F.E.D. Vignette #14 --

Dialectic as Self-Progression of Self-Activity and of Resulting Self-Change

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Author's Preface. The purpose of **F.E.D**. Vignette **#14** is to illustrate the ways in which **F.E.D**.'s '*Dyadic Seldon Function*' captures characteristics that have, at various moments, from **antiquity** all the way through to **modern times**, been insightfully ascribed to *the universal dialectical process*, including especially the characteristics of "*self-activity*", of "*self-change*", or «*auto-kinesis*» [Plato], and of [e.g., '''*dyadic*''', or "*second degree*"] **nonlinearity**.

A Note about the On-Line Availability of Definitions of F.E.D. Key Technical Terms. Definitions of **Encyclopedia Dialectica** technical terms, including of **E.D**. 'neologia', are available on-line via the following URLs --

http://www.dialectics.org/dialectics/Glossary.html

https://www.point-of-departure.org/Point-Of-Departure/ClarificationsArchive/ClarificationsArchive.htm

-- by clicking on the links associated with each such term, listed, in alphabetic order, on the web-pages linked-to above.

Links to definitions of the **Encyclopedia Dialectica** special terms most fundamental to this vignette are as follows --

«*arché*»
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Arche/Arche.htm

«*arithmos*» and «*arithmoi*»
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Arithmos/Arithmos.htm

«*aufheben*»
https://www.point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Aufheben/Aufheben.htm

Diachronic vs. *Synchronic*
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Synchronic/Synchronic.htm

Dyadic Seldon Function as '''Self-Reflexive Function'''
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/SeldonFunctions/SeldonFunctions.htm

Dyadic Seldon Function as 'Self-Iteration'
http://www.dialectics.org/dialectics/Glossary_files/%27Dyadic%20Seldon%20Functions%27_as_%27Self-Iterations%27,_vs._Standard_%27Other-Iterations%27.jpg

Historical or *Diachronic Dialectics*
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/SystematicDialectics/SystematicDialectics.htm

'*Meta*-«*Physis*»'
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/MetaPhysis/MetaPhysis.htm

ₙQ *dialectical arithmetic / algebra*
http://www.dialectics.org/dialectics/Correspondence_files/Letter17-06JUN2009.pdf

«*Physis*»
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Physis/Physis.htm

-- and we plan to expand these definitions resources as the **Encyclopedia Dialectica Dictionary Project** unfolds.

[**Note**: '''Arithmetical Quantifiers''' vs. 'Arithmetical Qualifiers'. In the phrase "**3** apples", we term "**3**" the "arithmetical ["pure"-]*quant*ifier", and "apples" the '''*ontological*''' -- or *kind* of thing -- '''*qual*ifier'''. In the phrase "**3** pounds of apples", we term "pounds" the '*metrical*[-unit] *qual*ifier' -- or '''unit of measure *qual*ifier''' -- *quant*ified by the **3**, which, together, '*quanto*-*qual*ify' the '*ontological qual*ifier', "apples". A key use-value of the *dialectical arithmetics* is to provide algorithmic, ideographical-symbolic systems for the various kinds of 'arithmetical *qual*ifiers', both with and without the co-presence of '''arithmetical *quant*ifiers'''.].

I. Introduction: The Marxian Provenance of Concepts of *“Self-Activity”* **and** *“Self-Change”*. The key terms for this vignette -- *“self-activity”* and *“self-change”* -- first emerged, in Marx's writing, very close to the original irruption of the *‘psychohistorical materialist’* theory that is now called “Marxian theory”, in what Engels called “the first document in which is deposited the brilliant germ of a new world outlook”, namely, in Marx's *“Theses of Feuerbach”*, in the third of his eleven theses, written by Marx in early 1845, on the eve of the continent-wide republican revolutions of 1848 in which both Marx and Engels were to later participate --

“The materialistic doctrine concerning the change of circumstances and education forgets that circumstances are changes by men and that the educator must himself be educated.”

“Hence this doctrine must divide society into two parts -- one of which towers above [Engels: “as in Robert Owens”].”

“The coincidence of the change of circumstances and of human activity or **self-change** can be comprehended and rationally understood only as *revolutionary practice*.”

[Loyd D. Easton and Kurt H. Guddat, editors and translators, **_Writings of the Young Marx on Philosophy and Society_**, Doubleday & Company, Inc. [NY: 1967], p. 401, **emphasis** *added* by A.D.].

During 1845-1846, Marx and Engels co-authored an extensively-articulated presentation of their new, *‘psychohistorical materialist’* world outlook, which, however, was not published until 1932, and in which they summarized that new, *‘psychohistorical materialist’* world outlook as follows --

“...reality is only the product of the preceding intercourse of individuals themselves. ... The difference between the individual as a person and what is accidental to him is not a conceptual difference but a historical fact. ... It is not a distinction that we have to make for each age, but one which each age makes itself from among the different elements which it finds in existence, and indeed not according to any theory, but compelled by material collisions in life. What appears accidental to the later age as opposed to the earlier -- and this applies also to the elements handed down by an earlier age -- is a form of intercourse [A.D.: later, Marx uses the tem “social relations of production” in place of his original term, “forms of [human-social] intercourse”.], which corresponded to a definite stage of development of the productive forces. The relation of the productive forces to the form of intercourse is the relation of the form of intercourse to the occupation or **activity** of the individuals. (The fundamental form of this **activity** is, of course, material, on which depend all other forms -- mental, political, religious, etc. The various shaping of material life is, of course, in every case dependent on the needs which are already developed, and the production, as well as the satisfaction, of these needs is an historical process, which is not found in the case of a sheep or a dog..., although sheep and dogs in their present form certainly, but *malgré eux*, are products of an historical process.) The conditions under which individuals have intercourse with each other ... are conditions appertaining to their individuality, in no way external to them; conditions under which these definite individuals, living under definite relationships, can alone produce their material life and what is connected with it, are thus the conditions of their **self-activity** and are produced by this **self-activity**.* [“*[marginal note by Marx:] Production of the form of intercourse itself.”]. The definite condition under which they produce, thus corresponds, as long as the contradiction has not yet appeared, to the reality of their conditioned nature, their one-sided existence, the one-sided-ness of which only becomes evident when the contradiction enters on the scene and thus exists for the later individuals. Then this condition appears as an accidental fetter, and the consciousness that it is a fetter is imputed to the earlier age as well.”

These various conditions, which appear first as conditions of **self-activity**, later as fetters upon it, form in the whole evolution of history a coherent series of forms of intercourse, the coherence of which consists in this: in the place of an earlier form of intercourse, which has become a fetter, a new one is put, corresponding to the more developed productive forces, and, hence, to the advanced mode of the **self-activity** of individuals -- a form which in turn becomes a fetter and is then replaced by another. Since these conditions correspond at every stage to the simultaneous development of the productive forces, their history is at the same time of the evolving productive forces taken over by each new generation, and is, therefore, a history of the development of the forces of the individuals themselves.”

 Since this evolution takes place naturally, i.e., is not subordinated to a general plan of freely combined individuals, it proceeds from various localities, tribes, nations, branches of labour, etc., each of which to start with develops independently of the others. Furthermore, it takes place only very slowly; the various stages and interests are never completely overcome, but only subordinated to the prevailing interest and trail along beside the latter for centuries afterwards [A.D.: the latter phenomenon belongs to what **F**.**E**.**D**. terms *‘the evoluteness of meta-evolution’*, and is captured by the *“double-«aufheben» evolute product”* rule of categorial multiplication, which undergirds the **Seldon Functions**, as we shall see below.].”

[Karl Marx, Frederick Engels, **_The German Ideology_**, Progress Publishers [Moscow: 1968], pp. 88-90, **emphasis** *added* by A.D.]

In the voluminous 1857-1858 work by Marx, posthumously entitled "***Foundations of the Critique of Political Economy***" ["*«Grundrisse»*"], and first published in 1939, in its section entitled "*Forms which precede capitalist production. (Concerning the process which precedes the formation of the capital relation or of original accumulation)*", Marx describes the *"self-change"* which results from this *"self-activity"* of human "social individuals" in the self-development of the early agricultural village communities of humankind -- all the way from gradual, "evolutionary", quantitatively- "dynamical" *"self-change"*, to "sudden", "revolutionary *self-change*", or, in **F**.**E**.**D**.'s version, to *'**meta**-evolutionary, socio-**onto**-dynamical, **meta**-dynamical, **meta**-finite singularity'* *"self-change"*, in the following terms --

"...In so far as property is merely a conscious attitude to the conditions of production as to *one's own* -- an attitude established by the community for the individual, proclaimed and guaranteed as law; in so far as the existence of the producer therefore appears as an existence within the objective conditions *belonging to him*, it is realized only through production. Actual appropriation takes place not through the relationship to these conditions as expressed in thought, but through active, real relationship to them; in the process of positing them as the conditions of man's **subjective activity**."

"But this also clearly means that *these conditions **change***."

"What makes a region of the earth into a hunting-ground, is being hunted over by tribes; what turns the soil into a prolongation of the body of the individual is agriculture. Once the *city of Rome* had been built and its surrounding land cultivated by its citizens, the conditions of the community were different from what they had been before."

"The object of all these communities is preservation, *i.e., the production of the individuals which constitute them as proprietors, i.e., in the same objective mode of existence, which also forms the relationship of the members to each other, and therefore forms the community itself. But this reproduction is at the same time necessarily new production and the destruction of the old form*."

"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**, and **new speech**.*"

"***The community itself appears as the first great force of production***."

"...In the last instance the community and the property resting upon it can be reduced to a specific stage in the development of the forces of production **of the labouring subjects** -- to which correspond specific relations of these subjects with each other and with nature."

"***Up to a certain point**, reproduction. **Thereafter**, it turns into dissolution*."

"...All the forms in which the community imputes to the subjects a specific objective unity with the conditions of their production, or in which a specific subjective existence imputes the community itself as condition of production, necessarily correspond only to a development of the forces of production which is limited both in fact and in principle. (These forms are of course more or less [A.D.: pre-human-]naturally evolved, but at the same time also the results of a [A.D.: human-]historic process."

"***The evolution of the forces of production dissolves them**, and their dissolution is itself as evolution of the human forces of production*."

"***Labour*** is initially undertaken on a certain basis -- first primitive -- then historical. Later, however, this basis or presupposition is itself cancelled [A.D.: i.e., becomes *«**aufheben**»*] ... as having become too narrow for the development of the progressive human horde."

[E. J. Hobsbawm, ed., Jack Cohen, transl., ***Karl Marx***: ***Pre-Capitalist Economic Formations***, Internat'l. Publishers [NY: 1969], pp. 92-97, ***emphasis added** by* A.D.].

Lastly, in volume one of Marx's *«**magnum opus**»* -- ***Capital***: ***A Critique of Political Economy*** -- we find the following account of human *"self-activity"* and *"self-change"* as human ***self-development*** in Marx's definitional description of his core category of *"**human labor**"* --

"Labour is, in the first place, a process in which both man and Nature participate, and in which man of his own accord starts, regulates, and controls the material ***re-actions*** between himself and Nature. ***He opposes himself*** to Nature as one of her own forces, setting in motion arms and legs, head and hands, the natural forces of his own body, in order to appropriate Nature's productions in a form adapted to his own wants. *By thus acting on the external world and **changing it**, he at the same time **changes his own nature**.* ***He develops his*** slumbering powers... ." [Karl Marx, ***Capital***, ***Volume I***, International Publishers [New York: 1967], p. 177, ***emphasis added** by* A.D.].

II. *E.D*. **Interpretation of the *Initial Generic Ordinal Qualifiers* undergirding the Seldon Function _NQ Arithmetic**.
Perhaps a bit surprisingly, upon first apprehension, the first four, first-order-logic, Dedekind-Peano Postulates for the "**N**atural" Numbers focus on their *ordinality*, *not* on their *cardinality*, viz. --

1. **1** is a "Natural Number".

2. The *successor* of any "Natural Number" is also a "Natural Number".

3. No two, distinct "Natural Numbers" have the same *successor*.

4. **1** is *not* the *successor* of any "Natural Number", i.e., **1** has *no ancestor* within the "Natural Numbers".

These postulates thus identify the essence of the "**N**atural Numbers", explicitly, in terms of [apparently purely-] *quantitative ordinality*. In keeping with this focus on *the ordinal*, Seldon defines the system of the _NQ *dialectical arithmetic* -- the first '*antithesis-system*', or '*contra-system*', to the "**N**atural Numbers" as «*arché*»-*system* -- in terms of *qualitative ordinality*. The _NQ, which he also calls the '*meta-**N**atural meta-Numbers*', are, in their simplest, least-interpreted essence, a consecutive sequence of 'meta-numeral' ideograms representing the successive *qualities*, *not* the *quantities*, of *ordinality* -- the *quality* of '*first*-ness', followed by the *quality* of '*second*-ness', followed by the *quality* of '*third*-ness', and so on... -- satisfying the four first-order-logic '*contra-**Peanic**', '*Qualo-**Peanic**' axioms:

1′. The *ordinal qualifier* for the *quality* of '*first*-ness' is an element of the '*consecuum*' of generic *ordinal qualifiers*.

2′. The *successor* of any element of the '*consecuum*' of generic *ordinal qualifiers* is also an element of same.

3′. Any two, distinct *ordinal qualifiers* have *qualitatively un*equal *successors*.

4′. The *ordinal qualifier* for the *quality* of '*first*-ness' is «*arché*»: *not* the *successor* of any element of its '*consecuum*'.

The symbols, or '*meta-numerals*', that stand for the '*meta-numbers*' of the _NQ '*arche*onic *consecuum*' are derived, *syntactically*, in a way which represents the *semantic* '*self-subsumption*', '*self-subordination*', or '*self-demotion*' [*dialectical*, *self*-«*aufheben*» *self-negation*] of the "**N**atural Numbers". That derivation is part of the positive fruition of the *dialectical*, *immanent self-critique* of the "**N**atural Numbers", which divulges the _NQ as the implicit, most extreme known *opposite*, "*Non*-Standard Model" of the "Standard", Peano "**N**atural Numbers". It involves the turning of the '*generic ordinal quantifiers*' of the "**N**atural Numbers" into the '*generic ordinal qualifiers*' of the _NQ '*meta-**N**atural meta-Numbers*'. The conceptual '*self-subsumption*' of the *quantitative ordinality* intended by the Dedekind-Peano Postulates surfaces the _NQ as their hitherto hidden, implicit '*intra-dual*', based upon the *generic quality of ordinality*, a '''*genericity*''' which we represent by the '*meta-numeralic*' ideogram '**q**'. That '*meta-numeral component*' represents '**q***ualitative ordinality*', or '*ordinal* **q***uality*', *in general*: just '**q**', or, more fully expressed, just $\underline{q}_N$.

To fully express, '*meta-numeral-y*', or ideographically, the '*consecuum*' of *specific ordinal qualities*, namely --

_NQ ≡ {'*first*-ness'; '*second*-ness'; '*third*-ness', etc.**}**

-- we must add a second '*meta-numeral component*', via '''*subordinating*''' *specific* "**N**atural Numbers", as *specific* '*ordinal quantifiers*', to the *generic ordinal qualifier* symbol '**q**', by '*subscripting*' those *specific* "**N**atural Numbers" to a '*script*-level' '**q**', '''*above*''' them, yielding --

_NQ ≡ { $\underline{q}_1$, $\underline{q}_2$, $\underline{q}_3$, **...** } [in which each '*meta-number*' is a minimal, «*genos*»*|*«*species*» «*arithmos eidetikos*» in its own right],

vs.

N ≡ { **1**, **2**, **3**, **...** }.

Note that this *opposition* of an arithmetical system of *purely-quantitative ordinality*, based upon the **N**, *versus* an arithmetical system of *purely-qualitative ordinality*, based on the $_\mathbf{N}\mathbf{Q}$, is not a *radical dualism*, imagined as an *absolute*, *irreconcilable diremption* between an *absolute quantitative* and an *absolute qualitative*. This *opposition* is, on the contrary, a *dialectical antithesis-sum*. The **N** *quantifiers* are still there, as *'specifiers'* -- still present -- in, or '''under''', the generic **q**s of the $_\mathbf{N}\mathbf{Q}$ *qualifiers*, though *sub*sumed, *sub*ordinated, *de*moted -- demoted to being their mere *sub*scripts or *denominators*: The **N** *quantifiers* are still *"contained"* in[side] ['''beneath'''] the $_\mathbf{N}\mathbf{Q}$ *qualifiers*. That is, each $_\mathbf{N}\mathbf{Q}$ *qualifier* is an «*aufheben*» *determinate negation* / *conservation* / *elevation-into-one-step-higher-gene*rality of an individual **N** *quanti*fier.

The joint «*aufheben*» *elevation* of the *quantitative ordinals* «*species*» yields the «*genos*» '**q**', of the *qualitative ordinals*.

For this first layer of interpretation of these *"purely-qualitative"* $_\mathbf{N}\mathbf{Q}$ *'meta-numbers'* -- which does not yet make explicit their universal interpretability for the modeling of *dialectical progressions* -- this is all that they represent: *abstract temporality*; [*abstract chronological*] *order*; *gene*ric *'ordered-ness'*; the consecutive succession of *'qualitative ordinality'*; the *'consecuum'* of *order quality* or of *order qual*ities.

But even here, at this minimally-interpreted stage of the construction of the $_\mathbf{N}\mathbf{Q}$ *dialectical arithmetic*, there is already a kind of *generic 'connotative entailment'* at work. True, it is but a shadow, and but a 'pre-vestigial' harbinger, of the richness of the kind of particularity of *categorial followership* that drives forward, intuitively, the *dialectical, purely-qualitative logic* of the more concrete, more *speci*fic *dialectical-algebraic* interpretations thereof. A case in point is exemplified in the very $_\mathbf{N}\mathbf{Q}$ *algebraic model* of *The Dialectic of Nature* that is used for the illustrations presented herein.

This *gene*ric *'connotative entailment'* can be formulated as follows: *'second*-ness' follows -- and even follows *from* -- *'first*-ness'; *'third*-ness' follows [*from*] *'second*-ness', and so on.

In the next section, the construction, by iterated interpretations layering, of the Seldonian *first dialectical arithmetic* will advance from this harbinger of *'connotative entailment'* to the following, still *gene*ric, but at last also explicitly *dialectical*, form of *'connotative entailment' ordinality*: ' *first full antithesis* follows from the *self-interaction* of [«*arché*»-]*thesis*; *first full synthesis* follows from the *mutual interaction* of *first full thesis* and *first full antithesis*', and so on.

III. *Dyadic Seldon Function Interpretation of the Initial Generic $_NQ$ Ontological Category Qualifiers*.
The *gene*ric '*dialectical model meta-equation*' form for the functions-family of the Seldon Functions is that of a *gene*ric

cumulum symbol [' $\lfloor\text{-}\lfloor\text{-}\rfloor$ '] on the LHS [L̲eft-H̲and S̲ide] of the '*dialectical meta-equation*', equated to an RHS
expression representing '*self-reflexive operation*' of an [«*arché*», '''*seed*''', '''*cell-form*''', or '*ultimate ancestor*'
ontological category symbol [represented, *gene*rically, by 'q_1'] -- indicating its recurring '*self-reflexion*' via a '*meta-*

exponentiated', *monotonically increasing* [' $\top$ '] whole-number-valued '''independent variable''' ['**h**'] -- on the RHS of
the *gene*ric *Seldon Function equation*, viz. [with '*gene*ric-ness' connoted by the "rectangular" *motif* of the symbols-set]:

$$\lfloor\text{-}\lfloor\text{-}\rfloor_{h\top} \;\; = \;\; [\![q_1]\!]^{v^{h\top}} \text{, for h in \{ 0, 1, 2, 3, . . . \}, v in \{2, 3\}.}$$

If **v = 2**, the *Gene*ric *Seldon Function* above is said to belong to the *Dyadic Seldon Function* sub-family. If **v = 3**, the
*Gene*ric *Seldon Function* above is said to belong to the *Triadic Seldon Function* sub-family. Our remarks herein are
concentrated on the *Dyadic Seldon Functions*, because the main '*dialectical-mathematical meta-equation*', modeling a
historical dialectic, exposited herein, is of the **v = 2** variety.

With **v = 2**, and selecting that special generic *Dyadic Seldon Function form* that we reserve for a *historical*
dialectic, the *form* of the '*meta-model meta-equation*' to be used in the illustrations herein, becomes, more
specifically --

$$\rangle\text{-}|\text{-}\langle_{\tau\uparrow} \;\; = \;\; \langle q_a \rangle^{2^{\tau\uparrow}} \text{, for } \tau \text{ in \{ 0, 1, 2, 3, . . . \}.}$$

-- wherein the symbol **τ**, replacing the more *gene*ric symbol **h**, represents the generic algebraic parameter-variable for the
historical epoch modeled, and wherein, in general, the "angular" *motif* of the entire symbols-set used is to connote the
historical dialectic domain of '*dialectical modeling*'.

The *Seldon Functions* bring with them a further, *second* layer of interpretation of the $_NQ$ *qual*ifiers, **{ q_1, q_2, q_3, ... }**,
by which they are interpreted as **q**ual*ifiers* that stand for *generic dialectical physio-ontological categories*, e.g., for
'''*physis*''' *categories*, or for full or partial '*meta-physis' categories*, or for full or partial '*uni-physis' categories*.

If we *assign* ['**[——>**'] the «*arché*»-*physis* category, q_a, to the *generic* $_NQ$ **q**ual*ifier* '*meta-number*', q_1, as signed by

'q_a[——> q_1 ', and if we can discern that q_a, and all of its successor-*categories*, and their *cumula*, as generated by its
successive, *cumulative*, 'Seldon-functional self-operations', connote «*aufheben*» *operators*, that is, *dialectical negation*
operators, then the *Dyadic Seldon Function* is seen to signify, under the axioms of the system of arithmetic of the $_NQ$
'*meta-numbers*' [http://www.dialectics.org/dialectics/Correspondence_files/Letter17-06JUN2009.pdf], a '*self-iterated*', *cumulative* recurrence
of *dialectical* "*negations of* [*the*] *negations*".

With every [unit] increase in **τ**, the *Dyadic Seldon Function* 'formulaic recipe' calls for the *dyadic self-operation* of the
result of the previous *dyadic self-operation*, i.e., for a *negation of the negation* of the result of the previous *negation of*
the negation. Only for **τ = 0** -- only for the case in which *no self-operation* occurs -- is the "result" a singleton [*physio-*]
ontological category symbol, the *symbol* for the «*arché*» [*physio-*]*ontological category* alone, instead of that "result"
taking the form of a *cumulum* of [powers-of-]*two* [or more] such symbols, i.e., a "non-amalgamative sum" [cf. Musès], or
an «*a-sumbletoi*» sum [cf. Plato], of '[*physio-*]*ontological category*' symbols, since $2^0 = 1$, and since $q_a^1 = q_a$.

$$\rangle\text{-}|\text{-}\langle_0 = \langle q_a \rangle^{2^0} \;\; = \;\; \langle q_a \rangle^1 \;\; = \;\; \langle q_a \rangle \;\; = \;\; q_a.$$

For example, if we take epoch $\tau = 1$, and denote the «**_arché_**» **_ontological category_** simply by **_a_**, for syntactical convenience, then the **_Dyadic Seldon Function_** calls for the following, as per the $_NQ$ axioms, since $2^1 = 2$ --

$$\rangle\text{-}|\text{-}\langle_1 \;=\; \langle\underline{a}\rangle^{2^1} \;=\; \langle\underline{a}\rangle^2 \;=\; \langle\underline{a}\rangle\times\langle\underline{a}\rangle \;=\; \underline{a}\times\underline{b}.$$

-- wherein **_a_** $[\!\longrightarrow \overline{\underline{\Psi}}_1$ connotes the «**_a_**»**_rché_** **_category_**, or '''«**_arché_**»-**_physis_**''', and where **_b_** $[\!\longrightarrow \overline{\underline{\Psi}}_2$ connotes the **_first_** '**_meta-physis category_**', with '**+**' here standing for a **_gene_**ralized **_addition_** operation, that encompasses the **_addition_** of **_qual_**itatively distinct terms, and with '**×**' here standing for a **_gene_**ralized **_multiplication_** operation, that encompasses the **_multiplication_** operation **_speci_**fic to the $_NQ$ **_qual_**ifiers.

If we take '$\langle\underline{a}\rangle \times \langle\underline{a}\rangle$' with $\langle\underline{a}\rangle$ connoting the **_category to be dialectically negated_**, and with '$\langle\underline{a}\rangle$' connoting the **_category_** doing that **_dialectically_** [**_self_**-]**_negating_**, with '$\langle\underline{a}\rangle$' as the **_dialectical_**, **_determinate_** '**_negation_**-sign' **_speci_**fic to $\langle\underline{a}\rangle$ as the object of the so-indicated **_dialectical, determinate negation operation_**, then we have '$\langle\underline{a}\rangle \times \langle\underline{a}\rangle$', as a whole, as connoting the **_first dialectical negation_**, **_by the negation-operation_** $\langle\underline{a}\rangle$ **_of the self-same negation operation_**, $\langle\underline{a}\rangle$, **_that is also the operand of the negation-operator_** $\langle\underline{a}\rangle$, forming what Seldon calls an -- ideographically signed -- 'subject [$\langle\underline{a}\rangle$]-verb[$\langle\underline{a}\rangle$]-object[$\langle\underline{a}\rangle$] identical', yielding a **_first dyad_**: '''**physis** + **meta-physis**''', or '**«arché» category** + **first meta-category**', viz. --

$$\langle\underline{a}\rangle\times\langle\underline{a}\rangle \;=\; \underline{q}_a \times \underline{q}_{aa} \;=\; \underline{q}_a \times \underline{q}_b \;\equiv\; \underline{a}+\underline{b}$$

-- which, in terms of the **_gene_**ric, minimally-interpreted $_NQ$ arithmetic, is a **_dialectical interpretation_** of the **_gene_**ric --

$$|\text{-}|\text{-}|_1 \;=\; [\![q_1]\!]^{2^1} \;=\; [\![q_1]\!]^2 \;=\; [\![q_1]\!]|\!\times\!|[\![q_1]\!] \;=\; [\![q_1 |\!\pm\!| q_{1+1}]\!] \;=\; q_1 |\!\pm\!| q_2.$$

The **_second_** iteration of this **_dialectical negation of the negation_**, corresponding to the consecutively **_next_** value of **s** namely, $\tau = 2$, for the $_NQ$ **_arithmetic_** interpreted for [**_psycho_**]**_historical dialectics_**, yields the following, ontologically-expanded **_cumulum_** of **_ontological categories_** -- a '**_dyad of dyads_**', consisting of **4** consecutive **_ontological categories_**:

$$\rangle\text{-}|\text{-}\langle_2 \;=\; \langle\underline{a}\rangle^{2^2} \;=\; \langle\underline{a}\rangle^4 \;=\; \langle\langle\underline{a}\rangle\rangle^2 \;=\; \langle\underline{a}+\underline{b}\rangle^2$$

$$=\; \langle\underline{a}+\underline{b}\rangle\times\langle\underline{a}+\underline{b}\rangle$$

$$=\; \underline{a}+\underline{b}+\underline{c}+\underline{d}.$$

The additional **2** ontological category-symbols above are *dialectically interpreted*, per the **E**.**D**. standard, as follows:

c = *third* **ontological category**, *first* <u>*full*</u> *uni-physis category*;

d = *fourth ontological category*, *second meta-physis category*.

We will not here pursue this **E**.**D**. standard *dialectical interpretation* of the *ontological categories* generated by the generic *Dyadic Seldon Function* beyond epoch $\tau = 2$, as they are not required for the purposes of this vignette.

The *'purely-qualitative calculations'* illustrated above describe our expectations as to the meaning of this vignette's illustrative *'meta-model'* in terms of *generic* characterizations of its successive, consecutive *dialectical categories*.

The next section addresses the heart of this *'meta-model'* -- the *specific* meanings of the *generic dialectical categories* as applied to the *'''special case'''* of *The Dialectic of Nature* in *general*.

IV. *'''Self-Activity'''* and *'''Self-Change'''* as Captured in the *Dyadic Seldon Functions* of the $_NQ$ Arithmetic.

If we would extend the theory left to us by Marx and Engels, of *the dialectic of human history -- the dialectic of human Nature*, i.e., *the dialectic of just the human part of Nature* -- explicitly into a theory of *The Dialectic of Nature* as a whole -- as begun by Engels, in his posthumously published, incomplete, and fragmentary manuscript, given the title posthumous *"Dialectics of Nature"* -- then we must extend the Marxian concepts of *"self-activity"* and of *"self-change"*, as set forth by Marx and Engels in the passages quoted in section **I**., above, to encompass *"selves"*, i.e., *"subjects"*, or *"causal agents"*, other than individual human *"subjects"* / *"agents"*, or human-social, collective *"subjects"* / *"agents"* -- whole human societies as collective *"subjects"* / *"agents"* -- alone. In framing a Marxian theory of *The Dialectic of Nature* as a whole, we must get beyond limiting our discourse of '*subject*-ivity', of '*subject*-ness', of '*subject*-hood' -- i.e., of the «*genos*» of *causal agency* in *gene*ral -- of an *agent* that operates upon natural objects, including upon the objective aspects of its own *self*, to just one of the «*species*» of that «*genos*»; indeed, beyond limiting our discourse to just the most recent and most developed, *self-conscious* «*species*» of that «*genos*» known to us: human '*subject*-ivity'.

Causal agency, in this *cosmos*, is not limited to *human agency* -- far from it!

Therefore, the quality of '*subject*-ivity', '*subject*-ness', '*subject*-hood' is **not** limited to human individuals or to whole human societies, although human '*subject*-ivity' or agency ***is*** the highest degree of '*subject*-ivity' ***known to humans***.

Any *natural causal agent* whose name can aptly -- i.e., with empirical truthfulness -- be cast into the "*subject*" role and position / "slot" of a well-formed English sentence is a "*subject*" *of some degree*. A special case of such sentences involves the same name occurring, aptly, in ***both*** the **subject** and the **object** "slots" of such a sentence -- forming a '''**subject** / **object** identical''', or, in our cases, a '**subject** / *verb* / **object** identical', since the entity whose name is both subject and object of such a sentence also has its [self-]activity, its "verb", absorbed into itself, absorbed into that entity, and one with that entity. That is, such an entity is thereby being represented as an 'event-entity', an '''eventity''', or, in mathematical terms, as an '''opera***tor***''', unifying both "operation" and "operand" -- and thus also as a 'noun / verb identical'; as an 'operation / operand identical', or as a 'function / argument identical'.

We illustrate, below, the ways in which a *'Dyadic Seldon Function Historical-Dialectical Meta-Equation Meta-Model'* describes a given history as *'a self-progression of self-activity for a thereby self-growing* [via [past] *self-activity*]] *'cumulum' of self-actors /* '''*eventities*''', yielding an *ontologically* different, *self-*«*aufheben*» *self-expanded self-acting 'cumulum'*, for each of its successive *historical epochs* -- i.e., for each successive value of the discrete time parameter, τ. We so illustrate by means of the special case of the most *gene*ral *Dyadic Seldon Function 'Meta-Model'* available -- the *'Dialectical Theory of Everything'*, *Dialectic of Nature as Totality 'Meta-Equation'* --

$$\rangle\text{-}|\text{-}\langle_{\tau\uparrow} = \langle\underline{\textbf{n}}\rangle^{2^{\tau\uparrow}}$$

-- with $\underline{\textbf{n}}$ denoting the «*arché-physis*» *'physio-ontological'* category of 'sub-**n**uclear particles", e.g., *quarks* and *leptons*.

Epoch τ	*Cumulum-form*	*'Power-form'*	τth 'Subject-[**Verb**[✗]-]Object-Identical'	*'Product- / Result-form'*
$\tau = 0$:	$\rangle\text{-}|\text{-}\langle_0$	$= \langle\underline{\textbf{n}}\rangle^{2^0}$	$= \langle\underline{\textbf{n}}\rangle$	$= \langle\underline{\textbf{n}}\rangle$
$\tau = 1$:	$\rangle\text{-}|\text{-}\langle_1$	$= \langle\underline{\textbf{n}}\rangle^{2^1}$	$= \langle\underline{\textbf{n}}\rangle\times\langle\underline{\textbf{n}}\rangle$	$= \langle\underline{\textbf{n}}+\underline{\textbf{s}}\rangle$
$\tau = 2$:	$\rangle\text{-}|\text{-}\langle_2$	$= \langle\underline{\textbf{n}}\rangle^{2^2}$	$= \langle\underline{\textbf{n}}+\underline{\textbf{s}}\rangle\langle\underline{\textbf{n}}+\underline{\textbf{s}}\rangle$	$= \langle\underline{\textbf{n}}+\underline{\textbf{s}}+\textbf{q}_{\textbf{sn}}+\underline{\textbf{a}}\rangle$
$\tau = 3$:	$\rangle\text{-}|\text{-}\langle_3$	$= \langle\underline{\textbf{n}}\rangle^{2^3}$	$= \langle\underline{\textbf{n}}+\underline{\textbf{s}}+\textbf{q}_{\textbf{sn}}+\underline{\textbf{a}}\rangle\langle\underline{\textbf{n}}+\underline{\textbf{s}}+\textbf{q}_{\textbf{sn}}+\underline{\textbf{a}}\rangle$	$= \langle\underline{\textbf{n}}+\underline{\textbf{s}}+\textbf{q}_{\textbf{sn}}+\underline{\textbf{a}}+\textbf{q}_{\textbf{an}}+\textbf{q}_{\textbf{as}}+\textbf{q}_{\textbf{asn}}+\underline{\textbf{m}}\rangle$

. . .

In the table above, the symbol **s** stands for the *first meta-«physis»* *'physio-ontological'* category of '**s**ub-atomic particles", that is, of '**meta-quarks**', e.g., **protons** and **mesons**. The symbol **a** stands for the *second meta-«physis»* *'physio-ontological'* category, of '**a**tomic nuclei", that is, of '**meta-sub-atomic particles**', e.g., **Helium nuclei**. The symbol **m** stands for the *third meta-«physis»* category of *'physio-ontology'*, that of '**m**olecules", i.e., of '**meta-atoms**', e.g., H_2O, **water**. The foregoing list covers the *'self-hybrid'* categories of *'physio-ontology'* expressed in the table above. We need not address the symbols for the *'merely hybrid'* categories of *'physio-ontology'*, such as **q**$_{sn}$ and **q**$_{asn}$, or their meanings, within the purposes of this vignette.

For all *epochs* **τ ≥ 1**, each of the entries under the '**τ**th '$_{\text{Subject-[}\textbf{Verb}[\times]\text{-]Object-Identical}}$' column in the table above can be characterized in all of the following ways --

1. A '''*self-activity*'''; an *activity of* / *by* a [pre-human] '''*self*''' / "**subject**" / *causal agency* [back-]upon that same '''*self*''' / "**subject**" / *causal agency*, thus also functioning as "**object**" thereof -- as also **object** *of* / *to itself*.

2. A '''*self-activity*'''; a '''*self-action*''', causing '''*self-change*'''-- here, not merely *quant*itative change, but *qual*itative change, *ontological change* [*expansion of the cumulum of possible ontology*] -- *self-induced change*; *change-in-self*, induced *by self*.

3. A *'self-labor'* [in a pre-human sense of the word "labor"]; a *labor upon self by self*; a *work upon self by self*; a 'self-working-up'.

4. A *'self-re-fl**e**x-ive function'* [cf. Russell,; Wittgenstein]; a *'function'* which can be characterized [*'-ive'*] as, bending [*'fl**e**x'*] back [*'re-'*] upon, or to impact, the very source [*'self-'*] which generated / generates that *'function'*.

5. A *'self-re-fl**u**x-ive function'* [cf. Ancient Eastern Philosophies / Religions]; a '''karmic''' *'action'* which is characterized [*'-ive'*] as, flowing [*'fl**u**x'*] back [*'re-'*] upon, and thus impacting, the very source [*'self-'*] which generated / generates that *'action'* [cf. "the karma-yoga performed by all things"].

6. An «*autokinesis*» [cf. Plato, Ancient Western Philosophy]; a *self-motion*; a *self-movement*; a *self-change*; a *change-in-self*, induced *by self*.

7. A *self-mirroring* / '''*self-refle**ct**ion*''' / *'self-beholding'* that irrupts new ontology -- that surges-up a new, expanded 'cumulum of ontology possibility' as expanded cosmological 'self'[cf. Hegel, '''Being-for-Itself'''].

8. [from **τ = 2** on]: A *'re-squaring of the already squared'*; a *'re-self- / determinate-negating / self-changing of the already self- / determinate-negated / self-changed'*.

9. A [quadratically] "*nonlinear term*" [as long as any of the terms in the 'cumulum' sum-representations being '''multiplied''' together are '''unsolved-for''' / 'unsemantified', 'dialectical-algebraic' unknowns].

Links to definitions of additional **_Encyclopedia Dialectica_** special terms deployed in the discourse above --

«*arithmos aisthetos*»
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/ArithmosAisthetos/ArithmosAisthetos.htm

«*arithmos eidetikos*»
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/ArithmosEidetikos/ArithmosEidetikos.htm

categorial
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Categorial/Categorial.htm

category
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Category/Category.htm

'*consecuum*'
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Consecuum/Consecuum.htm

'*cumulum*'
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Cumulum/Cumulum.htm

dialectical categorial progressions
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/CategorialProgression/CategorialProgression.htm

homeomorphic defects of models
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/HomeomorphicDefect/HomeomorphicDefect.htm

[*The*] *Human Phenome*
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/PsychoHistory/PsychoHistory.htm

immanent
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Immanent/Immanent.htm

immanent critique
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/ImmanentCritique/ImmanentCritique.htm

«*monad*»
https://www.point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Monad/Monad.htm

ontological category
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/CategoryOntological/CategoryOntological.htm

ontology
https://www.point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Ontology/Ontology.htm

psychohistory
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/PsychoHistory/PsychoHistory.htm

qualo-fractal
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/QualoFractal/QualoFractal.htm

qualo-Peanic
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/QualoPeanicity/QualoPeanicity.htm

'*self-meta-monad-ization*' or '*self-meta-individual-ization*' or '*self-meta-holon-ization*'
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Meta/Meta.htm
http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/MetaMonadization/MetaMonadization.htm