" and "Money-Capital" categor<u>ies</u>, topic<u>s</u>, and chapter<u>s</u>, in Marx's text, is the reverse of the '<u>systematic</u> order' per o<u>ur</u> algorithmic dialectic, "Money-Capital" being, arguably, a more complex category than "Commodity-Capital" [and, moreover, "Productive Capital" being a more complex category than either "Commodity-Capital" [and, moreover, "Productive Capital" being a more complex category than either "Commodity-Capital" or "Money-Capital"]. Per o<u>ur</u> model, "Commodity-Capital" should have named *Chapter I*. of vol. II, and "Money-Capital" should have named *Chapter I*. of vol. II, and "Money-Capital" should have named *Chapter II*.]. However, Marx *may* have had in mind, for this ordering, the '...<u>M</u>—C...<u>P</u>...<u>C</u>—M...' ordering of his process/human-praxis formula-algebra for one "*cycle*", or for one '*helical <u>whorl</u>*', of the combined production<u>s</u>/circulation<u>s</u> process within the ongoing <u>re</u>production process of capital<u>s</u>.

Thereafter, o<u>ur</u> categorial equation-model does *not* exhibit individual category-symbol term<u>s</u> that answer <u>speci</u>fically, per <u>our</u> solution<u>s</u>, to <u>any</u> of the categor<u>ies</u> of the <u>11</u> chapter<u>s</u> of volume II, Part II, entitled "The Turnover of Capital. But <u>our</u> model <u>does</u> capture the component-category/topic, named "The Circulation of the Aggregate [or "Total"] Social Capital", within the title of vol. II, Part III: "The Re<u>Production</u>\* and <u>Circulation</u> of the Aggregate Social Capital". However, with <u>speci</u>ficity, it captures only part<u>s</u> of portion I., entitled "The Subject Investigated", of Part III.'s *Chapter XVIII.*, entitled "Introduction". Those part<u>s</u> are mapped by '<u>qualitative</u> superposition' of the term<u>s</u> <u>sub</u>-series <u>19</u>, <u>20</u>, and <u>21</u> -- ()**g**<sub>KME</sub> ~**⊕**~**g**<sub>KMEEE</sub> () <u>∂</u>]= ()**g**<sub>KME</sub> ~**⊕**~**g**<sub>KMX</sub> ~**⊕**~**g**<sub>KMG</sub> (), which, collectively, denote the '<u>de</u>-abstraction, and <u>subsumption</u>, by **g**<sub>K</sub>, of the, more-abstract, categor<u>ies</u> of the "'Mon<u>ies</u>-mediated Circulation<u>s</u> of Commodit<u>ies</u>''', namely, the «<u>Kapitals</u>-subsumption of () **g**<sub>ME</sub> ~**⊕**~**g**<sub>MEE</sub> ~**⊕**~**g**<sub>MEEE</sub> () <u>∂</u>]= ()**g**<sub>ME</sub> ~**⊕**~**g**<sub>MEE</sub> () <u>∂</u>]= ()**g**<sub>ME</sub> ~**⊕**~**g**<sub>MS</sub> ~**⊕**~**g**<sub>MS</sub> ~**⊕**~**g**<sub>MS</sub> ~**⊕**~**g**<sub>MS</sub> (). The overall result is the category of "'the Money-«<u>Kapitals</u>»-mediated Circulation of Commodity-«<u>Kapitals</u>»"'', which we symbolize as "'K<sub>C</sub> — K<sub>M</sub> — K<sub>C</sub>'"'.

Beyond this point, o<u>ur</u> model of the «<u>Kapitals</u>» treatise of Marx's "*Critique of Political Economy Entire*" passes beyond itself, into the other five(+) treatises of that, dialectical, critique. Beyond this point, we will only <u>explicitly call your</u> **attention** to the five(+) remaining treatise-title-categor<u>ies</u> of the remaining **1536** – **21** = **1515** categor<u>ies</u>/terms of the **1536** terms/category-signs' RHS of this **D** = <u>CPE</u> 'dialectical [<u>meta-</u>]equation', mapping six(+) treatises.

The next of Marx's planned treatise<u>s</u>, the one on "Landed Property", is, as we already noted, above, solvable as signed by the <u>net</u> product of the '<u>auto-</u>«aufheben» critique operation' denoted  $\mathbf{g}_{K} \otimes \mathbf{g}_{K}$ , solving  $\mathbf{g}_{KK}$  as  $\mathbf{g}_{KK} \mid = \mathbf{g}_{L$ 

<sup>\*[</sup>Emphases added by K.S.].

Next, we solve for  $\underline{\mathbf{q}}_{ss}$  as  $\underline{\mathbf{q}}_{ss} \models \underline{\mathbf{q}}_{F} \models \underline{\mathbf{q}}_{F} \models \underline{\mathbf{q}}_{F} \models \underline{\mathbf{q}}_{g}$ , signing the category of the fifth planned treatise, on the <u>Foreign Trade</u> category, i.e., on the <u>Inter-State</u>, <u>Inter-Nation-State</u>, <u>Inter-Nation-al</u>', <u>Bi</u>-Lateral Trade category.

Finally, for the six treatises <u>explicitly planned by Marx, we</u> solve  $\underline{\mathbf{q}}_{FF} \models \underline{\mathbf{q}}_{M} \models \underline{\mathbf{q}}_{192}$ , for the <u>World Market</u> category.

But we also contend that three further treatises should have been -- would have been, in the event that Marx had lived long enough to complete his "Critique of Political Economy Overall" -- necessary, the latter two of which would have been '<u>pre</u>dictive': would have been '<u>pre</u>-constructions' of the, then, and still today, <u>future</u>, human-social, '<u>socio</u>-ontological', new prime social relations of production irruptions. The categories of these, by us expected, treatises are as follows --

Category  $\mathbf{q}_{\text{MM}} \models \mathbf{q}_{C} \models \mathbf{q}_{C} \models \mathbf{q}_{384}$ , denotes, for  $\mathbf{u}_{\underline{s}}$ , the category of ever-worsening, ever-greater in "amplitude" -- in numbers of human beings suffering -- *World Market, global Depression-Crises*, by which "advice is given" to the '«*Kapital*»-*ist System*' "to be gone and to give room to a higher state"\* of 'human-societal self-re-production'. Of course, *some* of these *Crises* units, including especially the *final Crisis unit*, belong to our model-solution-predicted, F.<u>E.D.-expected future</u>, a future also expected similarly by many others.

Category  $\mathbf{q}_{CC} \models \mathbf{g}_{R} \models \mathbf{q}_{R} \models$ 

Category  $\mathbf{q}_{RR} \models \mathbf{q}_{D} \models \mathbf{q}_{1536}$ , denotes, for  $\mathbf{u}_{S}$ , the category of '*Political-ECONOMIC* <u>DEMOCRACY</u>', as the ''successor system''' to the '«<u>Kapital</u>»-ist System', and as the global "social formation" of a Terran '<u>planetary polis</u>'. *Again*, we expect that the irruption of the even not-yet-global units of '*Political-ECONOMIC* <u>DEMOCRACY</u>'\*\*\*\* belong, of course, to o<u>ur</u> model-solution-<u>pre</u>dicted, F.<u>E.D</u>.-expected future.

<sup>\*[</sup>K. Marx, <u>Grundrisse</u>, ibid., p. **750**.].

<sup>\*\*[</sup>K. Marx, <u>Grundrisse</u>, ibid., p. 264.].

 <sup>\*\*\* [</sup>K. Marx, *Capital*, volume I, *ibid.*, Part VIII, "The So-Called Primitive Accumulation", *Chapter XXXII.*, "Historical Tendency of Capitalist Accumulation".
 K. Marx, *Capital*, volume III, *ibid.*, Part V, "Division of Profit into Interest and Profit of Enterprise. Interest-Bearing Capital", *Chapter XXVII.*, "The Role of Credit in Capitalist Production".].

### **12**. A Simpler Procedure for <u>Dialectical [meta-]Equation Categorial Series</u> <u>Advance[ment]</u> and <u>Solution</u>.

The procedure for category-series advance[ment] stated below, using the E, qualitative [finite-] difference incrementation

operator, and for solution of those ser*ies*, as well as those set forth in the main body of this text, the '*meta*-exponentiation procedure', the '*exponential* procedure', and the '*multiplicative* procedure', respectively, all have various merit<u>s</u> --

1. <u>meta-exponentiation procedure</u>: If  $\hat{\mathfrak{g}}_{\alpha}^{\nu}{}^{\nu}$   $|==()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma}^{\nu})$ , then  $\underline{\mathbb{E}}_{s}\hat{\mathfrak{g}}_{\alpha}{}^{\nu}{}^{s}=\hat{\mathfrak{g}}_{\alpha}{}^{\nu}{}^{s+1}\underline{\partial}|==()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma}\hat{\mathfrak{g}}_{\varsigma}^{m});$ If  $\hat{\mathfrak{g}}_{\alpha}{}^{\nu}{}^{\tau}$   $|==\langle\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma}\rangle$ , then  $\underline{\mathbb{E}}_{s}\hat{\mathfrak{g}}_{\alpha}{}^{\nu}{}^{\tau}=\hat{\mathfrak{g}}_{\alpha}{}^{\nu}{}^{t+1}\underline{\partial}|==\langle\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma}\hat{\mathfrak{g}}_{\varsigma}^{m}\rangle.$ 2. <u>exponentiation</u> procedure': Note that for the '<u>dyadic dialectical function</u>',  $\upsilon = 2$ , & for the '<u>triadic function</u>',  $\upsilon = 3$  --  $\underline{\mathbb{E}}_{s}()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})=()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})^{\upsilon}\underline{\partial}|==()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma}\hat{\mathfrak{g}}_{\varsigma}^{m}).$ 3. <u>multiplicative</u> procedure': For the '<u>dyadic dialectical function</u>' -- $\underline{\mathbb{E}}_{s}()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})=\hat{\mathfrak{g}}_{\varsigma}\otimes()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})\dots\underline{\partial}|=()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})\dots\underline{\partial}|=()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})\dots\underline{\partial}|=()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})\dots\underline{\partial}|=()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})\dots\underline{\partial}|=()\hat{\mathfrak{g}}_{\alpha}^{\nu}-\mathfrak{m}_{m}-\mathfrak{m}_{\alpha}\hat{\mathfrak{g}}_{\varsigma})\hat{\mathfrak{g}}|$ 

However, perhaps the easiest categorial advance-and-solution procedure, both to understand, and to use, is the '<u>additive</u> procedure', *AKA* the '<u>*Qual*</u>o-Peanic Successor-Function, Term-by-Term, Category-by-Category, One Category-Symbolat-a-Time Solution-Procedure'. W<u>e</u> have already exemplified it by using this procedure, without naming it, in two of the 'concluding commentar<u>ies</u>' above. Unlike the other three procedure<u>s</u>, w<u>e</u> did **not** consciously pursue and consciously discover this advancement/solution procedure. Instead, w<u>e</u> found o<u>ur</u>sel<u>ves</u> spontaneously and, at first, <u>un</u>consciously, <u>using</u> this procedure, once o<u>ur</u> experience/practice with the craft of constructing dialectical-categorial <u>Domain</u> model<u>s</u> exceeded a certain threshold. This procedure can be briefly and <u>gene</u>rically described as below. It amounts to leveraging the Peano Postulate<u>s</u>' <u>qual</u>ity of 'Peanicity', that the  $\mathbb{NQ}$  "<u>non</u>-standard model" of the first order Peano Postulate<u>s</u> shares

with "1st order" logic "<u>standard</u>" "<u>N</u>atural" number<u>s</u> axiomatic arithmetic, the axiom<u>s</u>-system that w<u>e</u> denote by <u>N</u>. This means, in particular, leveraging the "Peano successor function" which both of them share. But the  $\mathbf{NQ}$  version of that

"successor function" is an, 'essence-ially', 'ordinal-*qual*itative', *not* a simply 'ordinal-*quant*itative', "successor function". W<u>e</u> interpret the latter as mapping categorial, <u>ontological</u>, finite, <u>qual</u>itative differences. After describing this method <u>gen</u>erically, below, w<u>e</u> work a <u>speci</u>fic application example of its use.

### Generic Form/Pattern of the 'Additive Procedure' for Systematic Dialectic.

<u>Given</u>: a. '«*arché*»-category'  $\equiv \underline{\mathbf{q}}_{\alpha}$ , [—)  $\underline{\mathbf{q}}_{\mathbf{1}}$ , for <u>D</u>omain D.

- **b.**  $\mathbf{S} \equiv$  the "standard" Peano "Successor function", s.t.  $\mathbf{S}(\mathbf{n}) \equiv \mathbf{n} + \mathbf{1}$ , for all **n** in **N** [note 'proto-«aufheben»-icity'].
- c.  $\underline{\mathbf{S}} \equiv \text{the "non-standard" Peano "Successor function", defined by <math>\underline{\mathbf{S}}(\underline{\mathbf{q}}_n) \equiv \underline{\mathbf{q}}_{\mathbf{s}(n)} \equiv \underline{\mathbf{q}}_{n+1}$ , for every  $\underline{\mathbf{q}}_n$  in  $\underline{\mathbf{Q}}$ .
- d.  $\underline{s} \equiv a \underline{D}omain-specific \underline{s}, s.t. \underline{s}(\underline{q}_X) \equiv \underline{q}_{\underline{s}(X)} \equiv \underline{q}_{\underline{x}\alpha} [-) \underline{q}_{\underline{x}(X)+1}, s.t. '_{\underline{x}(X)} \equiv ordinal number of \underline{qual}$  if if if  $\underline{s}'$ , '

e. '...' <u>speci</u>al ellipsis dot<u>s</u>, signifying a ''<u>non</u>-amalgamative sum'' of <u>consecutive</u> 'category-symbol<u>s</u>'. <u>Below</u>: stage  $\#_s$ /stage-content of incremental categorial advance<u>s</u>/solution<u>s</u>, all using notation for systematic dialectic --0.  $\underline{\mathbf{q}}_{\alpha}$  [--)  $\underline{\mathbf{q}}_{\mathbf{1}}$ , is the '«*arché*»-category' for <u>Domain</u> D; therefore, as of this, **0**th, stage,  $\mathbf{D} \approx \underline{\mathbf{q}}_{\alpha}$ .

1. Next category:  $\underline{E}_{\alpha} \underline{q}_{\alpha} \equiv \underline{S}(\underline{q}_{\alpha}) = \underline{q}_{S(\alpha)} = \underline{q}_{\alpha\alpha}$   $\mid = \underline{q}_{\beta}, [-] \underline{q}_{1+1} = \underline{q}_{2}; \text{ as of stage 1, } D \approx \underline{q}_{\alpha} \oplus \underline{q}_{\beta};$ 2. Next category:  $\underline{E}_{\alpha} \underline{q}_{\beta} \equiv \underline{S}(\underline{q}_{\beta}) = \underline{q}_{S(\beta)} = \underline{q}_{\beta\alpha}$   $\mid = \underline{q}_{\gamma}, [-] \underline{q}_{2+1} = \underline{q}_{3}; D \approx \underline{q}_{\alpha} \oplus \underline{q}_{\beta} \oplus \underline{q}_{\gamma};$ 3. Next category:  $\underline{E}_{\alpha} \underline{q}_{\gamma} \equiv \underline{S}(\underline{q}_{\gamma}) = \underline{q}_{S(\gamma)} = \underline{q}_{\gamma\alpha}$   $\mid = \underline{q}_{\delta}, [-] \underline{q}_{3+1} = \underline{q}_{4}; D \approx \underline{q}_{\alpha} \oplus \underline{q}_{\beta} \oplus \underline{q}_{\gamma} \oplus \underline{q}_{\delta};$ 4. Next category:  $\underline{E}_{\alpha} \underline{q}_{\delta} \equiv \underline{S}(\underline{q}_{\delta}) = \underline{q}_{S(\delta)} = \underline{q}_{\delta\alpha}$   $\mid = \underline{q}_{\epsilon}, [-] \underline{q}_{4+1} = \underline{q}_{5}; D \approx \underline{q}_{\alpha} \oplus \underline{q}_{\beta} \oplus \underline{q}_{\gamma} \oplus \underline{q}_{\delta} \oplus \underline{q}_{\epsilon};$ 5. Next category:  $\underline{E}_{\alpha} \underline{q}_{\epsilon} \equiv \underline{S}(\underline{q}_{\epsilon}) = \underline{q}_{S(\epsilon)} = \underline{q}_{\epsilon\alpha}$   $\mid = \underline{q}_{\epsilon}, [-] \underline{q}_{5+1} = \underline{q}_{6}; D \approx \underline{q}_{\alpha} \oplus \underline{m} \oplus \underline{q}_{\zeta};$ 6. Next category:  $\underline{E}_{\alpha} \underline{q}_{\zeta} \equiv \underline{S}(\underline{q}_{\zeta}) = \underline{q}_{S(\zeta)} = \underline{q}_{\zeta\alpha}$   $\mid = \underline{q}_{\eta}, [-] \underline{q}_{5+1} = \underline{q}_{\eta}; D \approx \underline{q}_{\alpha} \oplus \underline{m} \oplus \underline{q}_{\eta};$ 7. Next category:  $\underline{E}_{\alpha} \underline{q}_{\eta} \equiv \underline{S}(\underline{q}_{\eta}) = \underline{q}_{S(\eta)} = \underline{q}_{\eta\alpha}$   $\mid = \underline{q}_{\eta\alpha}$   $\mid = \underline{q}_{\theta}; D \approx \underline{q}_{\alpha} \oplus \underline{m} \oplus \underline{q}_{\theta}; \underline{m}.$ 

Dialectic: Users' Manual. Edition 2. 04 June 2022.

### Specific Historical-Dialectical Example Using the 'Additive Procedure'.

For o<u>ur</u> example of this 'additive Peanic procedure', we will use the 'Dialectic of Nature'/'Dialectical Theory of Everything <u>meta-model meta-equation</u>' that was illustrated by the '''historical-dialectical''' 'dialectogram' in the main body of this text, in the <u>second</u> sub-section of its *first* section.

<u>Given</u>: The following definitions\* for the 'category-symbol' solutions stated below, applying notation for ''historical dialectic'''.

- $\underline{Q}_{r}$  [->  $\underline{\mathbf{q}}_{1}$ , o<u>ur</u> stipulated 'cosmo-ontological '«*arché*»-category' of '''p<u>r</u>e-atomic <u>particles</u>''' as <u>units</u>, for <u>Domain</u>  $\mathbf{D} = \forall$ ;
- $\mathcal{Q}_{rr}$   $\mid = \mathcal{Q}_{a}, \mid \to \underline{\mathbf{q}}_{2};$  cosmological category of "<u>atoms</u>", e.g., in *early* interstellar 'atomic cloud<u>s</u>' [& of ''<u>cosmological</u> nucleosynthesis '''];
- $\mathcal{Q}_{ar}$   $\mid = \mathcal{Q}_{n}, \mid \to \underline{\mathbf{q}}_{3}$ ; the category of <u>stellar <u>nucleosynthesis</u>; conversion<u>s</u> of, e.g., *proton "pa<u>rticles</u>"[<u>Hydrogen ions</u>, H<sup>+</sup>] to He<sup>++</sup> <u>atoms</u>;</u>*
- $\mathcal{Q}_{arr}$   $\underline{\partial} = \mathcal{Q}_{aa}$ ,  $\underline{\partial} = \mathcal{Q}_{aa}$ ,  $\underline{\partial} = \mathcal{Q}_{aa}$ ; the 'cosmo-ontological category' of "<u>molecules</u>", e.g., within [*later*] interstellar "molecular clouds";
- $q_{mr}$   $\models = q_1, \models q_5; interactions & their products among molecules & "particles", e.g., cosmic rays with interstellar "molecular clouds";$
- $\underline{q}_{mr}$   $\underline{\partial} = \underline{q}_{ma}$ ,  $\underline{[} \rightarrow \underline{q}_{6}$ ; interactions and their products among <u>molecules</u> and <u>atoms</u>, e.g., in *later* interstellar 'molecular/atomic clouds';
- $\mathcal{Q}_{\text{marr}} = \mathcal{Q}_{\text{mag}} \partial = \mathcal{Q}_{\text{mag}} = \mathcal{Q}_{\text{marr}} = \mathcal{Q}_{\text{mag}}, \quad [\rightarrow] = \mathcal{Q}_{\text{marr}}, \quad [\rightarrow] \mathcal{Q}_{\text{marr}};$
- $\mathcal{Q}_{\text{pr}}$   $\mid = \mathcal{Q}_{1}, \mid \rightarrow \underline{\mathbf{q}}_{9}; \text{ interaction}_{\underline{s}}/\text{product}_{\underline{s}} \text{ among "pre-eukaryotic living cells" and "particles", e.g., of cosmic rays with bacterial genes;$
- $\underline{Q}_{\text{prr}}$   $\underline{\partial} = \underline{Q}_{10}$ ; interaction <u>s</u> among "<u>pre-eukaryotic living cells</u>", and <u>atoms</u>, and the interaction products thereof;
- $\underline{Q}_{\text{par}} \quad \underline{\partial} = \underline{Q}_{\text{pn}}, [\longrightarrow \underline{Q}_{11}; e.g., interactions, "pre-eukaryotic living cells" with stellar <u>nucleosynthesis</u> [may be a null/negligible category];$
- $\underline{\mathcal{Q}}_{\text{pnr}} \quad \underline{\partial} \stackrel{=}{=} \underline{\mathcal{Q}}_{\text{parr}} \quad \underline{\partial} \stackrel{=}{=} \underline{\mathcal{Q}}_{\text{paa}} \quad \underline{\partial} \stackrel{=}{=} \underline{\mathcal{Q}}_{\text{pnr}}, [\longrightarrow \underline{\mathbf{q}}_{12}; \text{ interaction} \underline{s} \text{ among "} \underline{\mathbf{pre-eukaryotic cells"}} \otimes \underline{\mathbf{m}}_{\text{olecules}}, \otimes \text{ their products.} \dots$
- \*[If we see a dialectical <u>species</u> category signed above as containing 2+ <u>sub-species</u>, we named the one thought most recognizable to o<u>ur</u> readers, if there is such.]

<u>Below</u>: stage  $\#_{\underline{s}}$ /stage-content of incremental categorial advance<u>s</u>/solution<u>s</u>, using notation for "'historical dialectic'" --**0**.  $\underline{q_r}$  [->  $\underline{q_1}$ , is the '*«arché*»-category', of "'p<u>r</u>e-atomic <u>particles</u>"' as <u>units</u>, for <u>Domain</u>  $\forall$ ;  $\underline{D_{\forall}} \approx \underline{q_r}$ . Stage<u>s</u> --

1. Next category:  $\underline{E}_{r} \mathscr{Q}_{r} \equiv \underline{S}(\mathscr{Q}_{r}) = \mathscr{Q}_{S(r)} = \mathscr{Q}_{rr}$   $|= \mathscr{Q}_{a}, [\rightarrow \underline{q}_{1+1} = \underline{q}_{2}; \text{ as of stage 1, } D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{a};$ 2. Next category:  $\underline{E}_{r} \mathscr{Q}_{a} \equiv \underline{S}(\mathscr{Q}_{a}) = \mathscr{Q}_{S(a)} = \mathscr{Q}_{ar}$   $|= \mathscr{Q}_{n}, [\rightarrow \underline{q}_{2+1} = \underline{q}_{3}; D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{a} \Leftrightarrow \mathscr{Q}_{n};$ 3. Next category:  $\underline{E}_{r} \mathscr{Q}_{n} \equiv \underline{S}(\mathscr{Q}_{n}) = \mathscr{Q}_{S(n)} = \mathscr{Q}_{arr} \ \partial_{r} = \mathscr{Q}_{aa} |= \mathscr{Q}_{m}, [\rightarrow \underline{q}_{3+1} = \underline{q}_{4}; D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{a} \Leftrightarrow \mathscr{Q}_{n} \Leftrightarrow \mathscr{Q}_{n} \Leftrightarrow \mathscr{Q}_{m};$ 4. Next category:  $\underline{E}_{r} \mathscr{Q}_{m} \equiv \underline{S}(\mathscr{Q}_{m}) = \mathscr{Q}_{S(m)} = \mathscr{Q}_{mr} \ \partial_{r} = \mathscr{Q}_{aa} |= \mathscr{Q}_{m}, [\rightarrow \underline{q}_{3+1} = \underline{q}_{5}; D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{a} \Leftrightarrow \mathscr{Q}_{n} \Leftrightarrow \mathscr{Q}_{m} \Leftrightarrow \mathscr{Q}_{m};$ 5. Next category:  $\underline{E}_{r} \mathscr{Q}_{m} \equiv \underline{S}(\mathscr{Q}_{m}) = \mathscr{Q}_{S(m)} = \mathscr{Q}_{mr} \ \partial_{r} = \mathscr{Q}_{mar}, [\rightarrow \underline{q}_{5+1} = \underline{q}_{6}; D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \ldots \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{m} \Leftrightarrow \mathscr{Q}_{mar};$ 6. Next category:  $\underline{E}_{r} \mathscr{Q}_{ma} \equiv \underline{S}(\mathscr{Q}_{ma}) = \mathscr{Q}_{S(ma)} = \mathscr{Q}_{mar} \ \partial_{r} = \mathscr{Q}_{mar}, [\rightarrow \underline{q}_{5+1} = \underline{q}_{7}; D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \ldots \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{mar} \Leftrightarrow \mathscr{Q}_{mar};$ 7. Next category:  $\underline{E}_{r} \mathscr{Q}_{n} \equiv \underline{S}(\mathscr{Q}_{n}) = \mathscr{Q}_{S(m)} = \mathscr{Q}_{mar} \ \partial_{r} = \mathscr{Q}_{mar}, [\rightarrow \underline{q}_{6+1} = \underline{q}_{7}; D_{v} \approx \mathscr{Q}_{r} \Leftrightarrow \ldots \mathscr{Q}_{r} \Leftrightarrow \mathscr{Q}_{r} \ast \mathscr{Q}_{r}$ 8. Next category:  $\underline{E}_{r} \mathscr{Q}_{n} \equiv \underline{S}(\mathscr{Q}_{n}) = \mathscr{Q}_{S(n)} = \mathscr{Q}_{n} = \mathscr{Q}_{mar} \ \partial_{r} = \mathscr{Q}_{maa} \ \partial_{r} = \mathscr{Q}_{mar}, [\rightarrow \underline{q}_{8+1} = \underline{q}_{9}; D_{v} \approx \mathscr{Q}_{r} \And \mathscr{Q}_{r} \ast \ldots \mathscr{Q}_{r}$ 9. Next category:  $\underline{E}_{r} \mathscr{Q}_{n} \equiv \underline{S}(\mathscr{Q}_{n}) = \mathscr{Q}_{S(n)} = \mathscr{Q}_{n} = \mathscr{Q}_{$ 

For stage **11**,  $\mathbf{D}_{\forall} \underline{\partial} = \mathbf{y}_{\mathbf{r}} + \mathbf{y}_{\mathbf{a}} + \mathbf{y}_{\mathbf{n}} + \mathbf{y}_{\mathbf{m}$ 

## <u>Epilogue</u>.

We have endeavored, herein, to provide you with a *users* '*manual* for the F.E.D. <u>dialectic</u>al method.

**O**<u>ur</u> goal, with regard to the **D**<u>omain</u> of <u>dialectics</u>, is to help to bring the *``mind tool```*, the *«organon*», of <u>dialectics</u> into common, everyday use, permeating the global human <u>phen</u>ome, instead of seeing <u>dialectics</u> continuing, as it had continued within and ever since remote antiquity, until today, as the exclusive and still only <u>part</u>ial acquisition of a rarest *minim* of isolated, 'pinnacular' genius<u>es</u>, albeit often themsel<u>ves</u> still victim<u>s</u> of enfettering mysticism<u>s</u> -- e.g., of Pythagoras, Heraclitus, Zeno, Socrates, Plato, Aristotle, Fichte, Schiller, Schelling, Hegel, Chardin, and Marx.

That is, **our** goal is to bring <u>dialectics</u> into the «*Mathesis Universalis*» -- into the "universal study"; the "universal learning"; the "universal [*mental*] discipline"; the "universal science", or "universal knowledge"; into the "universally <u>learnable</u> [*subject*-]matter". This 'psychohistorical material', **we** expect, will be readily learnable by, at least, many of those who have mastered the "formal operations" stage of adult human cognitive development, and who are verging upon their *next* cognitive-developmental "singularity", their transition into the "<u>dialectical operations</u>" stage of adult human-social, cognitive development, with this learning potentially helping to catalyze and accelerate that next transition. **We** see this cognitive transition, by the many human individual<u>s</u>, globally, as crucial to a collective transition beyond capitalism.

Applications of "<u>non</u>-standard" 'arithmetics for <u>dialectics</u>' may, at length, attain the crossover from the <u>es</u>oteric to the <u>ex</u>oteric, becoming as widespread, globally, throughout the human <u>speci</u>es, and as "'[<u>second</u>-]natural"", as have those of the "<u>standard</u> natural arithmetic" already, long-since, though that arithmetic was once itself confined to the "high" towers and temples of the esotericism, and of the mysticism, of the ancient priesthoods.

If so, then we expect there to manifest mounting instances of that <u>predictive cognizance of emergent new ontology</u>; that insight into overcoming the paralysis and stagnation, or the violence, of apparently radical dualisms; that skill in finding ''complex unities''', i.e., <u>dialectical syntheses</u>, reconciliations of apparently <u>ir</u>reconcilable oppositions -syntheses that outperform either "one-sided side" by far -- that ubiquity of <u>immanent</u> critiques, and that capability to <u>critically</u> transcend the tendency of human thought toward fetishism and subject/object inversion which have characterized <u>dialectic</u>, in its use by some, at least, of those 'pinnacular' genius<u>es</u>, already, ever since ancient times.

All of these facult*ies* of <u>dialectics</u>, partially manifested in human history <u>past</u>, we expect to become 'widespreadly' manifest in human history <u>future</u> as well.

What we have essayed, herein, to produce, for you, as an act of "universal labor" [Marx], and to present, in as broadly accessible a manner as we have been able to muster, can also be grasped as a 'dialectical «characteristica universalis». That means a 'character-language', a 'language using characters', hence an ''algebraic''' language, and an '*ideogramic*', '*ideographically abbreviatory*' language. That also means an algorithmic «organon» for <u>dialectical methods</u> of «arché»+ discovery, and of <u>Domain present</u>ation, for two of the species of the «genos» of <u>dialectics</u>, i.e., for the two <u>sub-Domains</u> of the <u>dialectics</u> <u>Domain</u> popularly known as ''*systematic* <u>dialectics</u>''' and ''*historical* <u>dialectics</u>''', at the very least.

**O**<u>ur</u>, <u>dialectic</u>al, «*characteristica universalis*», however, endeavors to transcend the coercive <u>ide</u>ological limitation<u>s</u> of Leibniz's envisioned calculus, that -- had it been possible to construct it according to Leibniz's vision -- was intended to enforce, by 'coercion of "pure" logic', the monolithic conclusion<u>s</u> of a hyper-sectarian, <u>ide</u>ological, "Christian" political and metaphysical dogma, as a kind of prevenient "NewSpeak" [cf. George Orwell] for a *theocratic* "political correctness". Likewise, the "'categorial combinatorics", the *«arte combinatoria»*, of Leibniz's predecessor in such endeavor<u>s</u>, Llull.

We have striven to craft our, dialectical, «characteristica universalis» so as to transcend such limitations. We have done so by way of designing a dialectical *ide*ography intrinsically accommodating to the empirical reality of -- to the subjective, ''<u>psychohistorical</u>'' factuality of -- *diversity*; of the <u>myriad</u> points-of-view; of the so far, up to today, never resolved controversies, and even of the recalcitrant <u>undecidabilities</u>, that are inherent in at least the major **Domains** of interest to Terran humanity, within the limitations imposed by <u>past</u> to <u>present</u> '<u>psychohistorical-material conditions</u>'. We have thus designed this method to help to achieve the *clearer*, more precise expression, and, moreover, hopefully -and in part *thereby*, in some cases at least -- to help achieve the eventual *clarification*, and even the *resolution* of at least some of these profound controversies, and the *reconciliation* of at least some of these vastly disparate views, to the extent that <u>present</u> '<u>psychohistorical-material conditions</u>' so far permit, within the limitations enforced by the <u>present</u> level of the '<u>meta</u>-Darwinian fitness' of the Terran human <u>species</u> -- i.e., by the prevailing [human-]social forces and [human-]social <u>relations of [global, self-expanding human-societal self-re-]production</u>.

### About the Author.

Karl Seldon is the co-founder, together with Sophya St. Germain, of Foundation <u>Encyclopedia Dialectica</u> [F.<u>E</u>.<u>D</u>.]. He devised the <u>dialectical progression of axioms-systems</u> for <u>our</u> '<u>ideo-systematic</u>', '<u>ideo-taxonomic</u>', stepwise <u>dialectical present</u>ation of the 'arithmetics for <u>dialectic</u>' that bear his name. He is continuing the development of his '<u>gen</u>eralized equity' model of '<u>political-economic democracy</u>' for the higher, planetary social system(<u>s</u>), as supplementary opposite to, and as predicted successor to, the <u>present</u>ly-prevailing [<u>state-</u>]capitalist, national-social[ist] system<u>s</u>.

### About Foundation Encyclopedia Dialectica.

**Foundation** <u>Encyclopedia Dialectica</u> is the public interest, pro bono publico ""think tank" charged, by its cofounders, with making certain key contributions to seeding Earth's very first truly <u>Global Renaissance</u>, to be brought about by the <u>ascendence</u> of the higher, successor socio-political-economic system to our present, <u>failing, toxic, terminal state-capitalist system</u>; the successor system that we name <u>'equitist political-economic</u> <u>democracy</u>. We see this as to be achieved, in part, by a widening propagation, throughout global Terran humanity, of the advanced, oppositions-resolving, synthesis-capable thought-technology described in this text, thereby helping to catalyze a widespread transition, within global humanity, from the prevailing, <u>"formal operations</u>" phase of adult human cognitive development, to the <u>"dialectical operations</u>" phase. The Foundation operates from two centers, located at opposite poles of the North American continent, two centers which are code-named, respectively, from West pole to East pole, as 'Terminious, California', and/versus 'Stars' End, New York'.

Other Books already published, or scheduled to be published, by Foundation <u>Encyclopedia Dialectica</u> [F.<u>E.D</u>.] **Press**, include:

<u>A Dialectical "Theory of Everything</u>" – Meta-Genealogies of Our Universe and of Its Sub<sup>{n}</sup>-Universes – A Graphical Manifesto, by Foundation <u>Encyclopedia Dialectica</u>.

- Volume 0. *Foundations for a Unified Theory of Universal Dialectics*. [Edition 0 published 2010]
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### Master-Key: Index/Glossary of Key Terms of Art, Names of Persons, Texts' Titles, and Ideographical Symbols.

algorithm(s)[ic[s]] [a finitary, exacting recipe which, if followed, guarantees a unique, correct result for problems within its limited range of applicability], 2, 4, 7, 18, 64-66, 81, 85, 99-100, 103, 116, 137, 139, 147-148, 182-183, 200, 203-204, 208

algorithmic-heuristic [method] [a feature of the  $\mathbb{Q}$  dialectical method], 2, 6-7, 18-19, 65, 80, 97, 116, 139-140, 144, 147, 150, 183, 210 anthropopoiesis [the origination of Terran humanity], 87

arithmetic(<u>s</u>) for dialectic(<u>s</u>) [the dialectic progression of the <u>ED</u>ean axiom<u>g</u>-system<u>s</u> of dialectic arithmetics], 7, 63, 113, 117, 120, 122, 127, 209, 210 arithmetical qualifier [a qualitative unit forming an integral part of an arithmetic for dialectic], 84, 117, 119, 120, 122-124, 129, 139 arithmetical quantifier [a full-multiplicity quantifier integral to an arithmetic for dialectic, *vis-a-vis* a logical quantifier for formal logic], 11, 119, 122-124 «*arché*» [from ancient Greek; beginning; [ever-present] origin; [governing] source; ultimate ancestor; foundation; ultimate premise], *ubq*. «*arché*»-category [the initial category in a dialectical categorial progression, whose «*aufheben*» self-involution<u>s</u> generate that progression], *ubq*. «*arithmos*» [number <u>of things</u>], 8-10, 22, 25, 32, 37, 49, 51, 81- 83, 85, 97-101, 122, 123, 146, 147, 150, 159, 170, 171, 174, 192, 203 «*arithmois*» [from ancient Greek; plural of «*arithmos*»], 3, 8, 9, 10, 22, 32, 120-122, 142, 147, 150, 185 «*arithmoi*<u>e eide</u>*tikoi*» [the "transcendental", 'vertical-dialectical '*arithmoi*<u>p</u> of Platonian <u>*ib*</u>*eac*<u>5</u>, "number<u>5</u>" of «*aufheben*»-interrelated <u>ideas</u>], 3, 8, 121, 147 «*arithmoi<u>e</u> monadikoi*» [the mediating «*arithmoi*<u>p</u>"] of Platonian, abstract, mathematical, "absolutely identical" unit<u>s</u>, akin to modern **N**], 3 Asimov, Isaac [author of the <u>Foundation</u> heptalogy of novel<u>s</u>, permeated by a fictional science called "psychohistory"], 120, 170 allo-«*aufheben*» [from Modern German; «*aufheben*»-ation of an [ev]entity/«*arithmos*» induced by [an]other [ev]entit(y)(<u>*ies*</u>)/«*arithmos*»(«*arithmoi*<u>»</u>)], 201, 204 «<u>**a**</u>*sumbletoi*» [from ancient Greek; <u>**un**</u>-summable, <u>**un**</u>addable "number<u>s</u>", e.g., the «*arithmoi<u>e</u> eidetikoi*» per Plato], 84, 88, 89, 147 «*aufheben*» [change, combined with conservation, via elevation], 3, 8, 9, 16, 25, 26, 28-30, 32, 36, 40, 44, 46-47, 49, 50-53, 58, 62, 64-66, 72-

74, 77, 79, 82-85, 87, 96-103, 111, 117-118, 120-121, 129, 147, 149, 154, 157, 161-162, 172, 174, 181, 185, 197, 201-203, 205, 207 auto-«aufheben» [from modern German; self-induced self-«*aufheben*» of an [ev]entity or «*arithmos*»], 204

Aristotle, Metaphysics [the text wherein Aristotle discusses and critiques Plato's «arithmoi eidetikoi» mystical dialectical ideology], 107

A I G I C I K [major human-social relations of human-societal self-re-production «aufheben»-containment/nested sequence], 63-64

 $\underline{\alpha}^2 = \underline{\alpha} \oplus \underline{\Delta\alpha} \equiv \underline{\mathbf{q}}_{\alpha} \oplus \underline{\mathbf{q}}_{\alpha\alpha} \vdash \equiv \underline{\alpha} \sim \oplus \sim \underline{\beta}$  [generic algebraic formulation of the result of stage **1** of the <u>dyad</u> ic dialectical function], 192

 $\underline{\alpha}^{3} = \underline{\mathbf{q}}_{\alpha} \oplus \underline{\mathbf{q}}_{\alpha\alpha} \oplus \underline{\mathbf{q}}_{\alpha\alpha\alpha} \oplus \underline{\mathbf{q}}_{\alpha\alpha} \oplus \underline{\mathbf{q}}_{\alpha\alpha\alpha} \oplus \underline{\mathbf{q$ 

 $\underline{\forall}(\tau) = \langle \cdot \underline{\mathbf{n}} \rangle^3 \langle \cdot \tau \rangle \langle \cdot \tau \rangle \langle \cdot \langle \cdot \underline{\mathbf{a}} \rangle^2^{\tau} \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot \underline{\mathbf{n}} \rangle^2 \langle \cdot \rangle \langle \cdot 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\underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | \underline{\mathbf{n}} \rangle \langle \cdot | 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[+],  $\oplus$ , <+> [generalized <u>a</u>ddition sign<u>s</u>; <u>non</u>-amalgamative for <u>unlikes</u>, hyper-amalgamative/idempotent for like<u>s</u>; for the generic, the *æ*synchronic, & the diachronic context<u>s</u>, respectively, otherwise notated by **H**,  $\oplus$ , and  $\oplus$ , respectively], *ubq*.

= [asserts a known ontological category as the meaning-solution for an, e.g., algorithm-generated, initially unknown categorial-algebraic category-symbol], ubq.

**a**xiomatic assertion; assertion per an axiom of an axiom<u>s</u>-system], ubq.

Bahm, Archie [philosopher; author of a 1970s book discussing dialectic and related topics], 211

Big Surge [Cosmological Hypothesis/Dialectic of Nature, from "Dark Energy" as *«arché»* ontological category; "Dark Matter" as first contra-category], 173, 181 *«bildung»* [from modern German, [process of] formation], 86

Boole, George [independent co-creator/unknowing co-discoverer, with Leibniz, of "Boolean Algebra"; author of the 1854 book <u>*The Laws of Thought...*</u>], 182 Boolean [said of works similar to or consciously following/continuing Boole's work], 147, 182

B.U.E. [Before Unification Era; references U.E., the F.E.D.-predicted future Terran-human historical time-period designation/characterization], 6, 7

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49, 52, 64-68, 75, 80, 85, 100-103, 116, 150-152, 157-159 content-structure [a unity of form and content], 25, 35-36, 39, 53, 82, 117-120, 148, 161, 169, 181-182

contiguum [an oriented ordinality of contiguous but not "continuous" elements], 170

contra-Boolean [contrary in character to the character or quality named "Boolean"], 146

contra-Boolean algebra [axiomatic algebra containing an axiom or theorem that negates Boole's "fundamental law of thought", that, for any class  $\mathbf{x}, \mathbf{x}^2 = \mathbf{x}$ ], 2 contra-Boolean arithmetic [an arithmetic that undergirds a contra-Boolean algebra], 9

contra-Boolean logic [a contra-Boolean algebra in its aspect as a model of contra-Boolean – e.g., of dialectical, or *«aufheben» --* mental/cognitive operations], 2 contra-category [a category whose implicit units constitute qualitative [supplementary] opposites to the units of an *«arché»-category* and/or a uni-category], *ubq.* convolute [multi-ontic [meta-]evolutions whose latest ontology covers over or erases *entirely* their earlier ontolog(y)(*ies*)], 32, 34, 52, 98, 161

cosmic web [cosmic complex unity of Dark Matter/Dark Energy opposition, featuring galactic voids & filaments; w/condensing but dispersing galaxies], 170-171 crinkled space-time [space-time regions deformed gravitically, forming "Dark Matter", due to excession of "Dark Energy" accelerated space self-expansion], 170 crinkliness of space-time [character of gravitating regions of space-time as "Dark Matter", due to excession of "Dark Energy" accelerated space expansion], 170 critique of [the capitalist ideology of classical] political economy [especially the Marxian, immanent, dialectical critique of capitalist ideology], 20-21, 23, 30, 35-36, 44, 49, 53, 62, 64, 148, 198, 204-205

cumulum [ensemble of ontologically diverse units, inhering in different ontological categor*ies*, modelable by an *«asumbletoi»* sum of category-symbols], 2, 28n., 29, 32, 49, 52, 64-68, 71, 75, 80, 100-103, 116, 150-152, 157-159

cuneiform [ancient, e.g., Mesopotamian scripts-family; typically stylus-impressed/inscribed in wet clay tablets, later dried/fired], 121

**c** [an[y] element of the standard number<u>s</u>-space/number<u>s</u>-set **C** of the " $\underline{C}$  omplex Numbers":  $\mathbf{c} \in \mathbf{C} \mid \mathbf{c} = \mathbf{a} + \mathbf{b}\mathbf{i}$ ].

C [the 2-dimensional space or set of the "Complex numbers" -- "Real number-line x Imaginary number-line", via their Cartesian Product rule, 'x'], 11, 13, 138

<u>C</u> or C\_ [arithmetical axioms-system for the space or set of the "<u>C</u>omplex numbers", w/many "1st-order logic" and some "2nd order logic" axioms], 138

C-C' [human-praxis 'praxiogram'; symbol for human practices of Commodity barter or for "Elementary Form of [Commodity Exchange-]Value"], 21-23, 201

C—M—C' [human exchange-value-praxis 'praxiogram'; <u>Monies</u>-mediated circulations of <u>Commodities</u>, depicting just one single whorl thereof], 22-23, 201

 $\dots C - M - C' - M - C'' - M - C''' - M - C''' \dots [`praxiogram'; \underline{M} on \underline{ies} - mediated circulations of \underline{C} ommodit \underline{ies}, multi-whorl extended view], 203$ 

 $c_1 \underline{C}_1 \Leftarrow c_2 \underline{C}_2$  despite  $\underline{C}_1 \notin \underline{C}_2$ ;  $\{c_i \underline{C}_i \neq c_k \underline{C}_k\}$  [Marx's Elementary Value-Form; <u>quantity</u>-equating of <u>qualitatively distinct goods</u>], 21, 22, 198, 201

 $(\Box'; \Box')$  [oppositely-directed <u>gen</u>eralized  $(\Box')$  ontainment  $(\Box')$  relation-sign<u>s</u>;  $a \Box A$  asserts that **a** is <u>C</u>ontained in **A** in a more <u>gen</u>eral sense than that of  $(\Box')$ , 99

 $\underline{C} \Vdash \underline{M} \Vdash \underline{K}$  [Commodity--)Money--)Kapital «*aufheben*» '*psyche*-ological, mem<u>e</u>tic containment<u>s</u>' «*aufheben*»/nested sequence], 31

Daniel Abraham [co-author, with Ty Franck, of <u>*The Expanse*</u> series of science fiction novel<u>s</u>, and streaming-video episode<u>s</u>], 78 dark energy [unknown-in-detail <u>anti</u>-gravity "force" that accelerates the universal expansion of the diameter/volume of space], 20, 69n., 110, 169-174, 180 dark hole<u>s</u> [<u>*E*.</u><u>*D*</u>, re-naming of "black hole<u>s</u>", in light of their theorized slow emission of 'Bright Matter' Hawking radiation], 171 dark matter [¿gravity-inducing warping of space-time, produced by "Dark Energy"-accelerated space-expansion-rate excession?], 20, 69n., 110, 169-174, 180 Darwinian [exhibiting a character of, or similar to that of, Darwin's theory of <u>biotic</u> evolution], 75, 82, 174, 208

democratic planetary polis [predicted future global Terran human-social formation, embodying global political-<u>economic democracy</u>], 75 depreciation [value-loss; <u>technodepreciation</u> is fixed capital plant/equipment value-loss via productive-force<u>s</u> growth; drives capital's profit-rate fall], 60, 62 descendence [a la 'ascendence' & 'transcendence'; a system's last historical sub-epoch when its inner seed<u>s</u> of its successor system sprout], 5, 60, 210 descendence-phase capitalism [capitalism's decline, due to draconian acts of its ruling class in reaction to profit-rate fall from <u>technodepreciation</u>], 60, 210 de Nemores, Hermes [F.<u>E.D</u> elected Secretary-General, administrator, and author], 6

determinate [reduced in abstractness; <u>specific</u> as to the features of a given [ev]entity], 27, 49, 65, 97, 99, 101-102, 116, 119, 144, 203 determination(s) [qualities, character[istic]s, features, facets, aspects, attributes, predicates, talifications, epithets that define an [ev]entity or an *«arithmos»*], 8, 18-21, 23-24, 29, 32, 35-36, 39, 41-43, 46, 49, 51, 53, 65, 75, 116, 119, 123, 138, 144, 152, 156, 199-202

determinate negation [changing of one+ determination(<u>s</u>) of an [ev]entity into (a) different/other concrete, specific one(<u>s</u>); <u>not</u> abstract negation], 49, 99, 102 Detonacciones, Miguel [F.<u>E.D</u>. voting member, elected General Council member, Public Liaison Officer, author, and blogger], 28

dialectic(<u>s</u>) [*historical* process<u>es</u> produced by, or *present* realit<u>ies</u> presented/explained using, [[<u>self</u>-]iterated] «*aufheben*» operation<u>s</u>; dialog-*like* progression<u>s</u>], *ubq*. dialectical [exhibiting the character of dialectic(<u>s</u>); describing progression<u>s</u> analogous to those of human dialogue<u>s</u>/multilogue<u>s</u>], *ubq*.

dialectical algebra [an algebra capable of modeling *dialectical*, or *«aufheben»*, operations], 119

dialectical arithmetic [an arithmetic capable of modeling <u>dialectic</u>al, or «*aufheben*», operations], 78, 111, 116, 119-123, 126, 128, 137, 138 dialectical «*characteristica universalis*» [Leibniz's sought universal character language/universal algebra in dialectic version, e.g., the NQ algebra], 2, 208 dialectical function [a dialectic-mathematics function capable of modeling <u>dialectic</u>al, «*aufheben*» operations], 75, 110, 142, 148, 169, 183-184, 206 dialectical ideograph[ical](y) [an ideographical-symbolic language capable of modeling <u>dialectic</u>al, or «*aufheben*», operations], 2, 6, 9, 116, 208 dialectical meta-equation(s) ["purely"-*qual*itative or *qualo-quant*ic, ontic <u>dialectic</u> supra-equations, holding <u>qual</u>itatively different mere equations], 169, 183 dialectical meta-model(s) [supra-models, holding many <u>qual</u>itatively, ontically different mere models, e.g., one for each epoch], 110, 138, 183-184, 198 dialectical meta-model(s) meta-equation(s) [<u>dialectic</u>al meta-models expressed via <u>dialectic</u>al meta-equations], 110, 183, 198 dialectogram[ic](s) [a wholly or partly pictorial representation of a <u>dialectic</u>, i.e., of a dialectical <u>process</u>, and/or of a dialectical <u>relation</u>], 17, 21, 25, 32, 37, 44, 49, 58n., 61, 63, 73, 76, 79, 86, 91, 112, 226, 227 division by zero [singularit(y)(ies)] [[nonlinear] integrodifferential equations' finite-time "infinite"/undefined values via (a) zero denominator(s)], 137-138 domain, **Domain** [a deeper-level defined subject-matter locus within a first-level ontological category/sub-universe of a universal ontological taxonomy], ubq. dyadic [2-ic], 3, 9, 18, 28, 35, 61, 65-66, 73, 75-76, 80, 83-86, 95, 97, 99, 101, 110, 142, 148, 150, 154, 157, 169, 182-184, 198, 206 dyadic dialectical function [function generating dialectic progressions whose category-count expands in powers of 2], 110, 142, 148, 169, 183-184, 206 Dyosphainthos, Aoristos [F.E.D. voting member, elected General Council member, Chief Public Liaison Officer, author, and blogger], 6, 210 dynamasis [the pattern of the processes of self-induced-change, and of other-system(s)-induced-change, of a [meta-]dynamical [super-]system], 2, 146 dynamic(s) [patterned change of a system, both self-induced and other-system(s)-induced, describable by a "law" of motion equation], 2, 123, 144, 174 'Descendence-Phase' Capitalism and Its Transcendence: An Immanent Critique of the Marxian Critique of Capitalist Political-Economics, by Karl

Seldon [forthcoming; extends the dialectic of Marx's Kapital, + his hints on human historical dialectic, to a detailed vision of capital's successor-system], 210 Destiny and Control in Human Systems: Studies in the Interactive Connectedness of Time (Chronotopology), by Charles Musès

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Dictionary of Religion and Philosophy: Eastern and Western Thought, W. Reese [world philosophy/religion names and terms dictionary], 105 D [variable denoting any ontological Domain within the ED can Dialectic of Nature Universal Taxonomy], 17, 58, 71, 79, 84-86, 92-93, 200, 206  $\mathbf{D}_{\forall}$  [The **<u>D</u>omain of <u>A</u>ll or, i.e., <u>\forallll/Everything Presently Known</u>], 207** 

 $\mathbf{D} = \forall$  [The **Domain** of All or, i.e.,  $\forall \mathbf{ll} / Everything Presently Known$ ], 71, 99, 169, 186, 207

 $\mathbf{D}_{\forall} \underline{\partial} \mathbf{I} = \underline{q}_{\mathbf{r}} + \underline{q}_{\mathbf{a}} + \underline{q}_{\mathbf{m}} + \underline{q}_{\mathbf$ 

D = CPE [The Domain of Marx's Critique of capitalist classical Political-Economy Entire], 35-36, 43, 45-46, 50, 53-56, 199, 200-202, 204

**D** = e [denotes a 2-level vertical historical dialectic in the human-social reproduction-relations **D**omain, predicting equitist political-economic democracy], 59

**D** = **f** [denotes the <u>Encyclopedia Dialectica</u> Universal Taxonomy **D**omain of human-social formations and of the <u>dialectic</u> within that **D**omain], 86, 93-94

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 $\mathbf{D} = \mathbf{y}$  [denotes the <u>**D**</u>*omain* of, and the <u>**E**.</u><u>**D**</u>*.*-*predicted* <u>historical</u> and systematic dialectics</u> within the <u>**D***omain* of, 'meta-humanity'</u>, or of 'the meta-human'], 79

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 $\partial$  [The *part*ial differential op., ' $\partial$ ', is defined as taking an "infinitesimal" "purely"-*quant*itative *part* of/from/out of its operands], 10  $\hat{2}$  [Our ' $\hat{0}$ ' operator is defined as taking some **finite** qualitative part of/from/out of its operands], 10, 102, ubq.

<u>*D*</u> = [asserts a *part*ial, <u>*D*</u>, incomplete meaning-solution, '|==', for some but *not* all of the ''algebraic''' category-symbols in an «asumbletoi» sum of same], *ubq*.

Earth[ly] [Sol system planet Terra; exhibiting the qualities experienced by present human cognition regarding planet Terra], 5, 57, 75, 78, 86, 143, 160, 180 E.D. [Encyclopedia Dialectica; entries ordered per a universal natural-history taxonomy, defining [ev]entities textually/pictorially/dialectic-mathematically], ubq. EDean, or edean [in the manner of, or having to do with, E.D., Encyclopedia Dialectica], i-xii

Einstein, Albert [creator of the Special & General Theories of Relativity; co-founder and critic of quantum theory; seeker of a Unified Field Theory], 170, 180 Einstein Problem, The [that of finding a unified field theory, uniting the universal gravitic field with other physical "force fields" in a single field equation], 180 embedded image(s) [image files, e.g., JPG image files, pasted into primarily textual documents], 224-227

empty zero [edean for standard zero, denoted by **0**, in contexts of later E.D. arithmetics for dialectic, as distinct from 'full zero', denoted by **0**], 128, 137-138 encyclopedic dictionar(y)(*ies*) [dictionaries defining words, including proper-noun names, in extended, almost-encyclopedic detail], 210

encyclopedia, dialectical [fedean meme; order-of-irruption [Chardin] detailed definitions of main ontic categories/sub-categories of dialectic of nature to-date]. epithet(s) [word/phrase/mathematical sign, adding to the name of an [ev]entity by representing a characteristic thereof], 18-19, 35, 51, 116-117, 141, 199 epoch(s) [historical periods in the self-development of a **Domain** as defined per the **Domain**-inherent ontological-categorial units or «monads» extant in them], 2,

10, 41-43, 45, 48, 61, 71, 73, 78, 80-88, 91, 95, 97-104, 110-111, 126, 169-174, 180, 182, 198-199

epochal [the character of an historical dialectic that is self-divided and self-deployed as a progression of ontologically-different historical periods], 42, 61, 80, 83 epochality [the character of an historical dialectic that divides itself into onto-qualitatively different periods, each with its own, distinct ontological cumulum], 110 epoch, capitalist [the Terran human historical period from circa 1500 C.E./B.U.E. to present], 42, 45, 48, 126

Equitarian Reform/Revolution, The [the revolutionary reforms needed to establish the generalized equity social relation of production], 58, 60, 205 Equitism [F.E.D.-proposed generalization of the prevailing, exclusive capital equity system, extending it into new species of inclusive equity], 31, 205 equity [fairness and justness; justiciality], 31, 58, 58n., 60, 205n., 209 Dialectic: Users' Manual Edition 2 04 June 2022.

Equity, Generalized, Social [F.<u>E.D</u>.-sought supplement to capital equity, extending/sublating it via new equity spec<u>ies</u>], 31, 58, 58n., 59-60, 205n., 209 eventit(y)(<u>ies</u>) [event-entit<u>ies</u>; actualit<u>ies</u> that are simultaneously and unifiedly 'noun-like' & 'verb-like'; objects that are ongoing actions; process-objects], 116 evolute[ly] [analogous to a spiral seashell in which earlier whorls still remain visible after later whorls appear], 32, 52, 76, 81, 83, 98-99, 110, 161, 184 evolute-tion [evolutions whose latest ontolog(y)(<u>ies</u>) leaves their earlier ontolog(y)(<u>ies</u>) still visible/still extant], 32, 52

evolution [the biotic/trans-biotic natural-historical process, including the human-natural process, that emerges, or irrupts, new ontology from old], 60, 98, 149 excession [the process of *exceeding*, or the state of having *exceeded*, a finite threshold or limit], 172-173

externity [the defined outward-side or 'exteriority' of an [ev]entity or «arithmos»].

<u>Encyclopedia Dialectica</u>, Volume 0: Encyclopedic Dictionary for a Unified Theory of Universal Dialectics, by F.<u>E.D</u>. [key terms defined], 210 <u>Encyclopedia Dialectica</u>, Volume 1: Dialectics of the Ontological Categories of the Universal Taxonomy, Level 1, by F.<u>E.D</u>. [Level 1], 210 <u>Essentialism in the Thought of Karl Marx</u>, by Scott Meikle [a text that argues for influences of Aristotle's essence-dynamics in Marx's theory], 104 e + e = e [Robert Grassmann's "inner joining" logic-algebra equation, akin to  ${}_{NQ}$  dialectic-arithmetic's idempotency aspect, i.e.:  $g_n + g_n = g_n$ ], 181  $ee \neq e$  [Robert Grassmann's "outer weaving" logic-algebra equation, akin to the  ${}_{NQ}$  dialectic-arithmetic's metapotency aspect, i.e.:  $g_n [x] g_n \stackrel{1}{\neq} g_n$ ], 181

### $\underline{\mathbf{e}}^{3} \mid = \underline{\mathbf{e}} < \mathbf{x} > \langle > \underline{\mathbf{e}} < + > \underline{\mathbf{p}} < \rangle \mid = \underline{\mathbf{e}} < + > \underline{\mathbf{p}} < + > \underline{\mathbf{u}} [\underline{\mathbf{e}} | \text{ectron}_{\underline{s}} / \underline{\mathbf{p}} \text{roton}_{\underline{s}} / \text{ne}_{\underline{u}} \text{tron}_{\underline{s}} \text{ historical nature-dialectic, per 'meta-} \underline{gen}_{\underline{e}} \text{alogical evolute product' rule}], 99$

F.E.D. [Foundation Encyclopedia Dialectica, the NGO sponsoring this book, and orchestrating the development and serial publication of E.D.], ubq.

FED ean, or fed ean [by, in the way of, as defined by, or having to do with, F.E.D., Foundation Encyclopedia Dialectica], ubq.

finitary [non-"infinite"; realistic; actual; empirical; observed; practicable; honest], 9, 117, 119, 138, 171

fitness, Darwinian [attribute of populations of related <u>biotic</u> [ev]entit<u>ies</u>/ontos as measured by their <u>sustained</u> *rate* of onto-mass self-reproduction], 82, 182, 208 fitness, Meta-Darwinian [character of *«arithmoi»* of similar [ev]entit<u>ies</u>, biotic & *non*-biotic alike, measured as their <u>sustained</u> self-reproductive *rate*], 182, 208 Fomin, S. V. [author of the booklet <u>Number Systems</u>, which addresses arithmetical expressional economy as a function of base numerals count], 110

formation(<u>s</u>), human-social [supra-geological human<u>s</u>-made strat<u>a</u> of *our* noosphere; process<u>es</u> of their <u>gen</u>esis], 5, 64, 75, 86, 91, 95-96, 174, 182, 205 fractal(<u>s</u>) [scaled self-similarity structure<u>s</u>, oft *mis*-described as *actual*-infinitary], 2, 26, 28, 61, 72, 117-120, 138, 156, 161, 172, 174, 180, 198, 202 fractality [a key defining quality of many actual system<u>s</u> & dialectical progression<u>s</u>, namely, a scaled self-similarity content-structure which is <u>actually-finite</u>], 120 full zero [zero <u>species</u>, arising in <u>ED</u>ean qualo-quantitative dialectic arithmetic<u>s</u>, when **0** multiplies an arithmetical qualifier meta-numeral], 62, 128, 137-138 «<u>genos</u>» [dialectic-taxonomic ontic category <u>relatively</u> more <u>gen</u>e-ral than its "contained" <u>relatively</u> more <u>speci</u>al, «<u>species</u>» onto<u>s</u>], 45, 79, 169, 196, 208 «<u>gene</u>» [plural, «<u>genos</u>»], 72, 143, 146, 196

«<u>gen</u>e»-ral[ity][ization] [*existence upon/movement to* a more abstract, <u>gen</u>eral level/scale <u>relative</u> to/from more <u>speci</u>fic, concrete scale<u>s</u>], 72, 143, 146, 196 <u>gen</u>ealog(y)(<u>ies</u>) [lineages of descent defined by Darwinian, genomic/chromosomal linkages/connections], 96, 110, 169, 171, 173, 180

Generalized Equity [F.<u>E.D</u>.-predicted new human-social-relation-of-reproduction, topping capital-/wage-labor-reproduction-relation; capital-equity, e.g. sharesvoting relations, augmented/conserved/constrained by **3** new, grassroots economic-democratic social equity human/property rights spec<u>ies</u>], 58, 60, 205, 209

Gödel, Kurt [discovered Completeness Theorem for 1st order logic, Incompleteness Theorem for higher order logic/mathematics, independence of the Cantor Continuum Hypothesis from the other set theory axioms, and closed-form <u>special</u> solution to the ten General Relativity <u>nonlinear differential equations</u>], 2
 Gödelian [exhibiting qualities recalling the qualities of the work and views of Kurt Gödel], 2

Grassmann [family name of Justus, Hermann, and Robert Grassmann, all involved with "dialectic" approach<u>es</u> to mathematics and algebraic logics], 137 Grassmann, Herman [developer of hypercomplex arithmetic of **n**<sup>1</sup>-dimensional geometry, involving nilpotent arithmetical qualifiers/qualitative units], 181 Grassmann, Robert [brother of Hermann; focused on ["dialectical"] algebraic logics as well as on a Schleiermacherian dialectic of mathematics as a whole], 181 gridded chart [a text-embedded image, e.g., a JPG image file, of a chart organized via a regular or irregular grid], 224

<u>Hermann Grassmann</u>: Biography, by Hans-Joachim Petsche [biography addressing the psychohistorical context of H. Grassmann's work], 181-182 Grassmann, Hermann, <u>A New Branch of Mathematics</u> [first book in which the Grassmannian hypercomplex arithmetic of geometry is presented], 181 <u>From Past to Future</u>: Grassmann's Work in Context, by Hans-Joachim Petsche, *et al.*, editors [Hermann's opus in historical context], 181 Grassmann, Robert, <u>Theory of Scientific Discovery</u> [work including an exploration of NQ-like algebraic logics in which  $ee \neq e \& e + e = e$ ], 182 <u>Greek Mathematical Thought and the Origin of Algebra</u>, by Jacob Klein [on ancient «arithmoi» theory vs. modern number ideas], 107, 195 **G** [the space or set of the Grassmann numbers, for the Grassmann n<sup>1</sup>-dimensional arithmetic-of-geometry, exhibiting internally-generated escalations of n], 138

Harris, Errol E. [1908 - 2009 C.E.; Latter-day Hegelian dialectic philosopher], 26, 126

hetero<u>gen</u>eous multiplicity [many variant units, all of **1** kind], 25, 3, 43, 45-46, 48, 50, 72, 75, 78, 82, 96, 146, 152, 157-159, 171, 182, 199 heuristic-algorithmic method [a method that guides the use of a "rule of thumb" by an exacting recipe or "algorithm"], 139 historical dialectic(s) [diachronic oppositional ser<u>ies</u>], 3, 5, 9, 25, 36, 41, 45-46, 61, 64, 80, 91, 97, 99, 146, 169, 182-183, 191, 207-208, 210 Hamilton, William Rowan [discoverer/inventor of the arithmetic/algebra of quaternionic hypercomplex numbers, whose space is denoted, herein, by **H**], 137 Hegel [ideologue of a synchronic, mystic totality-dialectic: '*Logik--*)*Natur--*)*Geist* ["Spirit"]'], 2, 5-7, 27, 36, 65-66, 101, 126, 144, 146, 148, 181, 208 Hegelian[, trans-] [, pseudo-] [showing qualit<u>ies</u> recalling/extending/aping those of the work & views of Georg Wilhelm Friedrich Hegel], 2, 36, 126, 144, 181 helically [after the manner of an upwardly-whorling trajectory, rising up, out of the plane of its origin, cylindrically, vortically, etc.], 84, 172 Heraclitus [*circa* 540-475 B.C.E.; Greek philosopher of change by opposition; of the fiery, eventity nature of "objects"; combatted religious mysticisms], 104, 208 homeomorphic defect [the totality of differences between an, e.g., mathematical, model, & the experiential reality it is intended to "capture"], 2, 143, 200-202 humanocidal [polic<u>ies</u> urged by ruling-class "people are pollution", anti-humanist, pseudo-"ecology" ideolo<u>gies</u>, to exterminate ~95% of humanity], 5, 58 human phenome [the entire ideational, cultural superstructure of non-gene-encoded human traits, built on the base of the human genome], 7, 20, 110, 208, 210 human-social formation(<u>s</u>) [supra-geological human<u>s</u>-made strat<u>a</u> of our noosphere; process<u>es</u> of their <u>gene</u>sis], 5, 64, 75, 86, 91, 95-96, 174, 182, 205 <u>The Harper Dictionary of Music</u> [an encyclopedia dictionary of musical terms of art, and of name<u>s</u> of key figure<u>s</u> in the musical field<u>s</u>], 166 Harris, E. E., <u>Formal, Transcendental, and Dialectical </u> Hegel, <u>Lectures on Logic</u> [hand-recorded live lectures by Hegel on his [dialectical-]«Logik», edited from notes as taken down by his son, Karl Hegel], 162 Hegel, <u>Phenomenology of Spirit</u> [Hegel's dialectic evolution of spirit, from sense-certainty to dialectical reason, w/escape from subject/object dualism], 184 Hegel, <u>Philosophy of History</u> [notes on Hegel's lectures about his dialectical/mystical theory of world history], 195

reget, <u>*rutosophy of nistory*</u> [notes on neget's fectures about his dialectical/mystical theory of world history],

Hegel, *Philosophy of Right* [Hegel's dialectical/mystical theory of the key human-social/civil actualit*ies* that were contemporary to his own time], 146 Hegel, *Science of Logic* [Hegel's *full-regalia* version of his *«arché»-category*, [dialectical-]*«Logik»*, for his synchronic, mystic totality-dialectic/system], 184 heuristic[ally] ["rule of thumb" for solving a problem; often/not always, *correctly*; sometimes/not always, *uniquely*], 7, 9, 18, 21, 35-36, 139, 148, 203

**h** [an[y] element of the standard number<u>s</u>-space/number<u>s</u>-set **H** of <u>**H**</u>amilton's Quaternion<u>s</u>; **h**  $\in$  **H**, such that **h** = **a** + **b**<u>i</u> + **c**<u>j</u> + **d**<u>k</u>].

H [the 4-dimensional space or set of the *ideo*-kind of number-ideas named quaternions, developed by Willian Rowan Hamilton], 11, 138

H or H [arithmetical axioms-system for the space or set of the Hamilton quaternions, w/many "1st-order logic" and some "2nd order logic" axioms], 11, 138

<u>ideogramic[ally]</u> [writing of mainly <u>idea-symbol kind</u>, using "semantic-symbol<u>s</u>", vs. picture-symbol<u>s</u> or sound-symbol<u>s</u>], 2, 10, 44, 49, 61, 99, 138, 208 <u>ideogramized text-box [image(s)]</u> [a text-box image, e.g., a JPG image file, pasted into a textual document, that includes <u>ideogramic annotations</u>], 224-227 <u>ideogramized, texted dialectogram(s)</u> [an embedded dialectogram <u>pictogramic image</u>, that includes both <u>phonogramic & ideogramic annotations</u>], 224-227 <u>ideogram(s)</u> ["semantic symbol<u>s</u>"; symbol<u>s</u> that directly stand for <u>ideas</u>, not sound<u>s</u> of speech, nor stylized/caricatured retinal image<u>s</u>], 10, 28, 65, 99, 138, 208 <u>ideography or ideogramy [a kind if writing which, mainly or exclusively, uses <u>ideogramic symbols</u>], 2, 6, 9-10, 208</u>

ideography, dialectical [<u>ED</u>ean, dialectic-mathematic writing, that uses many <u>ide</u>ogramic symbols in representing <u>«aufheben»</u> process<u>es</u>/relations], 2, 6, 9, 208 <u>ide</u>ology [scientifically-falsifiable beliefs born <u>un</u>consciously from mis-construed experiences, &/or via <u>conscious</u> manipulation favoring ruling class power], ubq. <u>ideo-meta-gene</u>alog[ical[ly]] [characterizing or by way of <u>non-genes-based <u>«aufheben»</u>/dialectical-ordinal lineages or taxonomies of <u>ideas</u>/categories], 42, 137 <u>ideo-ontolog(y)(ies)[ical][ categor(y)(ies)] [intangible human <u>ideas</u>/memes seen as a forming a distinct ontological [<u>ide</u>o-]kind of being in their own right; as psychohistorical **subject**-matter], 2, 56, 103, 110-112, 116, 138-139, 141, 150, 181-182, 184, 191</u></u>

<u>ide</u>o-ontology-history-model [dialectical model of the temporal, <u>ide</u>o-meta-<u>gen</u>ealogical <u>ide</u>as-progression in a field/<u>Domain</u> of the Universal Taxonomy], 104 immanent [asserted of a quality that pervades the interior of, and comprehensively characterizes, an [ev]entity; <u>inherent</u>], 26, 42, 80, 111-112, 118, 148, 170 immanent critique [Zenoan-indirect-proof-akin, *«elenchus»*-like inside-critique, evoking and rectifying the internal-/self-contradiction<u>s</u> within a theory/<u>ide</u>ology per that theory's/<u>ide</u>ology's own, internally-asserted criteri<u>a</u>/"truth<u>s</u>"], 5, 20, 23-24, 28, 35, 52-53, 63, 65-67, 114, 119, 174, 191,

199, 203, 208, 210

infinite [fanciful/mystoid/contra-empirical/contra-experiential *ideo*logical concept, falsely asserting <u>actual</u>, already-existing endlessnesses], 2, 128, 137-139, 148 infinite singularity [the kind of singularity arising when a division-by-zero arises in an <u>un</u>solved dynamical equation, and/or in its solution-function, for a <u>finite</u>

value of the <u>t</u>ime, **t**, independent variable, under the contra-axiomatic assertion that, e.g., for any  $\mathbf{r} \in \mathbf{R}$ ,  $\mathbf{r}/\mathbf{0}$  "="  $\infty$ ; although  $\infty \notin \mathbf{R}$ ], 137 inhere[d](<u>s</u>) [is/was immanent to], 24, 27, 32, 65, 80, 82, 122, 180, 184

inherence [immanence], 10

inherent [immanent], 7, 8, 26, 60, 111, 208

integrodifferential equation[-model][nonlinear][partial] [eq. involving integration &/or [partial] differentiation as inverse operations], 2, 28, 128, 137-138 internity [the defined in[ward]-side, or internality, of an [ev]entity or *«arithmos»*], 41

interplanetary federation [FED ean psychohistorical pre-construction/prediction of next-higher, major, <u>meta</u>-planetary-polis, [<u>meta</u>-pluman social formation], 96 intra-duality [an inherent duality, internal to [ev]entit<u>ies</u>, or to «arithmo<u>i</u>» of [ev]entity unit<u>s</u>, driving their [meta-]evolution], 11-112, 114-115, 173, 182 intra-multiality [inherent beyond-dual/multiple intra-opposition, internal to [ev]entit<u>ies</u>, or to «arithmo<u>i</u>» of [ev]entit<u>ies</u>, or to «arithmo<u>i</u>» of [ev]entit<u>ies</u>, driving their [meta-]evolution], 11-112, 114-115, 173, 182 intra-multiality [inherent beyond-dual/multiple intra-opposition, internal to [ev]entit<u>ies</u>, or to «arithmo<u>i</u>» of [ev]entit<u>ies</u>, driving their [meta-]evolution], 111-112

J. R. R. Tolkein [Christian apologist; author of an essay on human "sub-creation" and on the opposition of "eucatastrophe" versus "discatastrophe"], 96

Kapital(s) [(a) social relation(s), projected onto [humans-made] things, appearing as self-expanding economic value if the agency of its human subjects is elided], 30-31, 35-37, 39, 41-47, 50, 52, 58, 61, 63, 199, 203-204, 205

 $\underline{\mathbf{K}} \sqsubseteq \mathbf{I} \underline{\mathbf{L}} \Vdash \underline{\mathbf{S}} \Vdash \underline{\mathbf{F}} \Vdash \underline{\mathbf{M}} \text{ [Marx's } \underline{\mathbf{K}} \text{apital} \underline{s} - \underline{\mathbf{L}} \text{ anded Propert} \underline{ies} - \mathbf{N} \text{ Nation-} \underline{\mathbf{S}} \text{ tate} \underline{s} - \mathbf{F} \text{ oreign [bi-lateral] Trade} \underline{s} - \mathbf{W} \text{ orld } \underline{\mathbf{M}} \text{ arket } \text{ auffheben} \text{ sequence], 52}$   $\mathbf{K}_{\mathsf{C}} - \mathbf{K}_{\mathsf{M}} - \mathbf{K}_{\mathsf{C}}' \text{ [human exchange-value-praxis 'praxiogram'; } \underline{\mathbf{M}} \text{ oney-} \underline{\mathbf{K}} \text{ apital} \underline{s} - \text{mediated } \underline{\mathbf{C}} \text{ irculation} \underline{s} \text{ exchange} \text{ of } \underline{\mathbf{C}} \text{ ommodity-} \underline{\mathbf{K}} \text{ apital} \underline{s}], 204$ 

 $K_{M} - C - K_{M}' \text{ [`praxiogram': Commodity[-Kapital]-mediated } \underline{M} \text{ oney-} \underline{K} \text{ apital} \underline{s} \text{ expansion, if } K_{M}' > K_{M}; \text{ only circulation} \underline{s} \text{ -process seen, e.g., mercantile capital}, 204$ 

Lakatos, Imre [1922 to 1974 C.E.; promulgator of what he termed the dialectical school of the philosophy of mathematics; student of Karl Popper], 18, 24 Lakatosian [exhibiting qualities recalling, reproducing, or extending those of the work and views of Imre Lakatos], 112

Leibniz [author, 1666 <u>Dissertation on the Combinatory Art</u>; co-discoverer of integrodifferential calculus & of Boolean algebra; sought a universal algebra], 4, 208 Leibnizian [exhibiting qualit*ies* reproducing, extending, or recalling the qualit*ies* of the work and views of Gottfried Wilhelm Leibniz], 2

logical quantity [summary form of quantity, e.g., notated by logical quantifiers of first-order predicate calculus,  $\neg \exists$ ,  $\exists$  and  $\forall$ ; limited to none, some, or all, resp.]. <u>Leibniz</u>: Logical Papers, G. H. R. Parkinson, translator [posthumously-published mss. by Leibniz, drafts toward his *«characteristica universalis»*], 4 <u>The Logic of Marx's Capital</u>: Replies to Hegelian Criticisms, by Tony Smith [clarifies Marxian/Hegelian <u>systematic</u> dialectic], 13, 187, 195 <u>L</u>  $\square$   $\underline{\mathbb{V}}$   $\square$   $\underline{\mathbb{W}}$   $\square$   $\underline{\mathbb{P}}$   $\square$   $\underline{\mathbb{S}}$   $\square$   $\underline{\mathbb{I}}$   $\underline{\mathbb{I}}$   $\underline{\mathbb{N}}$   $\square$   $\underline{\mathbb{K}}$  [Letters-)s<u>V</u>llables-)<u>W</u>ords-)... *«aufheben»*/nested sequence], 160

Margulis, Lynn [pioneer/propagator of the symbiogenesis/endosymbiosis theory of the meta-unitic *genesis* of **g**ukaryotic cell units from **p**rokaryotic cell units], 82
 Marx *ISM* [fraudulent, State-*CAPITALIST* perversion of Marx's theory, imposed by Leninists: Lenin, Trotsky, Stalin, Mao, Castro, II, Un, Xi, etc., *ad nauseam*], 5
 Marx, Karl [Earth's creator of a first approximation to psychohistory as a [f]actual scientific field, pre-actualizing the fictional science so named by Asimov], *ubq*.
 Marxian [qualities recalling those of the work and views of Karl Marx, opposing those of the -- "Marx<u>IST</u>" – Leninist/Trotskyist/Stalinist/Maoist, etc., imposters], 5, 7, 21, 23, 35-36, 41, 44, 49, 62, 146, 150, 152, 156, 196, 198-200, 202-204, 210
«*Mathesis Universalis*» [a term of Descartes and Leibniz; "universal study"; "universal learning"; "universal [mental] discipline"; "universal science", "universal knowledge"; "universally learnable [subject-]matter"; "universal mathematics"], 208

meta-Darwinian [exhibiting the quality of an extended-theory fruition of the dialectical, immanent critique of Darwinian *ideology*], 75, 174, 182, 208 meta-Darwinian fitness [measured as sustained percentage: time-periods-offset onto-mass % self-reproduction rate of a given ontology/«arithmos»], 182, 208 Meta-Darwinian Planetary Fitness Test [convergence of the pre-history, in Marx's sense, of a humanoid planet, to a test of its phenomic/genomic fitness], 75 meta-epoch(s) [a super epoch of ontological epochs, made up out of a heterogeneous multiplicity/temporal progression of mere ontological/ontic epochs], 172 meta-equation(s)[, dialectical] [heterogeneous [dialectic-]equations, via 1 super-equation], 73, 110, 142, 169, 171-173, 183-184, 198, 203, 207 meta-equation meta-model(s)[, dialectical] [a model of models; ontically heterogeneous multiplicity of [dialectic-]models, via 1 super-equation], 73, 169 meta-genealog(y)(ies)[ical][y] [of non-chromosomal lineages], 42, 63, 73, 80, 84, 96, 99n., 110, 137, 146, 169, 171, 173, 180, 184, 210 meta-genealogical evolute product rule [an alternative  $\mathbf{N}_{\mathbf{Q}}$  product-rule axiom: asserts that,  $\forall \mathbf{a}, \mathbf{b} \in \mathbf{N}_{\mathbf{Q}}, \mathbf{a}$  [x]  $\mathbf{b} = \mathbf{a}$  [+]  $\mathbf{b}$  [+]  $\mathbf{q}_{\mathbf{x}}$ ], 99n., 110, 184 meta-genealogy gap [break in a chain of -- a non-chromosomal lineage of -- «aufheben» meta-unit-ization/meta-«monad»-ization dialectical engenderings], 180 meta-human[ity] [E.D.-predicted «arithmos» of self-aware beings inhabiting super-planetary[-polis] social formations, e.g., interplanetary federation formations], meta-model(s) [ontic models' super-unity], 2, 5, 62, 69, 73, 75, 78, 86, 110, 128, 138, 142, 169, 171-174, 183-184, 184n, 198, 203, 210 meta-modeling [dialectical-mathematically modeling successive steps or epochs in a progression via *qualitatively differing mathematical models*], 142, 184 meta-model meta-equation(s), dialectical [a model of models; heterogeneous plurality of [dialectic-]models, all in **1** super-equation], 110, 183, 198, 203 meta-«monad»-ization [unifications of multiple «monads» of 1 ontic category, forming «monads» of a new, higher ontic category], 45-46, 61, 86, 110, 196 meta-social, meta-sociality, meta-socialization [human societies, relative to mere animal societies, are humans-led «aufheben» super-societies: each human society being made of a heterogeneous multiplicity of animal societies, e.g., of domesticated social animals].

meta-unit-icity [, *«aufheben»*] [the *quality* present when ontic units are co-present together with [their] [some of/all of their presently-extant] meta<sup>(n)</sup>-units], 25, 27, 31, 43, 45-46, 50, 52, 153, 156, 160-161

meta-unit-ization(<u>s</u>), [self-][«*aufheben*»] [unification<u>s</u> of *multiple* unit<u>s</u> originally grouped under **1** ontological category, forming new unit<u>s</u> of a new, higher ontological category], 8, 25, 61, 63, 72-73, 76, 82, 96, 119, 146, 153, 161, 180, 196, 200

<u>model</u>-epoch(s) [historical periodization of <u>Domain</u>-history per a <u>Domain</u> dialectic-<u>model</u>, often abstracting from <u>actual</u>], 61, 73, 81-85, 95, 99-104, 110 Moon, The [the cold[er], but nonetheless also/still bright, frequent prominent apparition in the Terran sky, in contrast to the hot[er]/bright[er] Sun], 207 multilogue [a human super-dialogue, i.e., involving more than '<u>di[a]</u>' – more than two participants/interlocutors].

Musès, Charles [mathematician-philosopher and Western mystic; discoverer of the Musean hypernumber arithmetics; a mentor of Karl Seldon], 28, 70, 83, 120 Marx, Karl, <u>Capital</u>, vol. I [first published 1867 C.E./B.U.E.; opens with systematic dialectic of [exchange-]value; about <u>der Produktionsprocess des Kapitals</u>; an immanent critique of the capitalist-<u>ide</u>ology-compromised science of classical political economy], 20, 23, 30-32, 35, 39-41, 50, 61, 63, 105, 148, 150, 198-203, 205

Marx, Karl, *Capital*, vol. II [about der Cirkulationsprocess des Kapitals], 23, 30-32, 35, 41, 50, 61-63, 150, 198-199, 203-204

Marx, Karl, *Capital*, vol. III [about the unity of the *Cirkulationsprocess* and *Produktionsprocess des Kapitals*; the *"self"*-reproduction process of Capital, as predominant social-relation-of-production, as a social totality/epoch], 35, 40-41, 50, 61-63, 150, 198-199, 203-204

Marx, Karl, <u>Capital</u>, vol. IV: Theories of Surplus-Value [planned 4<sup>th</sup> volume of <u>Capital</u>; a history of surplus-value ideologies/theories], 35, 41, 46, 50, 61-63, 150, 198-199

Marx, Karl, Engels, Frederick <u>Collected Works</u>, vol. 40 [CP-edited collection of Marx/Engels writings from 1856 to 1859 C.E./B.U.E.], 5, 20, 39, 43 Marx, Karl, Engels, Frederick <u>Collected Works</u>, vol. 33 [CP-edited collection of Marx/Engels writings from 1861 to 1863 C.E./B.U.E.], 41n.

Marx, Karl, Engels, Frederick <u>The Communist Manifesto</u> [booklet on successor system to capitalism, published on the eve of the 1848 revolutions], 58

Marx, Karl, <u>A Contribution to the Critique of Political Economy</u> [1859 protoic precursor to <u>Capital</u>; on Commodit<u>ies</u> & Mon<u>ies</u>/Simple Circulation], 35, 49, 53, 188, 193, 195

Marx, Karl, *Foundations of the Critique of Political Economy* or «*Grundrisse*» [posthumously-edited/-published *rough draft* from 1857-1858], 19, 20-23, 36, 41-42, 45, 48-49, 53, 57, 62, 64, 105, 148, 152, 189, 192-193, 195, 199, 205

Marx, K., Engels, F., <u>The German Ideology</u> [circa 1845 critique of their former Young Hegelians associates' <u>ideologies</u>; Marxian theory debut], 105 Marx, Karl, <u>Manuscripts of 1861 to 1863</u> [near-final draft of <u>Capital</u>], 41

Marx, Karl, <u>The Poverty of Philosophy</u> [circa 1846 immanent critique of Proudhonist <u>ideo</u>logy/of Proudhon's <u>The Philosophy of Poverty</u>], 148
 <u>Marx and Engels through the Eyes of their Contemporaries</u> [contains description of Marx's social thought-praxis], by Paul LaFargue, 148
 <u>Marx S Inferno</u>: The Political Theory of Capital, by William Clare Roberts [cites the categorial ser<u>ies ideo</u>logies of Proudhon and Fourier], 144
 <u>Marx Without Myth</u>: A Chronological Study of his Life and Work, by Maximilien Rubel and Margaret Manale [detailed, temporally-ordered biography, describing Marx's activities in their [micro-]historical sequence], 5, 39-40, 41n., 42, 45-46, 48

*The Mathematics of Life*, by Ian Stewart [includes a characterization of heuristics, as opposed to algorithms], 140

<u>Mathematics</u>: The Loss of Certainty, by Morris Kline [articulation of an historical, cultural, social, and demystified account of mathematics], 7, 211 <u>Mathematical Thought from Ancient to Modern Times</u>, by M. Kline [articulates an historical/cultural/social demystified view of mathematics], 211 L

 $\mathbf{M} \neq \mathbf{C} \langle \begin{bmatrix} \mathbf{L} \\ \mathbf{O} \end{bmatrix}$  ...  $\mathbf{P}$ ...  $(\mathbf{C} + \mathbf{c}) \neq (\mathbf{M} + \mathbf{m})$  [praxiogram: **1** whorl, industrial-capital repro.-process, circulation/production/profit moment<u>s</u> <u>explicit</u>], 21-23

 $\mathsf{M}\_\mathsf{C}\_\mathsf{M'} \text{ [praxiogram; abstract, <u>only-</u>circulation<u>s</u>-sphere-<u>explicit</u> model for capital-praxis, inverting abstract <u>Commodity-simple-circulations</u> formula], 23, 204 ... \\ \mathsf{M}\_\mathsf{C}\_\mathsf{M'}\_\mathsf{C'}\_\mathsf{M''}\_\mathsf{C''}\_\mathsf{M''}\_\mathsf{C''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M''''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}\_\mathsf{C'''}\_\mathsf{M'''}\_\mathsf{C'''}$ 

...M—C...P...C'—M'... [praxiogram; 1 whorl of industrial-capital repro., circulation & production, abstracting Labor-Power & Other inputs], 22-23, 204 M—M' [finance-capital "circuit"; Marx: capital's "most externalized and most fetish-like form"; possible dead end in cognitive descent to capitalism's «*arché*»], 22 <u>Dialectic: Users' Manual. Edition 2.04 June 2022</u> by Karl H. Seldon, for Foundation <u>Encyclopedia Dialectica</u> [F.<u>E.D.</u>]  $\underline{\mu} \text{ [solves for unsolved algebraic term } \underline{\mathbf{g}}_{\text{MON}} \underline{\partial} \mathbf{l} = \underline{\mathbf{g}}_{\text{MU}}; \mathbf{7}^{\text{th}} \text{ axiomatic } \underline{arithmetics} \text{ for dialectic category in their } \underline{ed} \text{ ean dialectic progression}], 118, 121-122, 131$  $\mu_{k}(\tau) \otimes \underline{\mu}^{o}_{k} \otimes \underline{\mu}^{o}_{\underline{\Sigma}_{n}} \underline{u}_{n} \underline{u}^{o}_{n} = \mu_{k}(\tau) \underline{\mu}^{o}_{k} \oplus \underline{\Sigma}_{n} \underline{u}_{n} \underline{u}^{o}_{n} \text{ [generic quantified metrical unit arithmetical qualifier, also state-variable or control-parameter qualified],}$ 

- $\mu^{o}$  [modern rendering of <u>gen</u>eric <u>qual</u>itative-unit/«<u>µo</u>nad» syncopated symbol from Diophantus of Alexandria's <u>The Arithmetica</u>, circa ¿250 C.E./B.U.E.?], 2  $\mu^{o}_{1\underline{u}^{o}_{1}}$  [<u>E.D</u>. <u>µ</u>\_dialectical-arithmetic sign usually <u>E.D</u>.-assigned to the arithmetical <u>qual</u>ifier for the, syncopated, "sec." <u>µ</u>etrological unit; note fractality], 129
- $1 \underbrace{\mu^{o}}_{1 \underbrace{\mu^{o}}_{2}} \underbrace{[\underline{E}.\underline{D}, \underline{\mu}]}_{2}$  dialectical-arithmetic sign usually  $\underline{\underline{E}}.\underline{D}$ .-assigned to the arithmetical <u>qualifier</u> for the, syncopated, "gm." <u>u</u>etrological unit; note fractality], 129
- $\begin{array}{c} \mathbf{1} \underline{\mu}^{\mathbf{0}}_{\mathbf{1} \underline{\mu}^{\mathbf{0}}_{\mathbf{3}}} \begin{bmatrix} \underline{E} \underline{D} \\ \underline{\mu} \end{bmatrix}_{\mathbf{2}} \text{ dialectical-arithmetic sign usually } \underline{E} \underline{D} \text{ -assigned to the arithmetical } \underline{qual} \text{ if if } \text{ for the, syncopated, "cm." } \underline{\mu} \text{ etrological unit; note fractality], 129} \end{array}$
- [x], ⊗, <x> [generalized multiplication/product-tion/interaction signs; 'meta-potent'/'hyper-potent' for NQ meta-numbers, as they model onto-dynamasis; for the
   (1) generic, (2) ≈synchronic, and (3) diachronic contexts, respectively, otherwise notated by ⊠, ⊗, and ⊗, respectively], ubq.

negation [the not-ification operation], 10, 27, 49, 57, 65, 82, 97, 99, 101-102, 138, 148, 191

negation, abstract [category of [Boolean] negation operations that purportedly produce *abstract nothingness* when applied to their operands], 27, 49, 138, 191 negation, *«aufheben»* [category of negation operations that unifiedly <u>negate</u> and <u>conserve</u> their operands, by <u>elevating</u> them in scale/complexity], 57, 99, negation, determinate [operation *not*-ifying <u>only some/not all</u> determinations of their operands, giving <u>not</u> nothingness but new concrete determinations], 49, 65 [self-]negation of the [self-]negation [a negation operation operation <u>operation</u> <u>operation</u> <u>operation</u> <u>operation</u> <u>operation</u>, self-reflexively upon [the result of] its previous negation operation], 97, 99 negation, self- [of a negation operation that applies to itself, or of an [ev]entity which, e.g., determinately, self-operates; self-acts], 65, 82, 97, 99, 101 negativity [the <u>quality</u> of **not**-ness; of limited-ness, of **not-all**-ness], 27

negator [an operation/operator which negates, in one of the senses of the term "negation" recognized herein], 65

negatory [having the effect of determinate [self-]negation, i.e., of a '*not*-ification' of some, but <u>not</u> of all, of the <u>specific-feature(s)</u> of the operand [ev]entity], 65 Newton, Isaac [founder of modern, mathematico-science; co-discoverer, with Leibniz, of integrodifferential calculus; "law" of gravity discoverer], 138 Newtonian [qualit<u>ies</u> recalling those of, or continuing/extending, the work and view<u>s</u> of, Isaac Newton], 126

nonlinear [*not* rectilinear; curvaceous; of integrodifferential equations: equation with its function-<u>unk</u>nown and/or the derivative(s) of that function-<u>unk</u>nown of any "order" of differentiation/integration, occurring/present in (a) "degree(s)"/power(s) other than the power equal to **1**], 28, 126, 138

nonlinearity [integrodifferential equation context: <u>quality</u> of such an equation due to its function-<u>unknown and/or its derivative(s)</u> of any "order", occurring/present in (a) "degree(s)"/power(s) other than **1**], 137, 210

non-meta-genealogical [not having the character of a non-chromosomal lineage], 146

non-standard models [" $\underline{N}$  atural" numbers context: any less-familiar interpretation of a first-order-logic axioms-system for the **N**], 9, 112, 115, 206, 208 nothingness, abstract [the spurious/void product of abstract negation operations], 65

not-ness [qualit(y)(ies) resulting from (a) [e.g., determinate] 'not-ification' operation(s)], 27, 49

<u>Non-Zero</u>: The Logic of Human Destiny, by Robert Wright [partly-Chardin-inspired; recounts the global progress of human social formation], 85, 90 <u>Number Systems</u>, by Fomin, S. V. [booklet addressing arithmetical expressional economy as a function of base numerals count], 110

**n** [variable representing an[y] element of the space or set **N**].

N [the space or set of the so-called "Natural" numbers], 10-11, 13, 17, 61, 111-117-124, 127, 138, 206

**N**, or **N** [arithmetical axiom<u>s</u>-system for the "<u>N</u>atural" number<u>s</u>, w/<u>many</u> "1st-order logic" and <u>some</u> "2nd order logic" axiom<u>s</u>] 61, 111-112, 117, 138, 206 **N** [double-underscored: arithmetical axiom<u>s</u>-system for the "<u>N</u>atural" number<u>s</u>, with <u>only</u> "first-order logic" axiom<u>s</u>], 5, 61, 111-112, 114, 116-120, 206

 $\frac{\mathbb{N}^{2^{\mathbf{v}}}}{\mathbb{N}} = \frac{\mathbb{N}^{2^{\mathbf{v}}}}{\mathbb{N}} = \frac{\mathbb{N}^{2^{\mathbf{v}}}}{$ 

Normal State Control in the space or set,  $\mathbf{Q} = \{ \mathbf{L}, \mathbf$ 

118, 120, 139-142, 144-145, 148, 150-151, 157-158, 161, 166, 169, 171, 173, 181, 183-185, 190, 192, 198, 206, 208

N Q [1st category of axiomatic arithmetics explicitly for modeling categorial dialectic in the ED ean progression thereof, basing the Q dialectical method], 120

N<sup>Q</sup><sub>n</sub> [an[y] element of space/set N<sup>Q</sup>; meta-number variable ranging over all elements of N<sup>Q</sup>: N<sup>Q</sup><sub>n</sub> ∈ N<sup>Q</sup>, ∀n ∈ N], ubq.

N<sub>a</sub> [that subset of the "Real" numbers that corresponds to the "Natural" numbers, «aufheben»-included in/elevated into the "Real" numbers space], 121

 $\bigcup_{\mathbf{N}} \underbrace{\mathbf{U}}_{\mathbf{N}} [category: 1st-order axiom\underline{s}-system\underline{s} of qualo-quantitative dialectic arithmetic\underline{s} for <u>quantifiable</u> [`°'] endo-categorial-<math>\underline{\mathbf{U}}$ nit<u>s</u>' <u>qualifiers</u>,  $\underline{\mathbf{u}}^{\circ}_{\mathbf{n}}$ , w/'<sub>n</sub>' spanning **N**].

 $\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}^{\mathbf{v}}$  [an[y] element of space/set  $\mathbf{U}$ ; meta-number variable ranging over all elements of  $\mathbf{U}$ :  $\mathbf{u}_{\mathbf{u}}\mathbf{u}_{\mathbf{u}}^{\mathbf{v}} \in \mathbf{U}$ ,  $\forall \mathbf{n} \in \mathbf{N}$ ].

## **N** $\models$ **W** $\models$ **Z** $\models$ **Q** $\models$ **R** $\models$ **C** $\models$ **H** $\models$ **O** [nested/*«aufheben»-containments* sequence for the <u>standard</u> number-spaces], 138

Octonions [axiomatic hypercomplex number space, denoted by **O**, with a basis of **8** qualitatively-different mutually-orthogonal [*qual*itative] units], 137-138 Octaves [a version of what Cayley called Octonions, a version that was discovered by Graves], 137

ontic [ontological; implying <u>real</u> kind/ontological, <u>qual</u>itative difference<u>s</u>], 2, 7-8, 26, 28-30, 43, 75, 80, 82-84, 86, 91, 98, 101, 110, 119, 180, 207 ontic state [ontological state; ontology state; cumulum "sum" of ontic categorograms defining a <u>Domain</u> at a stage of a dialectical categorial progression], 84, 110 onto(<u>s</u>) [short for '<u>onto</u>logical categor(y)(<u>ies</u>)], 180

onto-dynamasis [the process of the spawning of a new kind of units. constituting a new, previously <u>unprecedented ontological or kind-of-being category</u>], 2, 146 ontological history[-model] [a dialectical meta-model which "captures" the history of a **Domain** epochally and ontic-categorially], 81, 91, 97, 100, 110 ontological state(s) [ontic state; ontology state; cumulum "sum" of ontic categorograms defining a stage of a **Domain**], 78. 80, 147, 172 ontologicity [the <u>quality</u> of an <u>idea</u>-object or of a sensuous-object as constituting a unit of a <u>qual</u>itatively distinct <u>kind</u>-of-being category-of-units/«arithmos»], 141

ontology [taxonomic, categorial, systematically-ordered inventory of the kinds of units extant in a given stage of a given **D**omain], ubq. ontology-history [history of a **D**omain expressed via the categories of kinds of units extant in each of its epochs], 80-81, 83, 85-86, 97, 100-102, 104 ontology-history-modeling method [the Q dialectical method as a method of "capturing" the ontology-history of a given **D**omain], 100

ontology-state [ontic state; ontological state; cumulum "sum" of ontic categorograms defining a stage of a **D**omain], 80, 83, 84-85, 102-103 onto-mass [the [average] aggregate <u>physical mass</u>, e.g., in **gm**. metrological units, of all <u>physical units</u> inhering in a given onto-type during a given epoch], 174 onto-type [the <u>kind</u> of being(s) inhering in a given ontological [sub-]category of the <u>Encyclopedia Dialectica</u> Universal Taxonomy], i-xii ordinality [the <u>qual</u>ity experienced by human cognition when observing discrete consecutive order, e.g., Peanic order], 26, 111, 114-115 organicity [the <u>qual</u>ity experienced by human cognition when observing an organic system [cf. Marx, <u>Grundrisse</u>, p. 278; cf. Bahm]], 211 Orwell, George [author, prescient 1949 novel <u>Nineteen Eighty-Four</u>, or **1984**, envisioning a global system of ever-warring state-capitalist dictatorships], 208

• [an[y] element of the standard number<u>s</u>-space/number<u>s</u>-set of the  $\underline{O}$  ctonion<u>s</u>,  $O: o \in O$ ].

Parmenidean [qualities recalling those of the ancient work and views of Parmenides], 2, 103-104

Peano, Giuseppe [originator, with Dedekind, of the axiomatization of "<u>N</u>atural" number<u>s</u> arithmetic, e.g., via the "Peano Postulate<u>s</u>"], 9, 111-112, 114, 206 Peanic [recalling the qualities defined by the first order logic axioms for the "<u>N</u>atural" number<u>s</u> as formulated by Peano and Dedekind], 112, 114, 206-207 peanicity [the <u>qual</u>ity of Peanic ordinality], 114, 206

phenome, human [entire <u>ide</u>ational, cultural superstructure of non-gene-encoded human meme<u>s</u>, built on the base of the human genome], 7, 20, 110, 208, 210 <u>phonogram(s)</u> [a unit of written symbol representing, or whose "value" is, a sound of human speech], 44, 49, 99, 116, 146 phonogramy [writing using <u>phonograms</u>, e.g., ordinary English phonetic-alphabetic writing].

<u>pictogram[ic]</u> [[nature of] a unit of written symbol representing, or whose "value" is, a stylized/caricatured human retinal image], 10, 44, 49, 61, 116 <u>pictography</u> or pictogramy [writing using pictograms], 9

Planetary Fitness Test, Meta-Darwinian [convergence of the pre-history [Marx] of a human[oid] planet, to a test of its phenomic/genomic viability], 75 planetary «poleis» [pl.; the F. E.D. predicted plurality of slave-less planetary 'polises'; political-economic-democratic, [meta-]human-social formations], 75, 78 planetary polis [the F.E.D.-predicted Terran future, slave-less, political-economic-democratic, global [meta-]human-social formation], 5, 75, 78, 96, 205 planetary poli [neologism, pl.; a plurality of slave-less, planetary 'polises', political-economic-democratic, planet-wide [meta-]human-social formations], 78 Plato[n] [ancient Greek mystic-dialectic philosopher of the three «arithmoi»; later, of «autokinesis»], 2, 7-8, 27-28, 80, 83, 104, 111, 146, 153, 208 Platonian [qualities recalling, or continuing/extending, those of the work and views of Plato[n] of [Ancient] Athens], 103-104, 120, 152-153, 196 polarity [physical opposites, e.g., the 2 mutually-repelling poles of a bar magnet, N vs. S, used as a metaphor describing binary categorial oppositions], 211 polis [ancient Gk.: city-state; organized social formation/«arithmos», often of slave-owning citizens, perhaps a slaveholder democracy], 5, 45, 75, 78, 96, 205 Political-ECONOMIC DEMOCRACY [F.E.D. advocated successor-system to the present, capitalist system], 57-58, 60, 62, 205 & 205n., 209 political-economics [more revealing name for the capitalist ideological-science of economics, explicitizing its political nature], 53, 56, 150, 199, 203, 210 political economy [ideology-vitiated science of classical capital economics], 20-21, 21n., 23, 30, 35-36, 44, 49, 53, 62-64, 148, 191, 198, 203-205 positive double relative opposition [chiasma; dually-oppositional synthesis-less content-structures of Schleiermacherian so-called "dialectic"], 181-182 praxiogram [an ideographical/syncopated temporal-sequence-indicating symbol [with time advancing from left to right], describing a recurring human praxis], i-xii pre-atomic [of ontological units arising, in known cosmos-history, before the irruption of atoms as physi[c]o-ontological units], 73, 169, 207 pre-nuclear [of ontic unitg arising, in known cosmos-history, before the irruption of atomic nuclei/fully-ionized atoms as ontic unitg], 76, 110, 169, 180 Principle of Metafinity [holds that no infinitizes are actual, empirical observables; that there is no such thing as "actual infinity", e.g., that finite-time, division-by-

Principle of Metalinity [holds that no infinit<u>ies</u> are actual, empirical observables; that there is no such thing as "actual infinity", e.g., that finite-time, division-byzero singularit<u>ies</u> in dynamical equations/functions regularly correspond, <u>not</u> to objective infinite metrological values, as such have never been observed in human experiences' known history, but to metafinite neo-ontology self-irruption(s); Nature abhors [<u>quant</u>itative] infinity; infinity is <u>un</u>manifest].
proto-human [incipient, protoic human[oid]s' social-animal mere societ<u>ies</u>, as they existed prior to their [self-]meta-socialization], 73

protoic [archéic/incipient/prototypal form of the units/*«monads*» of an emergent/irruptant new/<u>um</u>precedented onto-type/ontological category], 21. 79. 96, 191 <u>proto</u>-state-capitalis[ms][t] [nation-states ruled by state-bureaucratic ruling classes post-liquidation of private capitalist, etc., ruling classes, as <u>a</u>autark<u>ies</u>, not yet able to compete in world market trade, e.g., relying on vast national territories & resources. Examples: Stalinist Russia; Maoist China; contemporary North Korea], 58 <u>psych</u>ohistorical [of historical theor<u>ies</u> about humanity(<u>s</u>) that admit the <u>materiality</u> of human <u>psyches</u> and phenomes], 2, 7, 62, 86, 125, 170, 182-183 <u>psych</u>ohistorically [by means of, or <u>explicitly including, psych</u>ohistorical considerations], 31

Psychohistorical Dialectics [4th ideo-ontological category of the <u>E.D.</u> dialectic of the dialectic itself; redressing errors/disagreements among/reconciling/unifying

psychohistorical theories, e.g., those arising on the same topic at different times/places in history], 182-183, 191, 198, 208

psychohistorical material [phenomic psycho-artifacts, including language artifacts, recognized in their historical materiality and subject-materiality], 86, 208 psychohistory [mathematical human-history-modeling, taking the ingredience, in that history, of human psyches and of human phenomes explicitly into account;

science-fictional science invoked by Isaac Asimov in his *Foundation* novels; [f]actual proto-mathematical dialectical science founded by Karl Marx circa 1857]. Pythagoras [ancient Greek mystico-mathematico-scientific philosopher, holding that "All is «Arithmos»" and ordering «arithmoi» via tables of opposites], 208 Pythagorean [qualities recalling those of the ancient work and views of Pythagoras and/or of his "followers", the Pythagoreans], 9

symbol content, respectively, and otherwise notated by  $[\ldots], (0, \ldots), (1, 0)$ , and  $(\ldots)$ , respectively], *ubg*.

**D** or  $\mathcal{G}_{p}$  [social formation(s) Domain; predicted 'socio-ontological category'/«arithmos» of <u>democratically self-governing</u> planetary polis units], 4, 74, 95, 204

qualifier(s), arithmetical [qualitative units integral to higher EDean axioms-systems of arithmetics for dialectic; non-quantitative, sometimes quantifiable meta-numeral *ideo*graphical symbols as integral elements in mathematics-of-dialectics axioms-systems], 83, 116, 118-119, 121-123, 128, 138

qualitativity [the [meta-]quality of being qualitative, as opposed to 'quantitativity', that of being "purely"-quantitative], 28, 119 qualo-fractal(s) [quanto-][finitary,] ["purely"-qualitative, finitary, scaled similarity regresses, e.g., Q categorial progressions and also the actualities so-modeled],

2, 26, 28, 61, 72, 117-120, 156, 161, 174, 180, 198, 202

qualo-quantitative [descriptions, e.g., dialectic-algebraic models, involving both arithmetic qualifiers and arithmetic quantifiers], 10, 23, 56, 119, 122n., 138 qualo-quanto-fractal(s) [qualo-quantitative, finitary, scaled self-similarity regresses, e.g., a dialectical qualo-quantitative model and the actuality it models], 172 quantifiability [quality of an [ev]entity able to be measured/described quantitatively; a meta-number meaningfully multipliable by an arithmetical quantifier], 122 quantifier(s), arithmetical [detailed quantity-specifiers in arithmetics, opposing predicate-calculi "logical quantifiers" for none, some, or all], 10, 18, 121-123 quantitativity [the [meta-]quality of being "purely"-quantitative, as opposed to that of being qualitative or that of being qualo-quantitative], 116 quanto-qualitative [a description, e.g., a dialectic-algebraic model, involving both arithmetical quantifiers and arithmetical qualifiers], 10, 116, 119, 137

quaternions, Hamilton's [H; the 4-dimensional space or set of the kind of number-*ideas* named quaternions, developed by Willian Rowan Hamilton], 137-138 Quantum Mechanics from General Relativity, by Mendel Sachs [text with hints for an Einstein "Unified Field Theory", plus quantum theory], 180n.

**<u>q</u>** [used herein to denote the <u>gen</u>eric-context, minimally-interpreted <u>Q</u> meta-number<u>s</u>, otherwise symbolized by: <u>uba</u>.

**<u><b>Q**</u> [used herein to denote the <u>**Q**</u> meta-number<u>s</u> as interpreted for <u>systematic dialectics</u>/their  $\approx$  <u>syn</u>chronic context, otherwise symbolized by:  $\frac{3}{2}$  ], ubq.

 $\mathcal{U}$ [used herein to denote the  $\underline{Q}$  meta-numbers as interpreted for <u>historical dialectics</u>/their <u>diac</u>hronic context, otherwise symbolized by:  $\overset{\diamond}{\rightarrow}$ ], ubq.

 $\mathcal{Q}_{\mathbf{b}} \models \mathcal{Q}_{\mathbf{c}} \models \mathcal{Q}_{\mathbf{c}} \models \mathcal{Q}_{\mathbf{c}} \models \mathcal{Q}_{\mathbf{f}} \models \mathcal{Q}_{\mathbf{f}} \models \mathcal{Q}_{\mathbf{s}} \models \mathcal{Q}_{\mathbf{c}} \models \mathcal{Q}_{\mathbf{h}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \vdash [predicted] \mathcal{Q}_{\mathbf{p}} \models [predicted] \vdash [pre$ 

 $\underline{Q}_{hh}$  [1=  $\underline{Q}_{v}$ ], [denotes F.<u>E.D</u>.-predicted, presently protoic/not-known-extant cosmo-ontological category/«<u>genos</u>» that we name 'meta-humanity'], 2, 75, 78

 $\underline{\mathbf{q}}_{\mathbf{v}}$  [---)  $\underline{\mathbf{q}}_{2}$ , [*ideo-physio-*ontological category of written English s<u>Y</u>llables, mapped to 2*nd gene*ric ordinal *qual*ifier of the <u>Q</u> arithmetics for <u>dialectics</u>], 157-160

 $\mathcal{Q}_{\mathbf{y}}$  [=-|  $\mathcal{Q}_{\mathbf{hh}}$ ], [denotes the F.<u>E.D</u>.-predicted cosmo-ontological category/«<u>gen</u>os» that we name 'meta-humanity'], 75, 78

**q** [an[y] element of the standard "rational numbers" numbers-space/numbers-set, denoted by  $\mathbf{Q}: \mathbf{q} \in \mathbf{Q}$ ].

Q [constructed/extendable/potentially-infinite/finitary space or set of the "<u>ratio-nal numbers</u>", <u>'ratio-numbers</u>, or <u>Q</u>uotient numbers], 10, 11, 13, 17

Q or Q [axioms-system for the "ratio-nal numbers", as formulated via some second-order-logic axioms as well as many first-order-logic axioms], 138

Q [axiomg-system for "rational numberg" stated via 1st-order-logic axiomg only, i.e., axiomg that logically-quantify over/assert about only individual q numberg].

Q [generic space or set of "purely"-gualitative/unquantifiable arithmetical Qualifier meta-numbers, abstracting from the number-space source of their subscripts].

Q [generic 1st-order-logic-only axioms-systems for dialectic arithmetics of "purely"-qualitative Qualifier meta-numbers, abstracting subscripts' sources], 118, 130  $\mathbf{Q}$   $\mathbf{\mu}_{\mathbf{Q}}$  [denotes the <u>ED</u>ean <u>Mu</u>, or  $\mathbf{g}_{\mathbf{M}\mathbf{Q}\mathbf{N}}$   $\partial \mathbf{l} = \mathbf{g}_{\mathbf{M}\mathbf{Q}}$ , <u>quanto-qualitative arithmetics for dialectics</u>, as limited to <u>quantifiers</u> & subscripts drawn from the space **Q**].

2 [specific space or set of "purely"-qualitative arithmetical Qualifier meta-numbers for dialectical arithmetics, as limited to subscripts drawn from the space Q], 78

. Q\_ [denotes the specific dialectic arithmetics of ontological Qualifier meta-numbers, with subscripts drawn only from Q, in first-order-logic-only axiomatizations].

 $\frac{1}{2} \quad [\underline{\mathbf{q}} \text{ ualitative } \underline{\mathbf{in}} \text{ equality "neti-neti" sign: } \underline{\mathbf{x}} \stackrel{1}{\neq} \underline{\mathbf{y}} \text{ means that category } \underline{\mathbf{x}} \text{ is } not \text{ greater than and } not \text{ equal to and } not \text{ less than category } \underline{\mathbf{y}} \text{], } ubq.$ 

rate of [self-]reproduction[, sustained] [Meta-Darwinian fitness-metric: present «arithmos» onto-mass growth rate = latest period onto-mass change divided by immediately previous period onto-mass change], 170, 174

recursive [quality of repeatedly applying a procedure that generates the next value in a sequence of values from (a) preceding value(s) of that sequence], 172-173 Regenerist Cosmological Hypothesis [hypothesis holding that early, over-accelerated self-expansion of space, "Dark Energy", precipitated "Dark Matter", and will do so again in the far future, repeatedly, whenever accelerating space-self-expansion-velocity exceeds its finite limit due to space self-expansion

dilution of those levels of "Dark Matter" and 'Bright Matter' spatial concentrations that restrain that rate of space self-expansion], 173, 180

reflexion [back-bending; a bending back upon], 28, 66

reflexive [metaphorically recurvate or recurvive; bent back upon], 24, 58, 97, 114

revolution(s) [processes within [human-social] Nature which cause the irruption of new, human-social-relations ontology], 45, 53, 56-58, 149, 181, 205 revolutionary [tending to transform prevailing human social relations of human-societal [self-]reproduction to a higher negentropic state], 56-57, 62, 138, 144 Roddenberry, Gene [original creator of the Star Trek series of series], 75, 78

Revolutionary Justice: The Social and Political Theory of P.-J. Proudhon, by Robert L. Hoffman [text discussing Fourier's serialism], 144 Dialectic: Users' Manual. Edition 2. 04 June 2022. by Karl H. Seldon, for Foundation Encyclopedia Dialectica [F.E.D.] [an[y]] element of the standard, so-called "Real numbers" numbers space/numbers-set, denoted by  $\mathbb{R}$ :  $\mathbf{r} \in \mathbb{R}$ ].

**R** or **R<sup>1</sup>** [the space or set of the so-called "<u>R</u>eal" number<u>s</u>], 10-11, 13, 17, 122, 137

**R**<sup>3</sup> [the threefold, three-dimensional-number-space Cartesian Product of the one-dimensional space of the "<u>R</u>eal" number line: **R**<sup>1</sup>; **R**<sup>3</sup> = **R**<sup>1</sup> × **R**<sup>1</sup> × **R**<sup>1</sup>], 170 **R** or **R**\_ [axiomg-system for the so-called "<u>R</u>eal" numberg, as formulated via <u>some</u> second-order-logic axiomg as well as <u>many</u> first-order-logic axiomg], 138 **R**\_ [axiomg-system for the "<u>R</u>eal" numberg, formulated via first-order-logic axiomg <u>only</u>, i.e., that logically-*quant*ify over <u>only</u> individual "<u>R</u>eal" numberg], 122 **f** |**L a** |**L m** |**L p** [*«aufheben»/nested* Nature-dialectic, from pre-/sub-atomic "particle" units, to those + <u>a</u>tom units, to those + <u>m</u>olecule units...], 73 (**R**/I)  $\downarrow$  [continually up-&-down, <u>a</u>periodically-fluctuating <u>Return On</u> Investment rate as observed empirically, near the "surface of [capitalist] society" [Marx]], 63 **R**<u>L</u> [space of the "Mu" µetrico-ontological, *quanto-qual*itative, **R**-*quant*ified and ontologically-*qual*ified µetrological unit-*qual*ifier µeta-numberg], 132, 135, 137 **R**<u>L</u> [the <u>Mu</u>, or **g**<sub>MON</sub>  $\partial$ ] = **g**<sub>MU</sub>, *quanto-qual*itative axiomatic arithmetics-for-<u>dialectics</u>, as limited to *quant*ifiers drawn from the space **R**], 2, 122, 128-137 (**p**' $_{\tau}$  +  $\Delta$ **p**' $_{\tau}$  - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub> $\tau$ </sub>(**I**<sub>0</sub> +  $\Delta$ **I**<sub> $\tau$ </sub> - **d**<sub>0</sub>( $\tau$ ) - **d**<sub></sub>

R U [specific quanto-qualitative dialectical arithmetics for ontic Unit meta-numbers, w/quantifiers from R, 1st-order-logic-only axiomatizations], 122, 131

Sachs, Mendel [physicist; framed solution to 'Einstein+ Problem' -- a "unified field theory" for gravity & electromagnetism, but also for <u>quant</u>um theory], 180n. Schleiermacher, Friedrich [Christian religionist/ideologue, philosopher/capitalist-ideologue, proponent of a dually-dualistic, synthesis-less "dialectic"], 181n. Schleiermacherian [<u>qualities</u> recalling those of the work and views of Friedrich Schleiermacher], 181

Schmandt-Besserat, Denise [co-discoverer of the clay token theory of the genesis of cuneiform writing in ancient Mesopotamia], 121

self-application [the application of an operation to that operation itself, or to a result of previous application of that operation, e.g., as a <u>dialectic</u>al self-reflexion]. self-«*aufheben*» [when an [ev]entity or «*arithmos*» <u>self</u>-interacts, producing ontically new meta-units by an «*aufheben*» self-meta-unit-ization of its own units]. self-«*aufheben*»-ation [the process of an <u>ide</u>o-[ev]entity's, or of a <u>physio-[ev]entity</u>'s, application, to itself, of [itself as] an «*aufheben*» operation].

self-critique [immanent critique; critique by oneself of one's own theor*ies*/model*s*; implicit critique of a theory/model by/according to itself; application of a theory/model, as an operation, to itself; an operation of determinate-negationing critique, applied to the view/theory from within which that critique

operation logically arises/is implied; self-application of a theory/model as an operator], 2, 24, 28-31, 53, 58, 65-66, 68, 75, 104, 199-200

[self-]involution [[[self-]iterated] action of a value, or of an [ev]entity, on itself; raising equational-<u>un</u>known mathematical symbols to powers  $\neq 1$ , e.g.,  $\mathbb{N}^{2^{-1}}$ ] self-operation [operation of a value upon that self-same value itself; constitutes <u>non</u>linearity if the operation/operator is an equational <u>un</u>known].

self-recursive [*qual*ity of a recursive procedure whose most-recent result is self-iteratively applied to itself, e.g., the calculative procedure encoded by **N** ], 173 self-reflexion [[action <u>of</u> self] bending back <u>upon/to</u> self; demystified "*«karma»*" or "*«karma yoga»*" of *phys*ical [ev]entit<u>ies/«arithmoi</u>»]. self-reflexive [exhibiting the *qual*ity of, or a *qual*ity analogous to, that of a[n] [it]self whose activity bends back around upon/to [it]self; 'boomerangish']. self-reflexive function(s) [name of *ideo*-ontological category in which any "function of itself" inheres; a 'function/argument identical'; an 'operation/operand identical'; a function which begins by operating upon itself, as its own "argument", to deliver its first function-value, and whose each

next function-value results as self-operation of its immediately-preceding function-value, e.g., the <u>anature-dialectic meta-model</u> [2].

self-reflexivity [*qual*ity of *ide*a-objects/*ide*a-[ev]entit*ies/ide*o-ontology, and of *exo*-objective *physio*-[ev]entit*ies*, which self-interact/act-back-on self; *karmicity*]. self-refluxion [the flowing back to/upon [it]self of the action of a[n] [it]self, or of a[n] [it]self as itself an action; as an activity-entity, or 'event-[en]ity'; *karmicity*]. self-refluxivity [*qual*ity of *ide*a-objects/*ide*a-[ev]entit*ies/ide*o-ontology, and of *exo*-objective *physio*-[ev]entit*ies*, whose action flows back to/upon self; *karmicity*]. self-refluxivity [*qual*ity of *ide*a-objects/*ide*a-[ev]entit*ies/ide*o-ontology, and of *exo*-objective *physio*-[ev]entit*ies*, whose action flows back to/upon self; *karmicity*]. self-ree-entry [action of an *ide*o-[ev]entity or of a *physio*-[ev]entity re-appearing in its own interior, as in *'The Power-Set «Aufheben» Product of a Set with Itself'*]. self-reproduction [operation of an [ev]entity/*«arithmos»* during a period so as to yield more of its own onto-mass at period-end], 39, 41, 82, 170, 174, 182 Self-Resurging Big Surge Cosmological Hypothesis [*aka* 'Regenerist Hypothesis'; that early, over-accelerated self-expansion of space, i.e. "Dark Energy", precipitated "Dark Matter" gravity as space-time deformation, & will do so in the future, repeatedly,

whenever space-expansion velocity-acceleration reaches/exceeds its finite limit], 172, 180

self-subtraction [subtraction, from a value, of that self-same value itself, e.g., forming empty-zero,  $\mathbf{0}$ , or, in some axiomatic contexts, full-zero,  $\mathbf{0}$ ], 137-138 sila [ancient near-Eastern volumetric unit of measure name, related to  $\underline{\mathbf{m}}$ .<sup>3</sup> and  $\mathbf{1}\mu^{\mathbf{0}}_{3\mathbf{u}^{\mathbf{0}}}$ , cited in writings by Denise Schmandt-Besserat], 121

singularity [that which arises when a division-by-zero arises in an [<u>un</u>]solved dynamical equation, and/or in its solution-function, for a finite value of the <u>t</u>ime, t, independent variable, often associated, in the actualities modeled by such equations, w/<u>local</u> destruction of old ontology, and irruption of new ontology], 2, 62, 75, 137-138, 208

singularity, cognitive-developmental [irruption of revolutionary new kinds of <u>ideo</u>-ontology within a human[oid] phenome], 208 singularity, division-by-zero [singularity via (a) zero denominator(s) arising in an [<u>un</u>]solved dynamical equation/solution-function, for a finite t value], 138 singularity, infinit[y][e] [kind of singularity arising when a division-by-zero arises in an <u>un</u>solved dynamical equation, and/or in its solution-function, for a finite value of the time, t, variable, under the contra-axiomatic assertion that, e.g., for any  $\mathbf{r} \in \mathbf{R}$ ,  $\mathbf{r}/\mathbf{0}$  "="  $\infty$ , although  $\infty \notin \mathbf{R}$ ], 62, 137

singularity, metafinite [resonance] [division-by-zero singularity in dynamical equations/functions, associated, in **D**omain modeled, with «aufheben»-irruption of meta-units/new ontology, cognized via (a) new [*ideo*-][*physio*-]ontological categor(y)(*ies*)], 2, 75

Smith, Tony [author of *The Logic of Marx's Capital*; clarifier of Marxian/Hegelian systematic dialectic, vs. historical dialectic, and of much else of note], 18 Smolin, Lee [author of *Scientific American* article entitled *"Space: The Final Illusion"*, and of much else of note], 170n.

social forces of production [human[ized] [*ideo*-][*physio*-]ontological products that tend to accelerate the self-reproductive rate/*fitness* of humanity], 56, 62-63 *Dialectic: Users' Manual.* Edition 2.04 June 2022. social formation(s), human-[supra-geological humans-made noospheric strata; processes of their genesis], 5, 64, 75, 86, 91, 95-96, 174, 182, 205

social relations of production [that side of the historic self-development of [the] human social-individual(s) initially fit (appropriate) to appropriate their social forces of production at a given stage in their historical development, as the other side of the historical self-development of (the) social individual(s); but, later, with their further development of the social forces of production -- as facilitated by those very social relations of production themselves - those social relations become <u>un</u> fit to further appropriate/manage that further-developed societal self-force of human-societal self-re-production], 36, 56, 61, 63, 86, 202-203 societal self-re-production [annually-accounted process of society as input to itself, then transforming itself, to produce its augmented self as its own output], 7 socio-ontological [descriptor reflecting a non-reductionist recognition of human-social constructs as constituting ontological categories in their own right], 31-32,

43, 45-46, 48, 50, 86-88, 91, 95-96, 199-200, 202, 204-205

socio-ontological history-model [diachronic dialectic model of the succession of socio-ontology in a human-social **D**omain of the Universal Taxonomy], 91 Socrates [mentor of Plato; early elaborator of dialectical method in philosophy, e.g., his *«elenchus»* version of Zenoan indirect [dis]proof], 8, 27-28, 83, 208 spandetrons [quasi-discrete *«monads»,* or units, of space per the Regenerist Cosmological Hypothesis, which continually self-replicate, **=** "Dark Energy"], 170 species, dialectical [*«aufheben»*-linked onto<u>s meta-unit-ically</u>-subsumed in/by a *«genos», e.g., «arché»*-category/<u>contra</u>-category/<u>uni</u>-category], 152, 196, 207 spirally [by means of a multi-whorl, a whorling approximately confined to a plane, or rising, helically, up out of a plane], 84

Standard Model of Particle Physics [currently-prevailing theory of the pre-/sub-atomic cosmo-ontology, held by the physics community], 170, 173, 180 Star Trek [human-progress-envisioning, televised science fiction series of ser*ies*, originally created by Gene Roddenberry], 96

state-capitalis[ms][t] [Orwellian 'national supercorporations', competing w/other capitals/capitals' in global trade; "mixed" economies; state capital-ownership & control of other capital; hybrid ruling class, bureaucrats serving Big Capital. Examples: Nazi Germany; Japan; China; USA, *esp.* in economic crises], 5, 58, 60, 209 sub-domain(s) [a universe of discourse wholly contained within/less inclusive of units than a full **Domain** of the <u>ed</u>ean Universal Taxonomy], 82, 103-104, 208 sub{w}-system(s) [(a) <u>qualo-quanto</u>-fractal [meta-]dynamical super-system(s) with  $1 \le w \in W$  levels/scales of dynamical <u>sub</u>-systems], 123

sub<sup>{n}</sup>-universe( $\underline{s}$ ) [a component of/universe within the <u>E.D.</u> Universal Taxonomy, with  $1 \le n \in \mathbb{N}$  levels/qualo-fractal-scales of nested <u>sub</u>-universes], 210 successor system, to the capitalist system [per F.<u>E.D.</u>, this higher successor system is 'Equitist Political-<u>ECONOMIC DEMOCRACY</u>'], 56, 60, 182, 205 syncopation( $\underline{s}$ ) [word-abbreviations, especially when used to represent arithmetical/gebraic variables, as in Diophantus's *circa* 250 C.E./B.U.E. <u>Arithmetica</u>], 123 syncopated [abbreviated; abbreviated words/names used to represent arithmetical/algebraic variables and constants, *a la* Diophantus of Alexandria], 2, 8, 128 systematic dialectics [the more-<u>synchronic speci</u>es of <u>the dialectic of the dialectic itself</u>; presentation of a present of a <u>Domain</u>'s, e.g., meta-unitic ontological-

categorial *«aufheben»* relations, abstracting from "longitudinal"/*dia*chronic/historical-dialectical *«aufheben»* processes of formation/development that, e.g., by recurrent 'meta-unit-izations', led to those, e.g., meta-unitic, *«aufheben»* relations], 9, 19, 182-183, 208

<u>Sound and Silence</u>, by Peter Aston and John Paynter [text reflecting the complex unity of the opposites sound and silence in each musical note], 162 "Space: The Final Illusion", **Scientific American**, by Lee Smolin [article foreseeing <u>quant</u>ized space as explanation for <u>quant</u>um entanglement], 170 <u>So</u> [finitary "set of all subsets", or "power set", 2<sup>u</sup>, of a <u>U</u>niversal set, <u>U</u>, for a finitary "<u>u</u>niverse of discourse"; the *«arché»* of a '<u>Finitary Set of All Sets</u>'], 15

**2<sup>S</sup>** [the finitary "power set", or "set of all subset<u>s</u>", of the finitary set **S**], 15

s'/(c + v) [Marxian core rate of profit ratio; period <u>net</u> ['] <u>s</u>urplus-value + (<u>c</u>onstant capital plus <u>v</u>ariable capital), in falling [ $\downarrow$ ] mode], 63

- $s(n) \equiv n + 1$  [Peano <u>s</u>uccessor vestigial-*«aufheben»*-function, applied in the Peano/Dedekind first order logic axioms for the so-called "Natural" numbers], 111
- $\underline{\mathbf{S}}^{2} = \underline{\mathbf{S}} \cup \underline{\mathbf{2}}^{\underline{\mathbf{S}}}$ [equation-definition of 'Power-Set «Aufheben» Product of a Set with Itself', used in the '<u>Finitary Set of All Sets</u>' model of <u>generic dialectic</u>], 15  $\underline{\mathbf{S}}_{\tau} = \underline{\mathbf{S}}_{0}^{2^{\tau}} = (\underline{\mathbf{2}}^{\underline{\mathbf{U}}})^{2^{\tau}}$ [the '<u>Finitary Set of All Sets</u>' self-reflexive function self-involutionary self-iterative math. model of <u>generic «aufheben»-dialectic</u>], 15

**20** – **(2)** [the <u>Finitary Set of All Sets</u> sen-renexive function sen-involutionary sen-interative math. model of <u>generic</u> «aufmeben»-<u>alatectic</u>], 15

S IL V IL M IL A [Scalars --) Vectors --) Matrices --) ... nested «aufheben»-containment ideo-ontological-categorial-progressional sequence], 156

ternary [three-fold], 110

tetrad [an «arithmos» containing exactly four units], 110, 142, 183-184

tetradic [names the *qual*ity experienced by human cognition when encountering instances of four-fold-ness], 110, 142, 183-184

tetradic dialectical function [*«arché»*-category-symbol self-involution, *generating new category-sign counts*, both in powers of **4**], 119, 142, 183-184 text box image [a box-bordered image file, e.g., a JPG file, embedded in a primarily textual digital document, and containing entirely textual content], 224-227 texted dialectogram [an embedded dialectogram <u>pictogramic image</u> which includes texted call-outs and/or annotations], 224

texted qualo-fractal diagram [an embedded [finitary] qualo-fractal pictogramic image which includes texted call-outs and/or annotations], 225

Thatcher, Margaret [social atomist; denied human society even exists; stated <u>racist theory</u> of Nazi racism as a neo-racist, denigrating the German "race"], 126n., triad [an *«arithmos»* containing exactly three units], *ubq*.

triadic [the *qual*ity experienced by human cognition when encountering instances of three-fold-ness], ubq.

triadic dialectical function [*«arché»*-category-symbol self-involution function, *gene*rating count<u>s</u> of new ontic category-symbols in powers of **3**], 75, 110, 142, 148, 169, 183

T. S. Eliot [20th century critic/poet of 'descendence-phase' capitalism, albeit unwittingly so; literary classicist, royalist and anglo-Christian], 182 <u>T. S. Eliot's Dialectical Imagination</u>, by J. S. Brooker [text describes T. S. Eliot's, mystical, bourgeois dialectics, sourced from Hegel via Bradley], 182 Ty Franck [co-author, with Daniel Abraham, of <u>The Expanse</u> series of science fiction novels], 78

Tyson, Neil de Grasse [astrophysicist; described "Dark Matter" as "unknown-source gravity", and "Dark Energy" as "unknown-source anti-gravity"], 169n.,

*ubq*. [abbreviation for the word <u>ubiq</u>uitous], *ubq*.

U.E. [Unification Era; F.E.D.-predicted/pre-constructed coming era in which Earth's humanity creates a unified political-economic-<u>democratic</u> planetary polis], 5-6 uni-category [ontic category whose units are *«autheben» <u>uni</u>tications of earlier presented/opposed ontic units]*, 28, 32, 51, 66, 72, 75, 101, 110-111, 182 Unified Field Theory, Einstein's [Einstein's sought principle/single-equation showing the hidden, deeper unity of the gravitic and electromagnetic fields], 180 Unified Theory of Universal Dialectics, F.E.D.'s [FED ean theory unifying 'vertical' & 'horizontal' <u>dialectic</u> via *«autheben»* principles],153, 196, 210 unitary [about units; of the nature of a unit; aiming toward unity], 114, 126

unitic [exhibiting the characteristics of an individual constituent of an ontic *«arithmos»*, ontological category, or "number" [of qualitative units]], 29, 96, 128 <u>Dialectic: Users' Manual. Edition 2. 04 June 2022</u>. unit(s) [(an) individual constituent(s) of an ontic or ontological «arithmos», ontological category, or "number" [of qualitative units]], ubq.

Universal [Ontological] Taxonomy, <u>E.D.</u> [The <u>E.D.</u> classification/categorization of all <u>present</u>ly-<u>known physio</u>-, <u>ideo</u>-, and <u>ideo-physio</u> unit<u>s</u>/«arithmoi»]. <u>unquantifiablility</u> [feature of «<u>a</u>sumbletoi» arithmetical <u>qual</u>ifier<u>s</u> which, by axiom, can't be meaningfully multiplied/modified by arithmetic <u>quant</u>ifier<u>s</u>], 28, 116 <u>U</u> [<u>U</u>niversal set; set of all element<u>s</u>/unit<u>s</u>/«monad<u>s</u>» for/of a given, finitary "universe of discourse", or a given, finitary <u>D</u>omain, of <u>E.D</u>. Universal Taxonomy], 15

 $2^{\underline{U}}$  [the finitary power-set, or set of all subset<u>s</u>, of a given <u>**D**</u>*omain*'s finitary <u>U</u>niversal set <u>U</u>], 15

U or U [generic space or set of quantifiable arithmetical Unit-qualifier meta-numbers, abstracting from the number-space source of their quantifiers/subscripts]. U [generic 1st-order-only axioms-systems for dialectic arithmetics of quantifiable arithmetical Unit-qualifier meta-numbers, abstracting quantifiers' source], 129 u U n [generic 1st-order-only axioms-systems for dialectic arithmetics of quantifiable arithmetical Unit-qualifier meta-numbers, abstracting quantifiers' source], 129 u U n [generic 1st-order-only axioms-systems for dialectic arithmetics of Quantifiable arithmetical Unit-qualifier meta-numbers, abstracting quantifiers' source], 129 u U n [generic 1st-order-only axioms-systems for dialectic arithmetics of Quantifiable arithmetical Unit-qualifier meta-numbers, abstracting quantifiers' source], 129 u U n [generic 1st-order-only axioms-systems for dialectic arithmetics of Quantifiable arithmetical Unit-qualifier meta-numbers, abstracting quantifiers' source], 129 u U n [generic 1st-order-only axioms-systems for dialectic arithmetics of Quantification of U: u U n of U n

Vernadsky, Vladimir [co-promulgator, with mystico-scientific theorist/Catholic ideologue/"heretic" Pierre Teilhard de Chardin, of the "noosphere" concept], 86

Wright, Robert [author of Chardin-influenced book, <u>Non-Zero</u>: The Logic of Human Destiny, exploring history/recurring patterns of human-social formation], 86  $\mathbf{W}$  [an[y] element of the standard "Whole numbers" numbers-space/numbers-set  $\mathbf{W}$ :  $\mathbf{w} \in \mathbf{W}$ ], 102

W [space of "Whole numbers", integrating the empty zero numeral, **0**, with numerals derived from the elements of the "Natural" numbers space], 10, 62, 138

W or W\_ [standard axiom<u>s</u>-system for the arithmetic of the Whole number<u>s</u>, featuring both many "first-order logic", and some "second order logic", axiom<u>s</u>], 139
 W\_ [the standard axioms-system for the arithmetic of the Whole number<u>s</u>, featuring *only* "first-order logic" axiom<u>s</u>], 130

 $\underbrace{\mathbf{W}}_{2}^{2}$  [encodes calculation of <u>dialectic</u>al progression of <u>ED</u>ean categor<u>ies</u> of axiomatic arithmetic<u>s for dialectics</u>, from  $\underbrace{\mathbf{W}}_{2}$  as their *«arché»-*category], 62, 130

 $\mathbb{Q}_{\mathbf{w}}^{\mathbf{Q}}$  [space or set of arithmetical ontological  $\mathbb{Q}$  ualifier meta-numerals, with their subscripts from the space of  $\mathbb{W}$  hole numbers:  $\mathbb{Q}_{\mathbf{w}}^{\mathbf{Q}} = \{ \mathbf{u}_{\mathbf{0}}, \mathbf{u}_{\mathbf{1}}, \mathbf{u}_{\mathbf{2}}, \mathbf{u}_{\mathbf{3}}, \dots \} ]$ , 35, 110. 185 & 185n., 199-200, 202

 $\mathbf{Q}_{\mathbf{w}}$  [category of 1st-order-logic-<u>only</u> axiom<u>s</u>-system<u>s</u> for <u>Q</u>ualifier<u>s</u>-<u>only</u> arithmetic<u>s</u> for <u>dialectics</u>, with subscript<u>s</u> drawn from space  $\mathbf{W} = \{\mathbf{0}, \mathbf{1}, \mathbf{2}, \mathbf{3}, ...\}, 62$ 

 $\underline{\mathbf{X}} \ [\underline{gene} \text{ric, algebraic symbol for a[ny] category/class/«arithmos» showing <u>contra</u>-Boolean behavior, e.g., for <math>\underline{\mathbf{x}} \in \mathbf{w} = \{ \begin{array}{c} \mathbf{u} \\ \mathbf{u}$ 

 $x^2 + 1 = 0$  [algebraic equation whose 2 solutions are  $\pm i$ ,  $\in C$ , i.e., are +i and -i, both  $\in C$ ], 137

 $\mathbf{X} \equiv \mathbf{g}_{\mathbf{v}}$  [equivalence syntax for the  $\mathbf{g}$  and <u>non- $\mathbf{g}$ </u> representations of a  $\mathbf{Q}$ -algebraic-variable/algebraic-<u>un</u>known <u>category</u>], 10

 $x(t)^2 = dx(t)/dt$  [arguably the simplest <u>non</u>linear differential equation, already exhibiting remarkable propert<u>ies</u> in its <u>known</u> solution], 137

 $\mathbf{X}^2 = \mathbf{X}$  [the Boolean "fundamental law of thought"/"law of [<u>exo</u>-]duality", for **x** restricted to the space **{0, 1}**, contradicting the <u>Q</u> <u>contra</u>-Boolean

'law of <u>intra</u>-duality',  $\underline{\mathbf{x}}^2 = \underline{\mathbf{x}}^1 + \underline{\Delta \mathbf{x}}^1 | \underline{\mathbf{x}} \notin \underline{\Delta \mathbf{x}}$ , e.g., for  $\underline{\mathbf{x}} \in \mathbf{w}^{\underline{\mathbf{Q}}} = \{ \begin{array}{c} \mathbf{0} \\ \mathbf{0} \\ \mathbf{0} \end{array}, \begin{array}{c} \mathbf{1} \\ \mathbf{1} \\ \mathbf{0} \\ \mathbf{2} \\ \mathbf{0} \end{array}, \begin{array}{c} \mathbf{3} \\ \mathbf{3}$ 

 $\mathbf{X}^2$   $\mathbf{X}$  [contra-Boolean fundamental law of <u>dialectic</u>al thought, e.g., for  $\mathbf{X} \in \underline{\partial}_{\mathbf{W}} \mathbf{Q} = \{ \begin{array}{c} \Box \\ \Box \\ \mathbf{U} \\ \mathbf$ 

the "law of [<u>exo</u>-]duality",  $\mathbf{x}^2 = \mathbf{x}^1$  – the latter reducing *logical-algebraic* <u>non</u>linearity to *logical-algebraic* <u>linearity</u>, i.e., to 'the simple reproduction of ideas' -- or  $\mathbf{x}(1 - \mathbf{x}) = \mathbf{0}$ , the Boolean form of the Aristotelian "law of <u>non</u>-contradiction"], 2

 $\underline{\mathbf{x}^{2}} \underline{\partial} | = \langle \mathbf{x} \langle + \mathbf{y} \underline{\mathbf{C}} \langle + \mathbf{y} \underline{\mathbf{W}} \langle + \mathbf{y} \underline{\mathbf{C}} \langle + \mathbf{y} \underline{\mathbf{q}}_{rx} \langle + \mathbf{y} \underline{\mathbf{q}}_{rx} \langle + \mathbf{y} \underline{\mathbf{q}}_{rx} \langle + \mathbf{y} \underline{\mathbf{q}}_{rx} \langle + \mathbf{y} \underline{\mathbf{q}}_{rx} \rangle$  [speculative hypothesis -- the Regenerist Cosmological Hypothesis -- regarding

Nature-dialectic to model-epoch **3**, with "**Dark Energy**", here denoted by **x**, as the deepest-yet-<u>2</u>known cosmological-ontological «*arché*»-*category*], 172

**y** [F.<u>E.D</u>.-predicted/pre-constructed future cosmo-ontological, Universal Taxonomy «<u>genos</u>»/'sub-universe' that we name ""meta-humanity"", Domain, D = y], 79

Zeno [of Elea; originator of dialectic per Aristotle; formulator of "indirect proof", i.e., *«reductio ad absurdum»* <u>disp</u>roof, a source for Socrates' *«elenchus»*], 8, 208 zero [the arithmetical <u>quant</u>ifier/value which comes in two known <u>species</u> – what we call "<u>empty</u> zero", **0**, and what we call "<u>full</u> zero", **0**], 137-138

zero, empty [standard]y denoted **0**, indicates an absence of any <u>abstract</u> arithmetical unit<u>s</u>, e.g., of **N** unit<u>s</u>, in its "purely"-<u>quant</u>itative context], 128, 137-138 zero, full [denoted **0**, typically arises when, e.g., a metrologically-<u>re</u>qualified mathematics model, which well-describes an actuality up to a critical finite value of its <u>t</u>ime variable, **t**, but while <u>un</u>qualified, can't describe the ontically-changed actuality after the zero division singularity at that **t**, except as " $\infty$ "], 62, 128, 137-138 **Z** [an[y] element of the standard "integers" number<u>s</u>-space/number<u>s</u>-set **Z**: **z**  $\in$  **Z**].

**Z** [the space or set of the 'integral numbers', or 'integers'', discrete plus-and/or-minus-signed [i.e., directional] numbers, e.g., -1, ±0, and +1], 10-11, 17, 137

**Z** or **Z** [standard axiom<u>s</u>-system for the "integer<u>s</u>", as formulated via <u>some</u> second-order-logic axiom<u>s</u> as well as via <u>many</u> first-order-logic axiom<u>s</u>], 13

**Z** [axiom<u>s</u>-system for the "integer<u>s</u>" formulated via first-order-logic axiom<u>s</u> only, i.e., axiom<u>s</u> that logically <u>quant</u>ify over/assert about <u>only</u> individual integer<u>s</u>].

 $_{2}^{Q}$  [Z-based meta-number space or set undergirding the **1**st category of axiomatic arithmetics for dialectics in the Z encoded ED ean progression thereof], 79

 $\frac{Q}{z}$  [1st category of axiomatic arithmetics for dialectics in the potential <u>ED</u>ean progression thereof, for, little-explored,  $\frac{Q}{z}$  variants of the  $\frac{Q}{Q}$  dialectic al method].

[meta-numeral signing full zero, starting in <u>u</u>, the **7**th dialectic-arithmetics in the fedean dialectical series thereof], 62, 77, 118, 129-138, 187-190, 194

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| 164         | Ideogramized Text-<br>Box                      | O <u>ur</u> Stipulated «Arché»-Category, & O <u>ur</u> Solution <u>s</u> for 9 Successor Self-Hybrid Categories<br>of Musical Units/«Monads»/Holons [concluded].                                  |
| 165         | Texted,<br>Ideogramized<br>Dialectogram        | A Systematic Dialectical Method of Presentation of the <u>Gen</u> eral Categorial Content-<br>Structure Taxonomy of Classical Symphonic Music, by Way of a Categorial Progression.                |
| 166         | Text-Box Image                                 | Commentary on the Dialectogram for: The Dialectic of Music.   |
| 166         | Systematic-<br>Dialectical [Meta-]<br>Equation | Dialectical Meta-Model Excerpt – Categorial Progression Presentation/Systematic Dialectic for Music of Symphonic Form [23 Category-Symbol Terms].   |
| 167-<br>168 | Systematic-<br>Dialectical [Meta-]<br>Equation | The Taxonomic, Systematic Dialectic of Modern Music [512 Category-Symbol Terms].  |
| 175         | Historical-Dialectical<br>[Meta-]Equation      | Dialectical Meta-Model Excerpt – The <u>E</u> . <u>D</u> . Historical Dialectic of Nature Hypothesis for Dark Energy as «Arché»-Category [32 Category-Symbol Terms].                              |
| 175         | Ideogramized Text-<br>Box                      | The Meta-Monadic « <i>Aufheben</i> » Singular Historical Dialectic of Nature – Connotation <u>s</u> of Key Self-Hybrid, Self-Conversion Term <u>s</u> [10 Category-Symbol Term <u>s</u> Defined]. |

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| 177                      | [Meta-]Equation  | Term <mark>s</mark> ].   |
| 178-                     | Texted,  | Encyclopedia Dialectica Dialectic of Nature Universal Taxonomy of Cosmological             |
| 179                      | Ideogramized<br>Dialectogram                           | Ontology ["what there is"] as [a]Known to-Date.  |
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| 187                      | Texted Graph   | The Unit <u>s</u> of the Category of Systematic Dialectic <u>s</u> .                       |
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