

Encyclopedia Dialectica's 'Organonic Algebraic Method' for Solving 'Dialectical-Algebraic [Meta-]Equations'.

This extended definition is for the purpose of spelling-out the recipe -- the “algorithm” -- that we apply in solving ‘dialectical [meta-]equations’ of the “‘systematic-dialectical’” and ‘meta-systematic-dialectical’ kinds.

This algorithm is called, by **F.E.D.**, the ‘Organonic Algebraic Method’.

The term ‘organonic’ in the phrase ‘Organonic Algebraic Method’ hails from an old Greek term, «*organon*», meaning “instrument of thought or of knowledge”, ‘tool of cognition’, ‘organ of mind’, or “‘system of rules or principles of demonstration or investigation’”.

The purpose of this ‘pure-*ideo*-ontological’ branch of the larger ‘Organonic Algebraic Method’ that we will define herein is to provide heuristic, “rule-of-thumb” support for the users of the **N_Q** dialectical arithmetic when they use it to model “pure” *ideo*-systems’.

More precisely, this method provides checklists, hints, and clues, that can help to advance such a user’s cognitive grasp of a Dyadic Seldon Function ‘meta-model’.

Such a user may initially have clarity on as little as the «*arché*» term of such a ‘meta-model’, plus on the epithet(s) of that «*arché*» only.

The Method’s support elements may aid a user to move cognitively from the ‘meta-model’ for the simplest, most abstract, most generic pattern of the dialectic, as given by --

$$\underline{\mathbb{H}}_{h\uparrow} = \left[\left[\mathbb{1}_1 \right] \right]^{2^{h\uparrow}}$$

-- to the more complex, more ‘thought-concrete’, more specific pattern implicit in a ‘meta-model’ of the form --

$$\underline{\mathbb{H}}_{\substack{n \\ u}}^x \left(\substack{x \\ s_x} \right) \uparrow = \left(\substack{n \\ u} \alpha_x \right) \uparrow^{2^{s_x \uparrow}}$$

-- if the user already knows at least the “‘values’” / meanings of **n**, **u**, and **x**, and of $\substack{n \\ u} \alpha_x$ [the «*arché*» term], and of the **s_x = 0** value of that ‘meta-model’, the ‘meaning-value’ of the «*arché*» in and by itself.

A schematic summary of this ‘Organonic Algebraic Method’, in the form of a diagram, is provided below.

The rest of this text is devoted to a narrative rendition of the algorithm that this ‘algorithm diagram’ depicts.

Both employ the “is equal to **by definition**” *relation* sign, ‘≡’, as a definition *operator* sign, such that ‘≡(**a**)’ means ‘the definition of **a**’, and such that ‘⊢. ≡(**a**)’ asserts [⊢.] that ‘a definition of **a** already exists for the user / is extant for the user, is known by the user, or has been discovered by the user’.

Algorithm Narrative.

A. Process Alpha: START.

α. GIVEN(s): The following two conditions must be given. Other givens may also apply, in particular cases.

α.1. $s_x = 0$: the step parameter is “‘initialized’” to the «arché» step, whose value is the «arché» term alone --

$$\mathbb{Q}_{\perp_1} \in \exists \binom{n}{u} \mathbb{H}(\overset{x}{0}) = \binom{n}{u} \alpha_x.$$

α.2. A definition of the «arché» term, $\binom{n}{u} \alpha_x$, is known to the user --

$$\vdash \exists \binom{n}{u} \mathbb{H}(\overset{x}{0}).$$

β. COMPUTE:

β.1. $w = 2^{s_x}$: compute current value of loop control parameter, **w**, as indicated function of current value of s_x .

β.2. Square the Seldon Function value for the current value of s_x , to obtain its value for next value of s_x , $s_x + 1$ --

$$\binom{n}{u} \mathbb{H}(\overset{x}{s_x})^2 = \binom{n}{u} \mathbb{H}(\overset{x}{s_x+1}) = \binom{n}{u} \mathbb{H}(\overset{x}{s_x}) \oplus \Delta \binom{n}{u} \mathbb{H}(\overset{x}{s_x})$$

-- which stands for an ‘antithesis-sum’, that is, for an ‘oppositional addition’ of the first, un-negated, un-elevated, ‘Boolean’ conservation term of the right-most “side” of the equation above, ‘opposed/added’ to the second, ‘delta’ (Δ) term, of that rightmost “side”.

β.3. Reset the current value of s_x , to its next / Peano successor value, $s_x + 1$.

γ. COMPUTE:

γ.1. Reset the current value of **w**, to its next / Peano successor value, $w + 1$.

δ. DECIDE: ¿Is **w** greater than 2^{s_x} ?

δ.1. If answer to question **δ** is **YES**, go to Process **ι**.

δ.2. If answer to question **δ** is **NO**, go to Process **ε**.

ε. DECIDE: ¿Is the **w**th term in $\Delta \binom{n}{u} \mathbb{H}(\overset{x}{s_x})$ a ‘self-hybrid’ term?

Commentary: A ‘self-hybrid’ term denotes a ‘contra-thesis’, ‘contra-category’, ‘contra-system’, or counter-example.

It is of the form $\mathbb{Q}_{\perp_2^{s_x}}$ in the generic, minimally-interpreted arithmetic, and is of the form $\binom{n}{u} \mathbb{Q}_{\perp_{YY}^x}$ in the

interpreted / assigned arithmetic / algebra, where $\binom{n}{u} Y_x$ is the already known, just-prior-step’s ‘self-hybrid’ term.

ε.1. If answer to question **ε** is **YES**, go to Process **η**.

ε.2. If answer to question **ε** is **NO**, go to Process **ζ**.

ζ. DECIDE: ¿Does user know of an apt definition for the “‘hybrid’” algebraic term mapped to the arithmetical \mathbb{Q}_{\perp_w} ?

I.e.: $\exists \left(\left(\frac{n}{u} \text{Y} \right) \right) \mapsto \frac{n}{u} \text{X} \dots ?$

I.e.: Can the user define this **W**th term, either because its meaning is given, or via the generic clues listed below? --

- This term aptly represents the '*complex unification*', *dialectical synthesis*, or *reconciliation* of $\frac{n}{u} \text{Y}$ and/or with $\frac{n}{u} \text{X} \dots$;
- This term aptly represents the "'*real subsumption*'", *assimilation*, *adjustment*, or *adaptation* of $\frac{n}{u} \text{X} \dots$ by/to $\frac{n}{u} \text{Y}$;
- This term aptly represents the *conversion*, by $\frac{n}{u} \text{Y}$, of [some of] the units constituting $\frac{n}{u} \text{X} \dots$ into units of $\frac{n}{u} \text{Y}$;
- This term aptly represents the *appropriation*, or *subordination*, by $\frac{n}{u} \text{Y}$, of [[some of] the units constituting] $\frac{n}{u} \text{X} \dots$;
- This term aptly represents *hybridization* / formation of '*hybrid units*', hybridizing units of $\frac{n}{u} \text{X} \dots$ with units of $\frac{n}{u} \text{Y}$.

ζ.1. If answer to question ζ is **YES**, go to Process θ.

ζ.2. If answer to question ζ is **NO**, go to Process γ.

η. DECIDE: Can user know of an apt definition for the '*self-hybrid*' algebraic term mapped to the arithmetical $\frac{n}{u} \text{Y}$?

I.e.: $\exists \left(\left(\frac{n}{u} \text{Y} \right) \right) \mapsto \frac{n}{u} \text{Y} ?$

I.e.: Can the user define this **W**th term, either because its meaning is given, or via the generic clues listed below? --

- This term aptly represents the *immanent critique*, *self-critique*, *self-reflexion*, *self-inspection*, or «*aufheben*» *self-negation* of $\frac{n}{u} \text{Y}$;
- This term aptly represents '*self-subsumption*', '*self-incorporation*', or '*self-internalization*' of $\frac{n}{u} \text{Y}$;
- This term signs "'*self-re-entry*'" of logical-individuals / units / elements of $\frac{n}{u} \text{Y}$, generating $\frac{n}{u} \text{Y}$ $\frac{n}{u} \text{Y}$ $\frac{n}{u} \text{Y}$;
- This term aptly represents the '*self-conversion*', by $\frac{n}{u} \text{Y}$, of [some of the] units constituting $\frac{n}{u} \text{Y}$;
- This term aptly represents the '*self-appropriation*', by $\frac{n}{u} \text{Y}$, of [some of the] units constituting] $\frac{n}{u} \text{Y}$;
- This term aptly represents formation of '*meta-units*' of $\frac{n}{u} \text{Y}$ units, each made up out of a multiplicity of $\frac{n}{u} \text{Y}$ units.
- The term $\frac{n}{u} \text{Y}$ is a '*supplementary opposite*' of the term $\frac{n}{u} \text{Y}$;
- The term $\frac{n}{u} \text{Y}$ "'*outers*'"/externalizes/'explicitizes' an *inner/internal/implicit duality* of the term $\frac{n}{u} \text{Y}$;

η.1. If answer to question η is **YES**, go to Process θ.

η.2. If answer to question η is **NO**, go to Process γ.

θ. NAMING: The user "'names'" this **W**th term, by means of a single-letter '*mnemonic epithet*', taken from the phrase or word which most aptly describes the meaning of this term to the best present knowledge of the user.

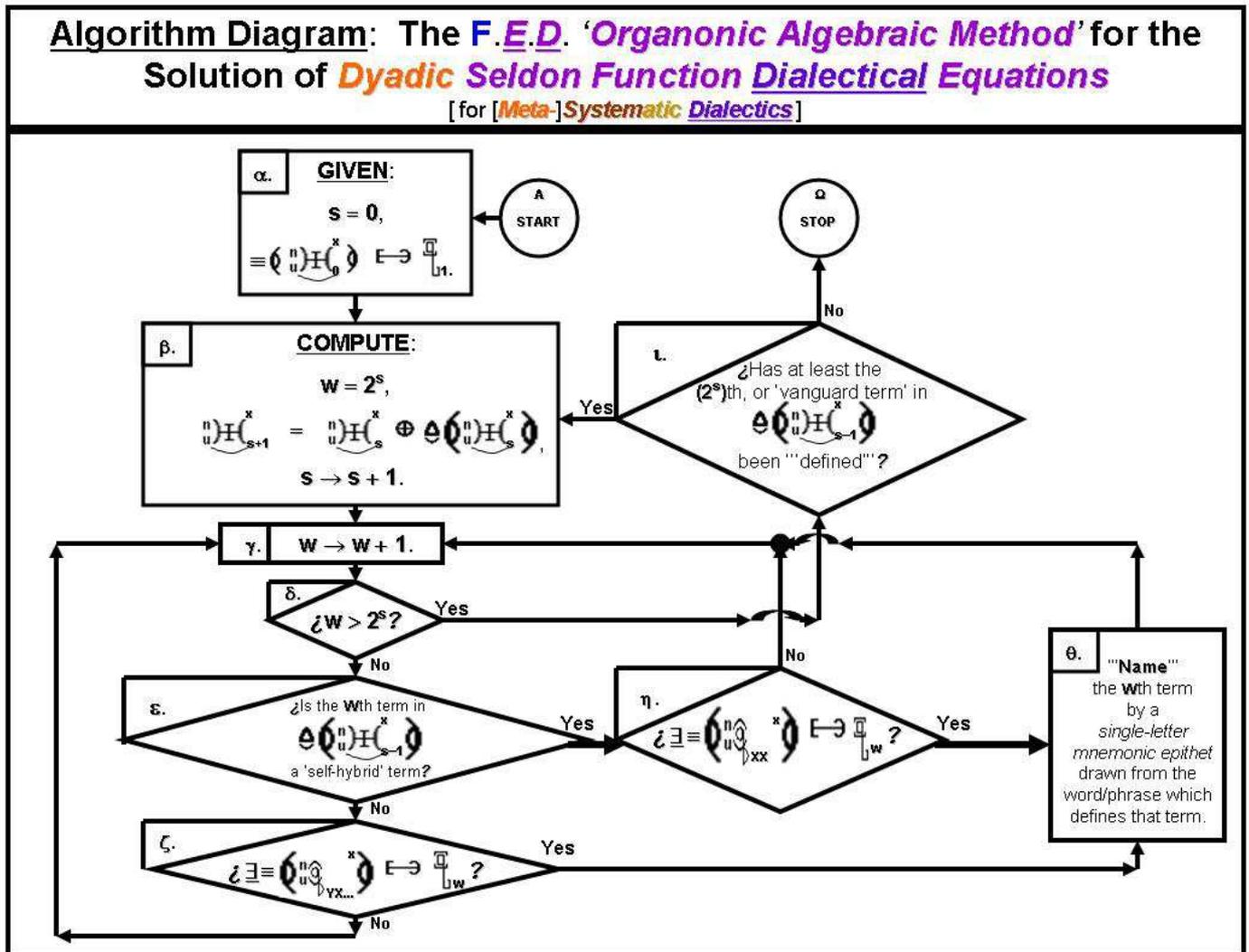
Then shift control to Process γ.

1. **DECIDE:** ζ Has at least the $(2^s)^{\text{th}}$ ‘vanguard term’, or ‘meta-meristematic’/highest term, in $\Theta(\overset{n}{u})\overset{x}{H}_s$ been “‘solved for’” / ‘semantified’ / ceased to be “unknown” / determined as to its meaning to user’s satisfaction?

1.1. If answer to question 1. is **YES**, go to Process β .

1.2. If answer to question 1. is **NO**, go to Process Ω .

Ω . Process Omega: **STOP**.



The *Encyclopedia Dialectica* ‘Organonic Algebraic Method’ for solving ‘Dialectical [Meta-]Equations’ is *not* entirely the same for solving [Meta-]Systematic-Dialectical Equations, as it is for solving -- for the ‘semantification’ of the terms of -- [Psycho]Historical-Dialectical Equations.

‘Organonic Algebraic Method’, as applied to the ‘Purely Qualitative [Meta-]Equations’ of [Psycho]Historical-Dialectics, to the solution / ‘semantification’ of each term of the progression-series / “non-amalgamative sum” [Musès] generated for each epoch, τ , by a ‘Dyadic Seldon Function meta-model’ of that [Psycho]Historical-Dialectic, is a matter of mapping / correlating each term to its *physically evident counterpart(s)* in the empirical, phenomenal world, *if any such counterpart is known*, and also with *term order matching chronological order*.

This same ‘Organonic Method’, but as applied to [*Meta*-]*Systematic-Dialectical*, “‘Method-of-Presentation’” ‘[Meta-]Equations’, typically involves *pedagogical license*, and *pedagogical choices*, via stipulated pre-assignments of the meanings of at least the «*arché*»-category term, and perhaps also of *some* of the ‘*contra-category*’ terms, and perhaps even of *some* -- e.g., some of the “‘culminating’” -- full ‘*uni-category*’ terms, so that solution is a matter of filling-in definitions, identifying, or solving-for, the implied but initially, explicitly ‘un[re-]cognized’, “‘algebraically *un*known’”, meanings of the terms that are *intermediate between* the pre-stipulated meanings of the pre-assigned terms.

For *Meta-Systematic-Dialectical* Dyadic Seldon Function ‘Meta-Equations’ in general, an analogy with the Maxwellian methodology of Lagrange’s Equations, a kind of ‘Meta-Lagrangian Principle’, applies, one which also applies -- perhaps even more strongly -- for [*Psycho*]*Historical-Dialectical* Equations.

This principle arises from the ‘*Possibility-Space*’ interpretation of the qualitatively different ‘ontological categories *qualifiers-sums*’ that the ‘Dyadic Seldon Function’ generates for each ≥ 1 value of its ‘self-iteration parameter’ -- its ‘epoch parameter’, **T**, or its ‘*Step/Stage* parameter’, **S**.

It means that not *all* of the *possible*, consecutive subscript ‘*gene*»-ric’ terms will *actualize* -- will necessarily be instantiated -- in any given ‘*speci*»-fic dialectical meta-model’.

The Lagrange equations of motion of classical mechanics describe a *generic* dynamical system, a *generic* “connected mechanical system”, by means of “*generalized coordinates*” and “*generalized velocities*”. Those equations’ spectrum of such “*generalized*” variables are intended to encompass *all possible speci*fic “moving material systems”.

But not all *speci*fic kinds of *concrete* such systems will *actually* embody all of those *possible* variables.

Thomas K. Simpson describes, as follows, the process by which James Clerk Maxwell derived the dynamical equations of the electromagnetic field, using the Lagrange equations. He did so by honing down the full *possible* ensemble of terms of the latter to those that were *actual* for electromagnetic field dynamics:

“...Maxwell approaches the construction of his own electromagnetic theory with a clear initial vision of the shape it must take. He does not begin with a collection of basic empirical results and seek a merely complete and convenient set of equations which will save the appearances. Maxwell knows at the outset that his theory must take the form of the equations of motion of a moving material system; these, as we have seen, are Lagrange’s equations of motion, which in Maxwell’s view simply explicate mathematically our *a priori* concept of matter in motion. *A priori*, Maxwell’s equations are merely a special case of Lagrange’s equations. Therefore, Maxwell’s program for a “dynamical” approach to electromagnetism must be this: beginning with Lagrange’s equations of motion, identify the *generalized* coordinates and velocities which characterize an electromagnetic system, and then determine by experiment which of the *possible* coefficients are *actually operative* in this *particular* science, and what relationships exist among the coefficients and the coordinates. Lagrange’s equations, thus related to electromagnetism and *sifted of inoperative terms*, will be the basic equations of electromagnetism. At the same time, they will characterize in broad strokes a *particular* form of connected system.”

[Thomas K. Simpson, *Maxwell’s Mathematical Rhetoric: Rethinking the Treatise on Electricity and Magnetism*, Green Lion Press [Santa Fe: 2010], pages 272-273, *emphasis added*].

Summary. Each new **Q**-algebraic “*unknown*” arises, in its “debut” iteration of a generic ‘Dyadic Seldon Function meta-model’, as a *new combination* of “*old*”, already “*known*” epithets / predicate-letters / intensions / connotations. The **Q**-algebraic task -- the task of solution of the ‘dialectical-algebraic [meta-]equation’ of that iteration/*stage* -- is to discern the best meaning for each such term [if any; if that meaning is not the “‘null’”, “‘inoperative’” meaning, corresponding to “‘existential *im*possibility’”, or to *non*-instantiation], the one that best fits the epithets of that new term, in the context of one’s experience and knowledge of the totality / “object realm” being “‘theorized’” by use of that ‘dialectical [meta-]equation meta-model’.