Supplement B. Some Exemplary Applications of a Dialectical «Characteristica Universalis».

This second Supplement to the F.E.D. Primer for <u>Dialectical Ideography</u> describes eleven 'anto-dynamical meta-models', applications of 'dialectical ideography' to diverse universes of discourse, in the form of eleven categorial progression generators constituting a sequence/selection of abridgements from <u>Encyclopedia Dialectica</u>.

Generic Characterization: <u>Q</u> as Medium/Metaphor. Evoking Our Insights/Intuitions/Imaginations on the Dynamics/'Meta-Dynamics' of "'Idea-Objects'" about Sensuous, 'Exo-/Physio-Objects/-Processes/-Phenomena/-'Eventities' and also about Other, Non-Sensuous, 'Endo-Ideo-Objects/-Processes/-Phenomena/-'Eventities'. The <u>Q</u>

arithmetic is a means of modeling how new, unprecedented categories irrupt out of the action – out of the "<u>inter</u>-action" and out of the '<u>intra</u>-action' – of the contents/referents of the categories already extant, or, more specifically, out of the actions of the already existent, concrete «arithmoi», the "populations" of [meta-]«<u>monads</u>», the "manifolds" or "*«ensembles»*" of [meta-]"<u>units</u>", or of [meta-]"<u>individuals</u>", which instantiate those categories and which those categories name and unify. This irruption arises both out of the interaction of [meta-]«monads» of the same category/kind/genus/«arithmos» with one another, and out of the interaction of [meta-]«monads» of one category/kind/genus/«arithmos» with those of a different such «arithmos». This characterization of <u>N</u> applies when

those [meta-]«monads» are idea-objects "'about" [made by our minds to model] "<u>concrete</u>", "'<u>external</u>", sensuous, "'sensible"', '<u>exo</u>-empirical', '<u>exo</u>-experiential', '«physis»-objects' or physical-material 'physio-objects'. It also applies when those [meta-]«monads» are idea-objects "'about" [also made "'in" our minds to model] "<u>abstract</u>" objects - <u>other</u> ideas; "'<u>internal</u>", <u>non</u>-sensuous, '<u>endo</u>-empirical', '<u>endo</u>-experiential', "'<u>intro</u>-spective''', '<u>epsycheic</u>»-objects', 'cognitive-psychological objects', '<u>psycho</u>-artefacts', or "'memes'".

"Idea[1]-objects'", 'idea-process-objects', 'idea-phenomena[tions]', 'idea-events', 'idea-entities', or 'idea-eventities' that form in our minds, and that <u>we</u> actively and deliberately <u>form</u> and <u>mold</u> within our minds, and whose dynamics/phenomenologies we observe with our "'minds-eyes'" -- especially in cases of factually and logically disciplined, scientific ideation -- constitute a kind of deliberately-induced and -cultivated "subjective" or "introspective" apparition, a class of 'endo-hallucinations', consisting of a plethora of variously 'sized' ghosts or «geists», highly "visco-plastic", malleable "micro-spirits", floating in the inner "heavens" of 'intro-mental sensation'/mind-perception, at least as "perceived" by our minds. This description pertains when such "'idea-objects'" are ideas about the behaviors of <u>sensuous</u>, physical objects, and when such "*idea-objects*" are "ideas about the behaviors of <u>non-sensuous</u> objects, of <u>other</u> idea-objects, e.g., concepts about concepts in general, or concepts about the concepts of mathematics or formal logic, etc.

To become "'literate"' regarding these inner creatures of ours -- to become skillfully expressive and articulate about these "'idea-objects" or 'idea-nouns' [which may also be[come] 'kinesic' and 'autokinesic', active and also <u>self</u>-active 'idea-verbs', 'idea-spirits', 'idea-agents', or "'idea-graphs' to directly "'notate" them and their processes, their inter-actions and inner- or 'intra-actions'; both their "'ideo-evolutions" and their 'ideo-<u>meta</u>-evolutions'; their "'ideo-dynamics" & 'ideo-<u>meta</u>-dynamics': we need an "'<u>ideo</u>-graph-y"'; an "'<u>ideo</u>-graph-ic[al] language". If we are ever to "'grasp" -- to get the "'hands and the arms of our minds" around -- the vast intricacies of these '[ideo-[meta-]]dynamics', then this language needs to provide a succinct, brief, abbreviative, 'semantically dens[e][ified]' notation, one with high 'semantic/memetic productivity' per symbol, using single characters to connote vast 'scopes' and 'scapes' of meaning.

The <u>Q</u> ideographies are designed to be a medium and metaphor for intensionally, connotatively, heuristically describing, and evoking our intuitions about, the "*dynamics*" and '*meta-dynamics*' of both our '*exo-objects*' and our '*endo-objects*'; of both '*exo-objectivity*' and '*endo-objectivity*'; of both '*physio*-matter(s)' and '*psycho*-matter(s)'.

If these *dynamics* and '*meta-dynamics*' of this seemingly non-physical '*idea-matter*', '*psycheic matter*', '*psychological-matter*', '*memetic matter*', or '*subject*[*ive*]-*matter*' can be summarily characterized aptly by the name, and by the connotations-history, of the word "'*dialectics*'', then this ideography will be an '*ideography*' of *dialectics*', and a '*dialectical ideography*'.

<u>Caveat</u>. By the same token, it should be kept in mind that the 'meta-models' -- the dialectical-ideographic models of multitudinous 'meta-evolutions' and of 'meta-dynamics' -- exposited herein through the use of, mainly, the «arché» dialectical ideography, denoted NQ, are entirely in the nature of

[&]quot;"thought-experiments": they are of the nature of hypotheses, not deductions. While we would argue that these ideographic 'meta-models' are 'character-ized' by the plausibility of their 'connotational calculations', it should be emphasized that none of them constitute a "rigorous" deductive proof [albeit a proposition justified by "rigorous" deductive proof is no better, with regard to its hold on empirical truth, than is the grip on empirical truth of its axioms/premises, which it "'inherits'" from them]. Each of these 'meta-models' is, at the present stage of its exposition herein, a conjecture only.

The Hegelian, "Statical" Disjunctive Syllogism, the Synchronic «Aufheben» Relation, "Timeless" Dialectics, and Plato's "Socratic" Dialogues. The aspect of the Q arithmetic,

and of its generic 'meta-model' of dialectical processes, namely, the 'self-iterator', $\underline{Q}_{0}^{2^{\tau \tau}}$ - wherein $\tau \tau$ asserts the continual monotonic escalation in the quantitative value of the τ variable - that we have emphasized in these Supplements so far, is that of 'onto-dynamasis' as an <u>historical</u>-dialectical, <u>diachronic «aufheben»</u> process of 'ontological speci-ation' and 'meta-speciation' - i.e., of 'genus-iation' or 'genera-ation': the "generation" of ever-more new, unprecedented ontology as a result of the self-re-flexive self-interaction/intra-action', as well as the 'flexive' inter-action, of the already-extant ontology. However, there is a <u>synchronic</u> aspect as well.

In 'meta-systematic dialectics', as a categorial-progression method of exposition of the comprehensive knowing/theorization of the temporary 'self-sustain-ance'/self-reproduction, and eventual self-supercession, of a given/already "chaotically experienced" [sub-]totality, the various '[meta-]organs' of that '[meta-]organism' may be captured in a finite '[time-]length', synchronic, time-perpendicular ''slice'' or ''section'' excerpt of the 'en-dur-ance', of the full temporal profile or diachronic 'side-view', of that [sub-]totality, grasped as a 4-dimensional space-time 'object-ivity' -- with 3 mutually-perpendicular spatial-"lengths", plus 1 "'temporal-length'', perpendicular to each of the other 3. Such a section might be taken at the <u>zenith</u> age, or '<u>zenith</u> sub-epoch', in the maturation of the system/[sub-]totality in question. The categories that arise in a categorial-progression exposition of the [statical] 'meta-anatomy' and the [dynamical] 'meta-physiology' of the self-reproduction of such a [sub-]totality, starting from its most abstract, «arché» category, will, as we shall illustrate below, in Examples 9 and 10, exhibit a 'Qualo-Peanic', 'supplementary opposition' «aufheben» relationship of predecessor category to successor category [see final <u>Comment</u>, this Section].

In such contexts of 'meta-systematic dialectical', categorial progression exposition, the generic dialectical process 'meta-model', the 'self-iterator' Q₀^{2^{TT}}, can be harnessed to ideographically generate the "outline" or "table of contents" of the narrative exposition, with, e.g., each chapter title as the name of a genus-category of that [sub-]totality exposition, the title of each main division of that chapter as a name of a species-category inhering within that genus-category, and the title of each sub-division of that main division of that chapter as the name of a sub-species-category inhering within that species-category, etc.

Among the ancients, especially, in the tradition of Platonic Idealism -- at least prior to the '«autokinesis» revolution' -- the focus was on such "synchronic" relationships of such categories of 'ontological species' and their 'ontological genera' in a much more statical sense. That Platonic tradition held to a timeless/eternal fixity of the species and genera of the fundamental categories, "ideas", or «eide». A fixed, unchanging number of unchanging species-categories "belonged" to each unchanging genus-category from everlasting - a purported fixity of ontological species and general n general, not limited to the later, Linnean theory of the fixity of the biological species, which was only overthrown in the 19th century, after the publication of Darwin's "The Origin of the Species", with its vast evidences of the mutability and 'dynamicity' of biological species emergence and extinction. Nevertheless, the relation of each ideo-ontological species, each species of concept, to its concept-genus, was an «aufheben» relationship, although, of course, the Germanic term «aufheben» would not have been the term used, by its ancient Hellenistic expositors, to describe this relationship. Each species of the same genus was qualitatively different from - precisely a different kind with respect to - every other such species; different species could not be "added" together in any amalgamative way, though they nonetheless formed, by the Platonic account, a discrete multiplicity, manifold, ensemble, or assemblage -- an «arithmos» -- of «eide», an «arithmos» of idea-species/categories, i.e., an «arithmos eidetikos». The «genos» of an «arithmos» or assemblage of such species was also held to be qualitatively distinct from - 'qualitatively different' than, and 'qualitatively higher' than -- each of its species, and even than the assemblage of all of its species, their «arithmos», although it was 'essence-ially' and intimately related especially to that very «arithmos». This, the «genos» implicitly "contains" all of Its species, and thus constitutes an «aufneben» negation - a simultaneous "cancellation", implicit "conservation", and categorial-levels "elevation", to a higher ideo-ontological plane, or 'ideo-meta-fractal scale, of its species. This ""«arithmos» structure", this 'meta-«arithmos»' of all genera; this non-additive, 'qualitative arithmetic' of generic, universal «eide»-as-'meta-numbers', or «eide»-as-'qualitative/non-additive-numbers'; these «arithmol», this 'meta-fractal' "assemblage of higher degree", or 'assemblage of assemblages', of different 'idea-species' and 'idea-genera', as a 'meta-assemblage made up out of a heterogeneous multiplicity of assemblages' of idea-objects; this '«arithmoi eidetikois', constitutes Plato's reputed "arithmetic of ideas" or "arithmetic of dialectics" --

"While the numbers with which the arithmetician deals, the arithmoi [assemblages of units - F.E.D.] mathematikoi or monadikoi [abstract, generic, gualitatively homogeneous "monads" or units - F.E.D.] are capable of being counted up, i.e., added, so that, for instance, eight monads [eight abstract units, unities, or a-toms - F.E.D.] and ten monads make precisely eighteen monads together, the assemblages of eide [of 'mental seeings' or mental visions; of 'ideas' - F.E.D.], the "arithmoi eidetikoi" [assemblages, ensembles, "sets", or sub-itotalities of gualitatively heterogeneous ideas or «eide» - F.E.D.], cannot enter into any "community" with one another [i.e., are 'non-reductive', thus, "nonlinear", that is, *non-superpositioning", *non-additive", 'non-addable', or *non-amalgamative" -- F.E.D.]. Their monads are all of different kind [i.e., are 'categorially', ontologically, gualitatively 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 unity] or monad; incomparable quantitatively - F.E.D.]... The monads which constitute an "eidetic number", i.e., an assemblage of ideas, are nothing but a conjunction of eide which belong together. They belong together because they belong to one and the same eidos [singular form of «eide»: one particular 'internal / interior seeing', vision, or «ιδεα» - F.E.D.] of a higher order, namely a "class" or genos [akin to the grouping of multiple species into a single genus in classical 'taxonomics' - 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 -- 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 'un-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 «arithmol monadikol» - 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 'dia-noesis', i.e., of 'pre-Isub-dialectical thinking - F.E.D.] should exist here, since each eidetic number is, by virtue of its eidetic character [«eide»-character or idea-nature - F.E.D.], unique in kind [i.e., qualitatively unique/distinct/heterogeneous - 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 - F.E.D.] in contrast to the unimitedly 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' - 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 8, 9876 b 14 ff. and N 3, 1090 b 35 f.), there are three kinds of arithmor. (1) the arithmos aldetikos - 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" or sensuous - F.E.D.] number represents nothing but the things themselves which happen to be present for alsthesis [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-lsub-dialectical thinking' - F.E.D.] reaches by noting that its own activity finds its exemplary fulfillment in "reckoning [i.e., account-giving] and counting"...The eidetic number, finally, indicates the mode of being of the noeton [that which exists "for" thought; the object of thought; the idea[I]-object -F.E.D.] as such - it defines the eldos ontologically as a being which has multiple relations to other eide in accordance with their particular nature [that is, in accord with their content - F.E.D.] and which is nevertheless in itself altogether indivisible. The Platonic theory of the arithmol eldetikoi 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, [NY: Dover, 1992], pp. 89-91, bold italic emphasis added].

Plato's extant "Socratean" dialogues provide further implicit amplitude on the methodology of this "statical dialectics" of the Platonic "«arithmoi eidetikoi»":

"STRANGER [to THEAETETUS]: Well, now that we stand agreed that the kinds stand toward one another in the same way as regards blending, is not some science needed as a guide on the voyage of discourse, if one is to succeed in pointing out which kinds are consonant, and which are incompatible with one another — also, whether there are certain kinds that pervade them all and connect them so that they can blend, and again, where there are divisions [separations], whether there are certain others that traverse wholes and are responsible for division? ... And what name shall we give this science? ... Dividing according to kinds, not taking the same form for a different one or a different one for the same — is not that the business of the science of dialectic? ... And the man who can do that, discerns clearly one form everywhere extended throughout many, where each one lies apart, and many forms, different from one another, embraced from without by one form, and again one form connected in a unity through many wholes, and many forms, entirely marked off apart. That means knowing how to distinguish, kind by kind, in what ways the several kinds can or cannot combine ... And the only person, I imagine, to whom you would allow this mastery of dialectic is the pure and rightful lover of wisdom [philosopher – F_D]." [Edith Hamilton, Huntington Cairns, editors, Plato: The Collected Dialogues, Princeton University Press [Princeton, New Jersey: 1989], Sophist, 253b-e, pp. 998-999, emphasis added by F_D]. Again —

"SOCRATES: But far more excellent, I think, is the serious treatment of them [words, «logos» – F.<u>E.D.]</u>, which employs the art of dialectic. . . . First, you must know the truth about the subject that you speak or write about; that is to say, you must be able to isolate it in definition, and having so defined it you must understand how to divide it into kinds, until you reach the limit of division." [ibid., Phaedrus, 277a-b, p. 522, emphasis added by F.E.D.]. And again, in the following 'critique of the Procrusteen', we have ---

*STRANGER [to the YOUNG SOCRATES]: We must beware lest we break off one small fragment of a class and then contrast it with all the important sections left behind. We must only divide where there is a real cleavage between specific forms. The section must always possess a specific form. It is splendid if one really can divide off the class sought for immediately from all the rest -- that is, if the structure of reality authorizes such immediate division. You had such direct tactics in mind just now and hastened the argument to its conclusion. You saw that our search led us to men, and so you thought you had found the real division. But it is dangerous, Socrates, to chop reality up into small portions. It is always safer to go down the middle to make our cuts. The real cleavages among the forms are more likely to be found thus, and the whole art of these definitions consists in finding these cleavages". [ibid., Statesman, 262b-c, pp. 1025-1026, emphasis added by F.E.D.].

Hegel, in his «<u>Wissenschaft der Logik</u>», captures this 'statical dialectic' of the 'ontological species/ontological genus' «aufheben» relationship in the inferential structure which he dubs the "disjunctive syllogism", and which he places as the final and highest form of syllogistic logic, and of "The Subjective Notion", in his assimilation and supercession of formal logic in the first section, on Subjectivity, of his "Doctrine of the Notion" --

*The Disjunctive Syllogism stands under the scheme of the third figure of the formal syllogism, I - U - P. But the middle is universality filled with form; it has determined itself as totality; as developed objective universality. Consequently, the middle term is as well universality as particularity and individuality. As the former it is, first, the identity of the genus; but secondly it exists as one which has absorbed particularity, as being equal with itself, that is, as general sphere which contains its total particularization – as genus divided into its species, or A which is B as much as C or D...

A is either B or C or D, but A is neither C nor D, therefore A is B.

A is subject not only in the two premisses, but also in the conclusion. In the first premiss it is universal, and in its predicate *it is the universal sphere particularized into the totality of its species*; in the second it exists as determinate or as one species; in the conclusion it is posited as the exclusive individual determinateness." [W. H. Johnson and L. G. Struthers, translators, <u>Hegel's Science of Logic</u>, <u>Volume 2</u>, Humanities Press, Inc. [NY: 1966], pp. 339-340, *emphasis added by* F.E.D.]. Again --

"A fully adequate syllogistic form will show how each term is implicitly involved in every other one. This is captured in the disjunctive syllogism: A is B or C or D; A is neither C nor D; so A is B. In this syllogism the major premise says that the universal is exhaustively defined in its constituent species. The minor says that the universal is an exclusive singular. The conclusion affirms that it is a member of a particular species". [John W. Burbidge, Hegel's Logic, In <u>Handbook of the History of Logic</u>, <u>Volume 3</u>, The Rise of Modern Logic; From Leibniz to Frege, Elsevier North Holland [SF: 2004], p. 155, emphasis added by F.E.D].

The genus/species or universal/particulars structure undergirding the above-specified 'judgment-algorithm' of the "disjunctive syllogism" is, as a [statical] «aufheben» structure, also a synchronic/statical 'meta-fractal structure'.

That is, the genus/species/sub-species/sub-species structure is characterized by the scaled <u>gualitative</u> self-similarity regress of genus, species, sub-species, sub-species, sub-species, sub-species, sub-species, sub-species, sub-species, sub-species, sub-species, wherein the sub-species category is a 'meta-sub-species' category made up out of the heterogeneous multiplicity of the categories of the sub-species, and wherein the genus category is a 'meta-species' category is a 'meta-species' category, made up out of the heterogeneous multiplicity of the categories of the sub-species, and wherein the genus category is a 'meta-species' category, made up out of the species categories.

<u>The 'Generics' of 'Pearic' 'Meta-Speciation' and 'Meta-Monadization'</u>: <u>The</u> $\underline{Q}_{0}^{2^{\tau_{1}}}$ <u>Generic Dialectic as a General Model for the «Autokinesis» Process/Structure Undergirding</u> the '<u>Dynamical/Meta-Dynamical Disjunctive Syllogism</u>'. We have seen, in the sub-section immediately above, how the '<u>synchronic</u>', 'meta-systematic-dialectical' method of presentation of theories of totalities, which proceeds by means of a categorial progression mode of exposition, and also the 'statical dialectic' of ancient idealism, share an «aufheben», 'meta-fractal categorial structure together with the ontological categorial progressions of '<u>diachronic</u>', dynamical and 'meta-dynamical', evolutionary and 'meta-evolutionary', historical dialectics. We have seen how this «aufheben», 'meta-fractal' structure undergirds the Inferential mechanism of Hegel's [statical] "disjunctive syllogism", and have heard how, in the context of 'meta-systematic dialectical expositions', at least, the <u>NO</u> 'self-reflexive iterator', $\underline{O}_{\tau^{\tau}} = \underline{O}_{0}^{2^{\tau^{\tau}}}$, can provide models of the progressions of such expositions, that, in effect, generate a series of such 'statical', "disjunctive-syllogistic" inferences.

However, the native ground of \underline{NQ} , and of its generic dialectic, $\underline{Q}_{\tau\tau} = \underline{Q}_0^{2^{\tau\tau}}$, is that of *diachronic*, *historical*, '*onto-dynamical*' dialectics. We therefore, in this section, pursue a dynamical and 'meta-dynamical', 'species-dynamical' and 'genus-dynamical' "generalization" and "extention" of Hegel's "disjunctive syllogism", together with an \underline{NQ} , dialectical-ideographic, $\underline{Q}_{\tau\tau} = \underline{Q}_0^{2^{\tau\tau}}$, formulation of that generalization/extension. The resulting structure/process constitutes the logical structure shared by all of the *Examples* exposited in this Supplement.

The questions that bring attention to the need for a 'dynamical' and even 'meta-dynamical' extention of the 'statical' disjunctive syllogism are of the following kind: Borrowing from Example 3 below -

Suppose that, at one "epoch" of the pre-human "dialectic of Nature", call it 'epoch 0', the highest level of monadic organization extant in the cosmos is that of "pre-nuclear particles" as monads, e.g., that of mesons, neutrinos, hyperons, etc., which we will collectively denote by the ideographic symbol-complex ' $\frac{1}{2n}$ ': $\frac{1}{2Q_0} = 4\frac{1}{2n} \frac{1}{2}^0 = 4\frac{1}{2n} \frac{1}{2}^0 = \frac{1}{2n}$

Suppose further that, at a later period, call it 'epoch 1', material organization at no higher/more inclusive level than that of the "pre-nuclear" level is still extant, but that *«monads»* organized up to the "sub-atomic level", the level of, e.g., protons and neutrons, have also become extant in the cosmos, so that the '*ontology-state*' of the cosmos has self-expanded to become: $\underbrace{1Q}_{1}^{1} = \underbrace{1Q}_{2}^{2} = \underbrace{1}_{2} \underbrace{1}_{2} \underbrace{1}_{2}^{2} = \underbrace{1}_{2} \underbrace$

F. 1. <u>tx</u> is either <u>tn</u> or <u>ts</u>. &
 F. 2. but <u>tx</u> is not <u>tn</u>.
 ⇒ 3. therefore <u>tx</u> is <u>ts</u>. QED.

Then, suppose further still that, at an still later period in the history of the cosmos, call it 'epoch 2', the 'ontology-state' of the cosmos has self-expanded, by means of the «autokinesis», or 'self-reflexive self-action', of the cosmos as a totality, to become: $\frac{1}{2}Q_1^2 = \frac{1}{2}Q_1^2 = \frac{1}{2}Q_0^2^2 = \frac{1}{2}(\frac{1}{2}n)^2 = \frac{1}{2}(\frac{1}{2}$

Because $\frac{1}{2}$ could also be either $\frac{1}{2}\hat{g}_{sn}$ or $\frac{1}{2}$. Since the extant "kinds" or "species" of "being" "contained" in the cosmos has expanded as of epoch $\tau = 2$, to include not only a «tertium quid», $\frac{1}{2}\hat{g}_{sn}$, but a '«tertium quid»', $\frac{1}{2}$, as well, the 're-validification' of the disjunctive-syllogistic judgment for the new, expanded cosmos requires an expansion of its "terms of reference" – an expansion of the list of 'ontos' it must reference in order to exhaustively specify the extant ontological "species" of this universe [of discourse]:

This example also illustrates the 'ontological specificity' and "*historical specificity*", or 'epochal specificity', of truth[-values]. One and the same judgmental proposition, whose "logical value" or "truth-value" was '.T.' for/in the ontological epoch denoted $\tau = 1$, was of truth-value '.F.' for/in the ontic epoch denoted $\tau = 2$, and would be 'unmeaningful [premature] and also false for/in the epoch denoted $\tau = 0$.

The validity of such judgments or inferences is thus a function of "epoch", a function of "history", a dynamical and 'meta-dynamical function, because the undergirding 'self-speciation' of a "universal" or a universe[-of-discourse] is a self-expanding one, a dynamical and 'meta-dynamical' one, involving the ongoing «autokinesis» emergence of ever new ontological categories or 'ontos', expressing new kinds of "being", emergence of new kinds of monads. A 'statical' disjunctive syllogism will not do the job. The undergirding speciation of the universal that it must exhaustively comprehend, if it is to generate valid inferences in relation to that universal, is not fixed and final for all eternity, but changing with/as time; as history.

Thus, the symbol-complex $\mathbf{Q}_{0}^{2^{\tau^{T}}}$ is the generic expression of a conceptual/algorithmic "motor" for 'species-dynamasis' [and for 'genera-dynamasis']; for the generation of new and unprecedented ontological species [and genera] as a function of the increasing value of the self-iteration 'countor', τ^{τ} . It is also a univocal ideographical symbol for a generic "dialectic" or "dialectical process". Thus, ' $\mathbf{Q}_{0}^{2^{\tau^{T}}}$ ' is the generic dialectical-ideographic model for the process undergirding our dynamical and 'meta-dynamical' generalization of Hegel's statical disjunctive syllogism. This generalized disjunctive syllogism is the dialectical-logical structure – understanding "logic" in the very general sense of a rules-system or model of what follows from what – undergirding all of the 'meta-dynamics' of 'meta-dynamics' of 'meta-evolution' – or of 'meta-system' or 'systems'-progression' – presented in this Supplement.

The Q Ideographies as Heuristic, Intentional-Intuitional, Connotational Calculi. Interpreted Q is about the heuristic orchestration of connotations. The Q calculi, in their "uninterpreted" versions, or, to be more accurate, their 'minimallyinterpreted' versions, versions involving 'meta-numerals' of the form \hat{g}_{η} , wherein η denotes a "Standard" numeral of some kind, and given the choice of a specific "product rule" for the interaction, mutual operation, or '[de-]flexion' of one Q 'meta-number' by another, or by itself, when "squared" -- e.g., using one of the product rules described in Supplement A. of this Primer -- function as exacting, algorithmic, "mechanistic" calculi for the computation of the results of such operations or interactions. But the results of such syntactically-deterministic calculations have only a most abstract, tenuous, attenuated, and generic meaning; only a most diaphanous semantic content -- just that content indicated in the left-most column of the Table of Similes that concludes Supplement A. Once, however, a "dialectician", or 'dialectical arithmetician', interprets or "assigns" [herein denoted ideographically via the symbol '↔'] some of the Q 'meta-numbers' to the ontological categories of a specific universe of discourse, and substitutes, for the generic 'meta-numerals' of the minimally-interpreted version of \mathbf{Q} , some mnemonic character symbols, abbreviating the names of the categories assigned, something quite the contrary gets underway, something that reverses the former richness of syntax cum poverty of semantics of the "raw" Q arithmetic. The symbols now have far richer meaning. But they have this meaning in the sense of an "intensional" symbology, as opposed to that of an "extensional" one.

<u>Background</u>. The compound 'phonogramic' symbol denoted by the string of phonetic symbols, or 'phonograms', 'g-r-e-e-n', stipulating -- albeit with some ambiguity -- how to vocalize the word "green", represents the color associated with that word "intensionally". That is, the color-experience called "green" is the "connotation" of the compound symbol or symbol-string 'g-r-e-e-n', whereas the "denotation" of that symbol-compound is the vocalized sound of the word "green". An example of an "extensional" symbol for the "denotation" or "extension" of the "intension" or meaning of "green-ness" would be a list, or a "set", of the names of all of the objects in the universe [of discourse] which share the quality of looking green, under their typical circumstances, to human eyes. Because the assigned or interpreted mnemonic symbols of the \underline{O} "algebras" are univocal and "intensional" rather than 'multi-vocal' and "extensional" -- because they directly denote meanings -- they do not, when they operate upon themselves or upon one another, operate at the level of *explicit*, exhaustive lists of the attributes -- or "sub-systems", or "organs", or "state-variables"... -- which those meanings implicitly "contain". Instead, they involve their users in inherently partly ambiguous 'semantic calculations', 'calculations of comotations', or 'computations of meanings', which are anything but algorithmic; which are 'intuitional' and 'heuristic', rather than "exact" and "unambiguous". This is because these mnemonic symbols directly "intend" mental objects, 'idea-objects', or "'memes'', such as they exist in the *«milieux* or *«ambiances»* of human minds, and hence will mean somewhat different things to human beings with somewhat different cognitive, connotative, experiential histories.

For example, suppose that we interpret five of the \mathbb{Q} ontological qualifier 'meta-numerals', namely $\hat{\mathfrak{g}}_{16}$, $\hat{\mathfrak{g}}_{26}$, $\hat{\mathfrak{g}}_{26}$, $\hat{\mathfrak{g}}_{27}$, and $\hat{\mathbf{g}}_{1}$, assigning them as follows: (1) $\underline{\mathbf{K}}$ or $\hat{\mathbf{g}}_{\mathbf{k}}$ to $\hat{\mathbf{g}}_{16}$, connoting the category of the 'human <u>social relations</u> of human societal self-re-<u>production</u> [including self-re-production of those very social relations]' known as «<u>Kapitals</u>»; (2) <u>M</u> or $\hat{\mathbf{g}}_{M}$ to $\hat{\mathbf{g}}_{g'}$ connoting the human social relations category of <u>M</u>onies; (3) <u>C</u> or $\hat{\mathbf{g}}_{c}$ to $\hat{\mathbf{g}}_{a}$, connoting the social relations category of <u>C</u>ommodities; (4) <u>G</u> or $\hat{\mathbf{g}}_{\mathbf{G}}$ to $\hat{\mathbf{g}}_{\mathbf{g}'}$, connoting the human social category of pre-commoditized or non-commoditized products of human labor, <u>G</u>oods or customary/obligatory "<u>G</u>ifts"; and (5) <u>A</u> or $\hat{\mathbf{g}}_{A}$ to $\hat{\mathbf{g}}_{1}$, connoting the category of 'predations', or Appropriations of the raw products of pre-/extra-human Nature, with minimal improvement/modification by human labor. Suppose further that we employ a semantic principle to the effect that 'compound-subscript' symbols connote the 'interaction', and the 'subsumption', by the category connoted by the leftmost subscript-symbol, of the categor(y)(ies) connoted by any and all of the subscript-symbol(s) to its right, or the 'ontological <u>conversion</u> of the categor(y)(ies) symbolized to its right by the one symbolized to the leftmost. Then, in that context, what should we mean by the symbol $\hat{\mathbf{q}}_{_{KM}} \leftrightarrow \hat{\mathbf{q}}_{_{24}}$? Would we be correct in taking it for a category of social relations ontology that should be described as "Money «Kapitals»", as "«Kapitals»-subsumed Monies", as "Monies converted into «Kapitals»", or as the "Money-«Kapital» moment" of the accumulation-process "metamorphoses" of «Kapitals»? If so, would we therefore also be correct in identifying 'self-interaction', 'self-subsumption', or 'self-conversion' symbols with first irruptions of new, unprecedented social ontology, e.g., in identifying $\hat{\mathbf{g}}_{MM}$ with $\underline{\mathbf{K}}$, $\hat{\mathbf{g}}_{CC}$ with $\underline{\mathbf{M}}$, $\hat{\mathbf{g}}_{GG}$ with $\underline{\mathbf{C}}$, and \hat{g}_{AA} with **G**, in reconstructing the past, historical dialectic of the 'meta-evolutions' of the human social relations of production? Moreover, what of the future? What of the 'pre-construction' of categories not yet experienced? For instance, what meaning should take shape in our imaginations, in this context, when we look at, and think about, the symbol

ĝ_{кк}?

The 'Meta-System-atic Dialectical' Progression of Systems of Dialectical Arithmetic Beyond \underline{Q} – A 'Meta-System' consisting of the Self-Progression of Increasingly-Extensional Systems of Dialectical Language, with Ever-Growing Capacity to Express Empirically-Verifiable 'Quanto-Qualitative' Determinateness / Specificity / <u>Concreteness / Complexity</u>. The intuitive, intensional, and connotational advantages and limitations of the initiating, \underline{Q} , 'ideo-ontological species' of explicitly 'dialectical systems of arithmetic', represent qualities that inhere in \underline{Q} as the «arché» or originating species of explicit, purely-qualitative arithmetics, involving 'arithmetical Qualifiers' as 'meta-numbers'.

These qualities are increasingly dialectically 'negated' -- "transcended", or "superceded" -- in the further progression of the 'meta-system-atic dialectical', 'categorial progression' derivation of the advancing systems of dialectical arithmetic as a 'meta-system totality'. That is, in the categorial ideo-ontological "speciation" and 'meta-speciation' of the various, successive 'ideo-ontological species' of systems of 'dialectical ideography', undergirding the 'dynamical/meta-dynamical disjunctive syllogism' of the "universal", or 'ideo-totality', and the dialectically self-expanding "universe of discourse", that we have named 'dialectical ideography', these limitations are overcome to an ever increasing degree. Successive systems of dialectical arithmetic provide increasing ideographical-linguistic facilities for describing both 'ideo-systems' and 'physio-systems' with an "extensional determinateness", and a quantitative as well as qualitative specificity, that renders such descriptions, including their predictions, empirically testable and "verifiable"/"falsifiable". Such "dialectical negation", ""transcendence", or "supercession" is characteristic of ['meta-]systematic-dialectics' "categorial progression" expositions of 'totality-theories' in general, according to Tony Smith: ... Hegel attempted to provide an immanent ordering of the basic categories ... To see this we have first to consider what a category is. It is a principle (a universal) for unifying a manifold [i.e., a "many-iold"; an «arithmos»; a multiplicity of individualized "units" or «monads»" -- F.E.D.] of some sort or other (different individuals, or particulars). A category thus articulates a structure with two poles, a pole of unity and a pole of differences. In Hegelian language this sort of structure, captured in some category, can be described as a unity of identity in difference, or as a reconciliation of universal and individuals. From this general notion of a category we can go on to derive three general types of categorial structures. In one the moment of unity is stressed, with the moment of differences implicit. In another the moment of differences is emphasized, with the moment of unity now being only implicit. In a third both unity and differences are made explicit together. Hegel's next claim is that there is a systematic order immanently connecting these three categorial structures. A structure of unity in which differences are merely implicit is simpler than one in which these differences are explicitly introduced; and one in which both unity and differences are explicit is yet more complex still. Similarly, the first sort of structure is the most abstract [i.e., the least specified; least "determinate" - F.E.D.], while the other structures are successively more concrete [via additional 'specifications' or 'determinations' - F.E.D. ... If a category is in general a principle that unifies a manifold, then if a specific category only explicates the moment of unity, leaving the moment of difference implicit, then there is a "contradiction" between what it inherently is qua category (a unifier of a manifold) and what it is explicitly (the moment of unity alone). Overcoming this contradiction requires that the initial category be "negated" in the sense that a second category must be formulated [or evoked and emanated as the externalization of the occulted 'internal-' or 'intra' dual of the first category, from out of, or 'outering' the 'intra-duality' of, that first category - F.E.D.] that makes the moment of difference explicit. But when this is done the moment of difference will be emphasized at the cost of having the moment of unity made merely implicit. Once again there is a contradiction between what a category inherently is and what it is explicitly. Overcoming this contradiction demands that the second sort of category also be negated and replaced with a category in which both poles, unity and difference, are each made explicit simultaneously. Hegel is well aware that "contradiction" and "negation" are not being used here in the sense given to them in formal logic. Following a tradition that goes back to Plato [at least - F. E.D.], he asserts that in the above usage "contradiction" and "negation" are logical operators for ordering categories systematically, as opposed to logical operators for making formal inferences. The logic with which we are concerned here is dialectical logic. ... The "negation" of the simple unity is the moment of difference that it itself contains implicitly. ... But this stage of difference is itself one-sided and partial. ... When the stage of difference is dialectically negated, we once again have a category of unity, but now it is a complex unity, one that incorporates the moment of difference ... Since a category of unity-in-difference on one level can itself prove to be a category of simple unity from a higher level perspective, thereby initiating another dialectical progression [self-propagating on a higher level or higher 'ideo-meta-fractal scale' - F.E.D.], from unity through difference to unity-in-difference, we can construct a systematic theory of categories by employing the dialectical 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." [Tony Smith, The Logic of Marx's Capital, SUNY Press [NY: 1990], pp. 5-7, bold italics emphasis by F.E.D.]."

Each successive system of 'dialectical arithmetic' in this 'meta-system' of 'dialectical arithmetics' is itself more conceptually "concrete", and more conceptually "complex", with a greater wealth of features, specifications, or "determinations", than any of its predecessors -- "ancestor-systems" which it both internalizes and exceeds in descriptive power. That is, because each successive system of dialectical arithmetic is essentially a system of [ideographic] language, this 'concreteness/complexity gradient' means that not only is the description of each successor system more concrete/complex than that of any of its predecessors, but also that its capability to describe [other systems] is likewise more concrete/complex than that of any of its predecessor systems of language. Thus, the «arché» ideography, the language of the "Natural" Numbers arithmetic, is, on the surface, the root language of «dianoia», and is therefore not that of - is essentially the dialectical opposite of - «dialektiké». On its outer face, the first-order-only Peanic specification of the *Natural* Numbers arithmetic, herein denoted N, is assumed to be connotationally equivalent to N, the first-plus-higher-order specification of the "Natural" Numbers arithmetic. This N is assumed to be an arithmetic of pure, unqualified guantifiers. However, on closer study, e.g., with the aid of the Gödel completeness and incompleteness theorems, and of the Löwenheim-Skolem theorem, it is discovered that, in fact, N 🗧 M, and that it is ambiguous as to whether M denotes an arithmetic of pure, unqualified guantifiers, or even an extreme opposite of that, an arithmetic of pure, unquantifiable gualifiers, herein denoted by <u>Q</u>, or, more generically, by just <u>Q</u>. Moreover, <u>Q</u> is found to provide a generic model of «dlalektiké»! So, first, the "category of simple unity", denoted N, splits itself into the 'thesis plus [----] contra-thesis' "category of difference", denoted N, as we reflect [as] <u>N</u> upon <u>N</u>, thereby externalizing the <u>Q</u> 'internal-dual' of <u>N</u>. The system of arithmetic denoted <u>N</u> is the «arché» of the 'dialectical ideographies', both because <u>N</u> harbors NQ - the first explicitly 'dialectical' ideography - as N's own hidden, occult, inner face, and also because, as we have set forth on page 35 of Supplement A., the Peanic succession/counting process itself constitutes a 'vestigial', qualitatively-attenuated dialectical progression. Further [self-]reflection motivates a further self-movement of this 'antithesis[sum-of-categories]" or "category of difference", $\underline{\underline{N}} \xrightarrow{\underline{P}} \underline{\underline{N}}_{\underline{N}}$ to add to itself a '<u>uni-thesis'</u> -- a "complex unity" of $\underline{\underline{N}}$ and $\underline{\underline{N}}_{\underline{N}}$, herein denoted by $\underline{\underline{N}}_{\underline{N}}$ or $\underline{\underline{N}}_{\underline{U}}$ -- thus yielding the <u>'synthesis</u>[-sum-of-categories]' structure of '<u>thesis</u> plus <u>contra-thesis</u> plus <u>uni-thesis</u> ', herein denoted by $(\underline{\mathbb{N}} \oplus \underline{\mathbb{Q}} \oplus \hat{\underline{\mathfrak{g}}}_{\underline{ON}})$, or $(\underline{\mathbb{N}} \oplus \underline{\mathbb{Q}} \oplus \underline{\mathbb{U}})$. The $\underline{\mathbb{U}}$ arithmetic, as a "unification" of N and Q in which both the 'qualifier' and the 'quantifier' aspects of N are 'explicitized' and 'co-emphasized' concurrently, is the first explicitly 'quanto-qualitative' or "gualo-guantitative" arithmetic in this progression of dialectical arithmetics. Its 'meta-number', 'qualifier' units or «monads», denoted 🗓, can be quantified, or, its 'quantifiers', Un, can be qualified by these 'unit qualifiers', $\hat{\underline{u}}_n$, as in $(\underline{u}_n)\hat{\underline{u}}_n$ or $\hat{\underline{u}}_n(\underline{u}_n)$, respectively, wherein \underline{u}_n denotes a number element of \mathbf{N} , in the case of $\underline{\underline{u}}_n$, and where $\hat{\underline{u}}_n$ is an element of $\underline{\underline{N}}$. With Q, you can only express that a given ontological category, say 1a, denoting the ontological category of "atoms", is possibly instantiated/extant during, say, natural-historical epoch τ = 2 of universal evolution. But, with Q, you can't express how many atoms are expected to be extant, on average, during that epoch. With U you can. You can assert [+] that, say, 10^{20} atoms are believed to have been extant, on average, during the epoch denoted $\tau = 2$, by writing: +, $(10^{20})_{4,2} \hat{\underline{\theta}}_{ab}$. Thus, the species of $\underline{\underline{\#}}_{ab}$ that have been generated so far in

this present exposition of our 'meta-dynamical disjunctive syllogism' for the species of dialectical arithmetics include: (1) an arithmetic limited, explicitly at least, to pure quantifiers, (2) a successor/opposer' arithmetic limited to pure ontological qualifiers, and (3) a further-successor/reconciler' arithmetic capable of 'quanto-qualitative' descriptions. But this dialectic of systems/categories of dialectical arithmetics does not stop with this third 'ideo-ontological species' of 'qualifier meta-numbers'. So far, with this third language, you can express how many are extant of a given 'ontological species', e.g. 10²⁰ atoms, but you can't say how much those atoms weigh. You still lack ideographical 'metrical qualifiers', for your quantifiers to modify/multiply, so that you can express a quantitative measure of some quality of a population of «monads» "from" a given ontological category, creating values that are "products" of quantifier with metrical qualifier and [also tagged] with an ontic qualifier.

Self-reflexion of the \underline{Q} ontic qualifiers surfaces the system/category of arithmetic for the next species of 'qualifier meta-numbers', that of '<u>Metrical qualifiers</u>', denoted $\underline{\ddot{q}}_{QQ}$ or <u>M</u>, which is interpreted to connote a <u>Q</u>-like arithmetic of '<u>unquantifiable metrical qualifiers</u>' as, in effect, a special species/sub-type recapitulation of the <u>Q</u> unquantifiable qualifiers. This category/system of arithmetic is followed by a 'partial uni-thesis' arithmetic/language of 'quantifiable metrical qualifiers', as, in effect, a special species/sub-type recapitulation of <u>U</u>, denoted $\hat{\underline{q}}_{\underline{MN}}$. Though quantifiable, these $\hat{\underline{q}}_{\underline{MN}}$ metrical qualifiers are deficient in that they cannot yet explicitly express the compounding of metrical units required for a workable 'ideographic arithmetic for dimensions/dimensional analysis'. But the next 'partial uni-thesis' system of arithmetic, denoted $\hat{\underline{q}}_{\underline{MON}}$, or $\hat{\underline{q}}_{\underline{MO}}$ or for short, <u>Q</u>, supplies the 'complex unity' species of 'meta-number quanto-qualifiers' or 'qualo-quantifiers' that can express a 'quantified metrical qualifier' also tagged with/"multiplied" by an 'ontological qualifier', together constituting an 'ideogram-complex' which is capable – in terms of the state-space/control-parameter-space "dynamical analytical geometry" of the dynamical systems theory for "ordinary" or 'total' differential equations – of expressing either a "state-variable-value" or a "control-parameter-value". Such are denoted generically by $(\mu_n)[\hat{\underline{\mu}}_{\underline{R}}, \hat{\underline{\mu}}_{\mu}]$

the generic quantifier of the metrical qualifier, wherein $\hat{\vec{\mu}}_{\underline{\Sigma}}$ denotes the generic metrical qualifier, and wherein $\hat{\vec{\mu}}_n$ denotes the generic ontological qualifier, e.g., specifying the $\underline{\Sigma}_{\alpha}, \hat{\vec{\mu}}$

category of state-variable or of control-parameter in question, to which the measurement expressed by the $(\mu_n) \begin{bmatrix} \hat{\beta} \\ \mu \\ \frac{\Sigma}{2} \sigma_j \hat{\hat{\mu}}_j \end{bmatrix}$ portion applies. For example, a predator-prey biomass

ecological state-space model might use the metrical qualifier for mass, e.g., $\tilde{\mu}_{[t+\frac{D}{2}_2]}$, denoting "dimensional" or 'metrical' units/«monads» of, say, kilograms, for both predator species and

prey species, but, in one case, tagged with an ontological qualifier ideogram denoting one of the model's <u>P</u>redator species' ontological categories, e.g., $\hat{\underline{\mu}}_{p}$, where *P* denotes some <u>N</u> number, say **4**, and, in another case, with a different ontological qualifier ideogram, e.g., $\hat{\underline{\mu}}_{p}$, where p denotes some other natural number, say **3**, and also connotes one of the model's <u>or number</u>, say **4**, and, in another case, with a different ontological qualifier ideogram, e.g., $\hat{\underline{\mu}}_{p}$, where p denotes some other natural number, say **3**, and also connotes one of the model's ontic categories of <u>p</u>rey species, so that the state-space trajectory function for this dynamical system could be expressed as: $\underline{s}_x = \dots + \mu_3(\tau) [\hat{\underline{\mu}}_{0}^{k};] \hat{\underline{\mu}}_{3}^{k} + \mu_4(\tau) [\hat{\underline{\mu}}_{0}^{k};] \hat{\underline{\mu}}_{4}^{k} + \dots$

With emergence of the \underline{B} 'system-qualifiers', multiple dynamical systems can be modeled by a single formula, with a separate \underline{S}_{e} -like formula as subscript for each dynamical system. With the advent of the \underline{Y} 'super-system qualifiers', multiple dynamical systems' state-functions/control-functions, plus their multiple, subscripted sub-system state-functions/control-functions unite in a single formula, As itself constituting a particular instance of a 'meta-systematic dialectical process', the progression of categories/systems of dialectical arithmetic can also be modeled in the languages of each of the dialectical arithmetics in that progression of dialectical-arithmetical possibilities. In particular, the \underline{Q} language can be used to construct a model of the dialectic of the dialectical arithmetics, in whose categorial progression/systems-progression the \underline{Q} category/system also forms one of the categories/systems. We notate this 'meta-model' as one of the 'meta-speciation' or 'ideo-onto-dynamasis' of the possible 'ideo-ontological species' of 'qualifiers' as 'meta-numbers', using the symbol ' $\underline{\#}$ to denote the "universal" of the rules-system of such 'dialectical meta-numbers', and the symbol-complex ' $\underline{\#}_{e} = \underline{\#}_{0}^{2^{5}}$ ' to denote the 'ontology-sum' of these possible species, up to the τ th 'self-iteration' of the «arché» system/category, $\underline{\#}_{0} = \underline{\mathbb{N}}$. Applying this notation, the 'dialectical-ideographic model' of the dialectic of 'dialectical ideography' itself looks like this --

 $\underline{\mathbf{T}} \quad \underline{\mathbf{H}}_{\tau} \quad \underline{\mathbf{N}} \underline{\mathbf{Q}} \text{ Arithmetic Interpreted for the Dialectic of Dialectical Arithmetics within which} \quad \underline{\mathbf{N}} \underline{\mathbf{Q}} \text{ Itself Figures as 'First Contra-Thesis'} \quad \underline{''Uninterpreted'''} \quad \underline{\mathbf{N}} \underline{\mathbf{Q}} \text{ Arithmetic} \\ \mathbf{0} \quad \underline{\mathbf{H}}_{0} \quad - \left(\underline{\mathbf{N}}\right)^{2^{0}} - \left(\underline{\mathbf{N}}\right)^{1} \quad - \underline{\mathbf{N}} = \text{ stipulated origin/«arché»; connotes the first-order Peano Postulates rules-system for the ''\underline{\mathbf{N}} atural'' \underline{\mathbf{N}} umbers arithmetic of ''pure'', unqualified quantifiers; }$

$$1 \quad \underbrace{\#}_{1} = (\underline{\mathbf{N}})^{2^{1}} = (\underline{\mathbf{N}})^{2} \quad - \underline{\mathbf{N}}(\underline{\mathbf{N}}) - \underline{\mathbf{N}} \rightarrow \underline{\mathbf{C}} \quad = \ \underline{quantifiers as numbers} \rightarrow \underline{\mathbf{C}} \quad \underline{qualifiers as intete-numbers}; \qquad \mathbf{I} \hat{\mathbf{A}}_{1} \equiv \hat{\mathbf{A}}_{2} \mathbf{I} = \underline{\Sigma}_{k-1,2} \mathbf{I} \hat{\mathbf{A}}_{k} \mathbf{I}$$

$$2 \quad \underbrace{\#}_{2} = (\underline{\mathbf{N}})^{2^{2}} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}})^{2} = ((\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \hat{\mathbf{A}}_{0k}) \rightarrow \underline{\mathbf{C}} + \hat{\mathbf{A}}_{00}) = ((\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{U}}) \rightarrow \underline{\mathbf{C}} - \underline{\mathbf{M}}) \qquad \mathbf{I} \hat{\mathbf{A}}_{1} \equiv \hat{\mathbf{A}}_{2} \equiv \hat{\mathbf{A}}_{3} \equiv \hat{\mathbf{A}}_{4} \mathbf{I}$$

$$3 \quad \underbrace{\#}_{3} = (\underline{\mathbf{N}})^{2^{2}} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{U}} \otimes \underline{\mathbf{M}})^{2} = ((\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{U}} \otimes \underline{\mathbf{M}} \otimes \hat{\mathbf{A}}_{k0} \otimes \underline{\mathbf{Q}}) \rightarrow \underline{\mathbf{C}} - \underline{\mathbf{M}}) \qquad \mathbf{I} \hat{\mathbf{A}}_{1} \equiv \hat{\mathbf{A}}_{2} \equiv \hat{\mathbf{A}}_{3} \equiv \hat{\mathbf{A}}_{4} = \hat{\mathbf{A}}_{3} = \hat{\mathbf{A}}_{1} = (\underline{\mathbf{N}})^{2^{2}} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{U}} \otimes \underline{\mathbf{M}})^{2} = ((\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{U}} \otimes \underline{\mathbf{M}} \otimes \hat{\mathbf{A}}_{k0} \otimes \underline{\mathbf{Q}}) \rightarrow \underline{\mathbf{C}} - \underline{\mathbf{A}}) \qquad \mathbf{I} \hat{\mathbf{A}}_{1} \equiv \hat{\mathbf{A}}_{2} \equiv \hat{\mathbf{A}}_{3} \equiv \hat{\mathbf{A}}_{4} = (\underline{\mathbf{N}})^{2^{2}} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{M}} \otimes \hat{\mathbf{M}}_{k0} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{M}} \otimes \hat{\mathbf{A}}_{k0} = \underline{\mathbf{Q}} \otimes \underline{\mathbf{A}})^{2} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{M}} \otimes \hat{\mathbf{A}}_{k0} \otimes \underline{\mathbf{M}} \otimes \hat{\mathbf{A}}_{k0} \otimes \underline{\mathbf{Q}} \otimes \underline{\mathbf{M}} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}_{k0} = \underline{\mathbf{A}} \otimes \underline{\mathbf{A}}^{2} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{A}}_{k})^{2} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{A}}_{k})^{2} = (\underline{\mathbf{N}} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}_{k0} \otimes \underline{\mathbf{A}}^{2} = \underline{\mathbf{A}} \otimes \underline{\mathbf{A}}^{2} = \underline{\mathbf{A}}_{k1,1} = \underline{\mathbf{X}}_{k-1,2^{2}} \mathbb{I} \hat{\mathbf{A}}_{k} \mathbb{I} = \underline{\mathbf{X}}_{k-1,2^{2}} \mathbb{I} \hat{\mathbf{A}}_{k} \mathbb{I} = \underline{\mathbf{X}}_{k-1,2^{2}} \mathbb{I} \hat{\mathbf{A}}_{k} \mathbb{I} = \underline{\mathbf{X}}_{k-1,2^{2}} \mathbb{I} \hat{\mathbf{A}}_{k} \mathbb{I}$$

$$\hat{\mathbf{A}}_{k1} \otimes \hat{\mathbf{A}}_{k1} \otimes \hat{\mathbf{A}}_{k1} \otimes \hat{\mathbf{A}}_{k1} \otimes \hat{\mathbf{A}}_{k1} \otimes \hat{\mathbf{A}} \otimes \underline{\mathbf{A}} \otimes \underline$$

Because of the subscript syntax of the $\underline{\underline{H}}_{e}$ dialectical arithmetics, we can construct formulae, via the later arithmetical systems, which are not only capable of describing the 'meta-fractal' structures of physical and mental formations, but which are themselves 'meta-fractal' in their syntactical structure. I.e., these formulae can concurrently exhibit related ontological "genuses", species, sub-species, sub-species, sub-species, etc., . . . , or, equivalently, related super-systems, systems, sub-systems, and sub-systems, etc., in terms of the population count of each, in terms of multiple measured state-variables and control-parameters, describing the state-space trajectory-cum-control-space path of each such connected super-system, system, and sub-system, etc., in terms of metrically-qualified as well as ontologically-qualified quantifiers, thus formulating the multiple solution-functions for several "systems" of [e.g., nonlinear] "total" or "ordinary" integro-differential equations by means of a single formula.

Later arithmetics can also describe an evolving "field", in physical three-space and time, as a physical-space-extended system, in terms of the time-changing states of each of that system's manifold or "mesh" of physical-spatial "points", thus, in effect, formulating the solution-function for a "discretized"/"finitized" [e.g., nonlinear] "*partial*" differential equation.

Furthermore, these later arithmetics can formulate that solution-function in a way which already embodies our paradigm, of 'meta-evolutionary meta-dynamics', by 'continuing through' "singularities", or temporal points/moments at which divisions-by-zero occur. This "continuation through" singularities typically manifests as an "extinction", via a zeroingout of the time-varying guantifier of the ontological and/or metrical gualifiers, of some previously-extant ontology of the system, inside the 'conversion-locus' or 'driver-locus' of this spatially-extended system, owing to the "complete conversion" of that old ontology into new/next ontology there, though, typically, that previously-extant ontology continues to exist/be conserved in [parts of] the rest of the 'conversion-formation' that constitutes the spatially-extended system being modeled. The "complete conversion" within that 'conversion-locus' also implies an irruption of new/next ontology, in that same 'conversion-locus' of that 'conversion-formation'; new ontology into which the old ontology has been 'completely converted', as of the moment of singularity, by the 'core ontological conversion-process', typically also the 'power-process', or 'energizing principle', of the entire 'conversion-formation'. The 'ontological qualifiers' of this new ontology, together with the 'metrical qualifiers' they 'qualitatively multiply', would have, up until that moment of singularity, been conjointly "quantitatively multiplied" by the zeros which would have been the values of their timevarying quantifier-valued functions in the solution-function formula in question. Thereby, the existence/'extantcy' of that new ontology would have been "zeroed-out" for all values of the time parameter, t, representing times earlier than the critical moment of the singularity. Only for times at and after that critical value of t would the time-varying quantifiervalued functions multiplying the 'onto-metrical qualifiers' of that new-ontology -- 'quantitatively-multiplying' its 'metrical qualifiers, which are also, already, in turn, 'qualitatively multiplied' by its ontological qualifiers' -- become non-zero. That is, this 'meta-dynamics' of zero-to-non-zero transition "'time-variability" of these quantifier-functions would address the "four-dimensional", "space-time" description of that species of dialectical processes in which the 'meta-dynamical', 'meta-evolutionary', or "'system-revolutionizing" 'conversion singularity' involves a sudden irruption of the crucial new ontology of the successor system, at/after the moment of singularity, but not at all before it, as in the example of gravitic many-body conversion-/collision-singularity discussed in Supplement A. Other dialectical processes involve the gradual formation of that new ontology -- the ontology that is definitive of the 'successor-formation' as "'successor-system"' -prior to the moment of singularity, so that the functions quantifying the 'onto-metrical qualifiers' for that new ontology must become non-zero at values of t representing times *earlier than* the critical time of the singularity.

The latter species includes dialectical processes in which [as with 'stellar-core-nucleosynthesis-driven-stellar-evolution] the new ontology, [e.g., the Helium species of the genus of atoms] accumulates gradually within the 'conversion locus' of the 'conversion-formation', long before the structural crisis of that formation [e.g., within the stellar core as 'conversion-locus', through the gradual, fusion-conversion of the earlier core-dominating Hydrogen species of the atomic genus into the Helium species], which crisis/"revolution"/meta-evolution' is precliptated only at the moment of the <u>complete</u> conversion of the earlier-dominant ontology in the conversion-locus' core' of that formation, <u>fully</u> into the new ontology characterizing the "successor-system". Such a crisis transforms the very nature of that 'predecessor' conversion-formation, as 'predecessor-system' into a qualitatively different, "successor-system", with different dynamical "laws" than those of its 'predecessor-system' [e.g., the resumed-implosion crisis of the star - of the stellar/atomic 'conversion formation' - is triggered the moment that the Hydrogen fusion explosion-process in the core "burns out of its Hydrogen fuel – thence inducing the "Helium flash" in the now essentially zero-Hydrogen, totally-Helium stellar core, thereby driving the "laws of motion/evolution" of the star off of the stellar "Main Sequence", and into a qualitatively different domain of stellar dynamics/behavior].

Moreover, the 'partial-differential dynamics' [and also the 'singularity meta-dynamics'] of the spatially-extended ... super-systems and ... sub-systems of that spatially-extended system can also be expressed ideographically, in detail, concurrently and inclusively together with the ideographical expression for the spatially-extended system itself, all by means of a single, multi-level [multi-subscript-level] solution-formula, containing explicit, distinct, but coupled modeling for each of the 'conversion loci' and/versus for the rest of their 'conversion-formations'. These later arithmetics, and their algebras, thus represent a veritable 'syntactical embodiment' of a "'Principle of Non-Reductionism'' -- a principle which applies to a multi-level, multi-scale, and multi-epochal/"historically-specific" qualitatively-differentiated "lawfulness", in which the "laws" and the total ontology of any one synchronic scale and diachronic epoch are expressed as being irreducible to those of any of the others.

Example 1: [Psycho-]Historical-Dialectical Model -- An Q Model of the Ideo-Onto-Dynamasis' of the Fields of Human Cognitive [Psycho-]History.

<u>Caveats</u>. As such, no model can escape its share of 'homeomorphic defect'. Beyond that general caveat, one should note that the 'lock-step' algorithmic underpinnings of modeling applications built using \underline{O} heuristic, intensional-intuitional calculi may provide useful guidance to human intuition and imagination in the process of discovery, provided that the basic succession principle of the calculus in use, and of the product rule selected, constitute an apt representation of that of the particular, actual 'consecuum' being modeled. One should also note that the 'resolution' or 'acuity' of this Example 1 model, as of any such model, will depend crucially upon the 'partition principle', or the 'ontological taxonomy', i.e., the 'framework of categorization' into which the modeler chooses to sub-divide the chosen universe of discourse, a la the cautions expressed by "The Stranger" to "The Young Socrates" in the passage from Plato's dialogue "The Statesman" excerpted above.

We apply the Q language, in Example 1, to model, in abstraction from any explicit symbolization of the influences of co-evolving

human social praxis, the 'diachronic ideo-phenomenology' of the 'ideo-auto-kinesis', of the self-developing 'ideo-ontology', of the cognitive psycho-history of humanity in terms of a "History Of Ideas", and in terms of the historical order of emergence of the broad disciplinary categories or "fields" of human idea-systems. That is, we posit a primitive undifferentiated unity of explanation-making, theory-making, or story-creation, i.e., the largely oral and even 'gestural' category of "Mythology" or "Mythopoeia", as the «arché» proto-field or proto-discipline category of human ideation. Furthermore, we hold that, in the psycho-historical logic of the unfolding of human ideation, this category has been followed by that of doctrinal, codified, scriptural, and institutionalized "Religions", then by that of "Philosophies", and then by that of empirically justified 'Knowledges', or "Sciences". We therefore interpret or assign [\leftrightarrow] the 'meta-numerals' of the <u>N</u> arithmetic to these "Intellectual Fields" categories, or systems, also assigning single-character, 'mnemonic' / 'algebraic-literal syncopes', or abbreviations, for these 'ideo-ontological categories', as follows --

M = The 'ideo-ontological' category or «arithmos» whose «monads» are systems of Mythology; stipulated starting point, or «arché» 🗢 g;

<u>R</u> = The 'ideo-ontological' category of <u>R</u>eligions = 'meta-Mythologies', each made out of a heterogeneous multiplicity of Mythologies \Leftrightarrow $\hat{\mathbf{g}}_{a}$;

- = ΔM = \hat{g}_{MM} ;
- P = The 'ideo-ontological' category of Philosophies = 'meta-Religions', each made out of a heterogeneous multiplicity of Religions $\Leftrightarrow \hat{\mathbf{g}}$;
 - = ΔR = \hat{q}_{RR} ;
- **K** = The '*ideo-ontological' category* of Empirically-Justified <u>K</u>nowledge<u>s</u>, or Science<u>s</u>, i.e., of an 'ideo-ontological' category or «*arithmos*» each of whose '<u>meta</u>-«*monads*»' are '<u>meta</u>-Philosophies', each made out of a *heterogeneous multiplicity* of Philosophies $\Leftrightarrow \hat{\mathbf{g}}_{e}$;

$$\underline{\Delta P} = \hat{g}_{RR}$$

The 'ideo-ontic' categorial progression/'consecuum' generator, for this dialectic, is denoted $(\mathbf{M})^{2^{\tau \tau}} \leftrightarrow \mathbf{I} \hat{\mathbf{g}}_{1} \mathbf{J}^{2^{\tau \tau}}$. This [*psycho-*]*historical dialectic* unfolds, in its first four 'revolutions', as the diachronic epoch-index, τ , escalates, i.e., as $\tau \uparrow$, *per this model*, as follows, using the '*«aufheben» evolute product rule*': $\hat{\mathbf{g}}_{n} \otimes \hat{\mathbf{g}}_{m} = \hat{\mathbf{g}}_{m} \otimes \hat{\mathbf{g}}_{n+m}$ for "Natural" numbers **n** and **m**, and $\hat{\mathbf{g}}_{Y} \otimes \hat{\mathbf{g}}_{X} = \hat{\mathbf{g}}_{X} \otimes \hat{\mathbf{g}}_{YX}$ for categorial connotative-mnemonic character-symbols X and Y, and, for 'auto-kinesic', 'self-[inter-]active', 'self-reflexive' cases, $\hat{\mathbf{g}}_{X} \otimes \hat{\mathbf{g}}_{X} = \hat{\mathbf{g}}_{X} \oplus \hat{\mathbf{g}}_{XX}$ --

0. Epoch 0, $\tau = 0$: $\underline{Q}_{0} = \mathbf{I}\hat{g}_{1}\mathbf{J}^{2^{0}} = \mathbf{I}\hat{g}_{1}\mathbf{J}^{1} = \mathbf{I}\hat{g}_{1}\mathbf{J} \implies \mathbf{A} \mathbf{M}^{2^{0}} = \mathbf{M}^{1} = \mathbf{M}^{1} = \mathbf{M}^{1};$ 1. Epoch 1, $\tau = 1$: $\underline{Q}_{1} = \mathbf{I}\hat{g}_{1}\mathbf{J}^{2^{1}} = \mathbf{I}\hat{g}_{1}\mathbf{J}^{1} = \mathbf{I}\hat{g}_{1} \Leftrightarrow \hat{g}_{2}\mathbf{J} \implies \mathbf{M}^{2^{1}} = \mathbf{M}^{1}\mathbf{M}^{2} = \mathbf{M}^{1} \oplus \mathbf{R};$ 2. Epoch 2, $\tau = 2$: $\mathbf{I}\hat{g}_{1}\mathbf{J}^{2^{2}} = \mathbf{I}\hat{g}_{1}\mathbf{J}^{4} = \mathbf{I}\hat{g}_{1} \Leftrightarrow \hat{g}_{2} \Leftrightarrow \hat{g}_{3} \Leftrightarrow \hat{g}_{4}\mathbf{J} \implies \mathbf{M}^{1} \oplus \mathbf{R}^{2} = \mathbf{M}^{1} \oplus \mathbf{R} \Leftrightarrow \hat{g}_{RM} \Leftrightarrow \mathbf{P};$ 3. Epoch 3, $\tau = 3$: $\mathbf{I}\hat{g}_{1}\mathbf{J}^{2^{3}} \iff_{\mathbf{P}^{4}}\mathbf{M}^{4} \oplus \mathbf{R}^{4} \Leftrightarrow \hat{g}_{RM}^{4} \oplus \mathbf{P}^{4} = \mathbf{M}^{4} \oplus \mathbf{R}^{4} \oplus \hat{g}_{RM}^{4} \oplus \mathbf{P}^{2} = \mathbf{M}^{4} \oplus \mathbf{R}^{4} \oplus \mathbf{R}^{4$

Note the *«aufheben»* "conservation"/transformation/"elevation" structure, or 'evolute' structure, of the above-depicted four successive "revolutions", or 'meta-evolutions', of the intellectual "fields"/systems/categories of human intellectual history.

Note also the ever-self-expanding, ever-self-accumulating, 'multi-ideo-meta-ontic', 'multi-ideo-meta-monadic', 'qualitatively-scaled/self-similar' or 'meta-fractal' character of the '<u>evolute</u> ideo-consecuum-cumulum' depicted by the above-expressed 'non-reductionistic', 'non-amalgamative sums' of categories of 'ideo-ontology'. An "<u>evolute</u>" spiral shell, as it grows, grows up out of the level of its original growth, into new, higher levels, so that its preceding growth is <u>not</u> hidden from horizontal view by its succeeding growth. A "convolute" spiral shell, in which all growth takes place on the same, original level, is deployed such that its later 'whorls' block from vision its earlier 'whorls', if viewed horizontally, hiding its past history from present view. In the universe of discourse of human intellectual disciplines, Mythology did not entirely vanish when it was superceded by Religion, nor did Religion entirely vanish when it was superceded by Science. However, it is true that the Mythology that has been conserved -- that has survived into the epoch of Religion and beyond -- has been influenced by, has adjusted to, and has been adapted by Religion, *et sequelae*, Religion by Philosophy, *et sequelae*, and Philosophy by Science.

In the 'evolute' or "'«aufheben»" categorial progression which is ideographically 'notated', 'algebraicized', or '<u>character</u>-ized' above, the new does not 'cover over' the old, but "at each stage of its further determination it raises the entire mass of its preceding content, and by its <u>dialectical advance</u> it not only does not lose anything or leave anything behind, but carries along with it all it has gained and inwardly enriches and consolidates itself" [Hegel, emphasis <u>added</u> by F.<u>E</u>.<u>D</u>.].

The old is fully conserved, at least in *possibility*, if not always in actuality, in the new. For we interpret the self-expanding spaces, of self-expanding dimensionality, which are modeled by the \underline{N} language, to be *Possibility Spaces*, rather than *Actuality Spaces*. That $\hat{\mathbf{q}}_{RM}$ is first extant in this model's progression in epoch $\tau = 2$, signifies, per this principle of interpretation, that [finite] manifestation of the 'intension' or category of ideo-ontology signified by $\hat{\mathbf{q}}_{RM}$ is *possible* in epochs $\tau \ge 2$, but <u>not</u> in epochs $\tau < 2$. Moreover, this mere 'extantcy' of $\hat{\mathbf{q}}_{RM}$ does not, at this model's level of determinateness/concreteness, imply any guarantee that this *possibility* will be *actualized* in a given historical instantiation of $(\mathbf{M})^{2^{\tau\uparrow}}$, for epochs $\tau \ge 2$.

This 'meta-model' does suggest an agenda for a historiography that it could serve: to attempt to map the authors, schools, and intellectual movements of the Terran past to the hybrid and non-hybrid terms and categories of the $M^{2^{\tau^{\uparrow}}}$ self-expansion. The first historical transitions, per this model, were those from the oral/dance story-making and collective story-telling of "*Mythology*", "superstition", or "popular religion", to the separation of elite[-only], literacy-based, bureaucratized, institutionalized, ritualized, 'literaturized', codified, sacred-text-based, text-fetishistic, doctrinaire, dogmatic, inquisitorial *Religion*, used as a ruling ideology for the "justification" of economic and other power-political exploitation of the scial majority. The ancient Roman architectural *«tour de force»* of the *«Pantheon»* might be seen as a penultimate materialized expression of this ideological process. The early transitions are, for most of us, mostly lost to detailed knowledge, lost in the mists of our deep, proto-literate past. We might conjecture, however, that, in the expansion of trade between city-states ruled with the help of "Mythopoeic" ideologies, and, especially, in the conquest of rival city-states by emergent, multi-city-state empires, the discrepancies between the many instances of local, unique, single-city-state-specific mythological ruling ideologies, and the legitimation needs to reconcile and to subsume or mutually incorporate these ideologies in support of the victorious rulers, provided impetus for processes of '*meta-mythologization*' that conduced to the emergence of codified, doctrinaire "Religions" in the sense intended for this model. We here suspend any further exposition concerning those 'meta-evolutionary', 'meta-dynamical' transitions, for now, for the purposes of this *Supplement*, in the present narrative gloss of this 'ideo-ontological' and ideo-onto-*dynamical*', ideographical 'model of human *ideo*-history', as belonging to a

scope beyond that of this introductory exposition. The $\tau = 2$ transition involves the term $\hat{\mathbf{g}}_{RM}$, which connotes a 'hybridization' or 'subsumption' of $\underline{\mathbf{M}}$ by $\underline{\mathbf{R}}$, or a 'ontological conversion' of $\underline{\mathbf{M}}$ into $\underline{\mathbf{R}}$, catalyzed by the emergence/presence/action of $\underline{\mathbf{R}}$:

The anthropological-historical record may be perused to see if the above 'mnemonograms', generated by the 'self-iteration' of \underline{M} , i.e., by $\underline{\langle M \rangle}^{2^{71}}$, call attention, 'postdictively', to records of reconstructions or relics of past-actualized 'memetic' categories – to 'psycho-ideological formations', social institutions, and/or social processes – answering to these ideographic connotative descriptions/specifications; institutions and processes perhaps not previously or otherwise recognized in this sense, as correspondences to these dialectical 'consecua'. Such tasks inhere in the most fundamental activities of the *Encyclopedia Dialectica* project.

Note above that, per this model, *Philosophy* arises as the 'contra-thesis' to the <u>entire</u> 'evolute cumulum' of the priorlyemergent 'ideo-ontology'. Again, our conjecture is that the confrontation of ancient thinkers and ideologues with many disparate and mutually-inconsistent religions, through trade, war, and otherwise-occasioned travel and other contact among multiple empires and city-states, engendered both the opportunity and the felt need to reconcile and unify diverse and conflicting doctrines, brewing up the 'meta-theologizing' that gave birth to Philosophy, in the sense that we assert **Philosophy** $\frac{1}{2}$ **Religion**, or that **P** $\frac{1}{2}$ **R**. In considering the possible actuality of a 'progressive historical opposition' or 'progressive antagonism' [----] between *Philosophy* and *Religion*, recall that many of the ancient Greek philosophers, including Socrates, were executed or exiled on charges including "atheism" against the ancient pagan 'mytho-religious' ideology of the Greek gods, which was seen as crucial to their power to rule by the rulers of the Athenian "democratic"/slave-ocratic' state, although, e.g., Socrates was hardly an atheist in general, still professing belief in <u>a</u> God.

Consider the next, $\tau = 3$ transition's spate of new socio-cultural meme-populations -- of new 'ideo-ontology' -- per this model. It includes a 'post-diction' or 'retro-diction' of the emergence of an 'ideo-ontological' category which is a partial 'uni-thesis', denoted $\hat{\mathfrak{g}}_{PR} \Leftrightarrow \hat{\mathfrak{g}}_{\mathfrak{g}}$, with respect to the *Philosophy* versus *Religion*-and-predecessors *antithesis*, denoted $\{ \mathbf{M} \Leftrightarrow \mathbf{R} \Leftrightarrow \hat{\mathfrak{g}}_{PM} \} \rightarrow \mathbf{P}$:

Perhaps, for examples, the great «Summae» of the medieval European Schoolmen, including the Summa Theologiae doctrines of Thomas Aquinas, cohere within this category? Or perhaps they belong to a 'retrograde' category, $\hat{\mathbf{g}}_{RP}$ [see final <u>Comment</u>, below].

Also in this epoch of $\tau = 3$, beyond the grand 'uni-thesis' of 'mytho-religion' and philosophy, denoted \hat{g}_{PPM} , this model posits the emergence of a new 'contra-thesis' category, of Scientific Knowledge, or Science, as $\mathbf{K} = \Delta \mathbf{P} = \Delta \Delta \mathbf{R} =$ ΔΔΔM, opposing the entire 'evolute consecuum-cumulum' of previously-posited 'ideological-ontology'. Again, our hypothesis is that the confrontation of ancient philosopher-ideologues with many disparate and mutually-inconsistent schools of philosophy, through trade, war, and otherwise-occasioned travel and otherwise-motivated contact among multiple colonies as well as with other empires and city-states, occasioned both the opportunity and the felt need to reconcile and unify diverse and conflicting claims, including by putting some of these claims to practical-empirical "trials" or tests, eventually engendering the 'meta-philosophizing' that gave birth to Scientific Knowledge, including out of that branch of Philosophy later known as "Natural Philosophy", the «arché» category of K, in the sense that we assert that <u>Scientific Knowledge</u> $\frac{1}{2}$ <u>Philosophy</u>, or that <u>K $\frac{1}{2}$ <u>P</u>. The antagonism between *Scientific Knowledge* and *Religion* is</u> still today widely remembered, as in the cases of the Inquisitorial persecution of Galileo Galilei by the Catholic Church, and in the pre-emptive self-censorships of Rene Descartes in response. The antagonism between Philosophy and Science, as in the academic combat between the early, Galilean proto-physicists and the Aristotelians, although less widely known today, is also well-documented. The model's next subsumption/self-iteration asserts a subsequent emergence of seven categories, 'partial uni-theses' or 'partial hybridizations', or 'conversion-formations' out of the combinations of the preceding partitions of 'ideo-ontology', culminating in a 'grand synthesis' of Mythopoeia, Religion, Philosophy, and

Scientific Knowledge, $\hat{\mathbf{q}}_{\text{KPRM}} \leftrightarrow \hat{\mathbf{q}}_{15}$, which is, no doubt, not yet fully extant even in our own time:

$\underbrace{ \left(\underline{M} \oplus \underline{R} \oplus \hat{g}_{RM} \oplus \underline{P} \oplus \hat{g}_{PM} \oplus \hat{g}_{PR} \oplus \hat{g}_{PRM} \oplus \underline{K} \oplus \hat{g}_{KM} \oplus \hat{g}_{KR} \oplus \hat{g}_{KRM} \oplus \hat{g}_{KP} \oplus \hat{g}_{KPM} \oplus \hat{g}_{KPR} \oplus \hat{g}_{KPR} \oplus \hat{g}_{KPRM} \oplus \underline{\Psi} \right) }_{ KPRM}$

Summarizing this <u>cumulative progression</u> of 'ideo-ontological categories' through its third 'full uni-thesis' category of $\mathbf{\hat{g}}_{\mathsf{KPRM}}$, we note that each of these categories is, implicitly, an «arithmos» or "population" of "memes", or, more accurately, of 'meme-complexes', whose 'ideo-ontological species' is specified by the subscripted 'meme-ograms' or 'mnemon-ograms' of their associated symbol. Thus "individuals", "units", or «monads» of $\mathbf{\underline{M}}$ are the particular historical Mythologies that have existed. The «monads» of $\mathbf{\underline{R}}$ are the particular historical Religions. The «monads» of $\mathbf{\underline{P}}$ are the particular historical particular historical Philosophies. The «monads» of $\mathbf{\underline{K}}$ are all of the particular Scientific Theories that have existed, including those that have by now "died out" or "become extinct".

Beyond $\hat{\mathbf{g}}_{\mathbf{KPRM'}}$ i.e., if this progression is held to continue beyond the advent of $\underline{\mathbf{K}}$, and of the subsumption, by $\underline{\mathbf{K}}$, of its predecessor 'ideo-ontos', then this model predicts, in epoch 4, in $\left(\underline{\mathbf{M}}\right)^{2^4}$, the emergence of a new 'contra-thesis' category, field, or discipline of human cognition, denoted with a '?' above, and equal to $\hat{\mathbf{g}}_{\mathbf{KK}} = \underline{\Delta}^1 \underline{\mathbf{K}} = \underline{\Delta}^2 \underline{\mathbf{P}} = \underline{\Delta}^3 \underline{\mathbf{R}} = \underline{\Delta}^4 \underline{\mathbf{M}}$. Is the envisionment of this category of the 'psycho-history' of human thought so far beyond the horizon of our times as to make its symbol in this model, $\underline{\Delta}\underline{\mathbf{K}}$, uninterpretable by us -- beyond our ken? Or does $\hat{\mathbf{g}}_{\mathbf{KK}} = \underline{\Delta}\underline{\mathbf{K}} = \underline{\Psi}$, denoting the field of *Psycho-History* itself? Well, what is '*Psycho-History*'? What do we intend/connote, in this context, by that term?

The term 'Psycho-History' as herein employed, is really a contraction that stands for an 'anthropo-sociological, political-economic, collective or inter-subjective historical psychology' of the human species. It signifies the comprehensive 'self-<u>historicization</u>' of all of the sciences, including mathematics, and including the sciences of the human psyche, thus also coupled with the comprehensive 'self-<u>psychologization</u>' of all of the sciences; the rigorous accounting for the "lawfully" developing 'ingredience' of historically-developing collective-subjective human mentality in all of the theoretical products of humans. The former, 'self-historicization' hypothesis is grounded in a broad-based, growing trend within recent human thought, as traced in such studies as The Discovery Of Time by Toulmin and Goodfield.

Marx and Engels wrote, in The German Ideology, "We know only a single science, the science of history". In Capital, Marx wrote of "historically specific" social-evolutionary "laws of motion", valid only within the limits of one epoch of social 'meta-evolution'; not the same before that epoch begins, nor after it ends. He thus envisioned the "laws" of [social] self-change as self-forming within a historical and 'meta-evolutionary' self-change of "laws", and, moreover, within a 'meta-lawful' and a qualitative self-change of [social] "laws" from one such social-evolutionary epoch to the next, not just a quantitative self-change of "laws". In the Grundrisse, Marx wrote of the "material force" of human social conscience ['con-scientia'], of humanity's collective 'psyche-ology': "with the slave's awareness that he cannot be the property of another, with his consciousness of himself as a person, the existence of slavery becomes a merely artificial, vegetative existence, and ceases to be able to prevail as the basis of production." [Grundrisse: Foundations of the Critique of Political Economy, Pelican [London: 1973], p. 463]. In the Economic-Philosophic Manuscripts of 1844, Marx wrote: "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. This history has not so far been conceived in relation to human nature, but only from a superficial utilitarian point of view, since in the condition of alienation it was only possible to conceive real human faculties and human species-action in the form of general human existence, as religion, or as history in its abstract, general aspect as politics, art and literature, etc. Everyday material industry...shows us, in the form of sensuous useful objects the essential human faculties transformed into objects. No psychology for which this book, i.e., the most tangible and accessible part of history, remains closed, can become a real science with a genuine content." [see T. B. Bottomore, Karl Marx: Early Writings, McGraw-Hill [NY:1964], pp. 162-163.]. Today's official Natural Science retains the 'Parmenidean hangover' of viewing natural regularities, natural "laws", and most natural conditions, as fixed and static -- the latter being an assumption to which even Einstein succumbed in what he later assessed to be his "greatest blunder": adding the "cosmological constant" to his equations for General Relativity to 'staticize' its model universe because, without it, they predicted the "expanding universe" later encountered observationally by Hubble. Official Science assumes a time-independent 'repeatability' of experiments, with the same average results. But what if the "laws" of nature, and, more specifically, their universal "constants", like Newton's G, are actually variables, functions of history, and thus change with time [a possibility of quantitative change of natural "laws" which Dirac and Poincaré explored], even if over time-scales mostly beyond human observation to-date? "Mach's Principle" held the inertia of each body to result from its gravitic interaction with the totality of mass-bodies in the universe, thus changing as a function of the history of the universe if that history involved, e.g., gravitationally-induced movements sufficiently redistributing those mass-bodies in terms of their relative positions and concentrations in physical space, as a result of those bodies' own mutual gravitational interactions themselves. Volterra formulated integral equations which predicted the next state of a system as a function of its entire history, of the integration of all of its past states. The phenomenon of "hysteresis", or history-dependent reactivity, in which a system's further reactions depend upon its history of previous reactions, received attention. Perhaps the assumption of memory-less "state-determinism" in the state-spaces of contemporary dynamical systems theory -- the assumption that two systems of the same kind, attaining a given state, must have the same next state, no matter how different their past state-trajectories; their past histories of interaction and "entanglement"; the assumption that state-space trajectories can never cross, is inadequate to reality.

Perhaps the apparent indeterminacy/probabilism' of next states in Quantum Mechanics is an artefact of that theory's assumptions of linearity and memory-less state-determinism? Perhaps the apparent "randomicity" of "quantum" behavior is actually its 'historicity' -- due to the impact of the differing 'cumula' of the past "entanglements" of supposedly "individuality-less", "identical", "indistinguishable" "quanta" on their present/recent behavior? [Super-]String theory, one of the leading contemporary candidates for the "Unified Field Theory" of all physical forces, makes gradual quantitative change of physical "laws" an inherent feature of its model of the universe, via the "dilaton field". Meanwhile, on the more philosophical frontiers of the natural and social sciences, Benedetto Croce held that all knowledge is historical knowledge, that historical knowledge is complete knowledge. Bergson argued for a new, less abstract, more 'contental' conception of time, which he termed "concrete duration". Chardin argued that all phenomena investigated by science must henceforth be viewed «sub specie evolutionis». The "time reversible" character of the equations which formulate the "laws" of nature in physics -- despite the apparently irreversible character of macroscopic process and macroscopic time ["time's arrow"] as humans experience it -- came under increasingly critical scrutiny, by Blum, Reichenbach, Prigogine, Davies, and others.

For us, the phenomenon of 'onto-dynamasis' forms the key consideration with respect to the 'quanto-qualitative' evolution and 'meta-evolution" of the "laws" of nature, including of the "laws" of human-social Nature and its self-evolution and 'self-meta-evolution' within the dynamical and 'meta-dynamical' historical totality of Nature as a whole. An escalating expansion of qualitative "degrees of freedom", of behavioral possibilities, of the kinds of action available, accumulates with the net self-expansion of the ontology of the cosmos, an ontological expansion in the past that humanity, as \underline{K} , has reconstructed from its present evidence/consequences/traces. The historical progression from a cosmos populated by eventities organized only up to the level of "pre-nuclear particles", to one that includes also "sub-atomic particles", to one that includes also "atoms", to one that includes also "molecules", to one that includes also "prokaryotic cells", to one that includes also "eukaryotic cells", to one that includes also "multicellular organisms", to one that includes also "animal societies", to one that includes also 'humanoid meta-societies'...qualitatively expands the universe of "events", "processes" and "activities" which true "laws" of nature -- as codifications of the actually-manifest [and mutable] "habits' [Peirce] of Nature -- must describe.

"OK", you might say, "all of the above is an argument for the self-transformation of Science in the sense of its comprehensive 'self-*historicization*'. That's an argument for the "*History*" component in $\Delta \mathbf{K} = \Psi = \underline{Psycho-History}$. But where does the "<u>Psyche</u>" come into it?

We hold that the *potential* for, the *possibility* of, $\uparrow \Psi = \uparrow Psycho-History$ arises with the accumulation and 'densification' of the instances and track records of its predecessor kind of memetic population, i.e., with the growth of the populations of the «monads» of K, i.e., of Scientific Theories/Knowledges, and with the observation thereof by thinking human subjects. It is the observation of the growing history of "successes" and "failures" and changes and other consequences of the growth of \underline{K} that can lead to $T\Psi$. It is the growing 'self-surroundment' and 'self-environment'; the consequently rising frequency of the 'self-confrontation' or 'self-encounter' or 'self-inter-/intra-action' within K; of the interaction of K-type «monads» with other K-type «monads», other «monads» of their own, K, kind/ontological species', rather than, as earlier, with «monads» of other, predecessor-kinds/ontological species' -- e.g., with P-type «monads», and R-type «monads», and M-type «monads» -- that engenders the irruption of the successor 'ontological species', the irruption [\uparrow] of Ψ ; of its *new* 'ontological species'; its new «*arithmos*»; its *new* kind of [*meta*-]«*monads*». The human «mentalité» and ideology of each epoch of human social formation constitutes, in effect, a different 'memetic'/'Phenomic' species of humanity. It is by means of this observation and consideration of the accumulating data of K that the contours and the consequences of the ingredience of homo sapiens sapiens species-specific/meta-evolving' subjectivity in the scientific-theoretical/memetical' objects that humanity constructs is revealed. It is in this sense that, herein, the ideogram Ψ intends an 'ideo-ontological category' of 'meta-scientific theories' constituted critically out of heterogeneous multiplicities of scientific theories; a category of meta-K «monads», each made up out of, or critically 'interiorizing', a heterogeneous multiplicity of K-type «monads». It is in this sense that the W-«monads» can be grasped as 'meta-«monads»' with respect to the type-K «monads»; 'self-«aufheben»' 'self-subsumptions' or 'self-internalizations' of the K-«monads». The «monads» of Ψ are thus 'psycho-historical theories' [i.e., explanations of multiplicities of K-type theory-«monads»].

We thus hold that $\Psi = \underline{Psycho-Historv}$ must denote a single science, a science of history that encompasses the history of science, i.e., that includes a science of the history of science, a 'science of the sciences' as 'meta-science', 'science squared' or 'science of the second degree', employing the material of the present, the 'pre-sent'; the material "sent from the past", to rigorously 're-construct' the past and to '<u>pre-construct</u>' the future, based upon the 'meta-fractal' principles of [<u>pre-</u>]construction thus made evident in the past, and thus also a science of <u>human</u> subjectivity, of human 'subject-hood', or 'subject-ness', and of the "objectifications" thereof, and this in a double sense:

(1) <u>Psycho-History as Part of Natural History</u>. With respect to the future, and to those portions of the past during which *the history of human Nature* has been part of *the history of Nature*, <u>Psycho-History</u> must account for this history of human subjects and "subjectivities" or ""«*mentalités*»"; for the activity of humanity, as part of the history and the activity of cosmic Nature as a totality. There human subjectivity and its ideologies are part of the side of the observed and theorized as well as of the side of the observers and of the theorizers.

(2) <u>Psycho-History and the Self-Accounting, by Human Subjectivity, for the History of Human Theories of Natural and Human Subjectivity.</u> Yet even when considering scientific theories of *contemporary extra*-human nature, as well as of pre-homo-sapiens 'Natural History', i.e., of *pre*-human/*extra*-human Nature, where human societies and human subjects are not among the objects, not part of the side of the objectivity being theorized -- observed or reconstructed -- nevertheless, *psyches are involved*: human subjectivity remains on the side of the observors and theorizers. A true **Psycho-History** must account for the human 'subject-*ive'*, *socio-psychological-cultural*, *collective-cognitive-developmental*, '*ideo-ontodynamical*', and *ideological ingredience*; the ingredience of historically 'meta-evolving' human *mentality*, in the ideological/scientific theories that human beings produce: ideological/scientific theories about natural agency and human agency alike.

The history of human ideas, the history of human knowledge, the history of science -- of <u>this</u> humanity's sciences -including the history of mathematics, is part of the "historical material", which is, in fact, a '<u>psycho-historical</u> material', whose artefacts are, in fact, <u>meme</u>-bearing, <u>meme</u>-etched, <u>meme</u>-recording '<u>psycho-artefacts'</u>, rather than an "object-only" "mere", or 'matterist', "matter". The 'historical materialism" of '<u>Psycho-History</u>' is thus a '<u>Psycho-Historical</u> Materialism'. It is not some *reductionist* '<u>Matterism</u>', which denies that human self-awareness represents yet a new, latest [at least locally] 'auto-onto-dynamasis' of Nature; a fundamental <u>addition</u> to the <u>ontology</u> of the <u>cosmos</u>, one which changes the "laws" of Nature -- which makes the "laws"/"habits"'/<u>possibilities</u> of the «Natur»-<u>including</u>-«Geist» qualitatively different from the those of the predecessor «Natur-<u>sans-Geist</u>». Human 'subject-ivity', via its objectifications, is empirical, is part of the data, part of "external objectivity", part of the sensuous, sensible "objective world" of the present, and of the past, which a true <u>Psycho-History</u> must '<u>re</u>-construct', as well as part of the possible/potential "objective world" of the future which such a <u>Psycho-History</u> must attempt to '<u>pre</u>-construct'. We may also glimpse, in these considerations, why a strategic function is essential to any true <u>Psycho-History</u> worthy of the name -- the formation, implementation, and on-going mid-course correction of a multi-generational strategy for the human species, and for its «sequelae»; a strategy which, in scope, is global, and, indeed, even -- and <u>necessarily</u> so -- cosmological!

A dialectical universe -- an «aufheben», or 'evolute', <u>cumulative</u> and '<u>ontologically</u>-dynamical' universe -- is one in which true "cycles"; in which exact *re-'petition*' is <u>impossible</u>. Second and later 'petition' can only occur in a cosmos already altered by the impact of the first, and, perhaps, by other, succeeding, 'petitions'. Thus, even an attempted "exact <u>re-plica</u>" of a previous enactment will yield at least some different consequences than could have been yielded by its earlier "plica", since its action will impact upon a universe altered, at least, by that earlier "*plication*". The assumptions of current Science regarding experimental results' "re-plication" and "reproducibility" should only be expected in short-term approximation. In a dialectical universe, i.e., in an 'auto-kinetical', self-moving, self-developing, self-reflexive, and also self-refl<u>u</u>xive cosmos, novelty, new '[ev]entities', new '«monads»', new ontology may arise via the 'meta-fractal-ogenic' processes that we term 'self-incorporation', 'self-internalization', 'self-interiorization', or 'self-subsumption'. These words name the concrete "mechanisms", or 'organisms', of the «aufheben» procedure; of <u>non</u>-propositional, ontological, <u>dialectical</u> negation, i.e., of the "self-activity" of <u>internal-/immanent-/self-reflexive/self-refluxive</u>-negation, essential to the dialectic of Nature's core 'meta-dynamic'; to the concrete, 'physical [self-]operators' that (a.) annul, (b.) preserve, and also (c.) elevate their 'physical [self-]operands. These are the physical, objective processes, of [meta-]monadicpopulation-<u>expansion</u>-driven, [meta-]monadic-population-<u>densification</u>-driven 'self-surroundment', or 'self-environment'; of 'self-concentration', 'self-confrontation', and, as a result, of 'cosmo-ontological' innovation via '<u>meta-monad-ization</u>'.

'Densified', intensified, 'plio-frequentized' 'self-interaction' of/by [that is, 'self-intra-action' within] the localized populations, «arithmoi aisthetoi», or 'concrete «arithmoi monadikoi»', of the current 'meristemal', or "vanguard", ontological category' or 'onto' -- mutual interactions among «monads» of the same, currently 'meristemal', kind, surpassing their [rates of] interaction with «monads» of predecessor kinds [i.e., the rates of their conversion of predecessor kinds of «monads» into «monads» of their own, 'meristemal', kind, via 'hybrid-onto' instantiating 'conversion-formations'] -- leads to 'self-conversion', the 'self-transition' of those currently 'meristemal' «monads» into [meta-]«monads» of the next-possible new kind, that is, to the irruption of [meta-]«monads» of the successor kind, through the 'self-interiorization' of the thus formerly 'meristemal' «monads»; forming the objective basis of a new 'meristemal' 'meta-onto'; of a new "vanguard" 'meta-ontic' ontological category.

The self-driven, self-caused 'self-iteration' of this objective process produces the 'objective Qualo-Peanic', 'evolute'/«aufheben», 'multi-meta-ontic'. 'multi-meta-monadic', meta-fractal 'consecuum-cumulum' of our ontologically dynamical, ontologically/qualitatively self-expanding cosmos, ever adding new 'ontological species', new classes of "being", to itself. These processes of self-«aufheben» 'self-subsumption' via 'self-internalization' resulting in 'meta-«monad»-ization' are the means by which: (1) populations of atoms, in the modern meaning of this term, in the process of expandedly reproducing/densifying' their own populations, also irrupt molecules -- molecules as 'meta-«monads»' and therefore also as unprecedented 'neo-«monads»'; as unprecedented new ontology which can be comprehended as one of 'meta-atoms' made up out of a heterogeneous multiplicity of atoms; by which (2) populations of molecules, in the process of expandedly reproducing/densifying' their own populations, also irrupt prokaryotic cells -- prokaryotic cells as 'neo-«monads»', and as a new ontology which can be comprehended as one of 'meta-molecules' made up out of a heterogeneous multiplicity of molecules; by which (3) by "bio-endosymbiosis" or "symbiogenesis", populations of prokaryotic cells, in the process of proliferating/expandedly reproducing/densifying' their own populations, also irrupt eukaryotic cells -- eukaryotic cells as 'neo-«monads»', and as new ontology, comprehensible as one of 'meta-prokaryotes', or 'prokaryotes of second degree', made up out of a heterogeneous multiplicity of prokaryotes; by which (4) populations of eukaryotic cells, in the process of expandedly reproducing/densifying' their own populations, also irrupt 'meta-cellular organisms' or "multicellular organisms" as 'neo-«monads»'; a new ontology which can be comprehended as one of 'meta-eukaryotes', or 'eukaryotes of second degree', made up out of a heterogeneous multiplicity of eukaryotes; by which (5) populations of 'meta-biotic', multicellular organisms, in particular, the "metazoa", as distinct from the 'meta-phyta', in the process of expandedly reproducing/densifying' their own populations, also irrupt "animal societies", 'meta-meta-zoa' or 'meta2-zoa', as 'neo-«monads»'; a new cosmological ontology, which can be comprehended as "animal societies" made up out of a heterogeneous multiplicity of individual meta-zoan animals'; and, finally, so far as we know, from the vantage point of this cosmic locality, by which (6) populations consisting of/whose "individual units", ""«monads»", or "modules" are 'mutually-domesticating' animal societies, in the process of expandedly reproducing/densifying' their own "populations" of these 'animal-society-units' -- entire animal societies as «monads» -- by 'socio-endosymbiosis' or 'socio-symbiogenesis', also irrupt 'proto-human[oid] meta-societies' -- 'meta-societies' as 'neo-«monads»', forming a new cosmological ontology, which can be comprehended as one of 'meta-societies' made up out of 'inter-symbiotic', 'mutually-domesticating', and gradually 'self-domesticating' heterogeneous multiplicities of multicellular animal societies and multicellular plant communities -- the very matrix within which, we hold, human[oid] language/self-awareness could come to birth, and did so, on planet Earth. The above-narrated 'meta-fractal-ogenic', 'self-iterative', «aufheben»-operation-based dialectic of

nature can, as we shall see in the sequel, be compactly expressed/modeled via the formula $\left(\frac{1}{\sqrt{D}} \right)^{2^{\tau}}$

Such 'meta-fractals' -- or scale-regressing quanto-qualitative, concrete and objective 'Qualo-Peanic' self-similarity structures -- exhibit scale-regression both synchronically and diachronically, both spatially and temporally. <u>Synchronically</u>, this 'meta-fractal' scaling results from "uneven and combined meta-development", or 'meta-evolution', and from the diffusion of new 'meta-developments', including 'hybridizations' with older 'meta-evolutions', across the full spectrum of physical-spatial regions of differential rates of advancement, from its regions of first-emergence to its regions of last-emergence. <u>Diachronically</u>, this 'meta-fractal' scaling manifests in 'temporal acceleration', that is, in the ever-shorter durations separating the successive epochs of dialectical, or 'self-«aufheben»', 'self-internalization'.

The mutual 'self-internalization' of «monads» or units to form 'meta-«monads»' or 'meta-units' is a concrete instantiation of the «aufheben» operation. This «autokinesis» process simultaneously <u>conserves</u> the 'self-internalizing' «monads» as 'internalized', as forming the 'internity' of each new 'meta-«monad»', and "'determinately <u>negates</u>"', [self-]changes, or converts the conserved «monads» into the <u>new</u>, 'meta-', «monads», thus inducing qualitative innovation, ontological gain. The same process also <u>elevates</u> the «monads» and their category, in that their '[self-]internalization' <u>creates</u> a new, higher, level, platform, or 'meta-fractal' scale, exceeding the level of those «monads» and of their category by [self-]subordinating them, i.e., precisely because they have, therein, constituted themselves as, now, parts, to a thus, thereby higher 'hol', whereas, prior to that [self-]subordination, those «monads», and their category, had formed the highest extant 'hol', or sub-totality; the highest extant ontological level, platform, or 'meta-fractal' scale.

For the abstract, absolutist, reified, and fetishized notions of "Time" still prevailing in official Science, the concept of a non-constant celerity of time, of $dt/dt \neq constant$, is senseless. However, a concept of 'temporal acceleration' becomes possible when one defines time concretely, as *actual*, ongoing, inherent, cosmological 'change-in-general', identifying time with localizations of the ensemble of the concerted cosmological activity -- of the 'inter-activities' ['flexions'] and 'self-activities' [self-re-flexions'] -- of all '[ev-]entities'.

A core, historical, intellectual enterprise of the human species, namely, the 'meta-evolution' of mathematics, also exhibits this diachronic 'meta-monadic' and 'meta-fractal' structure. In this case, this structure is formed in the "internal", mental world of 'subjective objectivity' -- of inter-subjective, 'psyche-ological', mathematical 'idea-objects'. This scaling, qualitative, '*meta-fractal*', '[ideo-]ontological' *self-similarity structure*, there takes the form of a progression of "logical types"; of '*meta-sets*' of higher "logical type", *made up out of a heterogeneous multiplicity of sets* [of sets of sets...], of lower "logical type", as set forth abstractly and ahistorically by Kurt Gödel in his account of the completeness-incompleteness 'ideo-meta-dynamic'. "Logical type" means, in this context, essentially a '*self-internalizations* count', of the number of '*self-internalizations*' distancing a given set from the "universal set", or set of all objects/"logical-individuals" defined for the universe of discourse of the axiomatic system. Each given formal 'epoch' of arithmetical axiomatic-systems' 'meta-evolution' exhibits logical incompleteness, as revealed by the "well-formed" 'formability', within it, of unsolvable equations, embedded in true "theorems", *but "theorems" not provable from its axioms*, which are propositions asserting that very unsolvability of those equations within that axioms-system, and which map to meta-mathematical propositions, the "Gödel formulae", which assert that this axioms-system is *either self-inconsistent* -- propositionally self-contradictory -- *or incomplete* in the very sense that it contains true propositions within it which *cannot* be derived deductively from its axioms.

'Self-incorporations' of the sets encoding those 'older' species of number, that are already extant in that system, form new 'meta-sets' [of sets...] -- new 'ideo-ontology' -- that encode 'younger', new kinds/species of numbers, basing new, additional axioms, rendering those 'theorems' provable via the new axioms, but thus also creating yet a new, «aufheben»-higher mathematical axiomatic system, with its own, new unprovable theorem(s) about diophantine equations that are not only 'diophantine-number-unsolvable', but still unsolvable by any numbers extant even within its expanded universe of number-species ...

Those new kinds of numbers, modeled by new, higher-logical-type kinds of sets, may also be those which render the equations that were unsolvable in the predecessor axioms system, readily solvable in the new. I.e., these new, higher kinds of numbers may include the solutions to those formerly "unsolvable" equations. But those kinds of numbers do not exist within, or 'for', the old axioms-system. Furthermore, the resulting, new, qualitatively different, 'ideo-ontologically different', axiomatic system will always have its own, new unsolvable equations, and their corresponding 'unprovable theorems', so that the self-incorporation of sets, the formation of new kinds of numbers, and of new axioms, hence of new axiomatic systems, is thereby always driven to re-ensue anew. The result is a recurrent, punctuated self-transcendence of the mere "evolution" and mere "dynamics" of expanding theorem-proving and 'theoremspopulation' growth within each axiomatic system, into a 'meta-dynamic' of the 'self-meta-evolution', or "'self-revolution" of each and every predecessor axioms-system into a qualitatively-expanded, 'ideo-ontologically-expanded', successor axioms-system, creating what we term a 'diachronic ideo-meta-system'; a 'meta-fractal systems-progression'; a 'meta-fractal ideo-cumulum' of mathematical axioms-systems -- i.e., an ever 'ideo-ontologically' self-expanding and «aufheben»-cumulative sequence of mathematical systems. The expanded "universal set" of each successor system «aufheben»-includes/preserves, but also transcends, in "logical type" and in contents, via that very inclusion/preservation, as its own, expanded "universe of discourse", its immediate-predecessor's "universal set", via 'self-internalizations' of that immediate predecessor-system's universal set ['internalization' of its predecessor's "universal set's" own "improper subset"] as well as of all of the proper subsets of that predecessor-system's "universal set". The successor system's "universal set" thus involves the 'self-incorporation' of the full "power-set" or "set of all subsets" of that predecessorsystem's "universal set". This yields a 'diachronic meta-system', made up out of the 'qualo-Peanic consecuum' of these multiple, 'Peano-successive' axiomatic systems, i.e., made up out of their self-expanding, ever-self-enriching 'ideo-cumulum'.

This 'endo-mental' process, 'The Gödelian Dialectic', or 'Gödelian Ideo-Metadynamic', to us, cries out to be mapped onto actual human Psycho-History. That task is taken up, in its arithmetical part, in Part II. of <u>Dialectical Ideography</u>, in the section entitled The Meta-Evolution of Arithmetics. That section thus also addresses 'The Psycho-History of Arithmetics'.

The scientific theories produced by humanity are also 'psycho-artefacts', reflecting humanity's developing subjectivity, i.e., reflecting 'human-natur[e-]al history' as the history of the self-development of human[ized] nature, including of human «mentalité», and "ideology", taken as "memetic", "Phenomic", 'psycho-material [f]actualities'. To posit a 'subjectless' objectivity; positing observation as only that of a pure objectivity or purely-objective world as if without any observor, or with an observor only "without" it, external to the world it observes; an objectivity by itself, devoid of any observing subjects as part thereof, is to posit conceptually something that does not exist and cannot exist objectively, that has no [f]actual counterpart, that in fact exists only as an imaginative figment, solely within the subjectivity of the subjectivity-denier. It posits that figment as if it were the sole possible generator of scientific theories. Nor is the detailed conceptual anatomy of any major scientific theory any sort of one-to-one mapping of the observations, the data, that the theorizers observe; any sort of uniquely determined, empirically-prescribed formulation, forced in its last detail by the objectivity that those theorizers measure and record. A multiplicity of qualitatively different, "Non-Standard" alternative-theories are always available. Scientific theories always embody choices and creative conceptual features which can only be accounted for by taking human «mentalité» into account, and which thus can only be accounted for psycho-historically. The subconscious subjectivity-projection, projecting the social self-identity of the observor into the observed, is party to what that observer perceives, thus also to that observer's theoretical accounts of the objectivity being theorized. The observer's own "self[-projection]" thus constitutes part of what the observer observes. And 'scientific' theories to date always «aufheben»-conserve in themselves, however unconsciously, some aspect of their ultimate «arché» in M, in Myth-making, in explanation by story-telling, always remaining partly infected with "ideology" in Marx's sense, with unconscious social-relations-reflecting 'ideo-logical' content. We need an explicit Ψ for many reasons, including to continually re-catalyze our cognizance of this [f]act. The very possibility of a given scientific theory, including of consensus consent to it within the extant scientific community, presupposes a requisite cognitive readiness in the communities of human theory-makers, and in their surrounding social audiences. It is not only the genomic, genotypic limitations and specificities of human theorizers -- which, we hold, may not vary very much across human history to-date -- that impact the formation of scientific theories and of the salient psycho-historical features of their histories. It is also their culturallyacquired, phenomic/phenotypic, 'meme-nomic'/memetic' social-formation limitations and specificities, which do vary, in a broadly cumulative and progressive fashion, along the diachronic direction. It is 'constitutively' unlikely, in the history of mathematical theories, e.g., for the system of the "Complex" numbers to arise before the system of the positive and negative "Rationals", or for the "Rational" numbers-system to arise before that of the "Natural numbers" -- no more likely than is the appearance of a prokaryotic cell prior to that of the molecules out of which it is constituted. Likewise, there is a necessary but more subtle 'constitutive' ordering in the succession of scientific theories. A gravity field-theory like Einstein's General Relativity is unlikely to arise prior to one like that of Newton, or even prior to a field theory of electromagnetism like that of Maxwell and Faraday. This may be due, in part, but only in part, to the new mathematical tools that undergird many advances in scientific theory, given the '«aufheben»/evolute/cumulative' character of mathematical advance as briefed above, per the 'Gödelian Ideo-Metadynamic'.

'Meta-scientific' explanation of this '*ideo-meta-genealogy*' of scientific theories belongs partly to '*memetics*', to the study of the historically self-developing human 'Phenome', thus also partly to <u>Psycho-History</u>. The Psycho-Historical, cognitive readinesses for scientific revolution/'meta-evolution', noted above, are also a function of an overall Psycho-Historical '[meta]-evolution' of collective human *mentality*. Mentalities are, in part, a function of the *instru*mentalities they employ, beginning with the human body itself. New theory formation is driven partly by theory/data discrepancies revealed by more accurate measurements enabled by the innovation of more sensitive instruments; driven, in turn, partly by the deepening needs of human societal-reproductive praxis, especially under prodding by the profit-motive within the epoch of the competition-driven 'capital-praxis'. But new instrumentalities have qualitative as well as quantitative repercussions. Marx wrote, in the *Grundrisse*, the following about this 'self-refluxive' 'back-impact' of human social-reproductive activity, back upon human Nature: "The act of reproduction itself changes not only the objective conditions -- e.g., transforming village into town, the wilderness into agricultural clearings, etc. -- but the producers change with it, by the emergence of new qualities, by transforming and developing themselves in production, forming new powers and new conceptions, new modes of intercourse, new needs, and new speech." [E. Hobsbawm, translator, *Pre-Capitalist Economic Formations*]. Netrational Publishers [NY: 1965], p. 93].

"Technology", as Marx held [see passage cited above on "objectified human psychology"], is also a reflection, an extension, an outering, an externalization, & an explicitization -- an 'object-ization' or 'object-ification' -- of the human psyche; of human collective/cultural 'psyche-ology'. It also plays key roles in the historical formation of new cognitive readinesses for theoretical advance, its use [re]acting back upon the very mentalities which fashion and use it, changing them further, in ways such as those explored by Innis, McLuhan, Logan, and Schmandt-Besserat, as well as by Marx.

The social state / stage of human subjectivity unconsciously projects itself into and encrypts itself within the theories it produces. The character of the *«monads»* we see in, ascribe to, or conceptually / mentally carve out of nature are not given uniquely in the phenomenologies as recorded by our experiments, our "natural" senses, and our "artificial" instruments. The 'monadizations' in our models of nature also, in part, reflect our own prevailing introspective 'self-monadizations'; our own socio-psyche-ological 'self-models', or internal 'models-of-self'; the character of our own social self-identities. Consider the social-self's self-atomization in the various stages of exchange-value-induced dissolution of the primordial kinship-based-communities, up to and including its historical extremity in the capital-nexus and the *«bellum omnium contra omnes»* of our 'alienation-based' [selling-based], ever-more "de-tribalized" and even 'de-family-ized' society. We hold that this self atomization, this atomistic view of human "selves", gives rise, in part, to the various versions of reductionist atomism. Our own internal, semi-conscious sense of self-identity is our inescapable model for all of the identities that we perceive in the external worlds of our interpretations of our experience. $\underline{\Psi}$ is needed to help found a scientific and trans-scientific understanding of the history of **K** itself, for all of these reasons.

The extreme 'ideality", the high degree of idealization and schematism, of this $(\underline{M})^{2^{\tau_{\uparrow}}}$ model brooks great 'homeomorphic defect' when it is compared against, for example, the observed [reconstructed] intellectual Psycho-History of Occidental humanity. Partly, this is because that history exhibits no a single progression from (\underline{M}) to $(\underline{M} \oplus \underline{R})$

to $\mathbf{A} \oplus \mathbf{R} \oplus \mathbf{\hat{q}}_{\mathsf{RM}} \oplus \mathbf{P}$ to $\mathbf{M} \oplus \mathbf{R} \oplus \mathbf{\hat{q}}_{\mathsf{RM}} \oplus \mathbf{P} \oplus \mathbf{\hat{q}}_{\mathsf{PM}} \oplus \mathbf{\hat{q}}_{\mathsf{PR}} \oplus \mathbf{\hat{q}}_{\mathsf{PRM}} \oplus \mathbf{K}$, but rather a *broken* progression,

collapsed and interrupted, then later resumed. It exhibits instead a progression from $(\underline{M})^{2^0}$ through $(\underline{M})^{2^3}$, followed by a catastrophic interruption of positive or expanding social reproduction, and a prolonged descent into negative or contracting social reproduction, via the Roman-imperialization of Christianity, the violent, genocidal suppression of ancient pan-Hellenistic "pagan" learning, the fall of the Roman empire, and the =1000-year Inquisition and "Dark Age" that followed.

The $\left(\underline{M}^{2^{3}} = \underline{M} \oplus \underline{R} \oplus \underline{\hat{q}}_{RM} \oplus \underline{P} \oplus \underline{\hat{q}}_{PM} \oplus \underline{\hat{q}}_{PR} \oplus \underline{\hat{q}}_{PRM} \oplus \underline{K}\right)$ 'cumulum' of Antiquity lapsed back into a profoundly retrograde, "Dark Ages" version of $\left(\underline{M} \oplus \underline{R} \oplus \underline{\hat{q}}_{RM}\right)$, if, predominantly, into a new development within \underline{R} -- that of state-power-wielding, theocratic-totalitarian-inquisitorial pseudo-Christianity.

Only with restoration of acceleratedly expanding social reproduction, and with the casing of the "Dark Age" into the "Dim Age" of the European pre-Renaissance and beyond, did a second wave of $\langle \underline{M} \rangle^{2^{3+}}$ take-off. More adequate models require ontological "interaction terms", denoting hybrid ontological formations, for the interaction of re-emergent Western European <u>P</u> and incipient <u>K</u> and their hybrids with those of the Islamic civilization, plus with those of the fossilized, preserved remains of the "Hellenistic/Romanistic" civilization of Mediterranean antiquity which informed and inspired both. The task of development and exposition of this more complex, more concrete, more accurate Model of Terran human collective-cognitive 'meta-evolution' is one that exceeds the scope of this <u>Supplement</u>, and that we reserve for the <u>Encyclopedia</u>.

Example 2: [Psycho-]Historical-Dialectical Model -- An NQ Model of the '[Psycho-]Historical Dialectic' Leading to the Irruption of Marxian Theory. Our second example is a 'psycho-historical' model, expressed in the NQ language of Dialectical Ideography, of the historical genesis or 'ideo_genealogy' of the 'idea-onto' of Marxian-Engelsian theory: of that 'meta-state' of human cognition; that breakthrough new paradigm and system of self-thought of the human species which was worked out by Marx, Engels, and Dietzgen in the mid-to-late 1800s. This model has been drastically simplified via a vastly different 'partition principle' from that of Example 1, stipulating "18th-Century mainly French Mechanistic Materialism" as the origin or «arché» of human self-thought [rather than, Mythopoeia, or "primitive animistic religion", or etc.], and by identifying the "19th-Century, mainly German Dialectical Idealism" emerging in Kant, Fichte, Schelling, and culminating in Hegel, as its 'ideo-contra-onto'. It thus requires and invokes only the first three units/«monads» of $\mathbf{N}\mathbf{Q}$ - $\mathbf{\hat{Q}}_1$, $\mathbf{\hat{Q}}_2$, and $\mathbf{\hat{Q}}_3$ - to describe the Marxian/Engelsian/Dietzgenian synthesis. Let us assign [+] the 'uni-thesis' of that 'synthesis-sum', for this model, to 🗓 $\mathfrak{g}_{\mathsf{IM}} \leftrightarrow \mathfrak{g}_{\mathsf{S}}$, and, synonymously [or 'synoglyphically'], to $\mathfrak{g}_{\mathsf{GF}}$, as well as to \mathfrak{R} , for the reasons explained below. The $\mathfrak{g}_{\mathsf{GF}}$ 'synoglyph' is intended to 'mnemonize' the «Deutsch-Französische» principle of Marx and Ruge, suggested by Feuerbach, and per which the two, in 1844, launched the «Deutsch-Französische Jahrbücher». Next, we assign to 91 the 'idea-onto' of "18th Century, mainly French Mechanical Materialism", denoted by \mathbf{g}_{M} and \mathbf{M} , or by \mathbf{g}_{F} and \mathbf{F} . Lastly, we assign to \mathbf{g}_{2} the 'ideo-onto' of ""19th-Century, mainly <u>German Dialectical Idealism</u>", denoted by \mathbf{g}_{1} and \mathbf{j}_{0} or by \mathbf{g}_{0} and \mathbf{g}_{0} . We can then simulate the historical 'onto-dynamasis' or 'psycho-historical progression' leading to the formation of Marxian theory, using the ideogram 'pd' to denote «aufheben» or dialectical, determinate, concrete, contentul, and ontological self-negation/self-transcendence/self-supercession/self-appropriation, in the context of historical dialectics, so using the '4' & 'b' & '\$' & '\$' ersions of parenthesis, product sign, and summation sign, via: $\hat{\mathfrak{g}}_{\mathsf{M}} \rightarrow \not= \widehat{\mathfrak{q}}_{\mathsf{M}} \Diamond \widehat{\mathfrak{g}}_{\mathsf{M}} \flat = \widehat{\mathfrak{q}}_{\mathsf{M}} \diamond \widehat{\mathfrak{q}}_{\mathsf{M}} \flat = \langle \widehat{\mathfrak{q}}_{\mathsf{M}} \diamond \rangle^{2} = \langle \widehat{\mathfrak{q}}_{\mathsf{M}} \diamond \underline{\Delta} \langle \widehat{\mathfrak{q}}_{\mathsf{M}} \flat \rangle \flat = \langle \widehat{\mathfrak{q}}_{\mathsf{M}} \diamond \widehat{\mathfrak{q}}_{\mathsf{I}} \flat \rangle^{\frac{3}{2}}$ $\hat{\mathbf{g}}_{\mathbf{M}}; \, \hat{\mathbf{g}}_{\mathbf{I}}, \, \mathrm{or};$

 $\hat{\mathfrak{g}}_{F} \rightarrow \mathfrak{r}^{4} \left(\hat{\mathfrak{g}}_{F} \right) = \hat{\mathfrak{g}}_{F} \left(\hat{\mathfrak{g}}_{F} \right) = \hat{\mathfrak{g}}_{F} \otimes \hat{\mathfrak{g}}_{F} = \left(\hat{\mathfrak{g}}_{F} \right)^{2} = \left(\hat{\mathfrak{g}}_{F} \oplus \Delta \left(\hat{\mathfrak{g}}_{F} \right) \right) = \left(\hat{\mathfrak{g}}_{F} \oplus \hat{\mathfrak{g}}_{G} \right)^{\frac{1}{2}} + \left(\hat{\mathfrak{g}}_{F} \right)^{\frac{1}{2}} +$

positing 1 or G as [self-]reactions to/contra M or F. Expressed in 'genericized'/generalized 'ideo-cumulum'/'historical-dynamical «arithmoi eidetikoi»' terms:

 $\underbrace{\text{(thesis)}}_{\text{F}} \rightarrow \underbrace{\text{(thesis)}}_{\text{F}} = \underbrace{\text{(thesis)}}_{\text{F}} \Rightarrow \underbrace{\text{$

Expressed via the generic, minimally-interpreted arithmetic, thus employing '-" instead of '-" as the dialectical/ «aufheben» appropriation/negation-sign:

$\hat{\hat{\mathbf{q}}}_1 \rightarrow \mathbb{P}^2 \hat{\mathbf{q}}_1 = \hat{\hat{\mathbf{q}}}_1^{-1} \boxtimes \hat{\hat{\mathbf{q}}}_1^{-1} = \hat{\hat{\mathbf{q}}}_1^{-2} = \hat{\hat{\mathbf{q}}}_1 \boxplus \square \hat{\hat{\mathbf{q}}}_1^{-1} = \square \hat{\hat{\mathbf{q}}}_1^{-1} \boxplus \hat{\hat{\mathbf{q}}}_{1+1}^{-1} = \square \hat{\hat{\mathbf{q}}}_1^{-1} \boxplus \hat{\hat{\mathbf{q}}}_2^{-1} \ddagger \hat{\hat{\mathbf{q}}}_1^{-2},$

The implicit self-inadequacy of the system of ideas denoted \underline{M} or \underline{E} , provoked this 'explicitization' or 'outering' of its opposite, \underline{I} or \underline{G} . The superposition, 'sum', or 'cumulum of ideas' denoted $\underline{A} \oplus \underline{I}$, is conceived, at this stage, to connote an 'appositional', antagonistic one, an antithesis: $\underline{A} \longrightarrow \underline{I}$. The immanent self-inadequacy of the thereby-explicit propositional and 'ideo-ontological' self-contradictions internal to $\underline{A} \oplus \underline{I}$ then drives a further 'ideo-onto-dynamasis':

$\underbrace{(\mathbf{M} \oplus \mathbf{I})}_{\mathsf{M}} \rightarrow \underbrace{(\mathbf{M} \oplus \mathbf{I})}_{\mathsf{M}} = \underbrace{(\mathbf{M})}_{\mathsf{M}}^{3} = \underbrace{(\mathbf{M} \oplus \mathbf{I})}_{\mathsf{M}} = \underbrace{(\mathbf{M} \oplus \mathbf{I} \oplus \mathbf{R})}_{\mathsf{M}}^{\frac{1}{2}} \underbrace{\mathbf{M}}_{\mathsf{M}}^{\frac{1}{2}} \underbrace$

Expressed in generic, 'ideo-cumulum' terms, with $\hat{g}_1 \leftrightarrow first$ thesis, $\hat{g}_2 \leftrightarrow first$ 'contra-thesis', & $\hat{g}_3 \leftrightarrow first$ 'uni-thesis': 'antithesis-sum' goes to 'synthesis-sum' --

 $(\underline{\text{thesis}} \oplus \underline{\text{contra-thesis}}) \rightarrow (\underline{\text{thesis}} \oplus \underline{\text{contra-thesis}}) \stackrel{1}{\rightarrow} (\underline{\text{thesis}} \oplus \underline{\text{contra-thesis}}); \stackrel{1}{\rightarrow} (\underline{\text{contra-thesis}}); \stackrel{1}{\rightarrow} (\underline{\text{thesis}}); \stackrel{1}{\rightarrow} (\underline{\text{thesis$

Expressed in terms of the minimally-interpreted generic-dialectical arithmetic, with the «arché» 'meta-mumber' \$1 as 'generic dialectical negation operator':

$\hat{\mathfrak{g}}_1{}^2 \rightarrow \hat{\mathfrak{g}}_1{}^1 \boxtimes \hat{\mathfrak{g}}_1{}^2 = \hat{\mathfrak{g}}_1{}^3 = \llbracket \hat{\mathfrak{g}}_1 \rrbracket \boxtimes \llbracket \hat{\mathfrak{g}}_1 \boxplus \hat{\mathfrak{g}}_2 \rrbracket = \llbracket \llbracket \hat{\mathfrak{g}}_1 \boxplus \hat{\mathfrak{g}}_2 \rrbracket \boxplus \llbracket \hat{\mathfrak{g}}_1 \boxtimes \llbracket \hat{\mathfrak{g}}_2 \rrbracket \rrbracket \rrbracket = \hat{\mathfrak{g}}_1 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_1 \equiv \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \equiv \hat{\mathfrak{g}}_1 \equiv \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \equiv \hat{\mathfrak{g}}_1 \equiv \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \boxplus \hat{\mathfrak{g}}_2 \equiv \hat{\mathfrak{g}}_1 \boxplus \hat{\mathfrak{g}}_2 \# \hat{\mathfrak{g}}_2 \#$

∢Materialism > → ∢Mat

→ (Materialism vs. Idealism) → ((Mechanism vs. Idealism) vs. Dialectical Realism).

The above render $\hat{\mathbf{g}}_{\mathsf{IM}}$ also as \mathbf{R} , the latter denoting 'Dialectical Realism'. This is apt because this synthesis recognizes the human-practical reality and materiality of 'idea-objects'; of 'idea-matter', i.e., of 'memetic matter' or "memes"; of 'psycho-historical' conditions and relations; of non-physical, non-tangible, yet still "material" socio-cultural actualities. 'Dialectical Realism' recognizes the "material force" of ideas, of ideologies, of collective human consciousness -- which are all also part of the 'psycho-historical material -- not just of tangible, physical-material objects alone [cf. T. Burns, Joseph Dietzgen and the History of Marxism, in the special issue, on dialectics, of Science & Society, Summer 2002]. We employ the term "Dialectical Realism" instead of, e.g., "Dialectical Materialism" also, in part, because we want here a term which does not bias the name of the <u>uni-thesis</u> 'ideo-onto' toward either that of the <u>thesis</u> 'ideo-onto' or that of the <u>contra-thesis</u> 'ideo-onto'. Rather, we want a name which encompasses the broader meanings of both the <u>thesis</u> and the <u>contra-thesis</u>, as well as the supersession of the one-sided meanings of each taken in their antagonistic separation; a name which connotes their higher unity. We want a name connoting a unitary paradigm which is, in some senses, both and, but in other senses, neither nor, 'Idealisticized Materialism' and 'Materialisticized Idealism'.

As even this drastically simplified rendition suggests, we are not aiming at an <u>a</u>historical, socially de-contextualized, only-affectively-focused [cognitionignoring], and individual-atomistic "individual psychology". We aim at a collective, <u>'historical psychology</u>' of the human species, equipped with a dialectical-ideographic model of actual [psycho-]history, including of the collective-cognitive/-affective [psycho-]history of ideas. We thus aim at a psycho-historical model of humanity which is predictive as well as reconstructive, built on the foundation of a 'dialectical arithmetic' capturing algorithmic aspects of dialectical process in the external actuality of the *«physis»* and in the internal actuality of the human. Note also how the historical/conceptual 'dialectical self-momentum' of this'ideo-ontology' and of its'ideo-onto-dynamic' potentially self-extends further still -- from

$\underbrace{\mathsf{A}} \oplus \underline{\mathsf{I}} \oplus \underline{\mathsf{R}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{R}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{R}} \bullet \underline{\mathsf{R}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{R}} \bullet \underline{\mathsf{I}} \bullet \underline{\mathsf{R}} \bullet \underline{\mathsf$

raising a query as to what ' Δl ' should signify, as it connotes, per the product-rule used, the '*ideo-ontic net gain*' term of the '*self-«aufheben»* <u>self-negation</u>' of <u>Dialectical Idealism</u>, denoted ideographically by $l^2 - l$.

Because <u>Dialectical Idealism</u> arises, per this model, as the fruit of the 'immanent self-critique', or 'self-«aufheben» self-negation', of <u>M</u>, i.e., of <u>Mechanistic Materialism</u>, whose 'ideo-ontic net gain' is denoted $\underline{M}^2 - \underline{M} = \underline{\Delta M} = \underline{I}$, this $\underline{\Delta I}$ may also be expressed as the 'ideo-ontic net gain' from the 'self-«aufheben»' of the 'self-«aufheben»' of the 'self-«aufheben»' of <u>Mechanistic Materialism</u>, or $\underline{M}^2 \underline{\langle M}^2$, via $\underline{\Delta I} = \underline{\langle M}^2 - \underline{M} \underline{\rangle}^2 - \underline{\langle M}^2 - \underline{M} \underline{\rangle}^1 = \underline{\langle \Delta M} \underline{\rangle}^2 - \underline{\langle \Delta M} \underline{\rangle}^1 = \underline{\langle \Delta M} \underline{\rangle}^2 - \underline{\langle \Delta M} \underline{\rangle}^1$

Example 3: Historical-Dialectical Model of the History of Nature as a "Hol", Including of Human[ized] Nature -- A 'Taxonomy Level 1' N O Model of 'The Dialectic of Nature'.

The NQ model to be glossed in this section is a dialectical-ideographic model of the historical dialectic of known Natural History as a whole; of the

dialectic of the cosmological *«physis»* as a concrete totality, in short, a new model of the universe, and a [trans-Leibnizian] '*Meta-Monadology*' of \forall [denoting 'All'; 'Everything' as in "Theory of Everything"]. Taking the 'taxonomy level 1' or maximal universe of contemporary knowledge as the universe of discourse for this example, we find that the 'helical', 'temporal <u>meta-fractal</u>', i.e., the '[quanto-]<u>qualitatively</u> scale-regressed diachronico-synchronic self-similarity structure' that is also a 'meta-monadic self-inclusion structure', and the interpretation [\Leftrightarrow] of the 'meta-number' 'unit qualifiers', denoted { \hat{g}_k } | k \in N, of the \underline{NQ} arithmetic, for the 'ontological [meta-]«monads»' of 'universal meta-evolution', per our standard 'principle of ontological

partitioning' for the $\underline{\forall}$ universe of discourse [which principle we denote by { $\frac{1}{\sqrt{2}}$ }], look like the following [Note: There is that "kind of movement"/form of change which we term "[self-]evolution" within each of the categories of the successive 'ontological species' of «monads», which are listed below in their natural-historical "order of appearance"/"order of actualization". We therefore reference the different/higher kind of movement/form of change, that generated by what we term 'self-aufheben'' 'self-internalization''/self-conversion', and which moves between categories, i.e., from one 'contra-thesis' [meta-]monadic 'ontological species' category to the next -- by a different term: '[self-]meta-evolution', or [natural-historical, self-]revolution', to distinguish the latter form/level of change from the former, that of mere "'[self-]evolution''.]:

* <u>n</u>	denotes the onto of pre-sub-atomic/sub-sub-atomic/pre-nuclear/"sub-nuclear" "free fields" / matter-waves /- "particles" [e.g., mesons], as «monads», plus anything else primordial, but unknown to present science, e.g., via the "quark" theory. The stipulated «arché» per contemporary standard physics / consensus knowledge;	= ¹ ² gn ⇔ ² g ₁ ;
1 <u>s</u> ¥	denotes the onto of pre-atomic / sub-atomic "free fields" / "waves" / "particles" [e.g., protons] as «monads», '[meta-]pre-nuclear particles / fields [each made up out] of [a heterogeneous multiplicity of] pre-nuclear particles / fields; the 'self-«aufheben»' 'self-internalization'/'self-subsumption'/self-conservation' of ""pre-nuclear pre-atomic particles" as «monads»;	$\equiv \sqrt[4]{q_{nn}} \equiv \sqrt[4]{q_s} \Leftrightarrow q_2;$
1 √ <u>a</u>	denotes the onto of <u>a</u> toms = '[meta-][<i>sub-atomic</i>] <i>particles</i> / fields as « <i>monads</i> », [each <i>made</i> up out] <u>of</u> [a heterogeneous multiplicity of] [<i>sub-atomic</i>] <i>particles</i> / fields' as its sub-« <i>monads</i> »; the 'self-« <i>aufheben</i> »' 'self-internalization'/self-subsumption'/self-conservation' of "sub-atomic particles" as « <i>monads</i> »;	= v ¹ ∧ _y g _{ss} = v ¹ ∧ _y g _a ↔ A ₄ ;
¹ √ <u>m</u>	denotes the onto of <u>m</u> olecules as «monads» = '[meta-]atoms [each made up out] <u>of</u> [a heterogeneous multiplicity of] atoms' the 'self- <i>«aufheben»</i> ' 'self-internalization'/self-subsumption'/self-conservation' of atoms as «monads»;	$= \frac{1}{\sqrt{g}} \frac{1}{2} \frac{1}{2}$
1 ₩₽	denotes the onto 'prokaryotic cells' as «monads» = '[meta-]molecules [each made up out] of [a heterogeneous multiplicity of] molecules' as its sub-«monads»; the 'self-«aufheben»' of molecules as «monads»;	$= \bigvee_{q}^{1} \widehat{g}_{mm} = \bigvee_{q}^{1} \widehat{g}_{p} \Leftrightarrow \widehat{g}_{16};$
1 <u>€</u>	denotes the onto of <u>e</u> ukaryotic cells as «monads» = '[meta-]prokaryotic cells [each made up out] <u>of</u> [a heterogeneous multiplicity of] prokaryotic cells' as its sub-«monads»; via "micro-biological endosymbiosis/symbiogenesis"; the 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of prokaryotic cells as «monads»;	$= \frac{1}{4} \stackrel{\wedge}{\operatorname{gpp}} = \frac{1}{4} \stackrel{\wedge}{\operatorname{ge}} \stackrel{\wedge}{\leftrightarrow} \stackrel{\wedge}{\operatorname{g32}}$
↓ <u>b</u>	denotes the onto of meta-biota as «monads» = '[meta-]eukaryotes [each made up out] of [a heterogeneous multiplicity of] ""eukaryotes" or ""eukaryotic cells" as its sub-«monads»; "multi-cellular" biota; self-«aufheben» of eukaryote-«monads»;	$= \frac{1}{\sqrt{g}} \stackrel{\wedge}{\underset{ee}{=}} = \frac{1}{\sqrt{g}} \stackrel{\wedge}{\underset{b}{\underset{be}{\to}}} \stackrel{\wedge}{\underset{ae}{\to}} \stackrel{\wedge}{\underset{ae}{\to} \stackrel{\wedge}{\underset{ae}{\to} \stackrel{\wedge}{\underset{ae}{\to}} \stackrel{\wedge}{\underset{ae}{\to} \stackrel{\wedge}{\underset{ae}{\to}} \stackrel{\wedge}{\underset{ae}{\to}} \stackrel{\wedge}{\underset{ae}{\to}} \stackrel{\wedge}{\underset{ae}{\to} \stackrel{\bullet}{\underset{ae}{\to} $
1 <u>ℓ</u>	denotes the onto of "animal societies" as «monads» = proto-£anguage-based meta-metazoa as «monads», '[meta-]meta-biota [each made up out] <u>of</u> [a heterogeneous multiplicity of] meta-biota' [specifically, out of a heterogeneous multiplicity of 'meta- <u>zoa'</u>]; the 'self-«aufheben»' 'self-internalization'/'self-subsumption'/'self-conservation' of meta-zoan biological individuals as «monads»;	$= \bigvee_{\forall}^{1} \mathring{q}_{bb} = \bigvee_{\forall}^{1} \mathring{q}_{\ell} \Leftrightarrow \mathring{q}_{128};$
¹ <u>h</u>	denotes the onto of [proto-humanoid] meta-societies as «monads», via 'social endosymbiosis/social symbiogenesis'; = '[meta-meta-]meta-biota', or '[meta-]animal societies [each made up out] of [a heterogeneous multiplicity of] animal societies', as its sub-«monads», by means of "mutual domestication" f" self-domestication" symbiosis; the 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of "animal societies" as «monads»,;;	$= \bigvee_{\forall}^{1} \frac{A}{Q_{\ell\ell}} = \bigvee_{\forall}^{1} \frac{A}{Q_{h}} \Leftrightarrow \overset{A}{Q}_{256};$

Note the '<u>meta-fractal'</u> -- i.e., the '[quanto-]<u>qualo-fractal'</u> -- self-progression of scales of mutually-similar, analogous/homologous ontological structure/content, in this <u>self</u>-progression of self-iterating self-«aufheben» 'self-enfoldments', 'self-infoldings', or 'self-involutions' [cf. Chardin].

Note also its <u>relative</u>/consecutive, 'ontological self-constructionist'/<u>non</u>-reductionist' dialectical 'monadism', 'modulism', or <u>relative</u> 'a-tomism' = '¬tomism'. This partial '¬tomism' is also a <u>relative</u>/partial '¬tomism' or 'tomism'. It is an assertion of the 'cut-ability' of these individuated 'units' of "cosmogenesis" or of 'cosmological self-genesis' -- "pre-sub-atomic particles", "sub-atomic particles", "atoms", "molecules", "prokaryotic cells", "eukaryotic cells", "multi-cellular organisms", "animal societies", human 'meta-societies', etc. -- relative to precedent/'precede-ent' scales in this 'ontologically self-growing meta-fractal rheid-crystal' of the cosmos, coupled with their apparent '<u>un</u>-cut-ability' from the viewpoint of subsequent scales, in contrast to the absolute 'ontological reductionism' of classical 'absolute atomism'. This 'dialectical [meta-]model, denoted $\{\sqrt[1]{n}\}^{2^{T}}$, is one, not of the 'reduction' of 'all other things' to "pre-nuclear particles", denoted $\sqrt[1]{n}$, but, on the contrary, is one of the 'self-construction' of "all other things to-date extant" from "pre-nuclear particles" taken as natural-historical premise.

The $\underline{\mathbf{Q}}$ 'self-«aufheben» evolute product rule, $\mathbf{\hat{q}}_{k} \llbracket \mathbf{\hat{q}}_{k} \rrbracket = \mathbf{\hat{r}} \llbracket \mathbf{\hat{q}}_{k} \rrbracket = \mathbf{\hat{q}}_{k}^{2} = \mathbf{\hat{q}}_{k} \boxplus \mathbf{\hat{q}}_{k+k} = \mathbf{\hat{q}}_{k} \boxplus \mathbf{\hat{q}}_{2k}$, can model scenarios in which the increasingly-frequent, intensifying 'self-reflexion' / 'self-reflexion', or self-confrontation and self-inter-action, or 'intra-interaction', within a burgeoning and 'self-densifying' population of individual											
$[ev]$ entities'/'«monads»' of 'onto-type' $\mathbf{\hat{q}}_{\mathbf{k}}$, due to the escalating 'self-surroundment' or 'self-environment' of that population supplanting their formerly-dominant 'other-environment' or 'other-surroundment', i.e., by											
populations of « <i>monads</i> » of 'onto-type' $\hat{\mathbf{g}}_{\mathbf{k}/2}$ via which they increasingly converted 'onto-mass' of type $\hat{\mathbf{g}}_{\mathbf{k}/2}$											
into 'onto-mass' of their own 'ontic species', $\hat{\mathbf{g}}_{\mathbf{k}}$ reproduces that type- $\hat{\mathbf{g}}_{\mathbf{k}}$ population, <u>but also</u> brings forth a											
new population, of ' <u>meta</u> -«monads»', of new, ' <u>meta</u> -onto-type', denoted $\hat{\mathbf{q}}_{2\mathbf{k}}$. Applying it to the above, we obtain, reading $\hat{\mathbf{x}}$ $\hat{\mathbf{x}}$ as ' $\hat{\mathbf{x}}$ of $\hat{\mathbf{x}}$ '; as $\hat{\mathbf{x}}$ of itself; i.e., as "function"/"operation"/"operator" $\hat{\mathbf{x}}$ operating on self:											
$\frac{1}{n}\left(\frac{1}{n}\right) = \frac{1}{n} \oplus \frac{1}{s} \stackrel{2}{\Rightarrow} \frac{1}{n}; \frac{1}{s}\left(\frac{1}{s}\right) = \frac{1}{s} \oplus \frac{1}{a} \stackrel{2}{\Rightarrow} \frac{1}{s}; \frac{1}{a}\left(\frac{1}{a}\right) = \frac{1}{a} \oplus \frac{1}{m} \stackrel{2}{\Rightarrow} \frac{1}{a};$											
$ \lim_{x \to \infty} \left(\lim_{x \to \infty} \phi \right) = \lim_{$											
$\frac{1}{2}\mathbf{b} \mathbf{A}_{\mathbf{a}}^{\dagger} \mathbf{b} \mathbf{b} = \frac{1}{2}\mathbf{b} \oplus \frac{1}{2}\ell \frac{1}{2} \frac{1}{2}\mathbf{b}; \frac{1}{2}\ell \mathbf{A}_{\mathbf{a}}^{\dagger}\ell \mathbf{b} = \frac{1}{2}\ell \oplus \frac{1}{2}\mathbf{h} \frac{1}{2} \frac{1}{2}\mathbf{h} \mathbf{A}_{\mathbf{a}}^{\dagger} \mathbf{h} \mathbf{b} = \frac{1}{2}\mathbf{h} \oplus \frac{1}{2}\mathbf{c} \frac{1}{2} \frac{1}{2}\mathbf{h};$											
$h(h) = h \oplus h \oplus h$. The operation above, in each case, being one of 'self-«aufheben»' 'self-negation'/'self-conservation'/ (self-elevation'. Note also that the above 'self-re-flex-ions' model only initial, "primitive accumulations" of each next ontic species of neo-«monads».											
Supplementing these ' <u>self-hybrid'</u> ontological 'self-products', are ontological 'cross-products', oft interpretable as connoting hybrid <u>onto</u> logical categories											

[]]]]]] <u></u> ,			
Hybrid onto: "primordial fireball"/pre-galactic medium – $\frac{1}{\sqrt{2}}$ to $\frac{1}{\sqrt{2}}$ 'reproductive accumulation' via 'conversion-formations'	=	1∧ ∀ ^g sn	⇔ĝ₃
'Galactic medium'/early stars' 1/2 to 1/2 iconversion-formations'; stellar nucleosynthesis 'reproductive accumulation' of 1/2	=	1 ∧ ∀ ^{Qas}	⇔ Å g ₆
The maximum-subscript hybrid onto of the early interstellar medium/ "molecular cloud" $\frac{1}{\sqrt{2}}a$ to $\frac{1}{\sqrt{2}}m$ 'conversion-formations'	=	1∧ ∀ ^{¶masn}	⇔ ĝ15
The maximum-subscript hybrid onto of "planetary interiors" / proto-oceans', & their 1 to 1 conversion-formations'	=	1 A ¥ [⊈] pmasn	<⇒Â31
The maximum-subscript hybrid onto of initial/primordial "planetary oceans", and their ¹ to ¹ conversion-formations'	=	1 A ¥ ^{¶epmasn}	↔ ge3
The maximum-subscript hybrid onto of developed "planetary oceans & continents", as de to db 'conversion-formations'	-	1 A ¥ [⊈] bepmasn	<⇒ Â 127
The maximum-subscript hybrid onto of, e.g., planetary oceans and continents as to to to conversion-formations'	=	1 ∧ ∀ ^{¶lbepmasn}	↔ ĝ ₂₅₅
The maxsubscript hybrid onto of Recent Earth atmosphere/ocean/soil sub-ontos, and1 to 1.h 'conversion-formations'	≡.1	i ∂ ghibepmasn	↔∂ậ51

<u>Note</u>: Each ontologically hybrid 'conversion-formation' is also a 'synthesis-formation', 'uni-thesis-formation', or 'complex unity' of ontic 'opposites', and an 'expanded reproduction formation' for its 'conversion-to' ontic category of [meta-]«monads», denoted by the leftmost character in the subscript of the corresponding <u>interpreted</u> Q 'meta-numeral'.

The 'meta-evolution' of this universe-ontology can be compactly expressed via the 'self-iteration' 'super-superscript', 'super-superscript', 'increasing degree of degree', 'exponent[iat]ed-exponent', or 'powered-power' expression $\frac{1}{2}O_{\tau} = \left(\frac{1}{2}n\right)^{2^{\tau}}$, wherein $\frac{1}{2}O_{\tau}$ denotes the 'meta-state' of that <u>O</u>ntology during and throughout the 'mere evolutions' during or <u>within</u> each 'natural-historical specificity' <u>epoch</u> τ ; 'mere evolutions' that continually ensue 'inside' each 'onto'.

This symbol $\frac{1}{2}O_{\tau}$ stands for the 'Ontology-meta-state' of that universe; the non-amalgamative 'inhomogeneous sum' or 'heterogeneous sum' modeling the 'historical multi-meta-ontic <u>cumulum</u>', or 'multi-meta-monadic <u>meta-warithmos</u>', of all 'ontos' at least <u>possibly</u> extant as of 'meta-evolutionary <u>epoch</u> number' or 'self-bifurcation index-value' τ . I.e., ${}_{u}^{n}O_{\tau}$, or ${}_{u}^{n}Q_{\tau}$, denotes the purely qualitative, purely ontological set or space of possible 'existents' or 'extants' in epoch τ , whether or not all such ontos are 'actualized' or 'actually populated' in the actuality modeled, and in the corresponding <u>quanto-qualitative</u> 'actualization space'. The latter may be modeled via the ${}_{u}^{n}U_{\tau}$ language, and, even more concretely, via the ${}_{u}^{n}H_{\tau}$ language.

The symbol-complex $\overset{n}{\underline{U}}$ stands for a 'meta-model' describing the 'multi-population meta-distribution' or 'cumulum inventory' of the nth 'taxonomic level'

of [sub-]ontos of <u>universe-of-discourse</u> u [<u>'sub</u>'-universe if n > 1]. For n = 1 and for $u = \forall$, denoting the <u>'all-inclusive'</u> or <u>'maximally-implicitly-indusive'</u> <u>universe-of-discourse</u>, the first 7 '<u>self-iterations'</u>, modeling possible/expected 'self-bifurcations', <u>'metafinite self-conversion</u> <u>singularities'</u>, 'natural revolutions', 'meta-evolutions', or [Turchinian] "'meta-system [self-]transitions", are the following --

τ	10 Interpreted Q Arithmetic	"Uninterpreted" Q Arithmetic
0	$\frac{1}{\sqrt{0}}_{0} = \left(\frac{1}{\sqrt{n}}\right)^{2} = \left(\frac{1}{\sqrt{n}}\right)^{1} = \frac{1}{\sqrt{n}} = \text{stipulated origin}/(arché); \underline{pre-nuclears} \text{ only}$	E \$11
1	$ \sqrt[1]{\underline{O}}_{1} = \left(\sqrt[1]{\underline{n}} \right)^{2^{1}} = \left(\sqrt[1]{\underline{n}} \right)^{2} = \sqrt[1]{\underline{n}} \left(\sqrt[1]{\underline{n}} \right) = \sqrt[1]{\underline{n}} \oplus \sqrt[1]{\underline{s}} = \underline{pre-nuclears} \oplus \underline{sub-atomics} $	⊑ậ ₁ ≡ ậ ₂ ⊒
2	$ \frac{1}{\sqrt{2}} = \left(\frac{1}{\sqrt{2}} n \right)^2 = \left(\frac{1}{\sqrt{2}} n \oplus \frac{1}{\sqrt{2}} \right)^2 = \frac{1}{\sqrt{2}} n \oplus \frac{1}{\sqrt{2}} \oplus \frac{1}{\sqrt$	$\llbracket \hat{\textbf{q}}_1 \equiv \hat{\textbf{q}}_2 \equiv \hat{\textbf{q}}_3 \equiv \hat{\textbf{q}}_4 \rrbracket$
3		$\llbracket \hat{\mathfrak{q}}_1 \mathtt{m} \hat{\mathfrak{q}}_2 \mathtt{m} \hat{\mathfrak{q}}_3 \mathtt{m} \hat{\mathfrak{q}}_4 \mathtt{m} \hat{\mathfrak{q}}_5 \mathtt{m} \hat{\mathfrak{q}}_6 \mathtt{m} \hat{\mathfrak{q}}_7 \mathtt{m} \hat{\mathfrak{q}}_8 \rrbracket$
4	$ \frac{1}{2} \underbrace{O}_{4} = \left(\underbrace{O}_{4} \right) \underbrace{\Phi}_{1}^{1} \underbrace{\widehat{\mathfrak{g}}}_{mn} \underbrace{\Phi}_{2}^{1} \underbrace{\widehat{\mathfrak{g}}}_{ms} \underbrace{\Phi}_{2}^{1} \underbrace{\widehat{\mathfrak{g}}}_{msn} \underbrace{\Phi}_{2}^{1} \underbrace{\widehat{\mathfrak{g}}}_{man} \underbrace{\Phi}_{2}^{1} \underbrace{\widehat{\mathfrak{g}}}_{mas} \underbrace{\Phi}_{2}^{1} \underbrace{\widehat{\mathfrak{g}}}_{masn} \underbrace$	$\underline{\boldsymbol{\Sigma}}_{k=1,2^4} \mathbb{I} \widehat{\boldsymbol{\mathfrak{a}}}_k \mathbb{I} = \underline{\boldsymbol{\Sigma}}_{k=1,16} \mathbb{I} \widehat{\boldsymbol{\mathfrak{a}}}_k \mathbb{I}$
5	$ \frac{1}{\sqrt{O}_{5}} = \left(\underbrace{1}_{} \oplus_{\nu}^{1} \underline{p} \oplus_{\nu}^{1} \hat{q}_{pn} \oplus_{\nu}^{1} \hat{q}_{ps} \oplus_{\nu}^{1} \hat{q}_{psn} \oplus_{\nu}^{1} \hat{q}_{pan} \oplus_{\nu}^{1} \hat{q}_{pasn} \oplus_{\mu}^{1} \hat{q}_{pasn} \oplus$	$\underline{\boldsymbol{\Sigma}}_{k-1,2^5} \boldsymbol{\mathbb{I}} \hat{\boldsymbol{\mathfrak{g}}}_k \boldsymbol{\mathbb{I}} = \underline{\boldsymbol{\Sigma}}_{k-1,32} \boldsymbol{\mathbb{I}} \hat{\boldsymbol{\mathfrak{g}}}_k \boldsymbol{\mathbb{I}}$
	$\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pmn}\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pmsn}\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pmsn}\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pma}\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pman}\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pmas}\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{pmasn}$	
6	$\frac{1}{2} \underbrace{O}_{6} = \left(\underbrace{1}_{\dots} \oplus \underbrace{1}_{e} $	$\underline{\boldsymbol{\Sigma}}_{k=1,2^6} \boldsymbol{\mathbb{I}} \hat{\boldsymbol{\mathfrak{g}}}_{k} \boldsymbol{\mathbb{I}} = \underline{\boldsymbol{\Sigma}}_{k-1,64} \boldsymbol{\mathbb{I}} \hat{\boldsymbol{\mathfrak{g}}}_{k} \boldsymbol{\mathbb{I}}$
	$\Phi^{1}_{\nu}\hat{g}_{emn}\Phi^{1}_{\nu}\hat{g}_{ems}\Phi^{1}_{\nu}\hat{g}_{emsn}\Phi^{1}_{\nu}\hat{g}_{ema}\Phi^{1}_{\nu}\hat{g}_{eman}\Phi^{1}_{\nu}\hat{g}_{emas}\Phi^{1}_{\nu}\hat{g}_{emasn}\Phi^{1}_{\nu}\hat{g}_{ep}$	
	$\Phi^{\dagger}_{\nu}\hat{g}_{epn} \Phi^{\dagger}_{\nu}\hat{g}_{eps} \Phi^{\dagger}_{\nu}\hat{g}_{epsn} \Phi^{\dagger}_{\nu}\hat{g}_{epa} \Phi^{\dagger}_{\nu}\hat{g}_{epan} \Phi^{\dagger}_{\nu}\hat{g}_{epasn} \Phi^{\dagger}_{\nu}\hat{g}_{epann} \Phi^{\dagger}_{\nu}\hat{g}_{epmnn}$	
	$\Phi^{1}_{\nu}\hat{g}_{epmn}\Phi^{1}_{\nu}\hat{g}_{epms}\Phi^{1}_{\nu}\hat{g}_{epmsn}\Phi^{1}_{\nu}\hat{g}_{epma}\Phi^{1}_{\nu}\hat{g}_{epman}\Phi^{1}_{\nu}\hat{g}_{epmas}\Phi^{1}_{\nu}\hat{g}_{epmasn}\Phi^{1}_{\nu}\underline{b}$	
7	$\frac{1}{2} \underbrace{\mathbf{O}}_{7} = \mathbf{A}_{} \oplus_{\mathbf{v}}^{1} \underline{\mathbf{b}} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{bn} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{bs} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{bsn} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{ban} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{bas} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{bas} \oplus_{\mathbf{v}}^{1} \hat{\mathbf{g}}_{basn} \oplus_{\mathbf{v}}^{$	$\underline{\boldsymbol{\Sigma}}_{k-1,2^7} \llbracket \hat{\boldsymbol{\mathfrak{g}}}_k \rrbracket = \underline{\boldsymbol{\Sigma}}_{k-1,128} \llbracket \hat{\boldsymbol{\mathfrak{g}}}_k \rrbracket$
	$\Phi^{\dagger}_{\nu}\hat{a}_{bmn}\Phi^{\dagger}_{\nu}\hat{a}_{bms}\Phi^{\dagger}_{\nu}\hat{a}_{bmsn}\Phi^{\dagger}_{\nu}\hat{a}_{bma}\Phi^{\dagger}_{\nu}\hat{a}_{bman}\Phi^{\dagger}_{\nu}\hat{a}_{bmas}\Phi^{\dagger}_{\nu}\hat{a}_{bmasn}\Phi^{\dagger}_{\nu}\hat{a}_{bp}$	
	$\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpn}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bps}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpsn}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpa}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpan}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpas}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpasn}$ $\Phi^{\dagger}_{v}\hat{\mathfrak{g}}_{bpm}$	
	$\Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpmn}} \Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpms}} \Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpms}} \Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpma}} \Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpman}} \Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpmas}} \Phi^{1}_{\mathbf{y}}\hat{\mathbf{g}}_{\mathbf{bpmasn}} \Phi^{1}_{\mathbf{x}}\hat{\mathbf{g}}_{\mathbf{bpmasn}} \Phi^{1}_$	
	$\Phi^{1}_{\mathbf{v}}\hat{\mathbf{q}}_{ben} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{q}}_{bes} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{q}}_{besn} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{q}}_{bea} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{q}}_{bean} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{q}}_{beas} \Phi^{1}_{$	
	$\Phi^{1}_{\mathbf{v}}\hat{\mathbf{g}}_{\text{berns}} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{g}}_{\text{berns}n} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{g}}_{\text{berns}n} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{g}}_{\text{berna}} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{g}}_{\text{bernan}} \Phi^{1}_{\mathbf{v}}\hat{\mathbf{g}}_{\text{bernan}$	
	$\Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepn} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{beps} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepsn} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepa} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepan} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepas} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepasn} \Phi_{\mathbf{v}}^{\dagger}\hat{\mathbf{q}}_{bepm}$	
	$\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepmn}\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepms}\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepmsn}\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepma}\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepman}\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepmas}\Phi^{1}_{v}\hat{\mathfrak{q}}_{bepmasn$	<u>↓</u> ℓ)

Aside. What is the purpose and the justification for such reconstructive voyages? How do such plumbings of the deep of time, delvings into the depths of cosmological, and planetary, socio-archaeological history, contribute to the urgent tasks of human-social change in the present world? Is it a pursuit of scientific knowledge for its own sake? A wasteful indulgence of vain curiosity? If driven, indeed, by curiosity, then what is the wellspring of that curious force – and of its curiously powerful and pervasive energy? Is it not the urge to know ourselves, and, thence, our possibilities, our capacity, our potential destiny in this universe, by way of coming to know our own 'meta-genealogy', the story of our 'meta-family' – the cosmos as a whole? The value of such knowledge? '*Psycho-History*' teaches us that it is above all the level/degree of self-development of our own *social self-identities* that delimits our capacities to contribute to social self-transformation, and that delimits our ability to pre-envision the outcome of that transformation; to form the pre-vision of the new sociely that we must create as our future, if Terran humanity is to have a future. If Beyond even the urgency of our present species-situation, such inquiry evinces a <u>radical existential need</u> of the seciel'-conscious species-being, human and "humanoid" alike, a need only to become the <u>more</u> compelling, once on the other, history side of present human <u>pre-history [Marx]</u>, for <u>conscious</u>, *living*, <u>personal connexion</u>, on the side of the individual, with the cosmological totality, on the other side; a need for formation of a 'universal self-identify' within the social individual II.

Example 4: [Psycho-]Historical Dialectical Model -- Taxonomy Level 2' \underline{NQ} Model of the Psycho-Econo-Demo-Meta-Geological-Geo-graphy of Human-Social Formation; 'The Dialectic of <u>Human</u> Nature', from the view point of the historical-ontological self-progression of '<u>Internan</u> socio-econo-political <u>demography/geography</u>'. This is a model of a total, continuing pre-historical/historical, process of human social form<u>ation</u> grasped as a self-progression of '<u>Internan</u> socio-econo-political <u>demography/geography</u>'. This is a model of a total, continuing pre-historical/historical, process of human social form<u>ation</u> grasped as a self-progression of '<u>Intera-geological</u>' geographical formations. 'Opening up' just the $\frac{1}{\sqrt{h}}$ 'onto' of the above-described '1st level' universe-model; constructing a '2nd-level' universe-model for the relative 'meta-evolutions' going on inside just the $\frac{1}{\sqrt{h}}$ 'onto' as [sub-]universe-of-discourse [that of <u>human</u> 'meta-social' society], and emphasizing political demography, so that the taxonomic level or ''location'''-identifiers or '<u>determinators</u>' for the ontic symbols of this model become ' $\frac{2}{h}$ ', not ' $\frac{1}{V}$ ', might lead to the following sequence of '<u>self</u>-«aufhebems' 'self-negations'/'self-conservations'/ self-elevations':

$\frac{2}{h}\underline{bands} \rightarrow \frac{1}{h}\underline{bands} = \frac{2}{h}\underline{bands} \left(\frac{2}{h}\underline{bands} \right) = \left(\frac{2}{h}\underline{bands} \right)^2 = \frac{2}{h}\underline{bands} \oplus \underline{A} \left(\frac{2}{h}\underline{bands} \right) = \frac{2}{h}\underline{bands} \oplus \frac{2}{h}\underline{camps} \stackrel{2}{\leftarrow} \frac{2}{h}\underline{bands};$
$^{2}_{h}\underline{camps} \rightarrow e^{\Delta} \left(^{2}_{h}\underline{camps} \right) = ^{2}_{h}\underline{camps} \left($
$\frac{^{2}_{h}villages}{h} \rightarrow \mathcal{P}^{4}\left(\frac{^{2}_{h}villages}{h}\right) = \frac{^{2}_{h}villages}{h}\frac{^{2}_{h}villages}{h} = \frac{^{2}_{h}villages}{h} + \frac{^{2}_{h}$
$h^{2}_{h} chiefdoms \rightarrow P^{2} \left(h^{2}_{h} chiefdoms \right) = h^{2}_{h} chiefdoms \left(h^{2}_{h} chiefdoms \right) = h^{2}_{h} chiefdoms \Phi h^{2}_{h} city-states + h^{2}_{h} chiefdoms;$
$\frac{^{2}_{h}city-states}{h} \rightarrow r^{2} \left(\frac{^{2}_{h}city-states}{h} \right) = \frac{^{2}_{h}city-states}{h} = \frac{^{2}_{h}city-states}{h} = \frac{^{2}_{h}city-states}{h} + \frac{^{2}_{h}city-s$
$\stackrel{2}{h} \underline{empires} \rightarrow \frac{1}{h} \underbrace{4^{2}_{h} \underline{empires}}_{h} = \stackrel{2}{h} \underline{empires} \underbrace{4^{2}_{h} \underline{empires}}_{h} = \stackrel{2}{h} \underline{empires} \underbrace{4^{2}_{h} \underline{empires}}_{h} \underbrace{4^{2}_{h} \underline$
or, in an abbreviated, phonograms[phonetic-characters]-used-as-ideograms "shorthand"

<u>b</u> Q <u>b</u>	=	² <u>b</u> ⊕ <u>h</u> C	***	² <u>b</u> ;	<u>²c₹²c</u> ♪	=	${}_{h}\underline{C} \oplus {}_{h}\underline{V}$	¥	2 <u>C</u> ;			$h \underline{V} \oplus h \underline{f}$	¥	² <u>∨</u> ;
² <u>f</u> (² <u>f</u>)	=	$\frac{^{2}\mathbf{f}}{^{h}\mathbf{f}} \oplus \frac{^{2}\mathbf{s}}{^{h}\mathbf{s}}$	ž	² <u>h</u> f ;	² <u>s</u> (² <u>s</u>)	-	² <u>s</u> ⊕ ² <u>e</u>	X	2 h S ;	² <u>e</u> { ² _h e } =	-	² <u>e</u> ⊕ ² <u>h</u> <u>n</u>	ş	² h <u>e</u>

-- given the following '<u>meta-fractal</u>' or '[quanto-]qualitatively scaling self-similarity structure', and with the following "interpretations" or "assignments" of the meta-number unit <u>qualifiers</u> { $\mathbf{\hat{q}}_{k}$ } of $\underline{\mathbb{N}} \subseteq \mathbf{N}$, to the '[meta-]ontological categories/'locus [meta-]«arithmoi»' or local 'populations' of '[meta-]monads' --

² <u>b</u>	denotes the human, social onto/«arithmos» of "bands" of nomadic [proto]-human[oid] scavengers/hunter-gatherers as social units/«monads» the stipulated starting point, origin, or «arché» for this self-progression of human, 'meta-social' systems/formations;			$\equiv \frac{2}{h}$	ĝ _b ⇔ĝ ₁ ;	ł
2 h <u>C</u>	denotes the onto/«arithmos» of "gamps" of human[oid]s plus their proto-[mutually-]domesticating animal followers as social units/«monads» '[meta-]bands' self-organizations/[ev]entities [each made up out] of [a heterogeneous multiplicity of] bands, or 'bands of second degree'; the 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of "bands" as «monads»;	= ² _h i	bb	= ² _h	ĝc⇔ ĝ2;	
² h⊻	denotes the onto/«arithmos» of "villages" of human[oid]s and of their domesticated plant and animal chattel "[meta-]camps" self-organizations/[ev]entities [each made.up out] of [a heterogeneous multiplicity of] camps, or 'camps of second degree'; the 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of "camps" as [meta ¹ -]«monads»;	≡ ² h	lec	= ² _h	å _v ≪⇒ å ₄ ;	
² hÍ	denotes the onto/«arithmos» of "chiefdoms", "[meta-]villages' self-organizations [each made up out] of [a heterogeneous multiplicity of] villages 'villages of second degree'; the 'self-«aufheben» 'self-internalization//self-subsumption//self-conservation' of "villages" as [meta ² -]«monads»	= ² / _h	Ìvv	= ²	ĝr⇔ĝs;	
2 h <u>S</u>	denotes the onto/«arithmos» of "city-gtates", "[meta-]chiefdoms' [ev]entities [each made up out] of [a heterogeneous multiplicity of] chiefdoms 'chiefdoms of second degree'; 'self-«aufheben»' 'self-internalization'/self-subsumption//self-conservation' of "chiefdoms" as [meta ³ -]«monade	≡ ² / _h ! 5»;	lff	≡ ² _h	ĝs⇔ĝ1e	i,
2 h <u>e</u>	denotes the onto/«arithmos» of "empires", "[meta-]city-states' [ev]entities [each made up out] of [a heterogeneous multiplicity of] city-states 'city-states of second degree'; 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of "city-states" as [meta ⁴ -]«monads	≡ ² / _h !	iss	= 2 h	ĝe ⇔ ĝ32	£
2 h	denotes the onto/«arithmos» of "nation-states", "meta-jempires' [ev]entities [each made up out] of [remnants of multiple multi-city-state empires]	= 2	A	= 2	Ân⇔ Â64	¢.

hn denotes the onto/«arithmos» of "nation-states", "[meta-]empires' [ev]entities [each made up out] of [remnants of multiple multi-city-state empires] = hge = hgn + ge; i.e., of [a heterogeneous multiplicity of fragments of former] empires; 'multi-city-state empires of second degree'; the 'self-«aufheben»' 'self-internalization'/self-subsumption//self-conservation' of fragments of "multi-city-state empires" as [meta⁵-]«monads»;.... ²hA denotes the human-social activity onto/«arithmos» of immediate Appropriation of the "raw" products of nature, without "improvement", i.e., with little/no human 'use-value-added', as unit/«monad»; stipulated «arché» for this self-progression of [proto-]human[oid], or 'meta-social', systems;

²G denotes the onto/«arithmos» of '2nd degree Appropriation', 'serial-' &/or 'cross-Appropriation', of nature-products, yielding human-improved nature = ²h_B a = ²h_B a = ²h_

²hC denotes the onto/«arithmos» of 'barterable' Commodities, or Goods+ -- having <u>direct use</u>-value but also having '<u>indirect</u>, exchange-use-value' = hgGG = hgGc ↔ g4; '2nd degree' or '[meta-]Goods' [made up out] of [or 'symbolically ["psychologically", "mentally"] <u>containing</u>' [a heterogeneous multiplicity/list of '1st degree', other] <u>Goods</u>, as social-relations <u>units/«monads»</u>, with Goods obtainable by them in customary barter-exchange as their <u>sub-</u>«monads»; the 'self-«aufheben»' 'self-internalization'/self-conservation' of "Goods/Gifts" as social-relations [meta¹]«monads»;

² <u>h</u><u>M</u> denotes the onto/«arithmos» of <u>M</u>onies as units/«monads», born when a single Money-Commodity singles-out as accepted universal equivalent = ²_h<u>G</u>_C = ²_h<u>G</u>_M ↔ <u>G</u>_B; a 'socio-ontological category' of '2nd degree' or '[meta-]<u>Commodities</u>' [made up out] <u>of</u> [or '<u>symbolically</u> ["psychologically", "mentally"] <u>containing</u>' a heterogeneous multiplicity/list of '1st degree'] <u>Commodities</u>, which these <u>M</u>onies can "purchase", as their <u>sub-units/sub-«monads»;</u> the 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of "Commodities" as social-relations [meta²-]«monads»;

²nK denotes the onto/«arithmos» of «Kapitals»; Money+ which makes <u>more</u> Money+; 'autocatalytic [exchange-]values' as units/«monads» = ²n gmm = ²n

²hE denotes the onto/«arithmos» of 'Generalized Equities' as social-relation units/«monads», with '<u>Externality Equities</u>' as their «arché» = ²hg_{KK} = ²hg_E ↔ g₃₂; basis of 'Equitarian' Soclety, foundation-relation of 'political-economic democracy', based upon '[meta-]<u>Capitals</u>' [made up out] of [or 'symbolically ['psychologically' and 'politically'] containing' and 'constraining' [[geographical-regional heterogeneous multiplicities of] individual] <u>Capitals</u>; the 'self-«aufheben»' 'self-internalization'/self-subsumption'/self-conservation' of "«Kapitals" as social-relations [meta⁴-]«monads»,

and with the following human-social 'meta-genealogies', or 'meta-social meta-phylogenies':

² A	->	₽₫ ₹ ₽₽	-	${}^{2}_{h}\underline{A} \otimes {}^{2}_{h}\underline{A}$	=	(² <u>A</u>) ²	=	∮ ² <u>A</u> ♦ <u>A</u> ∮ ² <u>A</u>)	=	$\left(\begin{smallmatrix} {}^{2}\underline{A} \\ {}^{h}\underline{A} \end{smallmatrix}\right) \left(\begin{smallmatrix} {}^{2}\underline{G} \\ {}^{h}\underline{G} \end{smallmatrix}\right)$	¥	² <u>A</u> ;
² <u>G</u>	->	բ ₫∢ ≧ G ♪	=	${}^{2}_{h}\underline{G} \otimes {}^{2}_{h}\underline{G}$	=	(² <u>G</u>) ²	=	∢ ² _h <u>G</u> ♦ <u>▲</u> ∢ ² _h <u>G</u> ∢	-	(² _h <u>G</u> ⊕ ² _h <u>C</u>)	ł	² G;
² <u>C</u>	-		=	² <u>C</u> ⇔ ² <u>C</u>	=		-		=	4 ² <u>C</u> ⊕ ² <u>M</u>	ž	2 C ;
² <u>M</u>	->	≓ { ² <u>M</u> }	=	${}^{2}_{h}\underline{M} \otimes {}^{2}_{h}\underline{M}$	-	(² / _h <u>M</u>) ²	=	$ \mathbf{A}^{2}_{h}\underline{M} \oplus \mathbf{A} \mathbf{A}^{2}_{h}\underline{M} \mathbf{A} $	-	∮ ² <u>M</u> ♦ ² <u>K</u>)	2	² <u>₩</u> ;
² <u>K</u>	→	₽₽ ₫ ₽ <u>к</u>	=	${}^{2}_{h}\underline{K} \otimes {}^{2}_{h}\underline{K}$	=	{ ² / _h K) ²	=	∮ ² <u>K</u> ♦ <u>∆</u> ∮ ² <u>K</u>)	=		2	² <u>K</u> ,

The operation above, in each case, being one of 'self-«aufheben»' 'self-conversion'/'self-negation'/'self-conservation'/ 'self-elevation'.

This 'meta-model' addresses the 'meta-dynamical' 'meta-evolution' of 'meristemal' human-social relations of human-society self-production [including of the [transitory] self-*re*production of these very human-social relations of society self-production themselves, as the 'meristemal', subsuming relations of production]. This model of that "*historical dialectic*" of "*the social relations of production*" can be expressed compactly by the symbol-complex $\left< \frac{1}{2} A \right>^{2^{\tau\uparrow}}$ in the ideographical language of this *dialectical ideography*. Note that this 'meta-model' abstracts completely from the "other side" of the historical development of the human social individual, namely, from the growth of the "*social forces of production*" [i.e., of the human-social '*self-forces*' -- '*self-reflexive forces*' or '*self-reflexive forces*' -- of human society '*self-productivity*'; of human, 'meta-social' society's human 'socio-onto-mass' '*self-productivity*' or '*self-reproductivity*']. The "*historical dialectic*" of the growth of these "*forces*" is merely *implicit* in this 'meta-model', whereas the *social relations of production* form its *explicit* focus.

Nonetheless, the growth of the 'society-reproductive forces' remains the <u>implicit</u> driver of the entire movement posited by this model, from ${}^{2}_{h}\underline{\mathbf{G}}$ to ${}^{2}_{h}\underline{\mathbf{C}}$, to ${}^{2}_{h}\underline{\mathbf{M}}$ to ${}^{2}_{h}\underline{\mathbf{K}}$, and beyond. For example, the transition from ${}^{2}_{h}\underline{\mathbf{G}}$ dominance to the emergence and dominance of ${}^{2}_{h}\underline{\mathbf{C}}$ and of barter-exchange between tribes, requires a level of human social *Goods-productivity*, which can sustain a sufficient level of human population, and sufficiently dense, surfeit "populations" of human-made Goods-artefacts, to the point that opportunities for one tribal community to encounter and to barter its surplus/to-it-useless Goods to neighboring tribal communities, in exchange for their, complementary, Goods-surpluses, becomes probable enough and frequent enough to be reliable/practicable/sustainable.

Another example: it is clear that the most essential form of Capital, Industrial Capital, i.e., not ${}^{2}_{h}\hat{\mathbf{g}}_{MM} = {}^{2}_{h}\underline{\mathbf{K}}$ [which connotes, directly, the "antediluvian" forms of Capital, chiefly merchant's Capital and usurers' Capital, originating from the *Money*[-&-*Commodity*] *circulation process*, and arising before Capital has seized control of, and reshaped, the social production process, i.e., before the advent of 'Capital-ist' society proper], but rather ${}^{2}_{h}\hat{\mathbf{g}}_{\mathbf{KMCGA'}}$ which signifies the "real subsumption", by Capital, of all of its predecessor social relations of production -- namely, of ${}^{2}_{h}\underline{\mathbf{M}}$, ${}^{2}_{h}\underline{\mathbf{C}}$, ${}^{2}_{h}\underline{\mathbf{G}}$, and ${}^{2}_{h}\underline{\mathbf{A}}$ -- requires the social permeation of wage labor, which in turn requires that the human society hosting/characterized-by the Capital-relation has attained a level of productivity/productive force such that each individual worker is, on average, able to produce more than the value-equivalent of that worker's daily subsistence-requirements in each day of work.

Otherwise there would be no potential surplus product to serve as an objective basis for the very possibility of profit of enterprise, hence of any epochally-sustainable possibility of existence for Industrial Capital, or for a "Capitalist society" -- meaning a society whose 'meristemal'/predominant social relation of production is the Capital-relation.

Marx, in the <u>Grundrisse</u>, or "Foundation", of his immanent critique of capitalist political economy, clarified the natures and the interrelationship of the social forces of production and the social relations of production, in connexion with the total "pre-history" of the truly human species, as follows: "Productive forces and social relationships -- the two different sides of the development of the social individual -- appear to be, and are, only a means for capital, to enable it to produce from its own cramped base. But in fact they are the material conditions that will shatter this foundation." [David McLellan, <u>The Grundrisse, Karl Marx</u>, Harper & Row [NY: 1971], p. 143, emphasis added by F.<u>E.D</u>.]. The [pre-]historical process of human social formation; the historical self-progression of human-social formations; the 'meta-dynamical' self-'meta-evolution' of human society; the historical succession of qualitatively/socio-ontologically distinct, "historically-specific", 'merely-dynamical' human-social <u>dynamical systems</u> of social relations of production that form, together, what we term the 'diachronic meta-system' of human societies, and of their net-expanding sequence of human-social ontologies, in terms of the <u>NQ</u> model of human-social '<u>non-ontostasis</u>' described above -- i.e., of human-social 'onto-<u>dynamasis</u>' -- "'looks'" to us as follows, per the self-iteration of its «arché», ^aA, through its 7th epoch [≈ 2 epoch-units beyond our present]:

τ ²_hQ Interpreted Arithmetic [Ontological Intensional-Intuitional, Connotational Symbols]

 $0 \quad {}^{2}_{h}\underline{Q}_{0} = \left\langle {}^{2}_{h}\underline{A} \right\rangle^{2^{0}} = {}^{2}_{h}\underline{A} = Stipulated origin / (arché): Predation / direct or immediate <u>Appropriation</u>$ of the raw or "not-humanly-refined" products of [principally <u>extra</u>-human/<u>pre</u>-human]nature; the scavenging/hunting/gathering human-social relations of production only,near the "vanishing point" of 'human-social' or 'meta-social' <u>economy</u> back into its $predecessor, 'animal-social' <u>ecology</u>, i.e., near the 'emergence point' from <math>\frac{1}{2}\underline{\ell}$ into $\frac{1}{2}\underline{h}$;

$$1 \quad {}^{2}_{h}\underline{O}_{1} = \left({}^{2}_{h}\underline{A} \right)^{2^{1}} = \left({}^{2}_{h}\underline{A} \right)^{2} = {}^{2}_{h}\underline{A} \left({}^{2}_{h}\underline{A} \right) = {}^{-1}_{h}\left({}^{2}_{h}\underline{A} \right) = \left({}^{2}_{h}\underline{A} \right)^{2} = {}^{2}_{h}\underline{G} = {}^{2}_{h$$

$$2 \ {}_{n}^{2} \Omega_{2} = \left({}_{n}^{2} A \right)^{2^{2}} = \left({}_{n}^{2} A + {}_{n}^{2} G \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G \right) \left({}_{n}^{2} A + {}_{n}^{2} G \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2^{2}} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {}_{n}^{2} G + {}_{n}^{2} H \right)^{2} = \left({}_{n}^{2} A + {$$

$${}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{ECA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{ECG}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{ECGA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMG}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMGA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMGA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMC}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMCGA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMCGA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMCGA}} \Leftrightarrow {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMCGA}} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMCGA}} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EMCGA}} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EKMCGA}} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EKMCGA} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EKMCGA}} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EKMCGA} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EKMCA} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EK}} \diamond {}^{2}_{h} \overset{\alpha}{\mathfrak{g}}_{\mathsf{EK}} \diamond {}^{2}_{h} \overset$$

Commentary on Example 5.

- A Story of the Historical Labor of the Self-Birthing, 'Self-Delivery', and Self-«Bildung» / Self-Formation of Humanity. The "story" that this 'meta-model' is telling is one of the self-expansion of the social-relations-ontology and thus of the very activities-ontology/praxis-ontology of human society. It encompasses, connotatively, key aspects of the extra-social, «anti-physis»/«physis» exchange/interchange, as well as of the intra-«anti-physis», i.e., the intra-social exchange aspects of the total history of human praxis. This 'socio-ontodynamasis' process involves the quantitative self-expansion and 'self-densification' of the '[meta-]monadic populations' of the leading 'socio-onto', or 'socio-ontological category', within each given epoch of that social ontology. Quantitative self-expansion and 'self-densification' eventually bring about a critical 'socioontic density'. As each such "critical-onto-mass" threshold of 'self-densification' is crossed, this crossing brings about the self-densified 'self-surroundment', 'self-environment', 'self-confrontation', and 'self-interaction' or 'monadic intra-action'/mutual interaction of the *«monads»* of the *leading-edge 'ontic population*', up to its moment of 'self-reflexion' and 'self-involution' [cf. Chardin]. This crisis creates new emergent such 'socioontos', triggering a social-relations 'social revolution', i.e., a 'social meta-evolution', or 'meta-system transition' [cf. Turchin], and a 'self-transcendence' [cf. Jantsch] of the extant human social system of human-social relations of human-societal [including human-social relations] self-reproduction. This story models that sequence of human-social 'meta-evolutionary epochs' as the 'onto-meta-dynamics' of an historical/ diachronic 'meta-system' -- that is, of a progressive-cumulative [«aufheben»] self-driven progression of human-social systems -- of human-social reproduction; of human-society-self-reproduction. It models that self-progression as a human 'socio-onto-dynamasis'; as a net-expanding historical accumulation/'cumulum' of ever-richer, ever more elevated/«aufheben»-involuted social ontology.
- The 'Intra-Duality' of Raw Appropriation, from the Vanishing Point of Human 'Use-Value-Added'. This "'story'" is also one of the manual 'Appropriation' of the 'raw' products of pre-human and/or of extra-human nature by palaeo-proto-humans, which led, at length, with the physical-spatial 'densification' of such activities, to a 'second degree' of such Appropriation, to a deeper Appropriation of the potentially humanity-useful properties of many pre-/extra-human natural objects/products. This deeper Appropriation is enacted by human agents' deliberate 'inter-Appropriation' and 'inter-Application' of portions of extra-human nature; by applying raw-Appropriated objects/natural products to other such objects/products; by the deliberate, human-intensional bringing to bear of the natural properties of one aspect of "raw" nature upon others by 'human-natur[e-]al' subjects/agents. The archetypal image of this 'self-reflexive', 'second Appropriation' and 'second degree' or 'nonlinear' Appropriation; 'Appropriation of the Appropriation' -- 'raw Appropriation squared', or 'meta-Appropriation' -- is the deliberate striking of one kind of stone upon and against an Appropriately other kind of stone, to form a burin. This epitomizes the transition from a human praxis limited to the 'mere' Appropriation of 'raw' nature, to the continuation/«aufheben»-conservation of that 'mere Appropriation' plus ['&' or '-+-'] the increasingly skillful hand[i-]'crafting' of increasingly 'refined' "Goods":

${}^{2}_{h}\underline{A} \rightarrow \mu^{2} \left({}^{2}_{h}\underline{A} \right) = {}^{2}_{h}\underline{A} \left({}^{2}_{h}\underline{A} \right) = {}^{2}_{h}\underline{A} \underline{of} {}^{2}_{h}\underline{A} = \left({}^{2}_{h}\underline{A} \right)^{2} = \left({}^{2}_{h}\underline{A} \rightarrow \Delta \left({}^{2}_{h}\underline{A} \right) \right) = \left({}^{2}_{h}\underline{A} \rightarrow {}^{2}_{h}\underline{G} \right) \xrightarrow{\frac{1}{2}} {}^{2}_{h}\underline{A}.$

The emergence of ${}^{2}_{h}\underline{G}$ from out of this 'self-opposition', 'self-antithesis', or 'self-duality', within ${}^{2}_{h}\underline{A}$, i.e., out of ${}^{2}_{h}\underline{A}$, 'explicitizes' and 'outers' or 'externalizes' that 'essence-ial' internal, implicit, immanent, inherent intra-opposition within ${}^{2}_{h}\underline{A}$, i.e., within the human-social activity / praxis of "raw" Appropriation of the productions of 'pre-eval' or pre-human, and of 'co-eval', contemporaneously 'extra-human' nature, by means of the ${}^{2}_{h}\underline{A}$ operation "over-coming" or 'coming-over'; 'over-going' or 'going-over' -- and thereby also 'internalizing', 'containerizing', and hence 'containing' -- itself; 'subsuming' or 're-entering into' itself, that is, by ${}^{2}_{h}\underline{A}$'s construction of a 'meta- ${}^{2}_{h}\underline{A}$ ' made up out of the manifold multiplicity of, and including the "cross-application" of, ${}^{2}_{h}\underline{A}$, as 'natural' result of a developed, 'pleni-populated', 'self-densified' praxis of ${}^{2}_{h}\underline{A}$.

Repetition or iteration of this <u>Appropriation</u> operation -- in effect, a *self-<u>Appropriation</u>* of the "Raw" <u>Appropriation</u> activity itself; the *self-application* of the "Raw" <u>Appropriation</u> action/operation -- is what progressively partially deepens incipient humanity's <u>Appropriation</u> of 'non-human nature', and thereby increasingly negates the "predicate" or epithet "Raw" initially attached to this activity of "<u>Appropriation</u>".

This repetition cumulatively negates that epithet, in the direction of its opposite; of the '<u>not</u>-"Raw", i.e., of the "worked-up", of the "finished", of the "refined"; of art/artisanship/artifice/artificiality/'arti-factuality' and therefore of the 'hu-man-u-f-act-uality'; of the for-human-consumption-human-improve-ment of nature; the increase of the 'fitness' and 'fitting-ness', for human use/consumption, <u>of</u> the heterogeneous «monads» of this socio-ontological category of humans-<u>A</u>ppropriated non-human nature; this <u>A</u>ppropriation <u>of</u> nature's [other] productions, <u>for</u> its human product[ion]s; <u>for</u> human nature, <u>for</u> human use, via human labor upon/"added to" that non-human nature/«physis»; by the human further-making of a 'humanized nature' («anti-physis», of an '<u>objectified</u> human <u>agency</u> or objectified <u>subject</u>-ivity', via this making-objective of human 'subjecthood'; this outward 'image-ing' of human faculties and needs in, into, and onto the world exterior to the human body; the formerly exo-human nature, by this 'exo-reflection' of what was within in[to] its without. Thus:

The self-application of this 'Raw Appropriation operation' is a 'Contra-Boolean Process':

Raw Appropriation	V A	ppropriation) =	aw	Appropriation) ²	*	Raw Appropriation;
Raw Appropriation 2 ²	-	Raw Appropriation	=	Goods-Making	=	Craftsmanship.

The before-cited epitome of this *deepening* Appropriation, of this '*meta*-Appropriation', including of this 'cross-Appropriation' is the *striking* of one rock, held in one hand, say a somewhat "glassy" rock, thus fitted, by its 'compositional nature', to hold a sharp edge after fracture -- a [f]<u>act</u> by then "'known" to the minds that 'held' the hands that held the rocks -- <u>against</u> other rocks, held by the same [proto-]human minds in their other hands, these other rocks, say of species of "harder" rocks, fitted by their characteristic 'compositional nature' to fracture the "glassier" rocks upon impact, creating tools, "'<u>burins</u>"', "'blade"-edged rocks, objects existent in pre-¹/₁<u>h</u> nature only "'by accident''', but, here, a *deliberate* result. Using these two kinds of rocks -- these two kinds of raw Appropriations -- against each other, i.e., 'contra-' one another, thus gives birth to <u>burins</u> as initial «monads» of a new socio-ontological category of '<u>G</u>oods'; to rudimentary, 'human-hand-made', 'hu-man-u-[f]<u>act</u>-ur-ed' <u>art[e][f]acts</u>; to human-improved-for-humans products of human labor; products of [self-]<u>human[izing</u> and [self-]human-ized] <u>Nature</u>.

This <u>act</u>[ion] of the con-current, '<u>co-A</u>ppropriation' of two natural products of differing qualities, harder versus "glassier", is orchestrated via human agency so as to bring these two contrasting "'raw'" properties mutually to bear upon one another, thus enacting a '<u>cross-A</u>ppropriation' of these qualities, and resulting in the creation of a species of physical objects with qualities, "'predicates''', or "'properties''' not normally extant in an earlier 'meta-state' of Nature, a 'meta-state' devoid of the definite, historically-specifically human 'species' of agency/'subject-ivity'/'subject-ness'.

The formula ${}^{2}_{h}\underline{A} ({}^{2}_{h}\underline{A})'$ or ${}^{2}_{h}\underline{A} \circ f {}^{2}_{h}\underline{A}'$ -- the formula connoting the '[self-]<u>Appropriation of Appropriation</u> [itself]' -- also connotes '<u>serial</u> <u>Appropriation(s)'</u>, the iterated <u>re-Appropriation and <u>deepening</u> 'raw' <u>Appropriation of the already <u>Appropriated</u>. The latter is instanced in the sequential stages of use-value-added '[hu-]man-u[al]-[f]<u>act</u>-ur-ing' or "'hand-making'" operations upon the "work-in-process'"/"'work-in-progress'" objects/objectifications of previous raw-<u>Appropriation-activity</u>, as in the "'Neo-lithic'"/"'Chalco-lithic''' emergent molding, and later, the 'proto-metallurgical' firing, of Earthen clay jars.</u></u>

The advent of the so-called "<u>artificial</u>", the very advent of the «anti-physis» itself, inheres in this deeper and iterated <u>Appropriation/cross-Appropriation of the "natural</u>" -- of the "'pre-human'''/"extra-human''' or 'exo-human' ontology of the cosmos: it inheres in this deepened and iterated-/cross-<u>Appropriation of</u> the «physis» by and for the human outgrowth of that very "nature"/«physis». It is above all necessary to avoid repeating the error of taking the <u>dialectic</u> of '«Natur» # «Geist»' as a Kantian <u>radical dualism</u>.

All of this development constitutes the incipient form of the growth of the human-societal forces of human-societal/communal self-re-production.

- The 'Intra-Duality' of Use-Value -- of "Goods"/"Gifts'" -- and the Emergence of a New Social Relations of Production Social Ontology, That of Commodities. The development of increasing human capability to improve upon raw nature in crafting human products to a greater "fitness" or "Appropriateness" for human consumption intensifies an intra-communal economy of obligatory redistribution and mutual "gift"-reciprocation [delayed/contingent exchange]. This exchange reproduces a form of inter-mutual "insurance" and communal "social risk management" against the variability and the vagaries of the ever-shifting hunting and horticultural circumstances for human societies, 'meta-societies' abjectly dominated daily by the conditions imposed by the «physis», that is, by the otherness of exo-human nature. Gradually, with the slow but also slowly-accelerating growth of the productive forces of these human communities, a higher 'population'/'frequency-of-encounter', and 'densification' of Goods-making activities and of their products is experienced. The human-populated portions of the Terran planetary biosphere become an increasingly skills-prosperous, goods-enriched, artifacts-permeated, and use-value-wealthy world. Use-value, in this context, develops also its own 'self-duality', its own internal, 'ontological/existential self-contra-diction', or 'contra-kinesis'; its own 'intra-duality', 'self-antithesis', or 'internal opposition', namely, that of 'direct use' vs. 'indirect-use'; 'immediate consumption use' versus 'mediate, exchange-use'.
- This 'pleni-population' and 'densification' of 'Goods-«monads»' is a manifestation of "the growth of the productive forces", i.e., of the growth of the productivity of human Goods-making activity, hence of the growth of the population-density of human goods-artefacts. Such growth can give rise, at first accidentally and unintentionally, to surfeits, to production -- or to production-capacity, productionpotential -- in excess of local needs. Such local excess production or "surplus product" is, initially, not 'use-value', but, rather, 'non-use-value' and waste, or "social entropy", from the point of view of local consumption-use. Yet it has the potential, through 'exchange-use', to procure other Goods from other localities -- other Goods which may also be in surfeit at their points of origin, within those other localities, so that the inhabitants of those other localities may also be willing to trade in it, but which are not in surfeit, given local needs and desires, with respect to local consumption-use for the first-mentioned locality. Irregular, aperiodic such recoupings of potential waste-loss via exchange -- episodes of intercommunal barter as interlude to periods of non-contact or of inter-communal war -- may give rise to a growing appreciation of the benefits of bartering, and to perceptions of "comparative advantages". This may lead to the 'frequentization', 'regularization', and eventual 'institution-alization' of production with the premeditated intent of barter-exchange, and, thereby, of proto-markets. That is, this may lead to deliberate, intentional production of Goods in surplus supply locally -- i.e., surfeit with respect to the consumption needs of the producer or of the producer's local community. That means production of Goods as Commodities-for-barter, i.e., in quantities which would make most of the resulting product a 'socio-entropic' non-use-value for the local community, absent trade, but with the aim of converting that product into *use-value-for-the-community* through the mediation of trade in the form of barter exchange.

Thus, the socio-ontological category of <u>Goods</u> 'self-bifurcates' into a Σ sum, <u>Goods</u> \Leftrightarrow <u>Commodities</u>:

 ${}^{2}_{h}\underline{G} \rightarrow {}^{2}_{h}\underline{G} = {}^{2}_{h}\underline{G} \left({}^{2}_{h}\underline{G} \right) = {}^{2}_{h}\underline{G} of {}^{2}_{h}\underline{G} = \left({}^{2}_{h}\underline{G} \right)^{2} = \left({}^{2}_{h}\underline{G} \rightarrow {}^{2}_{h}\underline{G} \right) = \left({}^{2}_{h}\underline{G} \rightarrow {}$

The 'Intra-Duality' of Commodities and the Emergence of the Social Relations of Production 'Socio-Ontological Category of Money. The ensuing regularization and institutionalization of Commodity-barter accelerates the 'densification' of barter activities. More and more commodity producers/consumers come to depend upon barter as their main means of access to the needed or desired products that they do not produce for themselves, as the barter "circulation"/proto-market praxis drives a deepening society-wide specialization of/division of labor. With this 'frequentization' or 'probabilization' of, and growing dependence upon, barter-relations, certain inconveniences, inefficiencies, and costs of the barter praxis come to the fore. Memorizing a vast plethora of customary 'barter-prices', with a separate quantitative equivalence rule, exchange-ratio, exchange-relation, or exchange-'relatio' for each pair of commodities, becomes ever more burdensome as the quantitative wealth of products, and the diversity of new product-kinds, burgeons with the further growth of the productive forces, under the impetus of the 'barterist' "'Commodity-relation'' as social relation of production, in those social margins where it becomes both 'meristemal' and predominant.

The need for you to wait, to hold your inventories until another comes to market willing and able to barter the exact item(s), in terms of quality, that you are seeking in exchange, and in the quantity of supply for which you are also seeking, is costly of your time, of your patience, in the spoilage of your perishable inventories, etc. There is thus an immanent, growing need for the manifestation of this evanescent, mentally-perceived 'exchange-value' of commodities as a separate, generic, partially-tangible, physicalized/social-symbolic object. The value, the utility, of a "general equivalent", a commodity acceptable in exchange for all other commodities, a standard commodity in quantities of which all other commodities can express their exchange-ratios, their 'barter-prices', is the solution to these dilemmas arrived at again and again by human societies on planet Earth. This "general equivalent" commodity role, adopting and then abandoning a whole sequence of candidate commodities, often finally settles upon a metal, such as gold, given properties of density, malleability, durability, uniformity-homogeneity, and scarcity. The "money-commodity" becomes the "general equivalent", and, eventually, the "universal equivalent" of state-minted paper money; obligatory legal tender. [Karl Marx provided a masterful systematic-dialectical derivation of the social-relations of production socio-ontological category of money as an outgrowth of the three "Value-forms" of Commodity-value, with embedded historical-dialectical overtones, in both A Contribution To The Critique Of Political Economy and in Capital volume I, respectively, e.g., per the editions by International Publishers - [NY: 1970], pp. 28-46; [NY: 1967], pp. 35-70; for further analysis of this systematic-dialectical transition, Commodities to Money, see Example 10 herein].

The onto of <u>Commodities</u> 'self-bifurcates' into a Σ non-reductionist sum, <u>Commodities</u> \Leftrightarrow <u>Money</u>:

${}^{2}_{h}\underline{C} \rightarrow {}^{2}_{h}\underline{C} = {}^{2}_{h}\underline{C} ({}^{2}_{h}\underline{C}) = {}^{2}_{h}\underline{C} of {}^{2}_{h}\underline{C} = ({}^{2}_{h}\underline{C})^{2} = ({}^{2}_{h}\underline{C} \rightarrow {}^{2}_{h}\underline{C}) = ({}^{2}_{h}\underline{C} \rightarrow {}^{2}_{h}\underline{M}) \xrightarrow{2}_{2} {}^{2}_{h}\underline{C}$

<u>Note</u>. The objects of human "economic" exchange and "exchange-value" are partly *physical* objects or *physical* [ev]entities, but they are also partly *subjective*, *mental*, *memetic* objects/[ev]entities; '*psyche-ic*' and '*psyche-ological*' objects, 'idea-objects' and 'emotional objects', symbolic/semantic objects, or 'cognitive objects'. Their '*materiality*' is thus partly a 'memetic' or *mental*, *cognitive*, '*ideative*' *materiality*, and thus they constitute a '*psycho-historical*' *materiality*, as well as a '*physical-historical*' *materiality*, both belonging within the purview of our '*Psycho-Historical Materialism*' paradigm.

Value is *imputed to/projected onto* physical objects by human [*inter*-]subjectivities in ways which are both partly conscious and partly unconscious, but *implicit* in the objective outer behavior/actions/practices of human beings with respect to those, their value[d]-objects. Thus, when we say that 'Money is a 'Meta-Commodity' made up out of or '*«aufheben»-containing' a heterogeneous multiplicity of Commodities'*, this is not meant in the same overwhelmingly physical and '*physical-spatial*' way that is meant when we say that 'A Molecule is a 'Meta-Atom' made up out of or '*«aufheben»-containing' a heterogeneous multiplicity of Atoms'*. Money '*«aufheben»-containis'* and '*summarizes*' the social manifold of Commodities <u>symbolically</u>, in the sense of presupposing them, their continual, reliable [re-]production -- their ongoing presence and availability in the market -- <u>in the minds</u> of its users, and in the sense of a necessary *inter-subjective* belief / trust / confidence / reliance on the part of the *human practitioners* of 'Commodity' and 'Money' relations-of-production that the money accepted <u>by</u> them in payment from others <u>now</u> will also be accepted from them as payment by others <u>later</u>, and with at least some degree of quantitative stability in the 'exchange-relatios' [\approx ratios / relations / *«rations»* / *«rapports»* / *«verhaltnisse»*] of those later exchanges. Thus, this kind of '*«aufheben»-containment*' attains the connotations of a "'memetic" and '<u>psycho-historical</u>' materiality, not of a merely physical materiality alone.

The Intra-Duality of Money and the Emergence of the Social Relations of Production Socio-Ontology of «Kapital». The circulation of Commodities which money mediates, facilitates, and accelerates in relation to its predecessor praxes of the social interchange of goods and services, impresses upon its human observors an abstract pattern which can be symbolized, after the manner of Karl Marx, via $\ldots C \rightleftharpoons M \oiint C' \ldots$. This sequence of symbols characterizes a process in which use-value -- the useful qualities of the kind of Commodity denoted by the symbol C' -- is the goal of the two sequential exchanges so symbolized. The producer/consumer owns a greater quantity than his/her need demands of the useful qualities denoted by C'. Therefore, the relation $C \stackrel{1}{\xi} C'$ must hold to make this exchange useful. The meaning of the sequence of symbols above is this: first an *«arithmos»* of <u>Commodities</u>, C, is exchanged for an sum of <u>M</u>oney, M, and then, later, M is exchanged for a different *«arithmos»* of <u>Commodities</u>, C'. It is evident that, at least <u>formally</u>, as a possibility, this sequence can be comprehensively inverted to yield: $M \rightleftharpoons C \oiint M'$, in which case, assuming

a single kind of Money, we must have M 2 M' if M = M'. But this 'intra-duality' of the money-mediated

commodity-circulation-process is far from a merely formal matter. Money emerged as a mere means of the Circulation of Commodities, a mediation meant to mitigate, ameliorate, and abate the frustrations an inefficiencies of pure barter exchange. But the regularization of money-mediated access to goods makes [the][former] money[-commodity] become, in a sense, more useful than any [other] good/commodity/concrete use-value. It becomes the abstract, general, universal use-value, albeit "onceremoved"; the unity or universality of the ever-growing diversity of all concrete, particular use-value, ever-burgeoning as the social productive forces grow, through money's [ever-increasing] access to all [other] use-values. The growth of needs and desires for the whole, expanding universe of human products offered as <u>Commodities</u> turns into a universal need for <u>Money</u>. <u>Money</u> turns, from being a means of Circulation of <u>Commodities</u>, to being almost an end in itself. The old practices of use-value accumulation, of Goods-hoarding as the "social risk management" function of the redistributionist Chieftain, of the redistributionist Temple-State, re-emerge in the latter-day forms of 'monetized' treasures and money hoards, which become the forerunners as well as the continuing accompaniments of the first emergences of Capital. Thus, as the population of money-acts 'densifies', some of the actors come increasingly to appreciate the efficacy of the innovative counter-sequence $M \Leftrightarrow C \Leftrightarrow M'$, such that and if and only if M' > M. And yet, money, and "capitalized money", can never be adequate to completely become "ends in themselves", because they are only, ultimately valuable to the extent that they can be, and are, "cashed-in"; that they can be "realized" eventually in human "life-gratifying" and "life-reproductive" concrete/particular, 'use-value-able' wealth. Indeed, the *«Kapitals»-system*, and its ruling plutocracy, is destined, at a certain stage in the development of its social [re-]productive forces, to face a choice between either (1) sustaining a quanto-qualitatively expanding human-social reproduction -- sustaining the 'social-reproductive use-value productivity', 'use-value-profitability', or 'social forces of production productivity/profitability' of human society -- at the expense of its 'capital-value-productivity' or capital-value-profitability, hence of the power to rule of that ruling plutocracy, or, on the contrary, of (2) temporarily and terminally sustaining its 'capital-value-productivity' or 'capital-value-profitability', and the *power to rule* of that plutocracy, at the cost of *a catastrophic contraction of social reproduction*; of a mass-murderous multi-/mega-genocidal [quantitative] collapse of global human population, not to mention of the "living standards"/"quality of life" for the vast majority of humanity; a catastrophic, "New Dark Ages" reversal of the growth of the social forces of production; of the 'social forces of production productivity/profitability' of human society. To the extent that this plutocracy gives increasing evidence of its choice of, and manipulation in favor of, alternative (2), the inherent inadequacy of capitalized money as end-in-itself for a viable human praxis of continued species-existence may "come to the fore" for the majority of the rest of the human species.

The social relation of production onto of <u>Money</u> 'self-bifurcates' into an $\underline{\Sigma}$ -type of 'irreducible'/'non-amalgamating' sum: <u>Money</u> \oplus <u>Capital</u>:

 ${}^{2}_{h}\underline{M} \rightarrow {}^{d}_{h}\underline{M} = {}^{2}_{h}\underline{M} ({}^{2}_{h}\underline{M}) = {}^{2}_{h}\underline{M} of {}^{2}_{h}\underline{M} = ({}^{2}_{h}\underline{M})^{2} - ({}^{2}_{h}\underline{M} \rightarrow {}^{d}_{h}\underline{M}) = ({}^{2}_{h}\underline{M} \rightarrow {}^{2}_{h}\underline{K}) \stackrel{2}{\times} {}^{2}_{h}\underline{M}.$

Supplement B to Introductory Letter

Foundation Encyclopedia Dialectica [F.E.D.]

- The 'Intra-Duality' of the Capital-Relation and the Emergence of the Social Relations of Production Socio-Ontology of Generalized Equity: Some Conjectures Regarding 'Equitism'. The operation that the «Kapitals»-system is, and that it applies externally, to its surrounding pre-capitalist hinterland [as it converts that hinterland into new socio-geographical increments to itself, to its own geographical domain], as it does also internally, to its own already-converted internal terrain, is one of expropriation - expropriation of small-holder peasant producers on the land and of self-employed urban artisans, etc., to form/expand the wage-worker class; expropriation of smaller capitals by larger, etc. «Kapital» is also an operation of bursting-asunder all barriers to the quanto-qualitative advance of social productivity [of the "social productive forces", cf. Marx]. As the «Kapital»-conversion of the pre-capital hinterland nears completion, as the «Kapital»-system comes to surround the last remnants of what once surrounded it, we move toward that moment in which the «Kapitals»-system will 'surround' and confront only itself worldwide. That approaching [extended] historical moment means that the operations which that system hitherto applied to the predecessor social formations that 'environmented' it in the past, the operations of expropriation and barrier-dissolution, will be applied to the «Kapitals»-system itself by the «Kapitals»-system itself, as its own only remaining human-social environment. With regard to the expropriation operator, this would mean an expropriation of the expropriation [operation] itself: "What does the primitive accumulation of capital, i.e., its historical genesis, resolve itself into? In so far as it is not immediate transformation of slaves and serfs into wage-labourers, and therefore a mere change of form, it only means the expropriation of the immediate producers, i.e., the dissolution of private property based on the labour of its owner. ... as soon as the capitalist mode of production stands on its own feet ... the further expropriation of private proprietors takes a new form. That which is now to be expropriated is no longer the labourer working for himself, but the capitalist exploiting many labourers. This expropriation is accomplished by the action of the immanent laws of capitalistic production itself, by the centralisation of capital. One capitalist always kills many. Hand in hand with this centralisation, or this expropriation of many capitalists by few, develop, on an ever-increasing scale, the cooperative form of the labourprocess, the conscious technical application of science, the methodical cultivation of the soil, the transformation of the instruments of labour into instruments of labour only usable in common, the economising of all means of production by their use as the means of production of combined, socialised labour, the entanglement of all peoples in the net of the world-market, and, with this, the international character of the capitalist régime. ... The monopoly of capital becomes a fetter upon the mode of production, which has sprung up and flourished along with, and under it. Centralisation of the means of production and socialisation of labour at last reach a point where they become incompatible with their capitalist integument. This integument is burst asunder. The knell of capitalist private property sounds. The expropriators are expropriated." [Karl Marx, Capital, vol. I, Chapter XXXII, "Historical Tendency of Capitalist Accumulation", International Publishers, [NY: 1967], pp. 761-764]
- Marx foresaw, in the <u>Grandrisse</u>, that, in this 'self-environment' and 'self-surroundment' of the «Kapitals»-system, it would find in its own nature a barrier to the further development of the social forces of expanding societal self-[re-]production, and act upon itself accordingly, unstoppably, whatever to the contrary its partisans and beneficiaries might wish: "... capital has pushed beyond national boundaries and prejudices, beyond the deification of nature and the inherited, self-sufficient satisfaction of existing needs confined within well-defined bounds, and the reproduction of the traditional way of life. It is destructive of all this, and permanently revolutionary, tearing down all obstacles that impede the development of the productive forces, the expansion of needs, the diversity of production and the exploitation and exchange of natural and intellectual forces. But because capital sets up any such boundary as a limitation contradicts its vocation, capitalist production moves in contradictions, which are constantly overcome, only to be, again, constantly re-established [and, on a larger scale F.E.D.]. Still more so. The universality towards which it is perpetually driving finds limitations in its own nature, which, at a certain stage of its development will make it appear as itself the greatest burner to this tendency, leading thus to its own self-destruction." [David McLellan, <u>The Grandrisse, Karl Marx</u>, Harper & Row [NY: 1971], pp. 94-95]. Vastly more needs to be said about the historical dynamics and 'meta-dynamics' of the «Kapitals»-system, and about the mechanisms and 'organisms' of its 'meta-finite self-conversion/self-bifurcation self-singularity, as especially about the immanent tendency of accumulation to <u>de</u>clerate itself, both as expressions of the growth of the society-re-productive forces within capital. However, the above-excerpted intimations must suffice for the present purpose.
- The Fight for Human Liberty is Now a Life-and-Death Struggle Against the Unchecked Power of the Totalitarian Capitalist Plutocracy of the Advanced Capitalist Core of the World-Market System. The «Kapitals»-system of political economy has engendered liberal political constitutions, with internal checks and balances limiting the abuse of political power, which have, as a result, proven so successful at growing social productivity/"the social forces of production", that the economy has, at length, outgrown the power of that system's political constitutions, and their exclusively political checks and balances, to avert the accumulation of unchecked power and the species-lethal abuse of that unchecked power, in the formation of a capitalist plutocracy. Its market competition, which provides economic checks and balances limiting abuses in the pricing and quality of goods, services, and in customer service quality in general, becomes successful competition. Successful competition becomes the [partial] negation of competition, namely, monopoly [or oligopolistic, etc., near-monopoly]. This leads to the formation of agglomerations of capital so gargantuan that they can take over the mass media of public communication, and buy out the political system - legislative, executive, and judicial; lock, stock, and barrel. Thereby, the political checks and balances among those branches of the public, political government are obviated and subverted. The houses of legislature become houses of prostitution. Increasingly, only those candidates for public, political, elected office who sell themselves to the plutocracy can acquire the vast funding necessary to buy access to the plutocracy-dominated mass media sufficient to achieve electoral victory. Thus, successful advanced capitalist democracies are characterized by a seemingly irresistible tendency to plutocratic totalitarian degeneration. The horrific dictatorships of Hitler and Stalin, precisely because they arose in nations whose capitalist development was in some ways retarded, have provided a prevenient, disfigured prefigurement of the hellish future of demise that humanity faces in the further, advanced development of this plutocratic totalitarian degeneration. Only the addition of economic checks and balances can overcome this economic subversion of once-partially-effective but exclusively political checks and balances. Only the emergence of political-economic democracy, of a democratically 'politicized' political economy, can check this tendency to plutocratic totalitarian political degeneration, arising from the economy; from the 'economic side' of the political-economy; from the economy's production of a prostitute-government, prostituted most-abjectly to the economic plutocracy.

 The Capital Equity Stock Shares-Principle of 'Internality Equity' and the Capital-Governance Norm of Stockholder Democracy. The share-principle, the capital-equity-principle, the one-share-unit-of-capital-owned = one-vote-for-the-election-ofdirectors-to-the-board-of-directors governance principle of stockholder democracy immanent within the socioontological category of capital, is a principle of enfranchisement for the owners of capital, but also a principle of total dis-enfranchisement for the non-owners of capital. The principle of 'Equitism' outers the latent, immanent dual of that capital-principle, a principle of enfranchisement also for the non-owners of capital. It does so in the form of the moral recognition and juridical formation, initially, of a new class of capital-equities, that of 'externality-equities', in part via the "equity" tradition of 'precedentary', case-law jurisprudence, as well as from the generalized-equity-enabling 'Equitarian' constitutional amendments to be proposed.

Thus, the 'onto' of Capital 'self-bifurcates' into the antagonistic Σ sum Capital-Equity ---- Generalized Equity:

${}^{2}_{h}\underline{K} \rightarrow {}^{2}_{h}\underline{K} = {}^{2}_{h}\underline{K} ({}^{2}_{h}\underline{K}) = {}^{2}_{h}\underline{K} \underline{of} {}^{2}_{h}\underline{K} = ({}^{2}_{h}\underline{K})^{2} = ({}^{2}_{h}\underline{K} \rightarrow \underline{\Delta} ({}^{2}_{h}\underline{K})) = ({}^{2}_{h}\underline{K} \rightarrow {}^{2}_{h}\underline{E}) + ({}^{2}_{h}\underline{K})^{2} = ({}^{2}_{h}\underline{K} \rightarrow \underline{\Delta} ({}^{2}_{h}\underline{K})) = ({}^{2}_{h}\underline{K} \rightarrow {}^{2}_{h}\underline{E}) + ({}^{2}_{h}\underline{K})^{2} = ({}^{2}_{h}\underline{K} \rightarrow \underline{\Delta} ({}^{2}_{h}\underline{K})) = ({}^{2}_{h}\underline{K} \rightarrow {}^{2}_{h}\underline{E}) + ({}^{2}_{h}\underline{K} \rightarrow \underline{A} - {}^{2}_{h}\underline{K})^{2} = ({}^{2}_{h}\underline{K} \rightarrow {}^{2}_$

- The Juridical 'Meta-Genealogy' of the Concept of 'Externality-Equity' and the Generalization to 'Stakeholder Democracy'. The term 'Externality Equity' herein denotes a form of non-stockholder stakeholder equity which arises from principles extending those already extant and precedented in the "equity" tradition of case law. It arises, in particular, from the principle that the ownership of capital, however legitimately acquired, does not convey to the owner the unlimited right to inflict harm and damage upon other citizens and upon society as a whole. It arises also from the further principle that the best locus in which to adjudicate and mitigate the externalities generated by the operation of capitalist enterprises -- the external costs or costs imposed upon third-parties whose interests are not represented in the traditional institutions of private capital governance -- is the locus of their origination: the very heart of capital governance itself. External, governmental regulatory bureaucracies, legislatively chartered and overseen, are subject to the plutocracy's bribery of the legislatures and to the "revolving door" bribes of later industry-employment offered to the regulating bureaucrats by the regulated industries. Lawsuits brought against those industries to the judiciary are too delayed, too costly for the citizen litigants who face the ultra-deep-pockets of their plutocratic, mega-corporate adversaries, and exposed to the gradual corruption of the judiciary by the plutocracy's bribery that increasingly controls the legislature and the executive branches which appoint the central judiciary. On the other hand, Nationalization of industry, state-monopoly of all capital, threatens to resurrect the unchecked, absolute, absolutely-corrupt, and soon-totalitarian dictatorship of Stalinist or Fascist state-capitalist bureaucracies, and must therefore count as another non-solution; as, in reality, either an acceleration or a prevenient attainment of the very «telos» of the totalitarian taxis of advanced capital.
- The dictatorship of a state-bureaucratic ruling class, whose grip on power and whose tenuous ruling-class-collectivist economic de facto
 'ownership' claim on the means of production is political-only, and totally vulnerable to political assault [unlike the case with a ruling class of
 private owners of capital] tends to totalitarianism as the only effective defense of its ruling power. It does so because any successful political
 challenge to such a ruling class would mean its political replacement, and thus its total loss of ruling power. If deposed politically, it is deposed
 totally. Political totalitarianism is thus the "natural" form of political and economic class self-defense for this kind of ruling class.
- The motive to multi-genocidal global totalitarianism of the capitalist plutocracy formed in the core regions of advanced private-capital is quite other than the motive described above. It arises with the decision of that plutocracy to reverse the historical growth of the human-social forces of production, as its only defense against its overthrow by the 'obsolescence depreciation' of its principal capital assets, which much-further growth of the productive forces would bring, as epitomized in the prospect, for the petroleum plutocracy, of the advent of controlled muclear fusion atomic power as a superior and, thus, oil-obsolescing alternative to its core power-asset in fossil-fuel-based molecular power, and, in general, by the way that rising, global, middle-class levels of living standards, health, education, and new, entrepreneurial wealth threaten the overthrow of its power to rule.
- The Econo-Political Institutional Infrastructure of the Initial Phase of 'Externality-Equities' Equitism. 'Equitism' envisions the constitutional-amendment provision and partially courts- and legislatures-regulated operation of 'bicameral' boards of directors in all capitalist enterprises of sufficient size and social impact, with a 'second house' of local-community-elected public directors in all local operating units of such enterprises. These 'publics' boards' would have constitutionally- and legislatively-ceded authority over the 'externalities budgets', the 'quanto-qualitative', externalities-production local annual operating plans of these enterprises -- thus representing, at the very heart of corporate governance, the 'externality-equities' owned collectively, in a collective property-rights or public property-rights application of the "Coase Theorem", by each such local-community's citizens, as public stakeholders, in virtue of this, their new and special kind of property right. The traditional board of directors and its delegates, representing the ownership of 'internalityequities' by the traditional stockholders, would continue to have authority over the dollar-denominated, financial annual operating plan. Discrepancies between the two operating plans would have to be negotiated between the two "houses" in accord with the constitutionally and legislatively mandated rules, with constitutionally and legislatively prescribed judicial review and/or arbitration in the event of deadlock/negotiation-failure. Any effort by the plutocracy to bribe the thousands of grass-roots public directors elected in local communities all across the landscape would face prohibitive costs and risks of exposure because of their vast multiplicity. Such massive bribery would be rendered more difficult also by the fact that the locally-resident citizens eligible to be elected as public directors would be fighting to defend their families, their homes, and their local communities in a way and from a vantage which would be very non-abstract, very direct and personal, compared to the vantage of the traditional long-distance central government legislator. In any case, attempts by the plutocracy and/or their subordinate capitalist-class elements to buy-off the vast number of citizen-directors nationwide would break the bribery budgets of even the superrichest of the super-rich.

- The Emergence of a Global 'Association of Public Directors'. It is expected that Associations of Public Directors, coordinating policy at the local, regional, national, and eventually, the international levels will "naturally" tend to emerge over time, perhaps initially as a kind of NGO [Non-Governmental Organization], and to eventually become institutionalized, 'constitutionalized', and 'electorialized'. This will create a situation of "dual power" between the political-economic 'Association of Associations' and the traditional political branches. But this should not be posed as one of unstable "dual power", leading inevitably to the "total victory" of one of the 'duals', and the "total annihilation"/"abstract negation" of the other. Rather, it should be grasped as the basis for a new, fourth branch of government -- of a partially democratized economic governance branch -- and of an «aufheben» conservation/elevation/negation of the first three branches of political government; leading to a government of sustained quadruple power, with the new, economic governance branch existing in a higher, stabilized, ongoing complex unity with the three earlier branches, supplying economic checks and balances that the political branches cannot supply, and that help to block the path, otherwise irresistible, toward their total prostitution and plutocratic totalitarian degeneration.
- 'Containment' and "'Real Subsumption'" of the Capital-Relation within the Relation of Generalized Equity. These Associations of Public Directors would supply a geography-based externalities 'container' and 'constrainer' for the many individual capitals operating in a given locality or region, capitals otherwise relatively "'abstracted'" and geographically indifferent; indifferent to the deleterious impacts of the externalities they generate on their local portions of humanity. These Associations would thus constitute the "monads" of a 'Meta-Capital' entity, each such "monad" 'made up out of a heterogeneous multiplicity of capitals in a democratic-jurisdictional sense. They would geo-demographically 'contain' and 'internalize/subsume' the many capitals operating within their geographical jurisdictions, in terms of, and placing checks and balances upon, the otherwise unlimited production of externalities which the combination of gargantuan oligopolist agglomerations of capital, their monopolized/prostituted mass media of communication, and their prostitute, increasingly "'plutocracy-owned''' political governments would unleash. The "pure" private capital principle is a principle of private profit maximization at any social/externality cost. It is limited, within the epoch of the "Kapitals"-system, only by political checks, i.e., by economically-exteriorized, government legislature/bureaucracy regulation, and litigation-triggered judicial intervention, in a context where these branches of government are increasingly prostituted to a few, dominant agglomerations of internationalizing capital-ownership.
- The 'Terminality' of the '<u>Un</u>-Contained' Capital-Principle. Thus the capital principle, when in its full development, at zenith if not integrated within a higher socio-economic principle, i.e., if it moves to become the organizing principle of global society as a whole; of the human-social totality, will become a principle of monopolistic, omni-ravenous, socially-camibalistic rapacity and parasitic malignancy; of unchecked, "absolute", and therefore "absolutely corrupt" power, which will ravage and destroy the totality of human society, the human species, and the planetary biosphere as a whole, in a vain defense of its power-prerogatives, mortally threatened by the further growth of the productive forces immanent in the improvement of majority standards of living, including standards of [scientific and technological, etc.] education, world-wide, which standards it therefore systematically attacks.
- The «Aufheben» [Self-]Negation of the Capital-Relation as Predominant Social Relation of Production. This meta-model, for ↑^a_LE, predicts no undialectical, abstract negation of the «Kapitals» ontology; no 'Jacobinoid-Leninoid' "absolute abolition"; no 'convolute' extinction/total de-manifestation, and no fantasy, utopian de-materialization of the Capital-relation. The social praxis ontology of 'Raw Appropriation' did not vanish/was not abolished by the emergence of that of Goods. The Goods ontology did not vanish/was not abolished by the emergence of that of Commodity barter. The Commodity ontology did not vanish/was not abolished by the emergence of that of Money. The Money ontology did not disappear/was not abolished by the emergence of that of Money. The Money ontology did not disappear/was not abolished by the emergence of that of Money. The Money ontology did not disappear/was not abolished by the emergence of that of Money. The Money ontology did not disappear/was not abolished by the emergence of that of Money. The Money ontology did not disappear/was not abolished by the emergence of that of commodity with all of these earlier 'meta-evolutionary' transitions identified in this meta-model, the dialectical, «aufheben» 'annulment-cum-elevation-cum-conservation' of the Capital-relation, via an appropriate 'containment' of, or 'self-internalization' by, and [self-]subsumption/"real domination" of Capital within the higher social principle of 'Generalized Equity', as sketched above. The latter principle was already interior to the 'equity' and 'exchange-of-equivalents' sub-principles immanent in Capital, as its implicit and internal dual.
- The Emergence of a Fourth, Economic Branch of Econo-Political Democratic Social Governance, in Sustained Quadruple Power with the Earlier Three. This model thus envisions the retention and conservation/transformation of the three traditional branches of political government in a <u>complex</u>, conflictual, and conflicts-conserving <u>unity</u> of sustained quadruple-power with the new, fourth branch, generalizing the stabilized, conflicts-conserving, checks-and-balances delivering <u>complex</u> unity of the original three. It also envisions the subordination but not the dissolution of the capital-principle. The capital-principle no longer attempts to organize the social totality. A higher and democratic, humanistic principle of social ordering supersedes Capital in that role: the principle of 'Generalized Equity'. But the latter principle allows the capital-principle, e.g., of price-competition and competition for customer-adherence, to persist in operation where it best orchestrates the extant hybridization of genomic and 'phenomic' human nature, providing vitally needed economic checks and balances that monopoly and statemonopoly economic governance so devastatingly lack.

- The Historical Helix of Social Democratization. The incipient political democracy and civil liberty that
 early, competitive capitalism brought can only be restored in a higher form, and preserved from destruction by
 the late form of that same capitalism, by advancing that initially merely political democracy to a <u>democratized</u>,
 actualized political-economy which incorporates Equitarian, externality-equities-based economic democracy; a
 public and popular economic democracy that was absent as such throughout the capital epoch, seeded only in
 that democracy among capitalists among the holders/owners of 'internality-equity' immanent in the
 principles and practices [however often honored in the breach] of joint-stock company stockholder democracy.
- Citizen Birthright Equity. The principle of the social generalization or universalization of equity-holding, and of an 'onto-dynamasis' beyond the kinds of such equity presently in existence to include new kinds, e.g., 'externality equities' -- the heart and «arché» of the E 'onto' -- does not end with the public-democratic 'property-ization' of 'externality equities'. It extends as well to the social generalization of the proprietorship of 'internality equities' by all citizens, by means of a policy of 'Citizen Birthright Equity Endowment' in an amended, constitutionalized Bill of Social Rights & Responsibilities. This also flows from principles of 'social risk management', of 'economic-systemrisk' management and of 'social self-investment'. It means that every child born into 'Equitarian Society', is granted, *«ipso jure»*, at birth, an income-taxes-funded equal sum of some capital equity stock, comprised of small portions of all publicly-issued stocks, bonds, and other capital assets meeting legislated standards, designed as an integrated social/individual risk management trust-fund, and a unified, 'omni-portable' "social safety net", for every citizen, in this sense making every baby born into human society a "trust-fund baby". It means per capita citizen net assets in place of today's plutocracy-mandated, malignantly growing per capita citizen liabilities; the share of each citizen in plutocracy-incurred public debt [a way by which the plutocratic minority finances its destructive imperial enterprises and their required "permanent war economy" via taxes, as legislated forced consumptions, foisted upon the non-super-rich majority].
- Moral Hazard Mitigations. The mitigation of the massive "moral hazard" potential of this social policy will
 require that there be many "strings attached", restricting the uses of this public investment in each citizenperson by that person, and by various parents or guardians and heirs of that person at various stages of that
 person's expected life-history, and beyond. Each social equity-endowment would remain a partially-social
 property; an only-partially-individual/-personal/private-property.
- The Principles of Universalized Inheritance and of Universalized Birth-Advantage. This policy of 'universal advantage'/'universal inheritance'/'social inheritance' -- of the universalization of capital ownership/inheritance as a partial remedy, negating the socially-recognized systemic risks of the «aufheben»-negated «Kapitals»-system -- envisions a unification of the fragmented and otherwise inadequate «Kapitals»-system epoch legacy of "social safety net" provisions. If not, in the beginning, with a golden or even a silver one, every baby would be born with at least a stainless steel "spoon in its mouth". The unified provisions would address the management of the risk of the "contained" but also "retained" elements of capital-profit-based economics, plus of the new, Equitarian system, as well as of the universal risks that human social life is heir to. Society's collective portion of equal initial social investment in each individual citizen, by social right of birth [as distinct from the persisting unequal family investment/inheritance, and the unequal fruits of achievements by that individual], and the partially age-based and tests-of-knowledge-based, constitutionally- and legislatively-restricted allocation of each child's birth-right equity capital -- would be legislatively designed to meet the expected, standard costs of forseeable life-history events, including:
 - · Education -- primary school, trade-school, college, professional, "life-long learning", etc.;
 - Medical Care -- for "normal" plus some classes of "catastrophic" illness;
 - · Home Purchase -- down-payment for young adult first home acquisition;
 - Entrepreneurship -- public "venture capital" for first business/producer cooperative launch;
 - Unemployment Insurance -- in case of economic downturns, M&A lay-offs, bankruptcies, etc.;
 - Re-Training -- redressing techno-depreciation of human capital/skill-negentropy;
 - Retirement -- partially replacing plutocracy-gutted pension, employer 401(k), IRA, & Social Security programs.

Costs of social failures by the individual -- e.g., of welfare livelihood-support in the cases of extended, perhaps non-economic-downturn-induced unemployment, or incarceration costs in cases of criminal conviction -- would be borne out of this birthright equity fund, up to its near-exhaustion, thus also forming a further dis-incentive to such failure.

This unification, with each citizen as price-concerned customer, given the voucher-like personal stake of each citizen in the conservation and expansion of the principal of each's birthright-equity social trust fund, would '*re-marketize*' social welfare provision, and '*re-competitivize*' the pricing of medical and welfare services, and, thus, the exercise of cost-efficiency and cost-discipline in their production, de-incenting the "take it for granted" moral hazard of "*free-of-charge*", *state-bureaucracy-produced* or *-subsidized* welfare.

- The policy of '*Citizen Birthright Equity Endowment*' raises questions of the disposition of such endowments in the event of termination of pregnancy by right of the mother. Parents would not be allowed to profit from their children's endowments, though the financial worries and burdens of parenthood would be significantly mitigated by this policy, countervailing against the extreme amplification of the "demographic transition" presently evident, in part, in advanced capitalist nations' growing tendency toward negative rates of population growth. But the policy would not constitute a direct financial incentive not to abort a fetus. However, the high social valuation of each and every life implicit in this policy suggests a certain resolution of the prevailing "*right-of-choice*" versus "*right-of-life*" social *conundrum*, an apparent *antinomy*, which we see, rather, as a *dialectical self-antithesis* or '*self-duality*' within the prevailing social concept of right.
- Aside: The "Abortion Rights" Conundrum, An Instance of the Intra-Dualities of Human Rights Generally. The apparent antinomy between the community's right and duty to safeguard the lives of all of its members, and to enforce severe sanctions against homicidal behavior, and of citizens' rights to the free disposition of their bodies with minimal governmental or communitarian encroachment, can be resolved in a higher, complex unity which preserves both dimensions of right, including their sometimes conflictual mutual relationship. Humane society should never permit the decision to terminate a human life even an embryonic one to be a casual decision. If a healthy mother, with expectancy of a birth-outcome unthreatening to her health, chose to terminate her pregnancy, she would be incentivized, by rewards and/or to avoid penalties, to register her intention to do so in the appropriate portal of the social omnibus communications utility, globally-socialized heir to today's "internet". Other legally-qualified prospective parents, perhaps biologically unable to birth children of their own, would have the constitutional right, by assuming all of the medical and other cost-burdens of the pregnancy and the delivery, to adopt the child[ren] resulting from the pregnancy, as long as the medical court a jury of elected physician-justices certified the mother as physiologically and psychologically safe to go to term within the 'legislatedly acceptable' outcome probabilities. If the medical court found otherwise, the planned abortion would be free to proceed. If no qualified prospective adopters were willing to "speak up for" the life of the child in this substantive way, this would constitute a relinquishment, by the community, of its right to preserve the potential life of the fetus in question. The mother would, in such cases, hopefully rare, be free to proceed with the abortion. No 'Citizen Birthright Equity Endowment' would accrue.

<u>The expected 'species' of 'generalized Equity' -- the 'meta-dynamical disjunctive syllogism' of the epochal transition from ${}_{h}^{2}\underline{K}$ to ${}_{h}^{2}\underline{E}$. We discern the following 'socio-ontological' species of social relations [of production] as inhering within the genus of 'generalized Equity', and as expected to be manifested by, and ingredient in, the emergence of ${}_{h}^{2}\underline{E}$ from ${}_{h}^{2}\underline{K}$ -</u>

- a. Internality Equity of private stockholders [«arché» 'onto' of equity, seeded in $\frac{2}{h}K$, partially «aufheben»-conserved i.e., under Publics' Boards'/other, constraints within $\frac{2}{h}E$];
- b. Externality Equity of public stakeholders [intra-dual 'contra-thesis' to 'Internality-Equity'; «arché» social-relations-of-production 'onto' of 'meta-Capitalist', 'Equitarian Society'];
- c. Citizen Birthright Equity: equal social resources grants to each new citizen, at birth; egalitarian social self-investment / self-endowment trust-funds, with "moral hazard" mitigators;
- d. <u>Stewardship Equity</u> rights of each working adult, including to membership in, and 1-person/1-vote 'economic suffrage' within, the 'producers' councils' or 'stewards' councils' democratically managing the socially-/legally-/constitutionally-favored producer's cooperative enterprises, and including the right to share in the profits-of-enterprise of any producers' cooperative in which that citizen works, with partial rights of use/disposition over the socially-owned means of social reproduction ceded, in <u>stewardship</u>, but <u>not</u> in local ownership, to these producers' cooperatives/local producers' associations, under the collective/democratic control of their 'stewards' councils', in continuous negotiation with these enterprises' own 'externality-equity'-holding 'publics' boards', as part of Equitarian Society's «aufheben»-negation/conservation/elevation of market-based checks-and-balances regarding the pricing and quality of the goods/services supplied to the citizen-consumers by these enterprises, using equitably-allocated socially-owned means of social reproduction social reproduction, such that this newly-emergent 'Stewardship-Equity-relation' increasingly supplants the likewise «aufheben»-conserved/constrained "'wage-labor'''/privet-capital social-relationship-of-production [cf. the model of "Economic Democracy" constructed by David Schweickart in his <u>Against Capitalism</u>, Cambridge University Press [NY: 1993], as well as in his <u>After Capitalism</u>. Rowman & Littlefield Publishers, Inc. [NY: 2002], to which we are indebted, in part, for key aspects of this crucial sub-principle of 'generalized equity'.];
- e. <u>Allocational Equity</u>. Equitable regional-geographical allocation of social property -- of socially/publicly-owned means of social reproduction resources/funding -- on a «per capita», or per human person basis. Truly equitable distribution of, e.g., the public assets ceded in stewardship to local and regional producers' associations, may involve, especially initially, from the point of view of the internationally-elected A.I.D.P. [«Association Internationale des <u>Directeurs Publiques</u>»], compensatory and reparative elements, until the injustices of past capitalist-imperialist social auto-cannibalization of the capital-hinterland and former "Second World" and "Third World" regions of the globe has been adequately redressed. Such allocative equity, in any case, involves the solution of presently unsolved -- and hardly even posed -- problems of 'social-negentropy accounting' in the context of a 'meta-market' social system, in which mere monetary-valuations provide an even more inadequate metric of 'social-reproductive use-value' than they do now, still within the integument of capital.

• The Intra-Duality of 'Generalized Equity as Dominant Social Relation of Production. This, our predicted category of emergent future human social relations ontology, denoted by ${}_{n}^{2}\underline{\mathsf{E}}$ above, is one whose manifest nature is still beyond present human experience. Our grasp of its conceptual essence is still too tenuous, as of this writing, to enable us to form a meta-systematic insight into its immanent- or self-dual, though we feel little doubt that 'Equitarian Societies' will manifest a 'self-duality' that will drive further social 'self-bifurcation', further social 'meta-dynamicity', further social 'meta-evolution'. A key issue is the location, in relation to this 'taxonomy level two' emergence of $\underline{\Delta} \left({}_{n}^{2} \underline{\underline{E}} \right)$, of the timing and meaning of the predicted 'taxonomy level-one' emergence of $\Delta \left({}_{n}^{1} \underline{\underline{E}} \right)$.

$h \to P^{d}(h) = h of h = h (h) = h^{2} = h \to h^{2} = h \to h^{2}$

Another key issue relates to the emergence of fully "mature" form(s) -- including of fully basedemocratized forms -- of 'meta-national' geo-demographic state-formations, in relation to the embryonic transnational forms already, presently, or formerly/historically, extant, e.g., the United Provinces of the Netherlands, the US, the League of Nations, the EU, the UN, NATO, NAFTA, multinational corporations, etc. Per the \underline{NQ} model of Example 4., this involves the timing of the fullness of the expected «aufheben» transition --

$\underline{nations} \rightarrow _ 4 \underbrace{(nations)} = \underbrace{(nations)} \rightarrow _ 4 \underbrace{(nations)} = \underbrace{(nations)} \rightarrow _ 4 \underbrace{$

If the historical-ontological category of the '*meta-national*' is to connote the institutionalization of global, political-economic governance, it had better not mean, in the actual event, the plutocracy-dominated world-<u>state</u> of the 'Rocke-Nazi' /'Meta-Nazi' '''New International Order'''; otherwise $-\frac{1}{2}h$ and $-\frac{2}{h}K$ will have triumphed, and the human species of this planet will be finished-off. It had better be an econo-politically *democratic* global governance network, answerable to a base consisting of the entire Terran human race.

The socio-ontological, human-"geo"-graphic connotation of a <u>plurality</u> of '<u>meta-nations</u>' may even implicitly involve something 'trans-<u>geo</u>-graphical', in the sense of an in<u>tra</u>-solar-systemic but nonetheless in<u>ter</u>-planetary expansion of the Terran human ecosphere. It is our conjecture that a taxonomy level one emergence of $+\frac{1}{2}\Delta h$ would coincide with the development of such intra-solar-systemic but interplanetary institutional formations among 'planetized humanities', emergent via the 'Terra-forming' of the most nearby planetary neighbors of Earth:

$\underline{meta-nations} \rightarrow \underline{\neg} 4 \underline{meta-nations} = 4 \underline{meta-nations} \xrightarrow{} \underline{\land} \underline{meta-nations} = 4 \underline{meta-nations$

assuming that $+\frac{1}{h}$ Terran humanity survives its impending clash with $-\frac{1}{h}$, and, concurrently, the looming clash of $+\frac{2}{h}$ with $-\frac{2}{h}$ [for more on the meanings -- the potential interpretations -- of such "signed" dialectical meta-numbers, see the <u>Comment</u> below, which concludes Part I of Supplement B.].

Aside: Hybrid Ontos -- Subsumption of the Extant by the Emergent. Transition from "Formal Domination" to "Real Domination" by the 'Meristemal' Ontology. 'Hybrid ontos' represent 'meristemally-biased' dialectical syntheses, either "partial" for the τ epoch in which they arise, or "*total*" for that epoch within the limits of its 2^{t} possible ontological categories. The expansions of ${}^{2}\mathbf{Q}$ stand for the 'multi-ontic cumula' of the partially-conserved, net-expanding ontology of the social relations of the [re-]production of human society. 'Hybrid' ontos in the expansions of ${}^{2}Q_{h}$ are denoted by 'cross-product terms' [as opposed to 'self-product terms', 'self-reflexive terms', or 'self-hybrid terms']. They stand for the "appropriation", "subsumption", "incorporation", or "adaptation"-to-themselves of earlier-and-stillextant 'ontos' by newly-extant, emergent 'ontos'. For instance, the first-arising 'hybrid onto', or 'uni-thesis', in ${}_{h}^{2}G({}_{h}^{2}A) - {}_{h}^{2}A \leftrightarrow {}_{q}^{2}[[]_{q_{1}}] - {}_{q_{1}}^{2}$, denotes the [partially-mutual] 'conformation', 'assimilation', 'adjustmentto-itself', or 'subsumption' of the ${}^{2}_{h}\underline{A}$ praxis/relations by the ${}^{2}_{h}\underline{G}$ praxis/relations. Likewise, the next-arising hybrid "'human-social''/'meta-social' 'ontos', $\Box_{h}^{2}\underline{Q}_{3}$, namely ${}_{h}^{2}\underline{\hat{q}}_{CA'}$, ${}_{h}^{2}\underline{\hat{q}}_{CG'}$ and ${}_{h}^{2}\underline{\hat{q}}_{CGA'}$, denote, respectively, "'re-shaping"'/"'integration"'/"'subsumption"'/"containment" of the ${}^{2}_{h}\underline{A}$, ${}^{2}_{h}\underline{G}$, and ${}^{2}_{h}\underline{\hat{q}}_{h}$ ²C the activities/relations, with the lattermost of these "operand" 'hybrid ontos', namely ${}^{2}{}^{A}_{GA}$, yielding ${}^{2}{}^{A}_{DGA}$ as its net product with "C, implicitly indicating that such "subsumptions" include also the further 'subsumptions of previous such subsumptions'.

The subscript symbols $_{A, G, C, M, K}$, and $_{E}$, serve a dual function. They are intensional symbols, so that they remind us of what a given *interpreted* **Q** 'meta-numeral', e.g., generically, ${}_{h}^{2}\mathbf{q}_{X...'}$, or ${}_{h}^{2}\mathbf{q}_{XYZ...}$ is supposed to *mean*. They also bridge us back to the *un*interpreted meta-numerals, in that, e.g., in this interpretation, we have, at the subscript level, and using '()' as the operation of extracting the "'quantifiers'" from a possibly 'quanto-qualitative' expression enclosed thereby: ()A = ()' of A = (A) - 1; (G) = 2; (C) = 4; (M) = 8; (K) = 16; (E) = 32, (C) = 32

that, e.g.,
$$\binom{2}{h} \overset{A}{\mathbf{q}}_{CGA} = \overset{A}{\mathbf{q}}_{(CGA)} = \overset{A}{\mathbf{q}}_{(4+2+1)} = \overset{A}{\mathbf{q}}_{7}$$

<u>Comment</u>. Relativity of the Categories "System" vs. 'Meta-System'; "Evolution" vs. 'Meta-Evolution'; "Dynamic" vs. 'Meta-Dynamic'. Note that, in our usage herein, the predicates 'system' vs. 'meta-system', and 'evolution' vs. 'meta-evolution' are <u>relative</u>, not absolute, predicates. What a given model's "ontological commitments", interpretation, and taxonomy identifies as an 'evolutionary process' within a "'system'''/'onto'/ «arithmos», also implies what constitutes the dialectically self-induced progression of systems in which that "'system'''/'onto'/ «arithmos» inheres and to which it belongs. That diachronic self-progression of multiple systems, induling the single system in question, is what we term that single system's 'meta-system'.

The process of that diachronic self-progression -- the process moving beyond or transcending the mere self-evolutionary process within that single system -- including (1) the process of the transition from that single system's predecessor-system to itself, and (2) the process of self-induced transition of that system from itself to its successor-system, all within that '<u>meta-system</u>' self-progression, constitutes the immediate 'meta-evolutionary process' of that single ''system'''. Likewise, the identification of a certain diachronic self-progression as a 'meta-dynamical', 'meta-evolutionary 'meta-system' implies that each '<u>sub</u>-epoch' or <u>sub</u>-process of the whole diachronic sequence of <u>sub</u>-processes out of which the given whole 'meta-dynamical' and 'meta-evolutionary' diachronic self-progression is immediately constituted is a ''system''', whose <u>internal</u> transitions/ developments constitutes mere 'self-evolutionary processes', relative to <u>that</u> identification of the 'meta-evolutionary' process.

A specimen of this relativity is provided by the comparison of the model of Example 5. with that of Example 3., above. If the "eventity" denoted $\frac{1}{2}h$ is identified as the 'meta-system' of reference, then $\frac{2}{h}C$, $\frac{2}{h}M$, and $\frac{2}{h}K$ are 'mere' "systems" within that 'meta-system' 'self-progression' denoted $\frac{1}{2}h$, and both of the 'self-transitions' denoted, e.g., $\frac{2}{h}C \rightarrow \frac{2}{h}C \oplus \frac{2}{h}M$, and $\frac{2}{h}M \rightarrow \frac{2}{h}M \oplus \frac{2}{h}K$ rank as instances of full-blown 'socio-ontological revolutions', or 'meta-social', 'meta-dynamical' 'meta-evolutions', within that 'meta-system', i.e., relative to $\frac{1}{2}h$ as 'meta-system'.

If, on the contrary, the ""eventity" $\frac{1}{\underline{h}}$ is identified as the mere ""system" of reference, then ${}_{h}\underline{\mathbb{C}} \rightarrow {}_{h}\underline{\mathbb{C}} \oplus {}_{h}\underline{\mathbb{M}}$ and ${}_{h}\underline{\mathbb{M}} \rightarrow {}_{h}\underline{\mathbb{M}} \oplus {}_{h}\underline{\mathbb{K}}$ rank as mere 'evolutions' within that "system", and it takes $\frac{1}{\underline{\ell}} \rightarrow \frac{1}{\underline{\ell}}\underline{\ell} \oplus \frac{1}{\underline{h}}\underline{\mathbb{h}}$ and $\frac{1}{\underline{h}}\underline{\mathbb{h}} \rightarrow \frac{1}{\underline{\ell}}\underline{\mathbb{h}} \oplus \underline{\mathbb{A}}\underline{\mathbb{h}}$ to rank as 'meta-system transitions' [compare Valentin F. Turchin, <u>The Phenomenon of Science</u>, Columbia University Press [NY: 1977], p. ix, et passim.], or as 'meta-dynamical meta-evolutions', i.e., relative to $\frac{1}{\underline{h}}$ categorized as mere "system" / ontological category / «arithmos» / "population" of [meta-]«monads».

That is, as in the history of early arithmetic and algebra -- e.g., in Diophantus' proto-algebraic notation, as in other early arithmetic notations -- the proximity or '*juxtapositioning*' of symbols signifies their *addition*, *not*, as in today's algebra-notation, their *multiplication*, in the '*subscriptal domain*' within these dialectical 'meta-numerals' [as opposed to within their '*scriptal*' and '*superscriptal' domains*, wherein such '*juxtapositioning*' of pure quantifiers does signify ordinary *multiplication*, *in alignment with later and contemporary algebra and analysis notation*].

<u>Comment</u>. The Darker Side of "the Dismal Science": Reverse-Subscript Connotations and '<u>Anti-Ontos'</u> [their mere implicitude in explicitude in <u>2</u> & <u>9</u>]. The focus of our interpretations of the foregoing model of <u>Example 5</u>, has been on the "progressive" aspects of the history of Terran human social formation. The connotations we have emphasized have been those of the historic, intergenerational self-advancement of the human species.

Nevertheless, "regressive" or "retrogressive" and "destructive" connotations also abound, in a way which is 'undifferentiate-able', with respect to the resolving power of the \mathbf{MQ} ideography, from the more "constructive" connotations which we have highlighted.

The "darker" connotations of the progression of connotative ideograms generated by the $\left({}^{2}_{h} \underline{\Delta} \right)^{2^{\dagger}}$ dialectic can sometimes be evoked by reversing the order of their subscripts. The symbol-complex ${}^{\prime 2}_{h} \underline{\mathbf{q}}_{AG}$, for example, constructed by interchanging the subscripts of ${}^{\prime 2}_{h} \underline{\mathbf{q}}_{GA}$, might be taken to connote the "Raw <u>Appropriation of Goods</u>" in the sense of the looting, by one tribe, of the storehouse stockpiles of another, or even "the <u>Appropriation of the Goods</u>-makers", connoting the enslavement or 'enserfment' of the <u>Goods</u>-producers of a conquered tribe by its conquering tribe. Agricultural 'enserfment' is a possible connotation here, because "Agriculture" – the technologies and productive forces of the "Domestication" of plants and animals; the "improvement" of biological organisms of other-than-human species for human consumption, by "selective breeding"/"<u>non</u>-natural selection" / "artificial selection" which we intend by the symbol-complex ${}^{\circ}_{h} \underline{\mathbf{q}}_{G}$, or ${}^{\circ}_{h} \underline{\mathbf{G}}$. However, both ${}^{\circ}_{h} \underline{\mathbf{q}}_{AG}$ and ${}^{\circ}_{h} \underline{\mathbf{q}}_{GA}$ map back to the same, single

meta-numeral of the 'minimally-interpreted' ${}_{N}\underline{\Omega}$ arithmetic, namely, to ${}_{N}\hat{\mathbf{g}}_{2}$.

The explicit distinguishability and separability of 'subscript-reversed' 'categoregrams' arises, within the self-progression/meta-systematic dialectic of the $\underline{\Omega}$ dialectical ideographies, with the emergence of $\underline{\Omega}$, the version of $\underline{N}\underline{\Omega}$ which applies the 'Gödelian' product rules, as set forth in Supplement A, Part

III. That is, were we to assign
$$\hat{g}_{1} \leftrightarrow \hat{h}_{h}^{2} \hat{g}_{A} = \hat{h}_{h}^{2} \Box_{g} \langle \hat{h}_{h}^{2} \rangle^{2^{1}}$$
, then $\hat{g}_{7}^{1} \times 2^{4} = \hat{g}_{112}^{2} \leftrightarrow \hat{h}_{h}^{2} \hat{g}_{GA'}^{4}$ whereas $\hat{g}_{7}^{4} \times 2^{1} = \hat{g}_{4802}^{2} \leftrightarrow \hat{h}_{h}^{2} \hat{g}_{AG'}^{4}$

However, 'invisible reversals' are also amenable to such "darker" interpretation. Thus, the term ${}^{'2}_{h}\hat{g}_{AA}$, which, after the interchange of its two subscripts, is [still] ${}^{'2}_{h}\hat{g}_{AA}$, remaining indistinguishable from itself before that interchange, may also, or alternatively, be interpreted as connoting the

'Appropriation of the Appropriators', which might connote the 'self-hunting' and 'self-predation' of the human species -- the essence of inter-tribal warfare. This predation/"hunting and gathering'" of humans by other humans, at the lowest levels of the productive forces, when the hunting-and-gathering labor-product of captives might not produce more than the cost, to the capturing tribe, of feeding them, might connote cannibalism or ritual sacrifice. At a higher stage of the productive forces, it might connote enslavement or 'enserfment' -- the capturing of human captives together with those captives' former "hunting grounds'" [and 'gathering-grounds'], or the lands they farm, seen as forming a unit of conquest, with the captives tied to that soil, as before, but now as a forced labor force for their conquerors.

The Gödelian product rule versions of \underline{NQ} do not address this issue. They do not render separable these two kinds/directions of connotations. To get to that kind of separability, we have to move on, in the meta-systematic dialectic of systems of dialectical arithmetic, from \underline{NQ} to \underline{Q} to \underline{Q} .

These observations raise the issue of the scope of the "<u>disjunctive syllogism</u>" for the <u>genus</u> of "*opposition*s"; for the genus of the <u>species</u> or kinds of "*opposition*" or contrariety -- the kinds of "*opposites*" or of "*oppositeness*" -- which exist, and of the capacity of the various stages of the categories/systems/languages of <u>Dialectical Ideography</u> to express them distinguishably.

One writer has expressed a view that sharply distinguishes two basic species of the genus of "oppositeness", as follows: "... Whereas before, we have a multitude of natural and mutually complementing pairs like female/male, day/night, finite/infinite, white/black, et al., now we have the additional possibility of pathological, host/parasite pairs like good/evil, honesty/deception, health/sickness, in which we have no longer two self-completing entities, both of which are needed in the scheme of things. Rather, we now have pairs of which only one is needed for well-being, the other being parasitic (not symbiotic) and actually inimical to it. The Pythagoreans, misunderstanding their Egyptian teachers, placed the host/parasite duality of good and evil (hence also 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 the two radically different kinds of opposites: those which are wave-like and mutually complementary; and the later, pathological variety... where one of the pair parasitizes on the other and, attacking il, 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." [Charles Musès, **Destiny and Control in Human Systems**: Studies in the Interactive Connectedness of Time (Chronotopology), Kluwer-Nijhoff Publishing [Boston: 1985], pp, 136-137].

Our research has so far called forth a tripartite speciation of the genus of "oppositions" --

Species 1. Complementary Opposites, mutually-symbiotic, mutually-completing, 'essence-ially' mutually relative, peer, and typically co-eval, synchronically related / arising, and such that one cannot exist without the other also existing Examples:

- · The relative 'side-ings' / 'sidednesses' / "'directions"', e.g., "Right" and "Left";
- · The "N" and "S" poles of a bar-magnet;
- The female and male polarities of the human species.

Species 2. Annihilatory Opposites, one seeking the destruction/annihilation of the other, and wherein that other can subsist apart from the existence of that adversary..... Examples:

· protons versus anti-protons;

- opposing armies joining battle;
- host versus parasite;
- per our model, +¹<u>h</u> versus -¹<u>h</u>.

Species 3. Supplementary Opposites, predecessor/successor pairs, 'Peanically'sequentially-related, initially diachronically-related; «aufheben»-related, i.e., 'Meta-Monadologically' related, as 'meta-fractally'scaled self-similarity linked stages. ... Examples:

- · atoms vs. molecules as 'meta-Atoms, or 'atoms of second degree', made up out of a heterogeneous multiplicity of "'mere'' atoms, of first degree';
- Ancient, "stand-alone" <u>city-states</u>, versus ancient multi-city-state <u>empires</u>;
- Ancient, pre-capitalist, "antediluvian" forms of <u>Money</u>, versus <u>Capital</u>.

The capability to express a distinction of "Supplementary" oppositions from "Annihilatory" oppositions arises naturally with the emergence of the $\underline{z} \underline{\Omega}$ version of the $\underline{\Omega}$ ideographies, for, if $z \in Z$, then \hat{g}_{z} and \hat{g}_{z} are "mutually annihilatory" under the "symmetrical" 'meta-genealogical evolute product rule:

ĝ _{+z}	Ħ	Â _{+z}	=	ĝ _{+z} '	ĝ_z B	ĝ =	ĝ_z	∎ġz	$= \square \overset{A}{\mathfrak{g}}_{+z}^{+1}$	$=$ $\mathbb{B}\overset{A}{\overset{-1}{\underset{+z}{\mathfrak{g}}}};$	
⊟g [^] _{+z}	B	⊞∯ +z	=	¶ =		+z = 0	ł _o =	≡ĝ_z ≡	⊟ĝ=	¶=	≡ĝ_∎ ∎ĝ_;
Â +z		а 	=	¶ =	ĝ_ <mark>z</mark> ⊠ĝ ₊ ;	, since					
ĝ _{+z}		â	=	ĝ _{+z} ■ ĝ _{-z}	■ g +z + (-z)	= q =	8 q 0	-	q , and		
gz	ß	ă +z	-	Âg_∎ Âg_+z	∎ ĝ + (+z)	= q =	a q 0	-	9 ₀ , and		
Å +1 g_+z	8	A −1 g +z	=	₫ +z	= ĝ_{+z}^0	= q ₀	=	A ^{−1} ∰ +z	$\hat{g}_{+z}^{+1} = \hat{g}_{+z}$	$z^{-1+(+1)} = \hat{g}_{+z}$	$\hat{q} = \hat{q}_{+z} / \hat{q}_{+z} = q_0$
= ĝz +1	8	A -1 9z	=	A +1+(-1) 9Z	= <u><u>q</u>_z</u>	= q ₀	-	A ^{−1} g _z ⊠	$\hat{g}_{-z}^{+1} = \hat{g}_{-z}$	$z^{-1+(+1)} = \overset{A}{\underset{-2}{\mathfrak{g}}}$	$\hat{\mathbf{g}}_{\mathbf{z}}^{0} = \hat{\mathbf{g}}_{\mathbf{z}}^{\prime} / \hat{\mathbf{g}}_{\mathbf{z}}^{\prime} = \mathbf{q}_{0'}^{\prime}$
₩¶+2	-	⊞ĝ _{+z} /q ₀	-	⊞ [[ɑ͡͡͡͡͡͡͡͡], a la l	⊞g	$= \mathbb{H}^{q} \mathfrak{g}_{+z}^{\Lambda}$	=	≝ [[ĝ _{+z} /q ₀]] ⁻¹	; q ₀ /q ₀	= q ₀ ⁺¹⁺⁽⁻	$= q_0^0 = q_{0'}^2$
⊐ĝ _{+z} /q	0	⊞ĝ _{+z} /q	=	• q •	= ⊞ĝ _{+z} /q ₀	≡ ⊟ĝ _{+z} /q ₀	-	q=	<u>⊞ĝ_</u> _∕q_ ⊞ ⊟	$a\dot{g}_{z}^{A}/q_{0} = q_{0} =$	⊡ĝ/q ₀ ≡ ≡ĝ/q ₀ ;
ĝ _{+z} /q	0 .	ĝ/q_	-	• q •	= <u>ĝ_</u> /q	≡ ĝ _{+z} /q	=	q=	ĝ _{+z} /q ∎ q	$0/\frac{a}{q}_{+z} = q_0 =$	ĝz/q ≡ q _o /ĝz
ĝ _{+z} /q	0 🖾	ĝ/q_	=	ĝ _{+z} /q _o i	∎ ĝ <mark></mark> /q ∎	$\hat{\mathbf{g}}_{z} / \hat{\mathbf{g}}_{z}$	=	q ∎ q	=	q _o ;	
ĝ_/q	. 8	ĝ/q_	=	ĝ_/q	≡ ĝ _{+z} /q ≡	â/â		q_ <u>∎</u> q ₀	-	q	

The potential of the variants of *dialectical ideography* discussed so far to express "*Complementary*"/"'synchronic"'/"'peer" oppositions is presently located in the 'deeply non-commutative' characteristics of the Gödelian variants of the <u>Q</u> ideographies, e.g., via:

s < ² _h A> ^{2²}	-	$h^{2}\underline{A}$	\$	² h <u>G</u>	\$	² ∧ h ^g AG	\$	² Â ^h ^ġ GA	\$	² hC	\Leftrightarrow	9 ⁹ 1	∎ _s ĝ ₄	[■] g ^Â 7 ¹ ×2 ⁴	∎ g ^A g7 ⁴ ×2 ¹	[■] g ^A _g ⁴ ×7 ⁴ /
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«et sequelae», although, per the interpretation of ${}^{2}_{h}{}^{a}_{AG}$ given above, this case conduces rather to an opposition of **species 2**, or to an opposition between **species 3** and **species 2**.

Ironically enough, the very *discovery* of '*onto-dynamasis*' as such, and of the '*contra-Boolean*' and '*meta-Boolean*' arithmetic that can model such '*ontological dynamics*' -- the discovery of the '*operatorial ideography*' of that we have come to call the \underline{NQ} arithmetic -- occurred in the context of Karl Seldon's study of a criminological case, that of a socially destructive diachronic categorial "progression" of illicit, socially parasitic technology. That is, the discovery of '*dialectical ideography*', though long sought-after by him, 'til then in vain, in quite other contexts, at last leapt out into view in his modeling of the historical phenomenology of what we would today interpret as a $\mathbf{I} = \hat{\mathbf{A}}_{1} \mathbf{I}^{2^{T}}$, or 'socially-entropic', '*onto-dynamasis*'! Little more can be rendered of this story here without revealing too much regarding personal histories and identities for this «*samizdat*» medium.