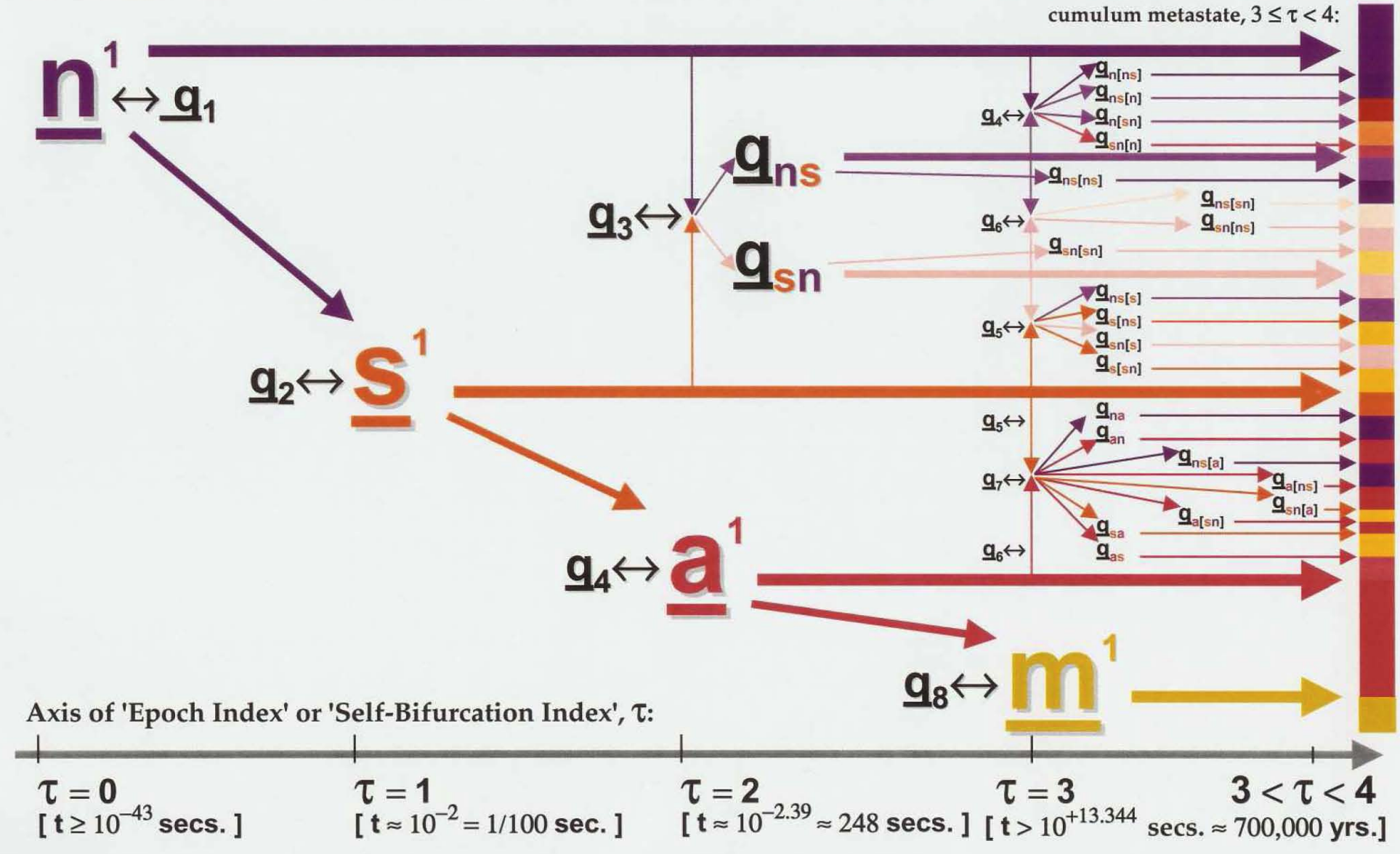
Geometric / Pictographic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

C. Self-Ramification "Cascade" Chart, to $^{1}\underline{Q}_{3}$

*[Cumulative "Tree" Structures, with '**t deceleration**' as per the Standard Model "Big Bang" hypothesis]*



Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

1. Ontology History Model -- The *Fundamental Equations* of '*Onto-Dynamics*'

Ontology History Model -- Ontological ['*Pure-Qualitative*'] ***Meta-Evolution Equation***:

The ontological meta-state denoted by ${}^{1}\underline{\mathbf{Q}}_{\tau+1}$, that is, the *value* given by the universe-model as describing the ontological meta-state of the cosmos at the end of *any* ***succeeding*** unit 'time'-step, denoted $\tau+1$, given τ restricted to the non-negative integers, is equivalent to that ontological metastate-description given by the *self*-product -- the ***self-operation***, ***self-application***, or ***self-reflexion*** -- of the *value*, denoted ${}^{1}\underline{\mathbf{Q}}_{\tau}$, given by the universe-model as describing the ontological meta-state of the cosmos at the end of its ***preceding*** unit 'time'-step, $(\tau+1) - 1 = \tau$, or, in 'ideographic ['mathematical'] shorthand':

$$ {}^{1}\underline{\mathbf{Q}}_{\tau+1} = {}^{1}\underline{\mathbf{Q}}_{\tau}[{}^{1}\underline{\mathbf{Q}}_{\tau}] = {}^{1}\underline{\mathbf{Q}}_{\tau}^{\,2} = [\underline{q}_0 + \underline{q}_1 + \ldots + \underline{q}_{2^{\tau+1}}] = [\underline{q}_1^{\,0} + \underline{q}_1^{\,1} + \ldots + \underline{q}_1^{\,2^{\tau+1}}] $$

Ontology History Model -- ***Generating Equation*** [*solution* of ***Meta-Evolution Equation***]:

The ontological metastate-description denoted ${}^{1}\underline{\mathbf{Q}}_{\tau}$, and given by the universe-model as describing the ontological meta-state of the cosmos for ***any value*** of its 'time'-index, denoted τ, is equivalent to the ontological metastate-description which results from the 2^{τ}-fold *pairwise* ***self-operation*** of its ***originating*** ontological metastate-description, denoted ${}^{1}\underline{\mathbf{Q}}_{0}$, given by the universe-model as describing the ontological meta-state of the cosmos for the ***zero-value*** of its 'time'-index, i.e., of its '***self-bifurcation index***', or, in 'ideographic ['mathematical'] shorthand':

$$ {}^{1}\underline{\mathbf{Q}}_{\tau} = {}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}} = [\underline{q}_0 + \underline{q}_1 + \ldots + \underline{q}_{2^{\tau}}] = [\underline{q}_1^{\,0} + \underline{q}_1^{\,1} + \ldots + \underline{q}_1^{\,2^{\tau}}] = [\underline{q}_1]^{2^{\tau}} $$

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

2. Ontology History Equations -- Reverse Derivation

---

from the ***Generating Equation*** to the ***Meta-Evolution Equation***

a. Assuming the *generating equation* is correct, i.e., $^{1}\underline{\mathbf{Q}}_{\tau} = {}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}}$, implies that

$$^{1}\underline{\mathbf{Q}}_{\tau+1} = {}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau+1}} = {}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}\cdot 2^{1}} = [{}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}}]^{2} = [{}^{1}\underline{\mathbf{Q}}_{\tau}]^{2},$$ thus

yielding the *meta-evolution-equation*, $^{1}\underline{\mathbf{Q}}_{\tau+1} = [{}^{1}\underline{\mathbf{Q}}_{\tau}]^{2}$;

b. Substituting $^{1}\underline{\mathbf{Q}}_{\tau-1}$ for $^{1}\underline{\mathbf{Q}}_{\tau}$ in the *generating equation*, again assuming that

$^{1}\underline{\mathbf{Q}}_{\tau} = {}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}}$, as per the *generating equation*, yields

$$^{1}\underline{\mathbf{Q}}_{\tau-1} = [{}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau-1}}] = [{}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}}]^{2^{-1}} = [{}^{1}\underline{\mathbf{Q}}_{0}^{\,2^{\tau}}]^{1/2} = [{}^{1}\underline{\mathbf{Q}}_{\tau}]^{1/2} = \sqrt{{}^{1}\underline{\mathbf{Q}}_{\tau}},$$ so that

$$[{}^{1}\underline{\mathbf{Q}}_{\tau-1}]^{2} = [\sqrt{{}^{1}\underline{\mathbf{Q}}_{\tau}}]^{2} = {}^{1}\underline{\mathbf{Q}}_{\tau} = {}^{1}\underline{\mathbf{Q}}_{\tau-1+1},$$ as per the *meta-evolution equation*:

$$^{1}\underline{\mathbf{Q}}_{\tau+1} = {}^{1}\underline{\mathbf{Q}}_{\tau}[{}^{1}\underline{\mathbf{Q}}_{\tau}] = {}^{1}\underline{\mathbf{Q}}_{\tau}^{\,2}, \text{ or } {}^{1}\underline{\mathbf{Q}}_{\tau} = {}^{1}\underline{\mathbf{Q}}_{\tau-1}[{}^{1}\underline{\mathbf{Q}}_{\tau-1}] = {}^{1}\underline{\mathbf{Q}}_{\tau-1}^{\,2}.$$

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

3. Ontology History Model -- $\underline{\Delta[{}^1\underline{Q}_\tau]}$, The *Diachronic Complement* of ${}^1\underline{Q}_\tau$

Partial ***Self-Equations*** and Partial ***Self-Inequalities***

$${}^1\underline{Q}_{\tau+1} = {}^1\underline{Q}_\tau[{}^1\underline{Q}_\tau] = {}^1\underline{Q}_\tau^{\,2} = {}^1\underline{Q}_\tau + \underline{\Delta}[{}^1\underline{Q}_\tau] \text{ and } \underline{\Delta}[{}^1\underline{Q}_\tau] \neq {}^1\underline{Q}_\tau, \text{ so}$$

$${}^1\underline{Q}_{\tau+1} \neq {}^1\underline{Q}_\tau; \quad {}^1\underline{Q}_0 \equiv [\,\underline{n}\,]; \quad {}^1\underline{Q}_{0+1} = {}^1\underline{Q}_0[{}^1\underline{Q}_0] = {}^1\underline{Q}_0^{\,2} = {}^1\underline{Q}_0 + \underline{\Delta}[{}^1\underline{Q}_0];$$

$$\underline{\Delta}[{}^1\underline{Q}_0] = {}^1\underline{Q}_1 - {}^1\underline{Q}_0 = [\,\underline{n} + \underline{s}\,] - [\,\underline{n}\,] = \underline{s};$$

$${}^1\underline{Q}_1 = [\,\underline{n} + \underline{s}\,] = {}^1\underline{Q}_0 + \underline{\Delta}[{}^1\underline{Q}_0];$$

$$\underline{\Delta}[{}^1\underline{Q}_1] = {}^1\underline{Q}_2 - {}^1\underline{Q}_1 = [\,\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}\,] - [\,\underline{n} + \underline{s}\,]$$
$$= [\,\underline{q}_{sn} + \underline{a}\,];$$

$${}^1\underline{Q}_2 = [\,\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}\,] = {}^1\underline{Q}_1 + \underline{\Delta}[{}^1\underline{Q}_1];$$

$$\underline{\Delta}[{}^1\underline{Q}_1] = {}^1\underline{Q}_3 - {}^1\underline{Q}_2 = {}^1\underline{Q}_3 - [\,\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}\,]$$
$$= [\,\underline{q}_{an} + \underline{q}_{as} + \underline{q}_{asn} + \underline{m}\,].$$

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

4. Ontology History Equations -- $\underline{\tilde{\mathbf{x}}}_\tau$, The *Synchronic Complement* of $\underline{\mathbf{x}}_\tau$

Invariant [developing] *Part* [$\underline{\mathbf{x}}_\tau$] *Partition* of the [developing] Whole [$\underline{\mathbf{W}}_\tau$], with $\underline{\mathbf{x}}_\tau \rightarrow \underline{\tilde{\mathbf{x}}}_\tau$

$$\underline{\mathbf{W}}_{\tau+1} = \underline{\mathbf{W}}_\tau^{\,2} = [\,\underline{\mathbf{x}}_\tau + \underline{\tilde{\mathbf{x}}}_\tau\,][\,\underline{\mathbf{x}}_\tau + \underline{\tilde{\mathbf{x}}}_\tau\,] = [\,[\underline{\mathbf{x}}_\tau + \underline{\tilde{\mathbf{x}}}_\tau] + \underline{\mathbf{x}}_\tau[\underline{\mathbf{x}}_\tau] + \underline{\tilde{\mathbf{x}}}_\tau[\underline{\mathbf{x}}_\tau]\,];$$

if we set $\underline{\mathbf{W}}_\tau \equiv {}^1\underline{\mathbf{Q}}_\tau$ and $\underline{\mathbf{x}}_\tau \equiv \underline{\mathbf{n}} \equiv \underline{\mathbf{N}}_\tau$, then $\underline{\tilde{\mathbf{x}}}_\tau \equiv \underline{\tilde{\mathbf{n}}} \equiv \underline{\tilde{\tilde{\mathbf{N}}}}_\tau$,

and we have --

if $\underline{\mathbf{W}}_0 \equiv {}^1\underline{\mathbf{Q}}_0 = [\,\underline{\mathbf{n}}\,] = [\,\underline{\mathbf{n}} + \underline{\tilde{\mathbf{n}}}\,] = [\,\underline{\mathbf{N}}_0 + \underline{\tilde{\tilde{\mathbf{N}}}}_0\,]$; then $\underline{\tilde{\tilde{\mathbf{N}}}}_0 \equiv \underline{\mathbf{0}} \equiv \underline{\mathbf{q}}_0$;

if $\underline{\mathbf{W}}_1 \equiv {}^1\underline{\mathbf{Q}}_1 = [\,\underline{\mathbf{n}} + \underline{\mathbf{s}}\,] = [\,\underline{\mathbf{N}}_1 + \underline{\tilde{\tilde{\mathbf{N}}}}_1\,]$; then $\underline{\tilde{\tilde{\mathbf{N}}}}_1 = \underline{\mathbf{s}}$;

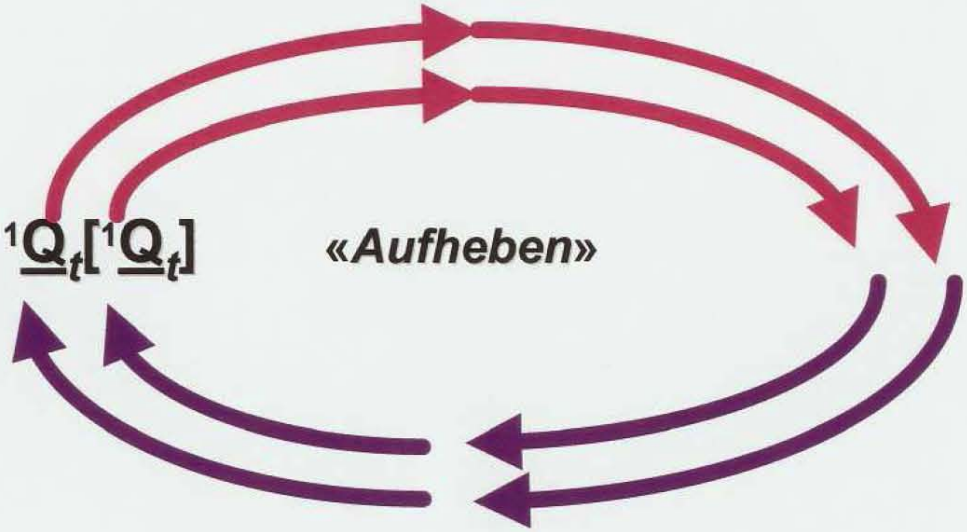
if $\underline{\mathbf{W}}_2 \equiv {}^1\underline{\mathbf{Q}}_2 = [\,\underline{\mathbf{n}} + \underline{\mathbf{s}} + \underline{\mathbf{q}}_{sn} + \underline{\mathbf{a}}\,] = [\,\underline{\mathbf{N}}_2 + \underline{\tilde{\tilde{\mathbf{N}}}}_2\,]$;

then $\underline{\tilde{\tilde{\mathbf{N}}}}_2 = [\,\underline{\mathbf{s}} + \underline{\mathbf{q}}_{sn} + \underline{\mathbf{a}}\,]$;

similarly, if we set $\underline{\mathbf{x}}_\tau \equiv \underline{\mathbf{s}} \equiv \underline{\mathbf{S}}_\tau$, then $\underline{\mathbf{S}}_0 = \underline{\mathbf{q}}_0$, $\underline{\mathbf{S}}_0 = \underline{\tilde{\tilde{\mathbf{N}}}}_0 - \underline{\mathbf{q}}_0 = \underline{\mathbf{n}}$; $\underline{\mathbf{S}}_1 = \underline{\mathbf{s}}$, $\underline{\tilde{\tilde{\mathbf{S}}}}_1 = \underline{\mathbf{N}}_1$; $\underline{\mathbf{S}}_2 = \underline{\mathbf{s}}$, and $\underline{\tilde{\tilde{\mathbf{S}}}}_2 = [\,\underline{\mathbf{n}} + \underline{\mathbf{q}}_{sn} + \underline{\mathbf{a}}\,] = [\,\underline{\mathbf{N}}_2 + \underline{\mathbf{q}}_{sn} + \underline{\mathbf{a}}\,]$.

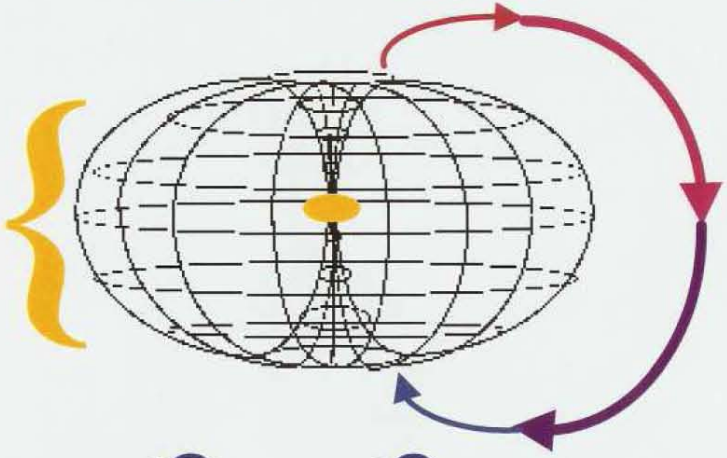
Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

5. Ontology History Model -- Toroidal-Vortex Visualization



(3) $^1\underline{Q}_t = {}^1\underline{Q}_{\tau+\Delta\tau}$

(2) $^1\underline{Q}_\tau \rightarrow {}^1\underline{Q}_\tau[^1\underline{Q}_\tau]$



[overall]:

$t = \tau \rightarrow t = \tau + \Delta\tau$

$^1\underline{Q}_\tau \rightarrow {}^1\underline{Q}_{\tau+\Delta\tau}$

$^1\underline{Q}_t \rightarrow {}^1\underline{Q}_t$

(1) $^1\underline{Q}_t = {}^1\underline{Q}_\tau$

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

6. Ontic Equations -- Equivalence of Epoch-Succession, Ontic Negation, and Self-Action in $\underline{\mathbf{Q}}$

The *Unit-τ-Advance* Operation, **E**, of the classical, '*purely-quantitative*' finite difference calculus, and the $\underline{\mathbf{E}}$, of our '*purely-qualitative*', '***metafinite-difference algebra***', an '***algebra of qualitative differences***' interpreted as ***ontological differences***, are defined by:

$\mathbf{E}\tau \equiv \tau + \Delta\tau \equiv \tau + \mathbf{1}$, wherein $\Delta\tau \equiv \mathbf{1}$ ['Δ' denotes *pure-quantitative unit-incrementation*];

$\underline{\mathbf{E}}\mathbf{x}_\tau \equiv \mathbf{x}_{\mathbf{E}\tau} \equiv \mathbf{x}_{\tau+\Delta\tau}$, for meta-system $\underline{\mathbf{x}}$, whose ontic meta-state during epoch τ is denoted by $\underline{\mathbf{x}}_\tau$;

$\underline{\mathbf{E}}[\,{}^1\underline{\mathbf{Q}}_\tau] \equiv {}^1\underline{\mathbf{Q}}_{\mathbf{E}\tau} \equiv {}^1\underline{\mathbf{Q}}_{\tau+\Delta\tau}$.

The *Determinate Negation* Operation of meta-evolutionary dialectics, here denoted ~, is defined such that:

$\sim\underline{\mathbf{x}}_\tau \equiv \underline{\mathbf{x}}_\tau[\,\underline{\mathbf{x}}_\tau\,] \equiv \underline{\mathbf{x}}_\tau$ 'of' $\underline{\mathbf{x}}_\tau = \underline{\mathbf{x}}_\tau^2 = \underline{\mathbf{x}}_\tau + \underline{\Delta}\mathbf{x}_\tau$ ['$\underline{\Delta}$' denotes *pure-qualitative unit-incrementation*].

$\sim[\,{}^1\underline{\mathbf{Q}}_\tau] \equiv {}^1\underline{\mathbf{Q}}_\tau[\,{}^1\underline{\mathbf{Q}}_\tau] \equiv {}^1\underline{\mathbf{Q}}_\tau$ 'of' ${}^1\underline{\mathbf{Q}}_\tau = {}^1\underline{\mathbf{Q}}_\tau^2 = {}^1\underline{\mathbf{Q}}_\tau + \underline{\Delta}[\,{}^1\underline{\mathbf{Q}}_\tau]$.

The ontic ***metastate-<u>Value</u>*** of a meta-system is <u>also</u> the self-***<u>Operation</u>*** which drives its next meta-evolution:

${}^1\underline{\mathbf{Q}}_{\tau+\Delta\tau} \equiv {}^1\underline{\mathbf{Q}}_\tau[\,{}^1\underline{\mathbf{Q}}_\tau] = {}^1\underline{\mathbf{Q}}_\tau^2 = {}^1\underline{\mathbf{Q}}_\tau + \underline{\Delta}[\,{}^1\underline{\mathbf{Q}}_\tau]$.

EQUIVALENCE *with respect to* ${}^1\underline{\mathbf{Q}}_\tau$, $\underline{\mathbf{E}} = \sim = {}^1\underline{\mathbf{Q}}_\tau$:

$\underline{\mathbf{E}}[\,{}^1\underline{\mathbf{Q}}_\tau] = \sim[\,{}^1\underline{\mathbf{Q}}_\tau] = {}^1\underline{\mathbf{Q}}_\tau{}^1\underline{\mathbf{Q}}_\tau = {}^1\underline{\mathbf{Q}}_\tau^2 = {}^1\underline{\mathbf{Q}}_\tau + \underline{\Delta}[\,{}^1\underline{\mathbf{Q}}_\tau] = {}^1\underline{\mathbf{Q}}_{\tau+\Delta\tau}$.

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

I. "Multiplication" Table of Interaction Products for: ${}^{1}\underline{Q}_{\tau} = {}^{1}\underline{Q}_{1} = {}^{1}\underline{Q}_{0}{}^{2^{1}}$

Ontological Meta-State Description of the Onto-Dynamical Universe at Epoch Index-value or Meta-Evolutionary Stage $\tau = 1$

auf*	${}^{1}\underline{Q}_{0} =$ $\underline{n}$	count of qualitatively Incremental, ontologically non-redundant terms [***ontos***]
${}^{1}\underline{Q}_{0} =$ $\underline{n}$	$= \underline{n} + \underline{s}$	2
	$= {}^{1}\underline{Q}_{1}$	$= 2$

[${}^{1}\underline{Q}_{1}$ is a *bi-qualinomial*]

poly-qualinomial *expansion:*

$${}^{1}\underline{Q}_{0}{}^{2} = {}^{1}\underline{Q}_{0}[\,{}^{1}\underline{Q}_{0}\,] = [\,\textit{maximum-subscript-term-of}[\,\underline{n}\,]\,]\cdot[\,\underline{n}\,] = \underline{n} + \underline{s} = {}^{1}\underline{Q}_{1}{}^{1}$$

*[short for Hegel's «***auf**heben*»*, serves here as an abbreviation for the generic dialectical operation that operators like ${}^{1}\underline{Q}_{\tau}$, and its constituents, denote, *and perform upon themselves when* "squared" or *self-applied*, viz. -- univocally (1) self-determinately *negating* or changing; (2) *elevating* to a higher ontological level, thus also; (3) *conserving*, ***themselves***, by their containment in or subsumption by/as that ontologically-higher level**]**.

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

II. "Multiplication" Table of Products for: $^1\underline{Q}_\tau = {}^1\underline{Q}_2{}^1 = {}^1\underline{Q}_1{}^2 = {}^1\underline{Q}_0{}^{2^2}$

Ontological Meta-State Description of the Onto-Dynamical Universe at Epoch Index-value or Meta-Evolutionary Stage $\tau = 2$

	auf	$^1\underline{Q}_1 =$		count of qualitatively incremental, ontologically non-redundant terms [*ontos*]
		$\underline{n}$ +	$\underline{s}$	
$^1\underline{Q}_1$ =	$\underline{n}$	= $\underline{n} + \underline{s}$ +	$\underline{n} + \underline{q}_{sn}$ = $\underline{q}_{sn}$	3
	+	+	+	+
	$\underline{s}$	$\underline{s} + \underline{q}_{ns}$ = +	$\underline{s} + \underline{a}$ = $\underline{a}$	1
		$= {}^1\underline{Q}_2$		$= 4$

[$^1\underline{Q}_2$ is a *quarti-qualinomial*]

poly-qualinomial *expansion:*

$$^1\underline{Q}_1{}^2 = {}^1\underline{Q}_1[{}^1\underline{Q}_1] = [\underline{n} + \underline{s}][\underline{n} + \underline{s}] = [[\underline{n} + \underline{s}] + [\underline{s}[\underline{n}] + \underline{s}[\underline{s}]]]$$

$$= [[\underline{n} + \underline{s}] + [[\textbf{\textit{maximum-subscript-term}-of}[\underline{n} + \underline{s}]] \cdot [\underline{n} + \underline{s}]]$$

$$= [[\underline{n} + \underline{s}] + [\underline{q}_{sn} + \underline{a}]] = [\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}] = {}^1\underline{Q}_2$$

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

III. Products Table for: $^1\underline{Q}_\tau = {}^1\underline{Q}_3{}^{2^0} = {}^1\underline{Q}_2{}^{2^1} = {}^1\underline{Q}_1{}^{2^2} = {}^1\underline{Q}_0{}^{2^3}$

Ontological Meta-State of the Onto-Dynamical Universe at Epoch Index-value or Meta-Evolutionary Stage $\tau = 3$

auf		$^1\underline{Q}_2$ = $\underline{n}$ + $\underline{s}$ + $\underline{q}_{sn}$ + $\underline{a}$	count of unique *ontos*
$^1\underline{Q}_2$ =	$\underline{n}$	= $\underline{n} + \underline{s}$ + $\underline{n} + \underline{q}_{ns}$ = $\underline{q}_{ns}$ + $\underline{n} + \underline{q}_{n[sn]}$ = $\underline{q}_{n[sn]}$ + $\underline{n} + \underline{q}_{na}$ = $\underline{q}_{na}$	5
	+		+
	$\underline{s}$	$\underline{s} + \underline{q}_{sn}$ = + $\underline{s} + \underline{a}$ = + $\underline{s} + \underline{q}_{s[sn]}$ = + $\underline{s} + \underline{q}_{sa}$ = $\underline{q}_{sa}$	1
	+		+
	$\underline{q}_{sn}$	$\underline{q}_{sn} + \underline{q}_{sn[n]}$ = + $\underline{q}_{sn} + \underline{q}_{sn[s]}$ = + $\underline{q}_{sn} + \underline{q}_{sn[sn]}$ = + $\underline{q}_{sn} + \underline{q}_{sn[a]}$ = $\underline{q}_{sn[a]}$	1
	+		+
	$\underline{a}$	$\underline{a} + \underline{q}_{an}$ = + $\underline{a} + \underline{q}_{as}$ = + $\underline{a} + \underline{q}_{a[sn]}$ = + $\underline{a} + \underline{m}$ = $\underline{m}$	1
		= $^1\underline{Q}_3$	= 8

[$^1\underline{Q}_3$ is an *octa-qualinomial*]

Algebraic / Arithmetic Representations of the Taxonomy Level One, Ideographic, Onto-Dynamic Cosmos-Model:

III. Poly-Qualinomial Expansion of: $^1\underline{Q}_\tau = {}^1\underline{Q}_0{}^{2^\tau} = {}^1\underline{Q}_0{}^{2^3} = {}^1\underline{Q}_3{}^1$

Ontological Meta-State of the Onto-Dynamic Universe at Epoch Index-value or Meta-Evolutionary Stage $\tau = 3$

$$^1\underline{Q}_2{}^2 = {}^1\underline{Q}_2[{}^1\underline{Q}_2] = [\underline{Q}_1[\underline{Q}_1]][[\underline{Q}_1[\underline{Q}_1]]] = [[\underline{Q}_0[\underline{Q}_0]][[\underline{Q}_0[\underline{Q}_0]]][[\underline{Q}_0[\underline{Q}_0]][[\underline{Q}_0[\underline{Q}_0]]] = {}^1\underline{Q}_3{}^1 =$$

$$[\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}][\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}] =$$

$$[[\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}] + [\textit{max.-subscript-term-of}[\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}] \cdot [\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}]] =$$

$$[[\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}] + [\underline{a}[\underline{n}] + \underline{a}[\underline{s}] + \underline{a}[\underline{q}_{sn}] + \underline{a}[\underline{a}]]] =$$

$$[[\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a}] + [\underline{q}_{an} + \underline{q}_{as} + \underline{q}_{a[sn]} + \underline{m}]] =$$

$$\begin{aligned}
&[[[\underline{n} + \underline{s}] + [\underline{s} + \underline{q}_{ns}] + [\underline{q}_{sn} + \underline{q}_{n[sn]}] + [\underline{a} + \underline{q}_{na}]] \\
&+ \\
&[[\underline{n} + \underline{q}_{sn}] + [\underline{s} + \underline{a}] + [\underline{q}_{sn} + \underline{q}_{s[sn]}] + [\underline{a} + \underline{q}_{sa}]] \\
&+ \\
&[[\underline{n} + \underline{q}_{sn[n]}] + [\underline{s} + \underline{q}_{sn[s]}] + [\underline{q}_{sn} + \underline{q}_{sn[sn]}] + [\underline{a} + \underline{q}_{sn[a]}]] \\
&+ \\
&[[\underline{n} + \underline{q}_{an}] + [\underline{s} + \underline{q}_{as}] + [\underline{q}_{sn} + \underline{q}_{a[sn]}] + [\underline{a} + \underline{m}]]] =
\end{aligned}$$

[$^1\underline{Q}_3$ is an *octa-qualinomial*]

$$[\underline{n} + \underline{s} + \underline{q}_{sn} + \underline{a} + \underline{q}_{an} + \underline{q}_{as} + \underline{q}_{a[sn]} + \underline{m}] + \underline{0} \leftrightarrow$$

$$[\underline{q}_1 + \underline{q}_2 + \underline{q}_3 + \underline{q}_4 + \underline{q}_5 + \underline{q}_6 + \underline{q}_7 + \underline{q}_8] + \underline{q}_0 =$$

$$[\underline{q}_1{}^0 + \underline{q}_1{}^1 + \underline{q}_1{}^2 + \underline{q}_1{}^3 + \underline{q}_1{}^4 + \underline{q}_1{}^5 + \underline{q}_1{}^6 + \underline{q}_1{}^7 + \underline{q}_1{}^8] = \underline{q}_1{}^8 = {}^1\underline{Q}_3$$