

# Unification of Engels's *Three “Laws” of Dialectics* in the Seldonian ‘*Meta-Model*’ of *‘The Dialectic of Nature’*.

by Miguel Detonacciones

**Author's Preface.** The purpose of **F.E.D. Vignette #10** is to present the singular expression of Engels's three “laws” of dialectics that arises in the Seldonian account of ‘*The Dialectic of Nature*’ -- the **dialectic** of *the maximal totality*; of our *cosmos* as a whole.

**A Note about the On-Line Availability of Definitions of F.E.D. Key Technical Terms.** Definitions of **Encyclopedia Dialectica** technical terms and ‘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, alphabetically, on the web-pages linked above.

The **Encyclopedia Dialectica** special terms most fundamental to this vignette are indicated below, together with links to their **E.D.** definitions --

«**arithmos**» and «**arithmoi**»

<http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Arithmos/Arithmos.htm>

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

«**aufheben**»

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

[http://www.dialectics.org/dialectics/Glossary\\_files/F.E.D.\\_%20A%20Dialectical%20%27%27Theory%20of%20Everything%27%27.%20Volume%200..%20FOUNDATIONS.%20Edition%201.00.%20first%20published%2010DEC2011.%20Definition.%20AUFHEBEN,%2018AUG2011.%20JPEG.jpg](http://www.dialectics.org/dialectics/Glossary_files/F.E.D._%20A%20Dialectical%20%27%27Theory%20of%20Everything%27%27.%20Volume%200..%20FOUNDATIONS.%20Edition%201.00.%20first%20published%2010DEC2011.%20Definition.%20AUFHEBEN,%2018AUG2011.%20JPEG.jpg)

‘**cumulum**’

<http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/Cumulum/Cumulum.htm>

«**monad**»

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

“‘**Seldon Functions**’”

<http://point-of-departure.org/Point-Of-Departure/ClarificationsArchive/SeldonFunctions/SeldonFunctions.htm>

-- definitions resources which will be expanded as the **F.E.D. Encyclopedia Project** unfolds.

## I. Engels's *Three "Laws" of Dialectics* in His Own Words.

The storied scientist, J. B. S. Haldane, in his preface to the publication of Engels's incomplete manuscripts, entitled *Dialectics of Nature* by their editors, notes that Engels, from at least **1871**, "intended to write a great book to show [quoting Engels: ] "that in nature the same dialectical laws of movement are carried out in the confusion of its countless changes, as also govern the apparent contingency of events in history." If this book had been written, it would have been of immense importance for the development of science." [Frederick Engels, *Dialectics of Nature*, International Publishers [NY: **1963**], p. **viii**].

These *Dialectics of Nature* manuscripts were never quite finished for publication by Engels, but Engels did, in the short second chapter, entitled "Dialectics", provide the following formulation of his *three "laws" of dialectics*:

"...It is, therefore, from the history of nature and human society that the laws of dialectics are abstracted. For they are nothing but the most general laws of these two aspects of historical development, as well as of thought itself. And indeed they can be reduced in the main to three:

- The law of the transformation of quantity into quality and *vice versa*;
- The law of the interpenetration of opposites;
- The law of the negation of the negation.

All three are developed by Hegel in his idealist fashion as mere laws of *thought*: the first, in the first part of his *Logic*, in the *Doctrine of Being*; the second fills the whole of the second and by far the most important part of his *Logic*, the *Doctrine of Essence*; finally the third figures as the fundamental law of the construction of the [M.D.: Hegel's] whole system.

The mistake lies in the fact that these laws are foisted on nature and history as laws of thought, and not deduced from them.

This is the source of the whole forced and often outrageous treatment; the universe, willy-nilly, is made out to be arranged in accordance with a system of thought which itself is only the product of a definite stage of evolution of human thought.

If we turn the thing round, then everything becomes simple, and the dialectical laws that look so extremely mysterious in idealist philosophy at once become simple and clear as noonday.

Moreover, anyone who is even only slightly acquainted with his Hegel will be aware that in hundreds of passages Hegel is capable of giving the most striking individual illustrations from nature and history of the dialectical laws.

We are not concerned here with writing a handbook of dialectics, but only with showing that the dialectical laws are really laws of development of nature, and therefore valid also for theoretical natural science.

Hence we cannot go into the inner interconnection of these laws with one another." [*ibid.*, pp. **26-27**].

We of [Foundation \*Encyclopedia Dialectica\* \[F.E.D.\]](#) are, however, concerned, in particular, with writing a "*handbook of dialectics*", one which is tentatively slated to appear in **2014**, under the primary authorship of [F.E.D.](#) Public Liaison Officer Aoristos Dyosphainthos.

We are also concerned, in general, with resuming and continuing the unfinished works of both Engels and Marx.

We must also, therefore, "go into the inner interconnection of these laws with one another."

This [F.E.D.](#) Vignette **#10** presents a brief summary of their "inner interconnection" in their more concrete context of *universal natural history* as *the history of the maximal dialectical totality*.

Both Marx and Engels frequently criticized the "abstract" character of the natural sciences of their time, and, in particular, their abstractness in relation to the history of nature. Engels's account of the *three "laws" of dialectics*, nonetheless, had to remain, precisely, abstracted from natural history, "suprahistorical" [Marx] in their formulation and presentation, because the natural science of Engels's time had not yet penetrated with sufficient depth into the macrocosm, 'mesocosm', and microcosm of the present cosmological epoch, or into the reconstruction of those of past epochs of natural history, to provide a knowledge-base sufficient to support the unified formulation of '*The Historical Dialectic of Nature*'. This fact may have contributed to the reasons owing to which Engels decided to give priority to other projects, and never completed either the *Dialectics of Nature* ms., or his intended greater work on *dialectics*. But, beginning *circa* the **2nd** half of the **20th** century, that condition has begun to be remedied. We take advantage of that growth in knowledge, subsequent to Engels's lifetime, herein.

## II. Unitary Operation of the Three “Laws” of Dialectics in Cosmos-History, Stated Narratively & “In a Nutshell”.

1. «**Genos**»: **Generic Narrative of the Unified Dialectical ‘Meta-Dynamic’ of Nature’s ‘Self-Revolutions’**. The in-context operation of Engels’s first “law” of dialectics, **the “law” of the transformation of quantitative change into qualitative change**, as concretely occurring in the main sequence of the natural history of the **cosmos**, is driven by the ‘auto-catalytic’ character of the populations of individuals of each successive major kind of individuals, each represented by a distinct “‘ontological category’”, that has arisen in the self-caused course of Nature’s ‘self-meta-evolution’.

Individuals of each newest kind make more individuals of that kind, of their own kind; they self-reproduce, expandedly, and often at an accelerated rate, at least early-on in their ‘self-evolution’.

They do so by converting ‘**onto-mass**’ of other, previously ‘self-meta-evolved’ kinds, into ‘**onto-mass**’ of their own kind.

The ‘qualitative growth’ of the universe -- of the **ontology** of the universe -- that such “quantitative growth”, such accelerated expanded self-reproduction, **passes into**, is not precipitated just by the growing quantity, the growing population-count, the growing **number**, of individuals of that newest ‘onto-type’.

It is also a matter of the growing physical-**spatial concentration** of that mounting quantity of such individuals.

That rising ‘onto-density’, in the cores of that ‘onto-type’s’ nucleation-zones, where that concentration maximizes, bring individuals of that same newest ‘onto-type’ into intense interaction mainly with one another, no longer, at least not at the cores of those nucleation-zones, mainly with individuals of earlier ‘meta-evolved’ ‘onto-types’.

Latent potentials of such interaction of similars are thus actualized to unprecedented degree.

From such unprecedented degrees of “‘self-interaction’” -- or of “‘intra-action’” -- within the populations of the newest ‘onto-type’, a **next** newest ‘onto-type’ irrupts, one constituted by an unprecedented new kind of individuals, qualitatively different from those of the former newest ‘onto-type’, and qualitatively different from those of all earlier ‘meta-evolved’ ‘onto-types’, representing, thus, a new quality of cosmological being, a new ‘onto-type’ -- unprecedented, **new ontology**.

Thus, **quantitative change**, change in the quantity and concentration/density of individuals of the earlier kind of ontology, mere **quantitative growth**, has abruptly given rise to a population of a new kind of individual, to **qualitative change**, to **qualitative growth** -- to **ontological revolution**; to yet another increment in the growth of the **ontology** of the **cosmos**.

**Quantitative “evolution” has passed into ‘qualitative meta-evolution’.**

The “**dynamics**” of “**evolution**” -- **quantitative** expanded self-reproduction of individuals of a given, then-vanguard ‘onto-type’ -- has, via ‘**metafinite singularity**’, **passed into** the ‘**meta-dynamics**’ of the «**aufheben**» birth of a new vanguard ‘onto-type’, **from out of the very womb** of its immediate predecessor ‘self-hybrid’ vanguard ‘onto-type’.

And it has done so by way of “**the interpenetration of opposites**” -- not, in the case of this main sequence, historical **dialectic** of natural history, of “‘**complementary opposites**’”, nor of ‘**annihilatory opposites**’, but of ‘**supplementary opposites**’ [see **F.E.D.** Vignette #6, **The Dialectic of Opposition**, for background on this ‘ideo-taxonomy’ of the three «**species**», or **kinds**, of **oppositeness**: [http://www.dialectics.org/dialectics/Vignettes\\_files/Aoristos\\_Dyosphainthos,F.E.D.\\_Vignette\\_%236.The\\_Dialectic\\_of\\_Oppositions,first\\_posted\\_29NOV2012.pdf](http://www.dialectics.org/dialectics/Vignettes_files/Aoristos_Dyosphainthos,F.E.D._Vignette_%236.The_Dialectic_of_Oppositions,first_posted_29NOV2012.pdf) ].

The quality of oppositeness of the old vanguard ‘onto-type’, versus its successor, may not always be experientially and affectively accessible to its human observers, which is why **F.E.D.** calls 2<sup>nd</sup> terms in its ‘**ideo-dialectical meta-models**’ ‘**contra-thesis**’ terms, whereas it calls 2<sup>nd</sup> terms in its ‘**physi[c]o-dialectical meta-models**’ ‘**meta-physis**’ terms.

The formerly-latent, unmanifest potentials of the “‘self-interaction’” of the up-until-then newest ‘onto-type’ constitute an ‘**immanent other-ness**’, an ‘**intra-duality**’, or ‘**self-duality**’, an ‘**internal-/self-opposition**’, of that up-until-then newest ‘onto-type’, one which becomes ‘outered’, externally manifested, once the intensity of population “‘self-interaction’”, or ‘intra-action’, breaches the threshold whereafter the next newest ‘onto-type’ becomes ‘irruptively actualized’, actualized as the **supplementary opposite**’ of the dominant, external-face/-manifestation of its predecessor vanguard ‘onto-type’.

And this process, of new ‘onto-type’ actualization, typically by ‘**self-«aufheben» self-meta-individual-ization**’, i.e., by ‘**self-meta-holon-ization**’, ‘**self-meta-unit-ization**’, or ‘**self-meta-monad-ization**’, is also the concrete, in-context instantiation of the **dialectical** “**negation of the negation**”. It is the ‘present **self-meta-individual-ization**’ of the previous **self-meta-individual-ization**’; the ‘present **self-«aufheben»**’ of the previous **self-«aufheben»**’.

## 2. «*Species*»: Specific Narrative of the Unitary *Nature-Dialectic* of a Paradigmatic Particular Example.

**The Particular, Paradigmatic Example for this Vignette: Stellar ‘Meta-Evolution’/‘Stellar Nucleosynthesis’.** In the *Dyadic Seldon Function* formulation of the *Dialectical Theory of Everything Equation*, that is, of the Seldonian *‘Cosmos-History Meta-Model’*, the various kinds of, and “generations” of, stars, figure as *‘dialectical synthesis formations’*, i.e., as *‘partial and total uni-physes’*, which *synthesize* ions, *atomic nuclei*, eventual *non-ionic atoms*, from *‘sub-atomic particles’*, mainly, at first, by a thermonuclear fusion process named *‘stellar nucleosynthesis’*, which populates the later universe with *‘higher atomic species’*. Thus, stars figure in that *‘Meta-Model’* as *‘ontological conversion-formations’*, *‘ontologically hybridized formations’*, containing both *‘lower atomic species’ nuclei*, generated, earlier, by *‘cosmological nucleosynthesis’*, and *sub-atomic ‘particles’* [e.g., “free, naked *protons*” -- ionized Hydrogen “atoms”], and even *sub-nuclear ‘particles’*.

However the purpose of this example, we will focus attention only upon the thermonuclear-fusion-conducting *core* of a hypothetical, Sol-like, “first generation” star, so that we can treat that stellar core as the locus of a *self-«aufheben» progression* of *‘self-conversions’*, or *‘auto-conversions’* [punctuated also by *‘allo-conversions’*], of *‘meta-physes’*, of *‘self-hybrid’* *‘self-meta-individualizations’* [also referred to as *‘self-meta-unifications’*] of “sub-atomic particles” as *units* -- of core protons [and neutrons] as *units* -- into Helium nuclei, ions of Helium atoms [e.g.,  $\text{He}^{++}$ ], as the *‘meta-units’* of those *units*. We will describe processes “locally”, i.e., relative to this one, individual stellar core as locus.

Beyond, e.g., the *‘proton-proton [p-p] reaction’*, the fusion of protons/ionized Hydrogen atoms/Hydrogen isotope ions [e.g., Deuterium] into Helium nuclei, stellar nucleosynthesis will later entail, for stars of large-enough initial mass, a progression of further *‘self-interactions’*, or *‘intra-actions’*, of their newly-arising stellar core *«arithmoi»* of nuclei [*meta-units* of rising atomic number; of *‘interactions’* among their [*meta-units*, i.e., of both *‘auto-meta-unification’* and *‘allo-meta-unification’* nuclear reactions, sometimes followed by atomic-number-reducing radioactive decay of the reaction-product nuclei. These nuclear reactions include Hydrogen nuclei into Helium nuclei [atomic number **2**: *auto* → *allo*]; Helium nuclei into Carbon nuclei [atomic number **6**: *auto*]; Carbon nuclei into Magnesium nuclei [atomic number **12**: *auto*], Sodium nuclei [atomic number **11**: *auto*], Neon nuclei [atomic number **10**: *auto*], Nitrogen nuclei [atomic number **7**: via *decay*], and Oxygen nuclei [atomic number **8**: *auto*]; Oxygen nuclei into Sulfur nuclei [atomic number **16**: *auto*], Phosphorus nuclei [atomic number **15**: *auto*], and Silicon nuclei [atomic number **14**: *auto*]; ... ending with Iron nuclei [atomic number **26**: *allo/decay*].

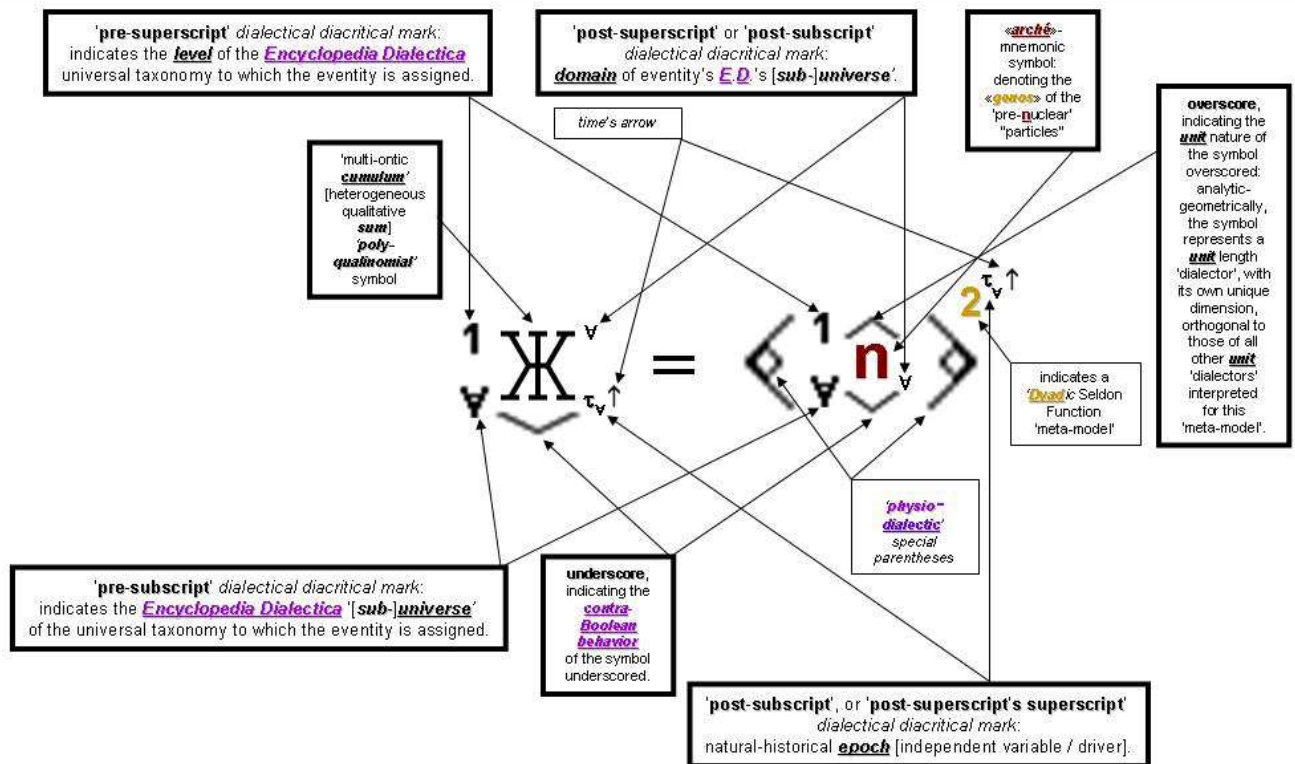
The main progression of such stellar core fusion “burning” is **Hydrogen** [proton] “burning”, **Helium** “burning”, **Carbon** “burning”, **Neon** “burning”, **Oxygen** “burning”, and **Silicon** “burning”. The nuclei *units* of most of the remaining chemical elements are generated by hybrid and/or *‘non-nucleosynthetic’* processes. The driver of this *progression* is the *‘dialectical intra-duality’* or *‘self-duality’* or *‘indivisible-duality’* that stares *are*.

A star is the *‘dialectical’* *‘complex unity’*, the *‘continual dueling’*, of a continuing self-gravitational self-*implosion* and of a colossal thermonuclear self-*explosion*, both at the *‘macrocosmic’* level, opposing one another at every point within the star [sometimes called “hydrostatic equilibrium”], both arising from the very “self”, the body, of the star itself, and both tied to the *‘opposition’* between the core protons’ mutually attracting nuclear force, and mutually repelling electrostatic force, at the *‘microcosmic’* level, with both of these *‘microcosmic’* forces sourced in the self-same core protons themselves. Thus, as initial core Hydrogen is *‘completely converted’* into Helium in a Sun-like star, the ‘thermonuclear self-explosion’ dual momentarily subsides, leaving the ‘self-gravitational self-implosion’ dual unopposed. Therefore, there begins, at this moment, an accelerating self-contraction, self-compressing the whole star, and its core, and driving-up the ‘physical-spatial concentration’ -- the density -- of the Helium “ash” in the core, until a critical threshold of Helium density is crossed, at which “the Helium flash”, a “runaway process” of Helium fusion -- of the “ash” resurrecting itself to “burn” again, in a new way of “burning” -- erupts into existence, along with the first new kinds of nuclei that result from Helium fusion. The latter is the new, unprecedented ‘physio-ontology’ of, e.g., Carbon nuclei [new and unprecedented for this locus, for this core’s locale, at least]. The *‘quantitative growth’* of the stellar core Helium population, via Hydrogen fusion, and its *‘quantitative’* ‘densification’ due to the exhaustion of Hydrogen “fuel”, leads to that *‘qualitative, ontological change’* which is the irruption of the new ‘physio-ontology’ of Carbon nuclei, etc., as the “ash” of “Helium burning”, after the *‘metafinite singularity’* of the “Helium flash”, which converts the *‘ash/waste/entropy’* of core Helium nuclei into the new *‘fuel/resource/-negentropy’* of a new epoch of revived, continued stellar evolution. When the core Helium “fuel” is itself, in turn, completely converted to Carbon, etc., “ash”, this process self-continues again, in *‘temporal meta-fractal self-similarity’* to the Hydrogen/Helium pattern just described, until energy-liberating, self-explosion-dual-sustaining nucleosynthesis finds its limit with the irruption of iron nuclei.



III. How the *'Dialectical Theory of Everything Equation' / 'Cosmos-History Meta-Model'* Mirrors the Unity of Engels's "Laws". Consider the *Dyadic Seldon Function* formulation of the *'Dialectical Theory of Everything Equation'*, that is, of the Seldonian *'Cosmos-History Meta-Model'* --

## Dyadic Seldon Function 'Meta-Model' for 'The Dialectic of Nature as a Whole': Its Symbolic Elements Defined via Callouts



-- confining our attention entirely, for the sequel, to its LHS [Left-Hand Side], namely, to  $\sqrt{\sum_{\tau} \dots}$ , which we will

simplify to just  $\sum_{\tau}$  for the purposes of this presentation. This symbol,  $\sum_{\tau}$ , simply stands for the *accumulation*, the qualitatively [ontologically] heterogeneous, therefore non-amalgamative "sum", or *'cumulum'*, of symbols standing for the *ontological categories*, or *kinds of things*, that may possibly exist within epoch number  $\tau$  of the self-creation of our *cosmos*. Now, the key to this presentation, and to the unity of Engels's three "laws", is this: the relations which this symbol satisfies constitute a unified, "singular" expression of Engels's "plural" *dialectical* "laws". Moreover, they do so in the concrete context of the self-generated history of our *cosmos*. That is, the relations expressed, ideographically, per the standard *F.E.D.* interpretation of the generic *Q* arithmetic, as the self-action/self-change of each such *'cumulum'*, thereby adding, to itself, a *qualitative* increment,  $\Delta$ , of (a) *new kind(s) of things* categor(y)(ies) [i.e., of *new ontology*] --

$$\sum_{\tau+1} = \sum_{\tau}^2 = \sum_{\tau} \sum_{\tau}, \text{ or } \sum_{\tau} \otimes \sum_{\tau}, \text{ or } \sum_{\tau} \langle \sum_{\tau} \rangle = \sum_{\tau} \oplus \Delta \sum_{\tau}$$

-- that is, the self-multiplication, self-operation, 'self-function-ing', "'self-reflexion'", or 'self-refluxion' of  $\sum_{\tau}$ , for each value, consecutively, of  $\tau = 0, 1, 2, 3, 4, 5, 6, 7, 8, \dots$ , *univocally* expresses the following *'trinality'* of processes:

**1. Self-Transformation of quantitative change into qualitative change: ‘Onto-dynamasis’ as Irruption of New Ontology.**

$\rangle\!-\!|\!-\!|_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau}^2 = \rangle\!-\!|\!-\!|_{\tau}^1 \rangle\!-\!|\!-\!|_{\tau}^1$ , and, using ‘ $\partial 1$ ’ to denote a finite fraction, or part  $[\partial]$ , of **1**, that is, if we impose, inside **1**, a boundary  $[\partial]$ , taking as the resulting value,  $[\partial 1]$ , that which is on only one side of that boundary, e.g., for this example, if we define  $\partial 1 \equiv 1/5$ , excluding the other (4/5)ths of **1** as residing on the “others side” of the boundary that we have imposed via  $\partial$ , then --

$$\rangle\!-\!|\!-\!|_{\tau+0} = \rangle\!-\!|\!-\!|_{\tau}^1 = \rangle\!-\!|\!-\!|_{\tau}^0 \langle \rangle\!-\!|\!-\!|_{\tau}^1 \rangle = \langle \rangle\!-\!|\!-\!|_{\tau} \rangle = \rangle\!-\!|\!-\!|_{\tau} = \rangle\!-\!|\!-\!|_{\tau} \oplus (0) \triangle \rangle\!-\!|\!-\!|_{\tau} \text{ \&}$$

$$\rangle\!-\!|\!-\!|_{\tau+\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{1+\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{\partial 1} \langle \rangle\!-\!|\!-\!|_{\tau}^1 \rangle = \zeta_{\tau} \langle \rangle\!-\!|\!-\!|_{\tau} \rangle = \zeta_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau} \oplus (1/5) \triangle \rangle\!-\!|\!-\!|_{\tau} \text{ \&}$$

$$\rangle\!-\!|\!-\!|_{\tau+\partial 1+\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{1+2\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{2\partial 1} \langle \rangle\!-\!|\!-\!|_{\tau}^1 \rangle = \zeta_{\tau} \langle \rangle\!-\!|\!-\!|_{\tau} \rangle = \zeta_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau} \oplus (2/5) \triangle \rangle\!-\!|\!-\!|_{\tau} \text{ \&}$$

$$\rangle\!-\!|\!-\!|_{\tau+\partial 1+\partial 1+\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{1+3\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{3\partial 1} \langle \rangle\!-\!|\!-\!|_{\tau}^1 \rangle = \zeta_{\tau} \langle \rangle\!-\!|\!-\!|_{\tau} \rangle = \zeta_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau} \oplus (3/5) \triangle \rangle\!-\!|\!-\!|_{\tau} \text{ \&}$$

$$\rangle\!-\!|\!-\!|_{\tau+\partial 1+\partial 1+\partial 1+\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{1+4\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{4\partial 1} \langle \rangle\!-\!|\!-\!|_{\tau}^1 \rangle = \zeta_{\tau} \langle \rangle\!-\!|\!-\!|_{\tau} \rangle = \zeta_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau} \oplus (4/5) \triangle \rangle\!-\!|\!-\!|_{\tau} \text{ \&}$$

$$\rangle\!-\!|\!-\!|_{\tau+\partial 1+\partial 1+\partial 1+\partial 1+\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{1+5\partial 1} = \rangle\!-\!|\!-\!|_{\tau}^{5\partial 1} \langle \rangle\!-\!|\!-\!|_{\tau}^1 \rangle = \zeta_{\tau} \langle \rangle\!-\!|\!-\!|_{\tau} \rangle = \zeta_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau} \oplus (5/5) \triangle \rangle\!-\!|\!-\!|_{\tau} \text{ \&}$$

What we have rendered above is really more of a “picture” or “diagram”, than a analytically well-formed sequence of equations, if we assume that  $\rangle\!-\!|\!-\!|$  is being expressed via the  $\mathbf{N}^{\mathbf{Q}}$  dialectical language.

This is so because the fractional values invoked above are not expressible in that language, a language which is based upon the ‘fraction-less’ Natural Numbers,  $\mathbf{N} \equiv \{1, 2, 3, \dots\}$ .

The  $\mathbf{Q}^{\mathbf{Q}}$  or  $\mathbf{R}^{\mathbf{Q}}$  dialectical languages, based upon the “Rational” Numbers,  $\mathbf{Q}$ , and the “Real” Numbers,  $\mathbf{R}$ , respectively, might be axiomatized so as to make the expressions above also analytically well-formed.

Nevertheless, as diagram, and/or as equations, the sequence above offers us some insight into the general model of

dialectical process expressed by  $\rangle\!-\!|\!-\!|_{\tau+1} = \rangle\!-\!|\!-\!|_{\tau}^2 = \rangle\!-\!|\!-\!|_{\tau}^1 \diamond \rangle\!-\!|\!-\!|_{\tau}^1$ , in relation of Engels’s *first “law” of dialectics*, that of *the transformation of quantitative change into qualitative change*.

The key is to recall that the  $\mathbf{N}^{\mathbf{Q}}$  dialectical language is a purely-qualitative arithmetical/algebraic language, a language in which quantity, including quantitative change, and quantitative change, cannot be expressed in any direct way.

The  $\mathbf{N}^{\mathbf{Q}}$  language is a ‘contra-thesis language’, and ‘contra-language system’, to its predecessor language system, the «arché»-thesis language system, or starting language system, denoted by  $\mathbf{N}$ , in the dialectical progression of dialectical language-systems in which both occur, with  $\mathbf{N}$  and  $\mathbf{N}^{\mathbf{Q}}$  as the first and the second in that progression, respectively.

As such,  $\mathbf{N}^{\mathbf{Q}}$ , as purely-qualitative language-system, opposes  $\mathbf{N}$  as a purely-quantitative language-system.

The  $\mathbf{N}$  vestigially-dialectical language is a purely-quantitative arithmetical/algebraic language, a language in which quality, including qualitative change, and qualitative change, cannot be expressed in any direct way.

The  $\underline{N}^Q$  language is “just as” deficient in capability to express quantitative change as the  $\underline{N}$  language is deficient in capability to express qualitative change.

It is only in the *third*, and later systems of *arithmetical/algebraic dialectical language* in the *dialectical progression of dialectical language-systems* -- systems that are beyond the scope of this section -- that the “‘one-sided-nesses’”, the descriptive deficiencies of both the  $\underline{N}$  and the  $\underline{N}^Q$  systems are gradually and increasingly redressed.

However, this conceptual *dialectical opposition* [relation-symbol: ‘↔’] between  $\underline{N}$  and  $\underline{N}^Q$  --  $\underline{N} \leftrightarrow \underline{N}^Q$  -- does not mean that their relation is one of *undialectical* “radical dualism” -- that they do not “*interpenetrate*” conceptually.

*Qualitative determinations* are not *absolutely absent*, but only ‘*implicitized*’, in  $\underline{N}$ .

Models expressed in the  $\underline{N}$  language “elide” the description of *qualitative, ontological, revolutionary change*.

*Quantitative determinations* are not *absolutely absent*, but only ‘*implicitized*’, in  $\underline{N}^Q$ .

‘Meta-Models’ expressed in the  $\underline{N}^Q$  language “elide” the description of *quantitative, evolutionary change*.

The  $\underline{N}^Q$  ‘*meta-Natural meta-Numbers*’, the ‘*Peanic ordinal qualifiers*’, that reside at the heart of the  $\underline{N}^Q$  *dialectical language-system*,  $\underline{N}^Q \equiv \{ \frac{\mathbb{Q}}{1}, \frac{\mathbb{Q}}{2}, \frac{\mathbb{Q}}{3}, \dots \} \equiv \{ \mathbb{Q}_{11}, \mathbb{Q}_{22}, \mathbb{Q}_{33}, \dots \}$ , arise as the «*aufheben*» *self-subsumption* -- the *self-subordination* or *self-demotion* via ‘*self-denominatorization*’, or ‘*self-subscriptization*’ -- of the “*Natural Numbers*”,  $\underline{N} \equiv \{ 1, 2, 3, \dots \}$ , as ‘*Peanic ordinal quantifiers*’, that reside at the heart of the  $\underline{N}$ , vestigially-*dialectical language-system* --

$\underline{N}^Q \equiv \{ \frac{\mathbb{Q}}{N} \} \equiv \{ \text{the quality of first-ness, the quality of second-ness, the quality of third-ness, ...} \}$ .

So, *quantitative meanings* are still present -- latent and subsumed -- in the  $\underline{N}^Q$  expression of  $\succ\text{-}|\text{-}\zeta_{\tau}$ .

But, directly, the difference between any  $\succ\text{-}|\text{-}\zeta_{\tau}$  and its  $\succ\text{-}|\text{-}\zeta_{\tau+1}$  is a *qualitative difference* --  $\triangle\text{-}\succ\text{-}|\text{-}\zeta_{\tau}$  -- *not* a *quantitative difference*: that *difference*, the *change* from  $\succ\text{-}|\text{-}\zeta_{\tau}$  to  $\succ\text{-}|\text{-}\zeta_{\tau+1}$ , is a *qualitative change*, in the form of an *qualitative increment* of *new ontological categories*, a *qualitative growth* of the ontological possibility-cumulum of  $\succ\text{-}|\text{-}\zeta_{\tau}$ , by  $\triangle\text{-}\succ\text{-}|\text{-}\zeta_{\tau}$ , to  $\succ\text{-}|\text{-}\zeta_{\tau+1}$ .

The discrete, *dis*continuous, epochal version of *time* modeled by  $\tau \in \underline{W} \equiv \{ 0, 1, 2, 3, \dots \}$  does not enable us to *directly* describe what is “between”  $\tau$  and  $\tau+1$ , and our  $\underline{N}^Q$  ‘meta-model’ of  $\succ\text{-}|\text{-}\zeta_{\tau}$  does not enable us to *directly* describe “what happens” during the transition from  $\tau$  to  $\tau+1$ .

The *ontological possibility-cumulum* that appears at *time*  $\tau+1$ ,  $\succ\text{-}|\text{-}\zeta_{\tau+1}$ , is *qualitatively, ontologically unequal* to, and expanded in *ontological possibility* with respect to, the *ontological possibility-cumulum* that appeared at *time*  $\tau$ ,  $\succ\text{-}|\text{-}\zeta_{\tau}$ :

$\succ\text{-}|\text{-}\zeta_{\tau+1} \begin{matrix} \updownarrow \\ \updownarrow \\ \updownarrow \end{matrix} \succ\text{-}|\text{-}\zeta_{\tau}$

Implicitly, what happens “between”  $\tau$  time-value  $\tau$  and  $\tau+1$ , what goes on “during” the interval  $(\tau, \tau+1)$ , is Engels’s “**quantitative change**”, the “**quantitative growth**”, or mere “**evolution**”, the “[**quantitatively**]-self-expanding self-reproduction” of the  $\tau$  **ontology**, of the  $\tau$  **cumulum**,  $\rangle\!-\!|\!-\!|_{\tau}$ , including the increase of the measures of the ‘physical-spatial self-concentration’, or ‘self-densification’, of the growing **population-size** of the  $\langle$ monads $\rangle$ , or “**individuals**”, of the leading, or vanguard, or meristematic **ontological category/population**, or ‘**kind**- $\langle$ arithmos $\rangle$ ’, of the “**number**” of **individuals** of that leading **kind**, and, consequently, the intensifying ‘self-interaction’ of, or ‘intra-action’ within, that  $\langle$ arithmos $\rangle$ , i.e., the intensifying mutual interaction of different **individuals** of that former newest **kind** of **individuals**.

The sudden reaching and breaching of the “critical density”, of the “critical onto-mass” concentration, of the **population** of that leading, last newest **kind** of **individuals** -- of the ‘onto-mass threshold’ *at-and-after-which*  $\langle$ aufheben $\rangle$  ‘**self-meta-individual-ization**’ occurs, and gives rise to the next newest **kind** of **individuals**, the next newest ‘**kind**- $\langle$ arithmos $\rangle$ ’, i.e., to the first “**number**” of **individuals** of that next newest **kind**, the initial “**number**”, or **population**, of that now newest **kind**, and, hence, to an increment of the next newest **kind** of **ontology**, is when  $\tau$  suddenly turns into  $\tau+1$ .

Thus, **quantitative, population-size change, evolutionary change** -- **quantitative growth, population-size growth, population-size expanding** self-reproduction -- has turned into **qualitative change, ontological change, revolutionary change** -- the **revolutionary irruption** of a new **kind** of **population**, of a new **kind** of **individuals**.

The  $\mathbb{N}\mathbb{Q}$  ‘**meta-model**’ of  $\rangle\!-\!|\!-\!|_{\tau}$  *elides* -- omits any **explicit** mention of -- the **evolutionary processes** of **quantitative change** that happen “in-between”  $\tau+0$  and  $\tau+1$ , “in-between”  $\tau+1$  and  $\tau+2$ , “in-between”  $\tau+2$  and  $\tau+3$ , etc.

The  $\mathbb{N}\mathbb{Q}$  ‘**meta-model**’ jumps from **qualitative change** to next **qualitative change**, from  $\rangle\!-\!|\!-\!|_{\tau}$  to  $\rangle\!-\!|\!-\!|_{\tau+1}$  to  $\rangle\!-\!|\!-\!|_{\tau+2}$  to  $\rangle\!-\!|\!-\!|_{\tau+3}$  to ... .

To take the supreme example, the Seldonian ‘**Dialectical Theory of Everything Equation**’ jumps from **pre-nuclear** “**particles**” [e.g., **quarks**] as the leading [only] **kind** of **individuals** present in the **universe**, to **pre-atomic**/“**sub-atomic**” “**particles**” [e.g., **protons**] as the leading **kind** of **individuals** present, to **atomic nuclei** [e.g., **He<sup>++</sup>**] as the leading **kind** of **individuals** present, to **molecules** [e.g., **H<sub>2</sub>O**] as the leading **kind** of **individuals** present, to ‘**pre-eukaryotic/prokaryotic cells**’ [e.g., **bacteria**] as the leading **kind** of **individuals** present, to **eukaryotic cells** [e.g., **yeasts**] as the leading **kind** of **individuals** present, to **meta-biota** [the “**meta-phyta**” and the “**meta-zoa**”: ‘**meta-cellular**’ “**multi-cellular**” **organisms**] as the leading **kind** of **individuals** present, to ... .

The **qualitative, ontological change**,  $\triangle\rangle\!-\!|\!-\!|_{\tau}$ , that appears, that is added to  $\rangle\!-\!|\!-\!|_{\tau}$ , to form  $\rangle\!-\!|\!-\!|_{\tau+1}$ , only *at and as of* time  $\tau+1$  in such ‘meta-models’, is [self-]caused by, is the **product of**, the **self-activity of**, the **self-change of**,  $\rangle\!-\!|\!-\!|_{\tau}$ , the **self-reflexion** of  $\rangle\!-\!|\!-\!|_{\tau}$ , the **self-reflexive action** of  $\rangle\!-\!|\!-\!|_{\tau}$ , the **self-operation** of, or ‘**self-functioning**’ of, the **operator**, or **function**,  $\rangle\!-\!|\!-\!|_{\tau}$ , which is symbolized by  $\rangle\!-\!|\!-\!|_{\tau}\rangle\!-\!|\!-\!|_{\tau}$  or  $\rangle\!-\!|\!-\!|_{\tau}\langle\!-\!|\!-\!|_{\tau}\rangle$  or  $\rangle\!-\!|\!-\!|_{\tau}^1 \diamond \rangle\!-\!|\!-\!|_{\tau}^1$  or  $\rangle\!-\!|\!-\!|_{\tau}^2$ .

The merely **partial completion** of this **self-activity** of  $\rangle\!-\!|\!-\!|_{\tau}$  does not achieve the irruption, into full presence, of that **qualitative increment** of **new ontology**,  $\triangle\rangle\!-\!|\!-\!|_{\tau}$ .

E.g., neither  $\rangle\langle\!-\!|\!-\!|_{\tau}\rangle$ , nor  $\rangle\!-\!|\!-\!|_{\tau}\langle\!-\!|\!-\!|_{\tau}$ , nor  $\rangle\!-\!|\!-\!|_{\tau}\langle\!-\!|\!-\!|_{\tau}\rangle$ , nor even  $\rangle\!-\!|\!-\!|_{\tau}\langle\!-\!|\!-\!|_{\tau}\rangle$ , achieves  $\triangle\rangle\!-\!|\!-\!|_{\tau}$  as a whole-presence -- as fully-present -- within the **universe**.

Only  $\rangle\!-\!|\!-\!|_{\tau}\langle\!-\!|\!-\!|_{\tau}\rangle$  as a whole, as completed, achieves  $\triangle\rangle\!-\!|\!-\!|_{\tau}$  as a whole, and thus also  $\rangle\!-\!|\!-\!|_{\tau+1}$ , as completed.



The intermediate stages, between *no part of*  $\rangle\text{-|-\langle}_t$  as yet ‘intra-acting’ on a newly-formed  $\rangle\text{-|-\langle}_t$ , and *all of*  $\rangle\text{-|-\langle}_t$  ‘intra-acting’ within  $\rangle\text{-|-\langle}_t$ , i.e., *within itself*, thus precipitating  $\rangle\text{-|-\langle}_{t+1}$  as the newly-formed, ‘not-yet-self-intra-acted’ *ontology-cumulum*, suffices to bring out  $\triangleleft\text{-|-\langle}_t$  as a fully-present, *qualitative change* embodying, *ontological change* embodying increment of new ‘onto-types’.

The  $\mathbb{N}\mathbb{Q}$  ‘meta-model’ of  $\rangle\text{-|-\langle}_t$  thus *explicitly* records *only* the results of the *revolutionary processes*, of *qualitative, ontological change*, that results from, and that is caused by, those *implicit*, intervening periods of *quantitative, evolutionary change*, of the *quantitatively self-expanding self-reproduction* of the leading *kind* of ‘onto-mass’.

But, given an awareness, and an interpretation, of the implicit *quantitative change* mediating the “*qualitative leaps*” from  $\rangle\text{-|-\langle}_t$  to  $\rangle\text{-|-\langle}_{t+1}$ , etc., we see that  $\rangle\text{-|-\langle}_{t+1} = \rangle\text{-|-\langle}_t^1 \rangle\text{-|-\langle}_t^1 = \rangle\text{-|-\langle}_t^2 = \rangle\text{-|-\langle}_t \oplus \triangleleft\text{-|-\langle}_t$  is a formulation of Engels’s “‘*law of the transformation of quantitative change into qualitative change*’” -- by means of the ‘self-action’, or ‘self-intra-action’, of the  $\rangle\text{-|-\langle}_t$  *ontology-cumulum*, e.g., in the more concrete context of *natural-historical dialectic*, i.e., in the more concrete context of the cosmological ‘*Dialectic of Nature*’ as a whole, as described by the Seldonian ‘*Dialectical Theory of Everything Equation*’.

## 2. Interpenetration of Opposites. ‘*Outering* the formerly occluded *Inner Dual*’ [actualization of ‘allo-potentiality’].

$$\rangle\text{-|-\langle}_{t+1} = \rangle\text{-|-\langle}_t \langle \triangleleft\text{-|-\langle}_t \rangle = \rangle\text{-|-\langle}_t \oplus \triangleleft\text{-|-\langle}_t \mid \rangle\text{-|-\langle}_t \nmid \triangleleft\text{-|-\langle}_t \quad \& \quad \rangle\text{-|-\langle}_t \nmid \triangleleft\text{-|-\langle}_t, \text{ so}$$

$$\rangle\text{-|-\langle}_{t+1} = \rangle\text{-|-\langle}_t \langle \triangleleft\text{-|-\langle}_t \rangle = \nmid \langle \triangleleft\text{-|-\langle}_t \rangle = \rangle\text{-|-\langle}_t \nmid \oplus \triangleleft\text{-|-\langle}_t$$

$$\triangleleft\text{-|-\langle}_t \sqsubset \rangle\text{-|-\langle}_{t+1} = \rangle\text{-|-\langle}_t \oplus \triangleleft\text{-|-\langle}_t, \text{ explicitly, but also --}$$

$$\triangleleft\text{-|-\langle}_t \sqsupset \rangle\text{-|-\langle}_t, \text{ implicitly.}$$

For **F.E.D.**, “‘*dialectical contradiction*’” is a matter of what we call ‘*intra-duality*’, ‘*self-duality*’, or ‘*indivi[sible]-duality*’, for those of our terms for such, which have a more ‘statical-sounding’ connotation, or ‘*intra-contra-kinesis*’, ‘*intra-dia-kinesis*’, ‘*endo-duo-kinesis*’, or ‘*intra-contra-«dynamis»*’, for those of our terms for such, which have a more apt, dynamical connotation.

The reader of section **2.**, of Part **II.**, above, can visualize, with ‘vividity’, the intension of a turgid technical term like ‘*intra-contra-kinesis*’, by the example of that section, of the organism a star, as a *dialectical* “‘*complex unity*’” of an overwhelming, continuing self-gravitational *implosion* and of a colossal thermonuclear *explosion*, at the *macro*cosmic level, opposing one another at every point within the star [sometimes called “hydrostatic equilibrium”], both arising from the very body of the star itself, and tied to the *opposition* between the core protons’ mutually attracting nuclear force, and mutually repelling electrostatic force, at the *micro*cosmic level, both forces arising from the self-same core protons.

That is, “‘*dialectical contradiction*’” is *not* a matter of two opposing, mutually external forces, conceived as radically separate and unconnected to any common source; is *not* a matter of ‘*exo*-duals,’ or of ‘*exo*-dualisms’.

For **F.E.D.**, “‘*dialectical contradiction*’” is “‘*internal contradiction*’”; “‘*self-contradiction*’”, inside a single *totality*.

This connects also to the question as to what constitutes “‘*opposition*’” in the *dialectical* sense of that term.

For **F.E.D.**, “‘*dialectical opposition*’”, also, is “‘*internal opposition*’”; ‘*self-opposition*’; ‘*self-antithesis*’.

The very form of our *fundamental equation of dialectic*,  $\underline{\tau} = \underline{\tau} \langle \underline{\tau} \rangle$  or just  $\underline{\tau} = \underline{\tau} \underline{\tau}$  -- and the implied assertion that  $\underline{\tau} \rightarrow \underline{\tau} \underline{\tau}$  as  $\tau \rightarrow \tau+1$  -- is an implicit assertion of such '*self-opposition*'.

In  $\underline{\tau} \underline{\tau}$ , the  $\underline{\tau}$  is *posited* "'op"' itself, is "'op"' *posited* to itself; is thus posited *twice*; is posited *dually*.

The '*intra*-duality' of  $\underline{\tau}$  is thus already *outered* in ' $\underline{\tau} \rightarrow \underline{\tau} \underline{\tau}$  as  $\tau \rightarrow \tau+1$ '.

The syntactical 'self-juxtapositioning' of  $\underline{\tau}$  thus also represents its [self] cause, its [self] driver, its "'self-force'", and its 'self-operation' -- the "'*self-contradiction*'" -- that generates its *dialectical motion*, its *self-movement*, from '*ontological-possibility-state*'  $\underline{\tau}$  to '*expanded ontological-possibility-state*'  $\underline{\tau+1}$ .

Its self-action does not leave it the same, does not leave it unchanged. It is thus *not* in '*self-equilibrium*'.

This dual positing of  $\underline{\tau}$ , this 'self-juxtapositioning' of  $\underline{\tau} \underline{\tau}$  --  $\underline{\tau} \underline{\tau}$  -- also implicitly asserts a temporal process of explicitization of an 'intra-duality', of a 'self-duality', one that is only implicit, or only inner, or only invisible as of  $\tau$ , but which has become fully "'outered'" and manifest as of  $\tau+1$ :  $\underline{\tau} \rightarrow \underline{\tau} \underline{\tau}$  as  $\tau \rightarrow \tau+1$ .

And to what does this 'self-duality' lead; in what does it result -- i.e., to what does this self-juxtapositioning equate?

It equates to the emergence, and to the adding, by action of itself, to the prior contents of the *cosmos*, i.e., to itself, of an outer *other*,  $\underline{\tau}$ , of an *other* to *itself*,  $\underline{\tau}$ , born from out of *itself*,  $\underline{\tau}$ :

$$\underline{\tau+1} = \underline{\tau} \langle \underline{\tau} \rangle = \underline{\tau} \oplus \underline{\tau}$$

That is, this outer other,  $\underline{\tau}$ , this outer dual, fully manifest in epoch  $\tau+1$ , is the outering of the inner dual, of the hidden dual, of the suppressed dual, of the unmanifest dual, of epoch  $\tau$ .

In the domain of 'physio-dialectic', of "'physical dialectics'", of 'pre-mental nature-dialectic', the other of  $\underline{\tau}$ , named  $\underline{\tau}$ , may not always feel like a/the 'qualitative opposite' of  $\underline{\tau}$ , to human perception, but it will always manifestly be an other to  $\underline{\tau}$ , qualitatively, ontologically different from  $\underline{\tau}$ , a kind of thing different in kind from the kind of  $\underline{\tau}$ .

This otherness of  $\underline{\tau}$ , named  $\underline{\tau}$ , in 'physio-dialectic', represents a *potential* that was already present in  $\underline{\tau}$  in epoch  $\tau$ , but that could not become *actualized* until  $\tau+1$ , as the  $\underline{\tau}$  in  $\underline{\tau+1}$  or  $\underline{\tau}^2$ .

To take the supreme example, the example of the *cosmos* as a whole as ultimate *dialectical totality*, per the Seldonian '*Dialectical Theory of Everything Equation*' --

The *potential* mutual affinity by which *pre-nuclear "particles"* [e.g., *quarks*] were capable of binding one another together into *pre-atomic*/*"sub-atomic"* "*particles*" [e.g., *protons*], was already present, as a *potential*, in cosmological epoch  $\tau = 0$ , but could only become *actualized*, visibly and manifestly as such, in cosmological epoch  $\tau = 1$ .

Likewise, the *potential* mutual affinity by which *pre-atomic*/*“sub-atomic”* *“particles”* were capable of binding one another together into *atomic nuclei* [e.g.,  $\text{He}^{++}$ ], was already present, as a *potential*, in cosmological epoch  $\tau = 1$ , but could only become *actualized* as such in cosmological epoch  $\tau = 2$ .

Again, the *potential* mutual affinity by which *atomic nuclei* were capable of binding one another together into *molecules* [e.g.,  $\text{H}_2\text{O}$ ], was already present, as a *potential*, in cosmological epoch  $\tau = 2$ , but could only become *actualized* as such in cosmological epoch  $\tau = 3$ .

Further, the *potential* mutual affinity by which multitudes of *molecules* were capable of binding one another together into *‘pre-eukaryotic/prokaryotic cells’* [e.g., *bacteria*], was already present, as a *potential*, in cosmological epoch  $\tau = 3$ , but could only become *actualized* as such in cosmological epoch  $\tau = 4$ .

Moreover, the *potential* mutual affinity by which *‘pre-eukaryotic/prokaryotic cells’* were capable of binding one another together into *eukaryotic cells* [e.g., *yeasts*], was already present, as a *potential*, in cosmological epoch  $\tau = 4$ , but could only become *actualized* as such in cosmological epoch  $\tau = 5$ .

Finally, for this example, the *potential* mutual affinity by which *eukaryotic cells* were capable of binding one another together into *meta-biota* [into the *“meta-phyta”* and the *“meta-zoa”*: into *‘meta-cellular’* *“multi-cellular”* *organisms*], was already present, as a *potential*, in cosmological epoch  $\tau = 5$ , but could only become *actualized* as such in cosmological epoch  $\tau = 6$ .

3. *Dialectical [Self-]Negation of [the Self-]Negation*. ‘Re-Self-Operation’ of the Results of the Preceding Self-Operation’.

$$\underbrace{\rangle\!-\!|\!-\langle}_{\tau}\!-\!|\!-\langle}_{\tau} = \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} \rangle \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} \rangle = \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \rangle \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \rangle$$

Per the Seldonian ‘*Dialectical Theory of Everything Equation*’ version of  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}$ , each value of each  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}$  -- one value for each *epoch* of *cosmos self-development*; for each value of  $\tau$  -- is a ‘natural-historically-specific’ «*aufheben*»-operator, a particular and unique ‘*self-transformation*’ in all of *the history of nature*; a particular ‘*determinate-negator*’, one that will, at the threshold of the next epoch, produce a particular case of cosmological-ontological change *in and to itself*.

Moreover, its specific, determinate «*aufheben*»-*negation of itself*,  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}\!-\!|\!-\langle}_{\tau}$ , produces not only the *next* state of the ontology of the *universe*, but also the *next* new, *universal*, unique, specific, determinate «*aufheben*»-*negation* operator.

And, just as every value of  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}$  for  $\tau > 0$ , is destined to be a dialectical negation operation, or self-change operation, *for itself*, so that the ‘*ontological-possibility-cumulum*’ of its *successor* epoch,  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau+1}$  is generated by, is made from, is constituted as, a [natural-]historically-specific ‘*Negation Negation*’, ‘*Negation(Negation)*’, or ‘*Negation of Negation*’, i.e. --  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau+1} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau}\!-\!|\!-\langle}_{\tau}$  -- so that each  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau+1}$  “contains”, and “is constituted by”, a “*Negation of the Negation*”, so too, in turn, is  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}$  generated by, made from, and constituted as, a [natural-]historically-specific ‘*Negation Negation*’, ‘*Negation(Negation)*’, or ‘*Negation of Negation*’, i.e. --  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1}$ , so that, in turn,  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau+1}$  can be ‘re-grasped’/‘re-minded’ as ‘*The Negation of the Negation (of The Negation of the Negation)*’, and so on back, until  $\tau = 0$  is reached:  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}\!-\!|\!-\langle}_{\tau} = \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} \rangle \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} \rangle$ .

Finally, we note that  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$ , so that the ‘*dialectical self-negation*’ that constitutes  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}$  contains [  $\square$  ], as part of itself, the ‘*dialectical self-negation*’ of the *specific* “other” of  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$ , named  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$ , so that part of  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau}$  is ‘*the other of the other of*  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$ ’, named  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$  --

[given that  $\underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}^2 = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$ ]:

$$\underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}\!-\!|\!-\langle}_{\tau-1} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}^2 \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \oplus \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} = \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \oplus \langle \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1} \rangle \square \underbrace{\rangle\!-\!|\!-\langle}_{\tau-1}$$

To take, once again, the supreme example, the Seldonian ‘*Dialectical Theory of Everything Equation*’, up to epoch  $\tau = 5$ : It encompasses *atomic nuclei* [e.g.,  $\text{He}^{++}$ ], as ‘*the other of the other*’ of *pre-nuclear* “particles” [e.g., *quarks*], and then *molecules* [e.g.,  $\text{CO}_2$ ], as ‘*the other of the other*’ of *pre-atomic*/“*sub-atomic*” “particles” [e.g., *protons*], and then ‘*pre-eukaryotic/prokaryotic cells*’ [e.g., *bacteria*], as ‘*the other of the other*’ of *atomic nuclei*, and then *eukaryotic cells* [e.g., *yeasts*], as ‘*the other of the other*’ of *molecules*, and then *meta-biota* [the “*meta-phyta*” and the “*meta-zoa*”: ‘*meta-cellular*’ “*multi-cellular*” *organisms*] as ‘*the other of the other*’ of ‘*pre-eukaryotic/prokaryotic cells*’.

The remarks above in this section also apply, with ‘*meta-fractal self-similarity*’, to all of the myriad less-than-supreme examples as well, i.e., to the Seldonian ‘*Meta-Models*’ of all of the ‘*sub<sup>n</sup>-universes*’, or ‘*sub<sup>n</sup>-totalities*’, of the *universe* as *maximal totality*.