

How "Actants" Unify Science and Cosmos

by developing common units and operations, common processes and methods, and consequent stochastic laws in common at all levels

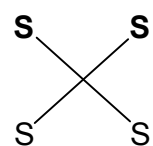
I. BY COMMON UNITS:

Let the zero exponent, X^0 , stand for "the set of" (instances of whatever X denotes); and let "cosmos" be defined as the universal set ($=U^0=1$) of all things-namable (called "actants"), such that:

- A. The ACTANT, $A \stackrel{\text{def.}}{=} \text{any thing-namable}$, is here viewed as an item of Action (= Energy x Time dimensionally) and so a versatile and unifying microunit in every science. : $X^{\bar{0}}$
- B. The CRUX CONSTANT, $r_c = \sqrt{12} = 3.46410 = \text{any actant's size, } N_{\sigma} \text{ in standard measure, since } \sigma^2 = N^2/12 \text{ in the rectangular distribution of the actant's units, } N, \text{ and } N/\sigma_N = N/N/r = r_c$: X^I
- C. The BIT. If $N = 2^n$, n bits = $\lg N = \text{number of units in the power of 2, e.g., } 2^1 = 1 \text{ bit since } n = 1, \text{ e.g., } 2^r = c = 11+ = \text{the "creatant" rate for the cosmos, i.e., actants organized one level per eon or log century.}$: X^{II}
- D. The CYCLE, $(e^{2\pi i})^t = 1^t = 1 \text{ cycle, either of radius } t \text{ or } t \text{ cycles each of unit radius. Thus } e^{2\pi i \cdot 4} = e^{8\pi i} = \text{the eon cycle; } (e^{8\pi i})^8 = \text{"the cosmo-cycle" = the first half-life cycle of a cosmic cohort of real actants at all 8 levels.}$: X^{III}

II. BY COMMON OPERATIONS: $,,, + x 1^x$ (and their inverses)

i.e., the 4 syntactic operations of all mathematics, logic, and language, namely:

- | | | |
|---|------------------------|---|
| A. LISTING in SETS = Qualitative Quantic Category = | $X^{\bar{0}} = {}^s X$ | }  |
| B. ADDING in SUMS = Quantitative Quantic Category = | $X^I = {}_s X$ | |
| C. MULTIPLYING in PRODUCTS = Relative Quantic Category = | $X^{II} = X_s$ | |
| D. MULTIPLYING in POWERS = Systemative Quantic Category = | $X^{III} = X^s$ | |

III. BY COMMON PROCESSES: $n^n \sqrt{2\pi n} / e^n$

i.e., the 4 combinatoric, or reiterant, processes, or forms of interacting among n actants

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|--|--|-----------------|
| A. REPEATING = elements into a set = n^0 | : $n^0 = (e^n n! / n^n) \sqrt{2\pi n} = 1$ | : $X^{\bar{0}}$ |
| B. COMBINING = UNITS INTO A SUM = n^1 | : $n = \ln(n^n \sqrt{2\pi n} / n!)$ | : X^I |
| C. PERMUTING = factors into a product = $n!$ | : $n! = n^n \sqrt{2\pi n} / e^n$ | : X^{II} |
| D. INTERACTING = actants into a "self-power" = n^n | : $n^n = e^n n! / \sqrt{2\pi n}$ | : X^{III} |

IV. BY SCIENTIFIC METHODS IN COMMON

i.e., by the four AIMS of scientists if classified. by TENSE of TIME, t, namely:

- A. TO DESCRIBE the present contents of the cosmos, so as: : X^{II}
- B. TO EXPLAIN its past causes, and : X^{III}
- C. TO PREDICT its future consequences, and increasingly : X^I
- D. TO CONTROL its anytime changes--all better than previously. : X^{III}_{max}

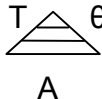
V. BY STOCHASTIC LAWS IN COMMON, $\Sigma p_i = 1$

where each law integrates its process into a unity, 1, as follows

- A. The NORMAL LAW of structuring describes the present cosmos in terms of probabilities governed by a self-product, n^2 as in $y = 1/\sqrt{2\pi} \int_{-T}^T (e^{-.5})^{x^2} dx = 1$
- B. The ENTROPIC LAW of evolving explains the past cosmos in terms of successive self-products or squarings as in $y = (e)^{2^n}$ or $p_t = p_0^{2^t}$; $p_t max = 1$
- C. The CYCLIC LAW of functioning predicts the future cosmos in terms of recurrent self-sums, $2n$ as in **cis** $2n\pi = (e^{2\pi i})^{2n} = 1^n = 1$
- D. The "COMBIC LAW" of fulfillment controls the anytime cosmos as in terms of a governing self-power as in $y = (e)^{n^n}$; $H = -\Sigma \lg p_i^{p_i}$; $\Sigma p_i = 1$
 (The four underlined exponents above = the four "self-reiterant" or key parameters of the cosmos by the Epicosm Model.)

The five sections, I - V, above, present variant unitary analyses-and-resyntheses of "science" end of "cosmos". Many other variants or versions are possible. They are all here derived, or Inferred, from the "Pan-Acts Model", previously called the "Epicosm Model."

This Pan-Acts Model may be briefly stated in the three dialects of science as follows:

- 1) in a prose form: ACT= INTERACTS ORGANIZE COSMOS = the "Pan-Acts" Model
- 2) in a geometric format: The "Mass-Time Triangle (= MTT)", or rectified normal curve, graphs this unitary cosmos (=U°=1) in 4 stages.


3) in 4 intertransformable formulas:

$U^0 = 1$	$\Sigma p_i = 1$	$a/ct = 1$	$(e^{2\pi i})^n = 1^n = 1$	These 4 analyses of unity represent versions of the cosmic model or universal set of everything namable that unifies all science and the cosmos
= a set	= a sum	=a product	= a power	
(of nameable element)	(of proportional parts)	(of a Creatant rate X Time)	(of a unit cycle)	