F.E.D. Preface to E.D. Brief #6, on the $_{W}Q$, by Guest Author "J2Y"

by *Hermes de Nemores*, General Secretary to the F.E.D. General Council

Summary. Our new guest author, known pseudonymously as "Joy-to-You", and whom I shall reference herein, using the nickname with which he often references himself in our correspondence -- "J2Y" -- has provided to you, our readers, *a new, short* [just **8** pages], *and highly-accessible «**entrée**»* into the ***second stage*** of the F.E.D. '***First Dialectical Arithmetic***', the $_{W}Q$ axioms-system of ***dialectical arithmetic***, with its *core* set, or space, of ***dialectical***, '***W**hole-numbers-based, purely-qualitative meta-numbers*' --

$$_{W}Q \equiv \{\, q_0,\ \underline{q}_1,\ \underline{q}_2,\ \underline{q}_3,\ \ldots \,\}.$$

What J2Y has accomplished for you is to develop a *single* new '''*idea-object*''', denoted $\underline{C}_{W}$, with which he shows how to *co-generate*, in a coordinated way, key new features of the $_{W}Q$ axioms-system, which are not ["yet"] extant in the $_{N}Q$ axioms-system. He does so by way of subsuming, into a "pure-**q**ualifiers" arithmetic, the "purely-quantitative" arithmetic of the Standard **W**hole Numbers[, the numbers contained in the set $W \equiv \{\, 0,\ 1,\ 2,\ 3,\ \ldots \,\}$], showing how to ***unify*** some of the *core* novel characteristics of the $_{W}Q$ axioms-system of "purely-**q**ualitative", ***dialectical arithmetic***.

Background. F.E.D. presents the system*s*-progression of the '***Gödelian Dialectic***' of the axioms-systems of the ***standard*** arithmetics, in their first-order-and-higher-logics' axiomatizations, in accord with a Dyadic Seldon Function '***meta-model***' which describes -- ideographically, and "purely-***qualitatively***" -- a '***Meta-Systematic Dialectical***' ***order-of-presentation***, and ***dialectical method-of-presentation***, of those successive systems of arithmetic. Using the notational convention that, if $\mathbf{X}$ denotes the standard number-space, or number-set, of a given kind of standard number, then that symbol, with a single underscore, and a $\#$ superscript, $\underline{X}^{\#}$, will be used to denote its first-*and-higher-order*-logic axiomatization [except that «***arché***» or starting systems are denoted by $\underline{X}_{\#}$], that F.E.D. ***order-of-presentation*** can be expressed as follows --

$$\underline{N}_{\#} \twoheadrightarrow \underline{W}^{\#} \twoheadrightarrow \underline{Z}^{\#} \twoheadrightarrow \underline{Q}^{\#} \twoheadrightarrow \underline{R}^{\#} \twoheadrightarrow \underline{C}^{\#} \twoheadrightarrow \ldots$$

-- and the Dyadic Seldon Function-based '***dialectical meta-model***' which generates that progression is --

$$\underline{)\!H\!(}_{s_{\#}\uparrow} = \left(\, \underline{N}_{\#} \,\right)^{2^{s_{\#}\uparrow}}.$$

Connected with the above-rendered ***order-of-presentation***, F.E.D. presents the ***dialectical progression*** of the particular «***species***» of *first*-order-logic-*only* axiomatized ***dialectical arithmetics***, that reside '''inside''' the «***genos***» of F.E.D.'s Q '***First Dialectical Arithmetics***', in a corresponding order --

$$_{N}\underline{Q}_{\#} \twoheadrightarrow {}_{W}\underline{Q}^{\#} \twoheadrightarrow {}_{Z}\underline{Q}^{\#} \twoheadrightarrow {}_{Q}\underline{Q}^{\#} \twoheadrightarrow {}_{R}\underline{Q}^{\#} \twoheadrightarrow {}_{C}\underline{Q}^{\#} \twoheadrightarrow \ldots$$

-- and the Dyadic Seldon Function-based '***dialectical meta-model***' which generates that progression is --

$$\underline{)\!H\!(}_{s_{\#}\uparrow} = \left(\, {}_{N}\underline{Q}_{\#} \,\right)^{2^{s_{\#}\uparrow}}.$$

In E.D. ***Brief #5***, J2Y gave you his able and novel derivation of the $_{N}Q$, basing the ***first stage*** of the ***dialectic*** of the Q. In new E.D. ***Brief #6***, he provides his innovative derivation of the $_{W}Q$, basing the ***second stage*** of the ***dialectic*** of the Q! Next, in E.D. ***Brief #7***, he plans to present for you a pathway to the $_{Z}Q$, basing the ***third stage*** of the ***dialectic*** of the Q!

The axioms of *the core axioms sub-set* of the F.*E*.*D*. $_{w}Q$ axioms-system for ***dialectical arithmetic*** are as follows --

(§1) $q_0 \in {}_{w}Q$ [the axiom of «*arché*» inclusion].

(§2) $[\forall w \in W][\,[q_w \in {}_{w}Q] \Rightarrow [sq_w = q_{w+1} \in {}_{w}Q]\,]$ [the axiom of inclusion of $_{w}Q$ qualifiers' ontological successors].

(§3) $[\forall j, k \in W][\,[\,[[q_j, q_k \in {}_{w}Q] \,\&\, [q_j \neq q_k]] \Rightarrow [sq_j \neq sq_k]\,]\,]$ [axiom of $_{w}Q$ successor ***uniqueness***].

(§4) $[\forall x \in W][\,\neg[\exists q_x \in {}_{w}Q] \mid [sq_x = q_0]\,]$ [the axiom of the $_{w}Q$ '***archéonicity***' of the «***arché***»].

(§5) $[\forall w \in W][q_w \in {}_{w}Q]$ [the axiom of «***aufheben***» *connexion*, or of ***subsumption*** [of the ***subsumption*** of the W by the $_{w}Q$]].

(§6) $[\forall j, k \in W][\,[j \gtrless k] \Rightarrow [q_j \neq q_k]\,]$ [the axiom of the ***qualitative uniqueness*** of distinct W-based ontological ***qualifiers***].

(§7) $[\forall w \in W][q_w + q_w = q_w]$ [axiom of $_{w}Q$ *idempotent addition*, or of ***ontological category*** [ontological qualifier] '***unquantifiability***'].

(§8) $[\forall\, i, j, k \in W - \{0\}][\,[j \gtrless k] \Rightarrow [q_j \pm q_k \neq q_i]\,]$ [the axiom of ***irreducibility*** for W-based ***qualitative sums***].

(§9) $[\forall\, j, k \in W][q_j \times q_k = q_k + q_{k+j}]$ [the axiom of *the* ***double***-«***aufheben***» *evolute product rule* for $_{w}Q$ qualifier multiplication].

(§10) $[\forall\, j, k \in W][q_j + q_k = q_j + q_k]$ [the axiom of *additive commutativity* of W-based ***qualitative*** / ***qualifier sums***].

(§11) $[\forall\, w \in W][q_w + q_0 = q_0 + q_w = q_w]$ [the axiom of the *additive identity element* for the W-based ***qualifiers*** space].

(§12) $[\forall\, w \in W][q_w - q_w = q_0]$ [the axiom of the ***self-differences*** closure of the W-based ***qualifiers*** space].

-- wherein s denotes the "Peano successor operator", $s(w) = w + 1$, and wherein s denotes the $_{w}Q$ version of that successor function, $s[q_w] = q_{s(w)} = q_{w+1}$.

Each successor-system in the '***Gödelian Dialectic***' of the F.*E*.*D*. axioms-systems progression --

$_{N}Q_{\#} \rightarrow\!\!\ni {}_{w}Q^{\#} \rightarrow\!\!\ni {}_{z}Q^{\#} \ldots$

is *more complex*, more '''[*thought-*]*concrete*''', and more *"definite"* -- richer in *"determinations"*, in *"features"*, in *'ideo-ontology'* -- than are its predecessor-systems, and hence is also richer in ideographical-linguistic expressive and descriptive capabilities and facilities than they are. Each successor-system also «***aufheben***»-'"***contains***"', «***aufheben***»-'"***elevates***"', and «***aufheben***»-***transforms***/-'"***negates***"' ***all*** of its predecessor-systems, and constitutes a '"conservative extension"' of its *immediate* predecessor-system.

Corresponding to the first three stages of F.*E*.*D*.'s ***dialectical presentation*** of the progression ***within*** Q, expressed above, is that, to stage $s_{\#} = 3$, of F.*E*.*D*.'s ***dialectical presentation*** of the standard systems of arithmetic:

$\underline{)\!H\!(}_{s_{\#}=0} = (N_{\#})^{2^0} = N_{\#}$; with '$-\!\!\oplus\!\!-$' signing '*antagonistic addition*'/'*summings of **opposite** qualities*' --

$\underline{)\!H\!(}_{s_{\#}=1} = (N_{\#})^{2^1} = N_{\#} -\!\!\oplus\!\!- A^{\#}$, wherein A denotes the "Aught"-numbers, $A \equiv \{[\forall n \in N][n - n]\}$;

$\underline{)\!H\!(}_{s_{\#}=2} = (N_{\#})^{2^2} = N_{\#} \oplus A^{\#} \oplus q_{AN}{}^{\#} -\!\!\oplus\!\!- M^{\#} \equiv W^{\#} -\!\!\oplus\!\!- M^{\#}$; $q_{AN}{}^{\#}$ unifying $A^{\#}$ & $N_{\#}$;

$M \equiv$ the "Minus" numbers;

$\underline{)\!H\!(}_{s_{\#}=3} = (N_{\#})^{2^3} = N_{\#} \oplus A^{\#} \oplus q_{AN}{}^{\#} \oplus M^{\#} \oplus q_{MN}{}^{\#} \oplus q_{MA}{}^{\#} \oplus q_{MAN}{}^{\#} -\!\!\oplus\!\!- F^{\#} \equiv Z^{\#} -\!\!\oplus\!\!- F^{\#}$,

wherein $q_{MN}{}^{\#} \oplus q_{MA}{}^{\#} \oplus q_{MAN}{}^{\#}$ reconcile $M^{\#}$ with $N_{\#} \oplus A^{\#} \oplus q_{AN}{}^{\#}$,

& with $F \equiv$ the Fractional Numbers, $\{[\forall z_j < z_k \neq 0 \in Z][z_j/z_k]\}$.