

Noesis

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EDITORIAL

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BURNING QUESTIONS ISSUE

Many contributors to Noesis, including myself, are compelled to develop all-encompassing philosophies, cosmologies or metaphysical systems. This suggests a chicken-egg question: Does rethinking the universe lead to a high IQ, or does a high IQ prompt the search for higher structure? I'm somewhat skeptical of both my IQ and my gedanking and am thus not willing to discuss my theorizing with readers until it yields clever results. (My latest best guess for the age of the universe is around 10 to the 13th years, though my other best guesses have ranged from 10 to the 30th to 10 to the 50th years.) Meanwhile, I print your theories and ask you such trivial questions as:

What were the names Walt Disney **didn't** choose for the Seven Dwarfs (Dwarves?). A book I read suggested that somewhere there is a list of rejected dwarf names, but I'm unwilling to search for it. If anyone knows the names that didn't make it (Stinky, Surly, Squirrely?), please send them in.

About vast theories as they appear in Noesis--I'm your typical superficial reader, and I have these suggestions to make you more effective at catching and holding my and other readers' attention.

1. In addition to debunking current mainstream thought, as some independent theorizers do, provide alternative suggestions about the nature of things. Instead of concentrating primarily on what doesn't work under quantum physics or Einsteinian relativity, tell us what would work. In doing so, focus on ideas, particles and processes with which readers are already familiar. Tell us how electrons would behave under your point of view, how the big bang might have unfolded, if the universe will end in fire or ice. Follow the lead of good writers and physicists such as Stephen Hawking and Steven Weinberg, who, when they write for lay people, make everything damned simple.

2. I do not now and have never followed step-by-step derivations. I don't even read the marrow of long paragraphs; my attention span is only 12 seconds. Give me the good stuff--the equation you arrive at, the $E=mc^2$, the $n/\log n$ =the number of primes in the first n numbers. Relate known entities--tell me there are 10 to the 80th protons in the universe, that the number of stars in a galaxy equals the number of galaxies in a universe. Be specific and numerically explicit. Provide pithy equations that I can play with, such as the special relativistic tau or lambda or whatever you call it, which lets me plug in fractions of c to get length and time and mass effects. Any idiot can take $.8c$ and get a tau of $.6$, and I am that idiot; throw me a bone.

3. Clarity, clarity, clarity. Short paragraphs, short sentences, short words, short articles. Sledgehammer us and the universe into submission with lightning-fast rabbit punches. But don't forget to do our

thinking for us. Define terms using words with which we are at ease. Make sure we get the brunt of what you are saying, even at the expense of some finer meaning.

Thanks

Chris Cole is running the answers to the first seven "short form" problems in this issue. Answers to the motley assortment of subsequent problems so far will appear in the next mailing. Due to my lack of graphics expertise, my not-very-good next-figure-in-the-series problem was stretched about 35% along the horizontal axis. The four vertices of figure 4 for instance, which could be the four corners of a square according to the stretched diagram, should really form a lozenge with internal angles of 60 and 120 degrees

A LETTER TO BOB HANNON FROM LEROY KOTTKE

Editor--

Bob has a copy of this--thought it may be unique as to succinctness. LeRoy

Dear Bob,

What if I can show you that $e=mc^2$ depends on c being a constant, and mass being finite?

Starting with $F=ma$ which is really $F=d(mv)/dt$, since $d(mv)=m*dv + v*dm$, then $d(mv)/dt = m*dv/dt + v*dm/dt$. Now at light speed $v=c$ and the big assumption is that $c=constant$, therefore $dv/dt=0$. This leaves us with $F=c*dm/dt$ since the other term $m*dv/dt$ is zero provided that m is never infinite.

Now, work = energy = $e = \text{Integral of } F*ds$, where s is distance. $F*ds = c*dm*ds/dt = c^2*dm$, since $ds/dt = v = c$ in this case, and integrating this gives $e = m*c^2$.

Does this or does this not say that the universe in which we live, where $e = mc^2$ is true, is a finite place where the speed of light is constant?

LeRoy C. Kottke (Constant C Bigot)

{Editor's comment: Who decided that s should stand for distance? I always used to screw up tests 'cause I forgot s doesn't stand for speed.}

ANSWERS TO SHORT FORM TEST

1. 20 (Pomfrit)
2. No answer
3. 15 (Pomfrit)
4. 16702650 (Pomfrit)
5. STEPHEN (HAWKING) (Rosner, Pomfrit)
6. 6.397242237 miles (Price, Pomfrit, Rosner, Kohring -- see solution below)
7. $f(x) = \sqrt{\frac{1}{i} + i x^2}$ (Price, Pomfrit)

SOLUTIONS BY C. KOHRING

followed by

TWO LETTERS AND AN ARTICLE BY CHRIS LANGAN

Attachment 1 is my attempt at the Forest/Road problem in issue 58, page 16 (prob. 6). I arrived at an answer of 6.39724...miles.

Here is a proposed problem for you and Chris Cole's "Test":

You are to plant a grove of trees, with the following constraints:

- o The grove must be composed of only x trees.
- o The trees must be in y straight rows.
- o Each row must have at least z trees.

How do you arrange the trees?

Try this problem for:

$x = 18$
$y = 9$
$z = 5$

$x = 19$
$y = 10$
$z = 5$

, and/or

$x = 29$
$y = 16^*$
$z = 5$

A sample solution (there is more than one) is attached for the first set, which could be printed in the next issue if you desire. Other solutions are available. This is more difficult than it looks! Enjoy...

* not sure if this is the largest number possible, but...

Also attached is my renewal check and a copy of my Titan score for consideration as a member into the One-in-a-Thousand Society.

cc: Chris Cole

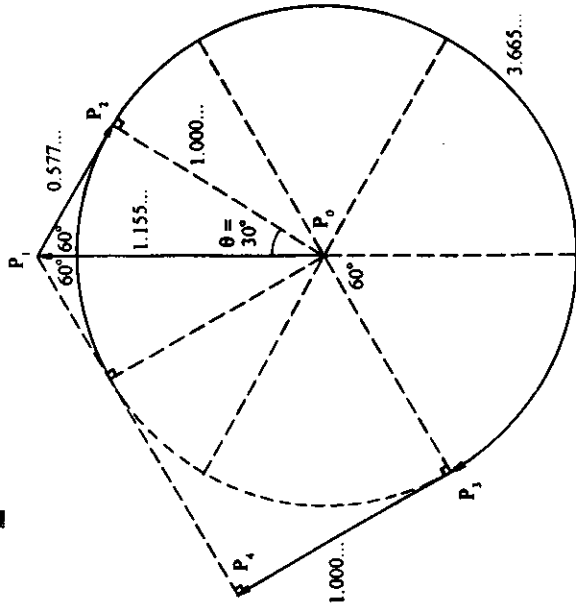
C. Kohring
Xenia, Ohio

In-Genius, Issue 58, Page 16, Prob. 6., Forest/Road...

Total Path $x = (1/\cos \theta) + (\tan \theta) + 2\pi((135^\circ - \theta)/180^\circ) + 1$

$dx/d\theta = 0 \rightarrow$ solve for θ @ $x_{\min} \rightarrow \theta = 30^\circ$

- $P_0 \rightarrow P_1$ 1.155... miles
- $P_1 \rightarrow P_2$ 0.577...
- $P_2 \rightarrow P_3$ 3.665...
- $P_3 \rightarrow P_4$ 1.000...
- $x_{\min} =$ 6.39724... miles



July 01, 1992

Dear Rick:

Pursuant to our conversation of mid-June, 1992, in which you confirmed your ability to publish the enclosed piece in its entirety in the July issue of *Noesis*, I've sent Chris Cole the disk and another set of hard copy.

As you'll recall, you predicted that Chris - who seems outspoken concerning his opinion that the CTMU "draws conclusions that can't be drawn" - would want to indulge in more criticism of the theory, in either the same issue or that immediately following.

My understanding is that he will not delay publication of my piece in order to compose his response. But just in case he does, I've had the hard copy notarized to establish the priority of my copyright. This is all the more necessary in light of my announcement of the "religion of logic" associated with the theory.

This measure seems advisable inasmuch as Chris may be forced to go rather far out on various limbs in his efforts, perhaps breaking several before finding one that he thinks may support him. While no such limb exists, I doubt he'll have an easy time admitting it. It's not that he's stupid; it's just that he may believe himself committed to his position, and he's chosen the wrong adversary.

Read this paper closely. It does exactly what I say it does, and may well be the most important thing you'll ever read. It's unfortunate that I have to appear to pick on Ron, Chris, and others, but I grow ever wearier of swatting gnats (empty criticisms). As I see it, we have a lot to accomplish, and these people - who let themselves be perceived as mental giants - are not only clinging to their own versions of the flat-earth hypothesis, but encouraging others to share their conceptual inadequacies by ignoring or contesting the very logic they claim to be using and defending.

The CTMU is a necessary context not only for metaphysics, but for metamathematics and physics (including relativity and quantum theory, which only it can unite). Unlike other more nebulous philosophical theories, it has a very precise mathematical structure that will confute anyone who disputes it. While I don't wish that kind of humiliation on the members of this group, nobody can protect them from themselves forever.

It seems that reflected glory just isn't enough for some of them. That's the problem with Mega-style hype: it's hard not to believe it about oneself. It looks like many of our members would rather defy logic than admit that somebody *else* might have beaten problems that beat them and their idols...even when such an admission might earn them a place in history and a chance to help change the world for the better. That's a real shame.

If you have any questions, just write or call. You can publish this letter if you want to.

Sincerely,

Chris Langan



July 01, 1992

Dear Chris:

Enclosed are the disk and hard copy for my latest contribution to *Noesis*. Rick Rosner has assured me that it will be published fully and faithfully in the July issue, the exact date depending on your own busy schedule.

As you may or may not know, Rick advised me that you would be critiquing my work in the July or August issue. In his words, you still feel that "the CTMU draws conclusions that can't be drawn". I'm not quite sure what to make of that, since you haven't yet succeeded in refuting any claim made for the theory.

Your academic background, featuring the likes of Richard Feynman, seems to be impeccable by common standards. Accordingly, you may feel that your arguments have the imprimatur of people far smarter than I. Since I'm unsure of your criteria for "intelligence", I won't bother to dispute that. But regardless of your intellectual credentials, are you *quite certain* that you know what you're arguing with?

Because I respect your intelligence, I'm going to be unusually blunt with you. The way I see it, you have absolutely no chance of coming out on top against me or the CTMU. Furthermore, you stand to lose whatever prestige you might have by opposing yourself to my theories, inasmuch as I have developed their mathematics to an extent allowing me to refute with arbitrary exactitude anything you say against them. I offer this information not to intimidate, but for the very real benefit of you and others.

I gather that some members of the former Noetic Society considered themselves to be atheists. If you were among them, you may resent my introduction of the "religious" side of the CTMU. But if so, I must point out that you would no longer be objecting under the aegis of logic and rationality. While logic has sometimes appeared effective against *faith*, CTMU ethics and theology depend only on logic and mathematics themselves...the kinds that require no great appreciation for mysteries of faith.

If I am mistaken - if Rick is wrong about your absolute determination to resist the CTMU to the bitter end - then please accept my apologies for this letter. But if not, I would advise you to start cutting your losses by exercising extreme caution in your attempts at rebuttal. I may deserve a little more credit than I've been getting from you in the "smarts" department.

Incidentally, as you may have gathered, I did manage to hunt up a little material on Ed Fredkin (I hadn't heard of him because his theory is virtually unpublished). As I'd suspected, he is not functioning on the CTMU level of generality or sophistication. In fact, he seems to have missed most of the necessary principles for a model like his, and could never claim priority over a CTMU-level theory. But his ideas were of interest to me, and you are to be commended for pointing them out.

I hope everything else is going well for you. In case you didn't know it, I appreciated the effort you made to get *Jojo Einstein* into print. I also enjoyed your piece on Special Relativity...very clear and concise. My regards to your family.

This letter is publishable, should you want to share it.

Sincerely,

Chris L

The Mathematical and Metaphysical Bases of Choice, Purpose, and Free Will: a CTMU Critique of *Noesis* 67, 68, and 69
SYNOPSIS: Embedded in a critique of *Noesis* 67 - 69, we define the basic criteria for a *root metaphor* of reality as well as for *metaphysics*. These criteria are solved to produce the recursive root-metaphor of metaphysics, the *quantum transducer*. *Unbound teleosis*, the nonrecursive generalization of the quantum transducer and the transmetaphysical (nonrecursive/recursive) root concept, is defined as *generalized drive*, in turn definable on generalized purpose independent of specific agents or goals. Existing on an absolutely primary level of reality, it appears relative to the subjective cognitive syntax in terms of inductively-symmetrized cognitive, behavioral, or dynamical potential (intrinsically symmetric combinatorial expansions of subjectively-syntaxified models) and can be distributed as *free will* through the identity of a universal *computative symmetry*, or *empyrean* Γ . Γ is a metaphysical algebraic system with transductive elements processing mutual cognitively-relativized information; inductively stratified, it superficially resembles a nested hierarchy of highly parallelized, relatively-universal deterministic/nondeterministic automata. It explains and unifies logical undecidability, relativity physics, and quantum uncertainty, indeterminacy, and nonlocality. *Transductive algebra* (*algebraic representations as information-transductive algebras*) also unites metaphysics (ontology, cosmology and epistemology), ethics, and aesthetics in a general theory of philosophy, evolving in the CTMU beside natural and mathematical science. Γ -*recursion*, the solution of "the problem of induction" and the Γ -relativized inverse of the stepped empyreonic identity-to-element relationship, is uniquely described. The CTMU theory of *telehedra* is introduced; the purposive act as defined by Pepper is reduced to interpreted telehedron theory. The theory of intelligence is noted to be CTMU-dependent. *CTMU* is revealed to be a double acronym. The universe is declared solved at a metaphysical level of generality. Etc.

Welcome again to the skyless and fogbound Canyon of Lethe, walled by leaden apathy and eternal amnesia, where fact and demonstration are eaten by yawning, lightless incomprehension before they can even become echoes. It's time for a solar flare.

There is much in *Noesis* 67 and 68 to which I was initially tempted to take exception. In the interests of brevity, I will instead confine the bulk of my remarks to what I regard as the three main research-oriented contributions in these issues. Two were by Ron Hoeflin and one was by Peter Wone, apparently a research associate of member Christopher Harding.

My comments on Wone's piece, which I found suggestive, will be merely cautionary. Mr. Wone should be apprised that the Noetic half of this group has already proven resistant to several elementary consequences of some of his basic assumptions. E.g., when he defines *mind* as "the operation of a *mechanism* such that it may define its own *goals* and *purposes* and manipulate abstractions symbolically", he is unwittingly embracing the CTMU and all of its logical implications. Incredibly, certain members of this group, even some who consider themselves philosophers and metaphysicians, would seemingly rather appendectomize themselves with rusty ice-picks than observe this rational necessity...despite the fact that mechanism is only one aspect of the model. This will prevent them from grasping the full implications of the Wone-Harding thesis, such as it may be, as surely as axle grease would prevent them from grasping an excited piglet.

Now we come to Ronald Hoeflin's two papers, *American Philosophy and the Problem of Induction*, and *Metaphysics and Personality*. These works are not devoid of insight. Under ordinary circumstances, they would merit mildly favorable reviews. Unfortunately, and somewhat incomprehensibly, they appear to reflect complete ignorance of critical information of which their author is known to be in possession. This information has withstood more or less sophisticated arguments - some of them Hoeflin's own - thrown at it over the last several years. Yet, where the information should have taken root and grown, only a hole is evident.

I am tempted to write something to the effect that Ron *cannot* or *is not allowed* to proceed as though the information was never imparted, particularly in a group (a) which claims a one-in-a-million entrance level by IQ; (b) a large part of whose members have seen the "forgotten" information; (c) in whose journal the information was published. But the fact is that, no matter how wrong or foolish it may be, Ron *can* (at least pretend to) ignore it. If I had to guess, I would say that he has a bit too much faith in certain categorizations within which he has erroneously pigeonholed my work. But in any case, lest the group suppose that his idea of "metaphysics" supersedes mine, I am forced to critique his theories in light of my own (the CTMU).

When Ron defines *metaphysics* as "an attempt to articulate a (usually rational, well-thought-out, comprehensive) conscious orientation towards reality, although one that may be influenced by the subconscious", he is actually *redefining* it in a way that fails to do it justice. Modern philosophy, having witnessed a long string of pundits who, finding themselves in possession of part of the truth, forthwith declared themselves to be in possession of *all* of the truth, apparently desires to placate its many practitioners by reducing metaphysics to a kind of *I'm OK, You're OK* therapy session. If you buy that, then you deny the necessary existence of any single comprehensive, correct model of reality, and thereby make the same denial for all branches of science and mathematics. If no such model need exist, then reality is allowed to be ultimately inconsistent from a subjective viewpoint. This would invalidate all thought. So Ron's redefinition of metaphysics can be immediately dismissed as otiose.

Having thus dealt with Ron's terminology, we now turn to Pepper's. Purpose, both in the dictionary and in the sense employed by Pepper, is defined on goals. Goals, in turn, are defined on the desires of purposeful entities. This is a recursive circularity; "goal" and "purpose" are recursively-related concepts. Goals are defined and sought only by intelligent entities; Pepper explicitly associated *purpose* with *intelligence*. This implies both that purpose is no more general a concept than intelligence, and that the statement "all reality is purposeful" implies the statement "all reality is intelligent".

Of course, Pepper stopped somewhat short of claiming that the universe is an intelligent entity. We are thus left to suppose that when he designated the purposive act a "root metaphor", he did not mean to apply it to the entire universe, but only to the cognition and behavior of its more intelligent inhabitants. I.e., he seems to have designed it as a root metaphor for conscious and/or subconscious human (or at least animal) psychology (this is clearly how Pepper scholar Hoeflin also interprets it).

Working from this deduction, the only way to universalize the purposive act is to assert that the universe is wholly the creation of human or animal psyches. But since Pepper (unlike some quantum

theorists) also stopped short of this, we may further deduce that he meant the purposive act to be the root metaphor of some nonuniversal (i.e., subcosmological) theory. Because Aristotle and his followers defined metaphysics to include cosmology *in its entirety*, this implies unequivocally that the purposive act, at least in the sense of Pepper, is the root metaphor of no valid theory of metaphysics.

Ron claims that the purposive act covers "each of the major types of metaphysical orientation" in that each metaphysical orientation emphasizes one of its "distinctive phases". This would indeed imply that the purposive act is a comprehensive metaphor of metaphysics. But a root is something fundamental, and this is not what "comprehensive" means.

In order to validate and utilize Ron's insights, we must first eliminate the confusion regarding their metaphysical significance. In the senses that Pepper employed terms like "purpose" and "act", the purposive act metaphor is not sufficiently basic to serve as a metaphysical root-concept. But the mere fact that *Pepper* was not up to metaphysical validation of the purposive act is not a proof of impossibility. If we could somehow define the universe itself as a "purposive act", then the metaphor would acquire metaphysical validity after all.

To be acceptable, this definition would have to be supported by a logically self-consistent mathematical model of metaphysics. Such a model exists and has been described in *Noesis* as the CTMU. The CTMU is a coherent mathematical description of reality with which all valid theories must be in accord; it has been shown to be *the* single correct worldview. All of the worldviews and philosophical tendencies mentioned by Ron in his papers have validity only up to CTMU isomorphism; if they could not be interpreted within the CTMU, they would be demonstrably wrong. There is no metaphysics but CTMU metaphysics. This is precisely because the *root metaphor* of the CTMU is categorical over all valid theories; it is the root metaphor of recursive reality itself. ["Recursive" refers to the mathematical concept of *recursion*, which is roughly translatable as "self-definition" and refers to any closed schema whose parts are defined on the whole or each other. In computation theory, the *Church-Turing thesis* posits that all *computable functions* are recursive in that they form a closed system whose elements are all mutually defined in terms of a small set of initial functions and rules of composition.]

To understand why this has to be so, consider the term *metaphysics*. As originally conceived by Aristotle and his followers, it was supposed to embrace ontology, cosmology, and epistemology. In short, it was supposed to be a *comprehensive theory of reality and our power to know it*. It was conceived as a set of guidelines from which a universal theory of reality was to evolve; from these generalistic beginnings to their specific consequences, its explanatory power was to *distribute* over all parts and facets of mental and physical reality in the causal and existential senses. This distributivity criterion makes hard mathematical demands on metaphysicians. Foremost among them is the necessity that the most general characterization of reality and its parts be *recursively defined*. In effect, this requires that the basic descriptions of arbitrary bits of reality be identical to that of overall reality; thus, when we ask a metaphysical question like *of what is reality composed?* we can effectively answer: *of reality*. Nonrecursive theories give no answers to questions of any generality; attempted solutions result in open, never-ending regressions. Distributivity

and recursivity are closely related concepts in any context. In the ultra-general context of metaphysics, they are absolutely necessary and identical in a way specifiable only within the CTMU formalism.

The *root metaphor* of a theory of reality, according to Hoeflin, is its "central guiding concept". This can refer to nothing less than an inductively invariant, recursive-distributive definition of reality; otherwise, it is secondary within the theory and the "root" of nothing. This implies the existence of a very simple test by which to determine what is, and is not, a "root metaphor" in the metaphysical sense.

The test: are there terms or symbols in the theory which are *not* described by the proposed metaphor? I.e., is the metaphor either syntactically or semantically decomposable (in metaphysics, syntax and semantics are ultimately equivalent'), or is it a *consequence* rather than a prime *antecedent*?

If defined as one would expect from the way Pepper has named it, the "purposive act" fails on all counts. There are many agencies and processes in the universe for which purposeful interpretations are highly problematic. A star inputs matter and outputs radiation via internal transduction by stellar processes. But does it do so "on purpose"? And if so, how does it formulate that purpose? Such questions appear ridiculous from a modern scientific viewpoint. Not only are there acts which are not purposeful (e.g., snoring) and purposes on which no action is predicated (e.g., *not* to act; to know "life after (natural) death"), but any act presupposes an agent. Even if the ultimate purposive agent were regarded as a product of its own purposive act, the metaphor fails to describe the means or mechanism of production. These problems are more than enough to invalidate Pepper's metaphor as a root concept in the metaphysical sense.

On closer analysis, however, we find that Pepper's "purposive act" is not as simple as its name implies. It is no mere "act", but the entire context in which a complex sequence of mental and behavioral steps take place. This only compounds the problems already cited. Nonrecursive decomposability is even more extensive. And where Pepper's "drive" is defined as animal motivation, it cannot apply to pre-animal stages of temporal cosmology. It is *consequential* to the evolution of animal life, nondistributive in time, and thus no root at all. Against the backdrop of mainstream cosmology, it looks more like "the anthropic principle" run amok.

On the other hand, consider the root metaphor of the CTMU, previously described as the *quantum transducer*. A more complete description would be the *inductively invariant (arbitrarily quantizable) informational transducer*. It is by definition a closed, recursive network involving at each level of generality every term distributing over that level. It has the algebraic structure of a variably-qualified *computative symmetry*. It is at once subjective and objective, computing even as it is computed *qua* information. It describes reality at all phases of decomposition by human metaphysicians; it is the holographic image of reality for purposes of human cognition. It is *paradoxiform* and thus invariant with respect to logical negation; there is nothing that it does not describe and nothing prior to it. It is unique and cannot be meaningfully approximated. It is the alpha, the omega, and the whole Γ -recursive alphabet, and any "metaphysician" who insists on ignoring it asks to be remembered first as a joke.

The quantum transducer is purposeful in a relativized sense. It, and it alone, is the purposive agent of any purposive act. To see

why, suppose that purpose, under a neutral guise such as *unbound telesis*, were to refer to something independent of the quantum transducer - like, say, the primal undifferentiated essence of the quantum transducer. In terms of the "purposive act", we might call it "generalized drive". But in this case, it would be too general to be developed recursively relative to human cognition. Were there an "act" by which *telesis* "becomes" the quantum transducer, it would be prior to the quantum-transductive phase of reality, nonrecursive, and the root metaphor of no recursive theory of reality. Purposive acts in the structured sense of Pepper occur only in time, and time is always transductive.

Since what we take to be recursion begins with the quantum transducer, so must any recursive theory of metaphysics. But if we are to make the universe *purposeful* and thereby rescue ourselves from utter meaninglessness, purpose cannot be secondary. Even if he did not miss it entirely, Pepper failed to resolve the paradox at the heart of his metaphor: if purpose is truly basic to standard reality, then it cannot be defined exclusively on intelligent behavior evolving *within* reality.

This paradox is resolvable. *Telesis* appears within the CTMU as the "generalized impetus" of quantum (and composite) transducers, enabling it to serve as a relatively-nonrecursive potentiator. While purpose is perceived as the simulated spatiotemporal relationship of a combinatorial expansion of a model of present actuality (potential) to a specific hypothetical future actualization (goal) in terms of the perceptual and behavioral parameters of a specific subjective transducer, *telesis* (from the Greek *telos* for *end*, signifying that it is the end product of purposive inductive regressions), as the actuator of *all* purposes, is generalized not only beyond distinctions among specific transducers and goals, but ultimately beyond distinctions of space, time, and object. Unlike timebound purpose, its scope (root-status) is thus metaphysical.

We can elaborate on this distinction within Pepper's terminology. *Goal*, *purpose*, and *drive* refer respectively to an object; a subjective transducer to which it is utile; and the determinant level of the spatiotemporal context including object and subject. The *purposive* (subjective) context includes (the subjective images of objective) goals, and the *drive* context includes both the purposive/subjective and goal/objective contexts. This suggests a functional relationship: $\text{drive}(\text{purpose}(\text{goal})) = \text{purposive action}$. As an object of relative transductive utility, a goal is purposively interpreted by a subjective transducer. Given subjective purpose, drive causes objective actualization, or the real attainment of the goal by the purposeful subject. Drive has both subjective and objective significance, and is thus the most comprehensive of the three key terms in Pepper's description of the purposive act.

The limit of this generalistic regression, active *telesis* or "generalized drive", is *bound* (specified) only by association with some nongeneral transducer as the *impetus* of its *deterministic* and/or *nondeterministic* behavior. With respect to a deterministic transducer, volitive control is sharply restricted; volition works only through physical invariance. For a partially nondeterministic transducer, the fact that behavior is partially constrained by physical invariants does not preclude more direct telic feedback. But either way, a transducer's telic involvements ramify through "parallel universes" defined by inductive (generalizative) regression. Relatively-undecidable telic variables can be regressively induced to select for physical actualization, and a multivalued logic constructed to account for them.

Telesis can thus be associated with the recursively-stratified identity of a parallelized computative symmetry in which towers (nested series) of inductively-defined subalgebras correspond to identic phases.² The control relationships among subalgebras are "simultaneous" in the sense of time-independence, but inductively ordered with respect to generality. Relativistic distribution of the multiphasic symmetric identity over elements of the symmetry then effects the perfect distribution of telesis over reality. [On the physical level Γ_1 , active-phase telesis is apparent as *energy* and is distributed objectively through *mass-energy equivalence*, spatially through the energies of *vacuums* and *fields*, and temporally through the energies of *physical processes (action)*. In modern cosmogony, distribution is reflected in such theoretical devices as "the *heat* of cosmogenesis" and "the Higgs *field*".¹ Because telesis is defined as "unbound" and therefore *free* of logical circumscription, distributing telesis amounts to distributing freedom at the quantum level. In conjunction with the right kind of chaotic, micrologically ultracomplex system, this freedom becomes what some of us call *free will* and recognize as the pivot of human existence. The specific global composition of subjective volition, *teleology*, is also identically distributed within relativized inductive limitations, implying a *purposive universe* in which cosmogenesis can be associated with an *atemporal* "purposive act". This logicomathematical version of *Genesis* implies that teleology is what ancient theologians saw as "the unknowable will of God". The parallel codependency of teleology and the telesis of sentient entities implies, among other things, that men and women - in concert if not as individuals - have the power to think and act pro-teleologically (for *good*) or counter-teleologically (for *evil*), subject to inductive limitations on *ethical intelligence*. And because aesthetic reasoning occurs within the context of the *pleasure drive*, it is telic and merges with ethics at the teleological (Γ -identic) level of the CTMU.³

Without the CTMU or something isomorphic to it, the beloved human concepts of *purpose*, *free will*, *good*, *evil*, and *beauty* can be factored out of reality as quirks of human psychology stimulated by perception or mentation of certain kinds of objects or situations. Being normally defined on the acquisition of goals in "real time", purpose is meaningless outside the transductive context; Pepper's metaphor is just a definition of the general setting (minimal transductive arrangement) within which purpose can reside. Purpose - at least as commonly defined - does not meaningfully regress beyond this decomposable context, is a secondary concept, and is thus of limited metaphysical import. It is telesis, or *generalized drive*, which is truly fundamental to cosmogenesis from the viewpoints of physical entities.

The "conscious" part of the human mind is ill-suited to understand the actual nature of telesis, something which can only be neurally approximated through the CTMU device of Γ -recursion (see definition below). The reason for this difficulty resides in the fact that telesis is the common essence of recursive and nonrecursive reality. Telesis is "recursive" because of its infinite self-involution, but "nonrecursive" due to its transcendence of physical computation. In CTMU epyreonic terms, we say that telesis is Γ -nonrecursive because physical reality is not closed under induction, but Γ -recursive because telesis is the universal basis of reality in general. While Γ_1 is closed under limited operations, it is wide open under transcendental regression; Γ , on the other hand, is closed under all possible infotransductive operations.

While we see teleisis "upwards" from Γ , in terms of our recombined (inductively iterated) cognitive syntax, it can be "downwardly" beheld as pure self-constraint. Its infinite combinatoriality, or direct polymorphism with respect to components of the Γ , transductive syntax, is actually quite natural to essential reality; it is the Γ level of our minds which is "infinitely restricted". Teleisis assumes physicality only because its self-differentiation lets transducers like us interpret it *informationally* (note that self-interpretation is just *semantical recursion*, a natural manifestation of teleisis; it is the stimulus-invariant basis of all purely-subjective predicates including pleasure, pain and emotion). But as defined from above, we exist physically only as incomplete, mutually differentiated, highly constrained facets of *one unified Self*, whose teleological conatus weights and absorbs our own.

One more point bears mention. This vindication of free will holds whether the physical universe is totally deterministic or not. The only variable is how teleisis affects physical reality. If we lived in a totally deterministic universe - which is not so in any pre-CTMU sense, given quantum indeterminacy - our "telic feedback" (from physical reality to physical reality) could go through the empyreonic identity to "the moment of cosmogenesis" (temporal initialization, closure, or volitive subjectivization), affecting or appropriating initial conditions from which the present evolved. Much volition would cancel or be weighted out. But telic freedom, no matter how indirect or collectivized, would yet exist.

The same mechanism works for all lesser degrees of determinacy. Teleisis, transduced through the specific sub-identity of an appropriately high level of Γ , influences a sector of spacetime containing "enough nondeterminacy" to accommodate the desired effect. Again, it can be "crowded"; specific teleses are *competitive* in any but a macro-nondeterministic universe lacking invariant constraints. With *incomputability*, this accounts for the fallibility of intent; because proteological teleisis is not always locally favored, we can find our wills frustrated "despite the best of intentions", and often while the wills of less ethical people are apparently furthered. This, much to our frequent dismay, is the edificative structure of reality.

Our current low understanding of the brain does not specify how "nondeterministically" it works. We symmetrically perceive choice as a subjectively-nondeterministic juncture in a train of thought. This kind of indeterminacy devolves to an instant of apparent "indecision" over which decisive (symmetry-breaking) tendencies are seemingly non-binding; if asymmetric probabilities were seen as binding, there would be no conscious impression of choice. Yet, what we usually call "consciousness" is only one aspect of mentality, and no partial cognitive frame can be *privileged* by calling its subjective indecision "absolute" (*Principle of Intercognitive Symmetry*). Thus, paradoxically, we may not be able to directly (locally) influence our own mental processes. But these still correlate with teleoactive "feelings". Feelings are objectively meaningless outside the CTMU; being without physical embodiment (as opposed to evidence) and intrinsically undecidable within physical reality, they must exist and relate to teleisis on a *nonphysical (metaphysical) level*. Teleisis then influences reality, through "quantum psychokinesis" or whatever other windows of opportunity may be open to it, in ways transcending direct neural responsivity. Because this "psychokinesis" is transduced through levels of relative undecidability, it is *inconfirmable through any conventionally-designed experimental arrangement*. Antiparapsychological skept-

ticism affords no defense against CTMU logic.

Observe what we have done. We have showed, given the background provided in the bibliography, that the universe is purposive, though in a more-than-anthropic sense. We have further stated that the general structure of the universe must *distribute* holographically over quantized reality for any level of metaphysical cognition, including our own. This, however, does *not* imply the perfect distributivity of *specific* purpose in the sense of Pepper. Purpose distributes as teleology only over those transducers able to support it on a given cognitive stratum, and then only in an inductively restricted way relative to that stratum. Thus, even though Pepper's purposive act metaphor is not a root concept, it can be deduced at short range from one that is. We thereby prove that the true root concept (the quantum transducer) is subject to teleological distribution and therefore purposeful, *but only in a sense elucidated by the CTMU*. Pepper disciples may continue to preach his philosophy, but only by acknowledging the CTMU. Were they to play on without it, they would only be playing with themselves at the expense of whomever listens to them.

More good news for *rational* Pepper fans is that his limited kind of "purposive act", if not Ron's entire discussion of it, is CTMU-interpretable and thus theorizable. The Pepper-Hoeflin theory of the purposive act is isomorphic to the CTMU theory of *tehedra*, complex ensembles consisting of purposive transducers, problematic contexts with initial and target stages, and algorithms for the transformation of initial to target states. It has already been applied to famous mathematical problems whose solutions have not yet been published (including some whose solutions would make the TV news if published anywhere else than *Noesis*). While its applications to the psychology of personality depend strongly on the validation of Freudian and Jungian models of subjective reality - something beyond Ron's eclectic version of "metaphysics", but already decided in the CTMU - Ron still deserves recognition for having written a pair of thought-provoking papers.

Black fans may have a rougher time of it. In the CTMU, the "problem of induction" is solved by a well-defined mathematical process known as Γ -recursion. Neither Black nor Pepper appear to have had any idea what it is or how to do it. In a nutshell, it is the *transfinite iteration of the human cognitive syntax with respect to relative decidability up to paradoxiform closure* (this kind of "hyperinductive recursion" generates multiple levels of relatively deductive recursion; it is these to which we alluded in *Noesis* 44, second to last paragraph, page 11). If you neither know nor care what that means, you should either give up science and philosophy or move to another planet. Because on *this* planet, the CTMU has already been discovered...by me.

This by no means invalidates all of Ron's insights. But it does knock them decisively off the elevated pedestal on which he seems to have placed them. This is a logicomathematical certainty. If it is news to anyone that the game of metaphysics has changed since Stephen Pepper and Max Black made their marks, then this is your wake-up call. Black's article on "the problem of induction" in the *Encyclopedia of Philosophy* seems to imply that he has seen and classified all the major solutions. He has not. Pepper found that the main schools of metaphysics could not be subsumed under a single root metaphor. They can. Hoeflin has opined that this root metaphor is Pepper's "purposive act". It is not. There may be many paths to enlightenment, but for purposes of logical discourse, they all have toll bridges labeled *CTMU*.

I have long since gotten used to having my comments disregarded by certain members of this group.³ In the absence of certainty, I chalked it up to hard luck. Better that than sieze the reigns of power and banish all who oppose me, apparently an honored strategy in these circles. But in any case, writers for this periodical should consider doing me, themselves, and each other a favor by not submitting as valid research anything which violates CTMC principles as so far given. I won't threaten to take my tests and run away or have you bounced out of *Club Mega*, but I can assure you of one thing: I will make you eat your paper, publically. And if you respond *ad hominem* or with arguments from authority, I will do worse. This will happen regardless of your IQ, the number of letters before or after your name, and whether or not you are listed in *The Intergalactic Who's Who of Pure Genius*.

Regarding the focus on original research, the last things any research-oriented group needs are rules mandating the knee-jerk expulsion of members due to *what they say*. Such rules, unless implemented democratically within logical boundaries, constitute potentially fatal restrictions on research. The problem with Ron's stipulation, with which I happen to sympathize *as a goal*, is this: one natural topic of Mega Society research would be the nature and measurability of human intelligence. If we were to find that human intelligence is not practically measurable at the mega level, then we could not logically maintain this criterion *even as a goal*. The mega level could then be relativized to performance on a given test, or the members could *discuss* whether or not to change their name. But what works for kings and popes will not work here. With due respect to Ron's psychometric artistry, his tests are far more expendable than freedom of (CTMC-logically consistent) thought. Incidentally: anyone who assumes that the northern European origin of the name *Langan* (my stepfather's surname) indicates that I was privileged or showered with cultural advantages assumes too much. My childhood was, for the most part, both impoverished and brutal by middle class standards. While institutionalized hacks demeaned their intellects, I have supported my own research in ways which left it *free*. I would not be surprised to learn that my monetary resources are presently among the lowest of all the adult working members of this group. I do not respect those of us who have achieved material success strictly for that; in default of conscience, material success need benefit only the few who have it. I prefer to applaud *altruism*, as exemplified by those who choose to pursue knowledge for the benefit of humanity rather than money for the benefit of themselves. Money always resists pursuit as a means to worthy ends, tending to become instead an end in itself; the hunger for money is cannibalistic and defies satiation. College degrees are not equivalent to knowledge or intelligence, have personal economic utility only, and deserve slavish applause from nobody but your parents. For everybody's information, *Voesis* has already contained the answers to major unsolved problems including Newcomb's paradox, Bayes' paradox, and the general relationship between quantum nonlocality and quantum indeterminacy. Those who consider submitting original research to *Voesis* (and I hope they are many) should nonetheless understand that it is easier to obtain the Society's recognition for going to school, making up puzzles, or praising the entrance exam than for knowing how to solve famous problems like those just listed.

Lest anyone think me contentious, I should point out that I am (a) only treating others as I have been treated; (b) still awaiting signs of cooperation from the rest of the group. Apparently, some

of us have decided that the Mega Society should *do* research. In a research environment, cooperation means acknowledgement of each other's work. Without that, the members are conceptually isolated and the group is superfluous. *It is time to scuttle your dinghies and board this starship.*

Regarding *Noesis* 69:

There are two sides to the abortion issue. One side wants "life" and the other wants "choice". Neither side has correctly defined these terms; there has existed no common logical framework in which they could be cross-analysed. Now such a framework exists. It is the *CTMU*, a reduction of reality to inductively stratified, cognitively-relativized transductive information (differentiated teleis).

A foetus cannot function as a human; its humanity is not functional but potential. In the context of abortion, the latter term is indefinable in any but a subjective way. That which is "potential" does not yet exist in actuality, and what does not exist in actuality does not actually exist. If existence is not actual, it is not objective, and what is not objective is perforce subjective; it currently exists only as anticipation in the mind of a subject. Only the *CTMU*, including the above discussion of *teleis*, enables the meaningful consideration of "potential human existence"...as well as the *other* potential kinds of existence (life forms) precluded by excessive growth of human population in a finite medium (the stable carrying capacities of many parts of the earth have already been exceeded by human population, as have certain crucial aspects of human personal and social psychology).

Choice cannot be deterministically defined in any pre-*CTMU* sense except in terms of subjective ignorance. If those of you who like "choice" want to find out what you are talking about, you should start by reading the seminal paper *The Resolution of Newcomb's Paradox* in *Noesis* 44. The concept of free will is meaningful in no context but the one defined there and here. (To Mr. Hannon: Outside the *CTMU*, your stance is inconsistent. If there is no free will, then choice cannot exist in an absolute sense and must be subjectively relativized. Otherwise, there is no alternative but to label it an "illusion" and discard it as a basis for abortion policy. I invite you and others trapped in your quandary to enter an infinitely larger and more wonderful mental universe than the ones you now inhabit.)

Robert Dick's statement that capitalism and democracy can sustain a far higher world population than that of the present is right in principle but wrong in spirit, and it is absolutely wrong if "sustain" means forever. Wealth in nonrenewable natural resources is an absolute limiter on wealth in property and "human potential". Wealth is a conserved quantity. Everything people use - goods, labor, information, each other - is, or relates to, some combination of matter and energy. Because these are conserved within systemic boundaries (like those of economies, ecologies, and planets), so for wealth. This, too, is a certainty. Trying to get around it is like trying to square the circle...at the certain expense of human happiness and the probable expense of life on earth.

Robert Hannon's comments on *American Philosophy and the Problem of Induction* postulate "an entirely predetermined chain of cause and effect that began when time began". This implies one of two positions: (a) quantum indeterminacy is absolute, but there are no quantum-sensitive systems whose macrological behaviors depend on it; or (b) quantum indeterminacy is a subjective phenomenon which regresses to a higher form of determinacy. Position (a) is absurd.

Quantum-sensitive systems exist in nature (ecosystems in which organisms are genetically mutated by exposure to natural radiation; any system combining extreme structural complexity, quantum and molecular microdynamics, and chaotic hypersensitivity to initial conditions, like human brains and the various parts of physical reality in which they *evolve* and *function*), and quantum-effect devices have even been manufactured (quantum wave-diffraction detectors; SQUIDs). Position (b) is meaningless outside the CTMU and so logically dependent on unbound telethesis...i.e., *free will*.

About relativity theory: if it can be distilled to a single basic lesson, it is that recursive reality must be treated as *cognition and information*. The term *illusion*, meaning illusory information, refers to subjective limitations on information. But in the special theory, *every frame of reference qualifies as an observer or "subject"*. So "illusions" can appear relative to any subset of the universe. In the CTMU, this aspect of relativity is elevated to a whole new theoretical level. So if you want to make a distinction between "illusion" and "actuality" in the theories of Einstein, you had better do so in light of the CTMU. As Einstein himself would tell you, nothing else will work. [In *Noesis* 69, Chris Cole gives a brief account of Special Relativity and advises members to "get used to it". It may interest some of you to know that (a) the logical completion of Special Relativity is the CTMU; (b) certain fundamental CTMU relationships can be mapped onto Special Relativity in such a way that to reject the CTMU is to reject Special Relativity (see footnote 2). This means that arguing with me is no more advisable than arguing with Albert Einstein. I am told that Chris, who is a better friend of the CTMU than he seems to realize, may want to criticize it yet again. Maybe this would be the place for him to start. Otherwise, he - like the rest of you - should start "getting used to it". That'll be every dime you've got.] According to the editor, some of you may be receiving a complete set of back issues of *Noesis*. Presumably, these are intended to be read. While I naturally held the Noetic Society in highest regard, my experiences in it may one day seem to outsiders like those of a teacher struggling with a classroomful of willful, inattentive children. If you want to be a participating member of this group and make us all look good in the process, do your homework. The following paragraph is addressed to the Mega Society. Regardless of the distinction some of you might make between *IQ* and *intelligence*, this group presents itself in a way calculated to make nonmembers perceive it as a society of intellectual supermen. I state for the second time that this entails high responsibility. Any member who expected or still expects CTMU-calibre revelations to appear first in constipated academic journals need only find a looking-glass to see the inconsistency and hypocrisy of his or her position. Whether or not you regard yourself as privileged to be a part of this revolution, you are bound to admit that the truth is not beholden to professional jealousy or editorial tailsniffing. Prejudice and petty bickering do not support claims of intellectual superiority, however tacit they may be. *Witness my knowledge*, or by yourselves be judged.

I hope that some of you now know a little more about who *you* are, and a little more about who *I* am. I had to verify my own nature the hard way. Perhaps I can spare others some confusion. If not, then not. While I would rather avoid hurting your feelings, the time for guessing games is past: at a metaphysical level of generality, the universe has now been solved. *We are among the angels and demons who, by leave of God, shape reality for good or evil*

through cognition and telesis, mind and will. I show you this for love of *Self*, that you may save yourselves and each other. And I tell you this: there are none so blind as those who *will not* see, nor so lame as those who *will not* stand. My regards to all of you. Jojo Einstein, who has agreed to handle all further argumentation on root metaphors, sends his best.

- ¹ A *syntax* is that part of a transductive language invariant with respect to content. Metaphysics, as a general theory of reality, must account for both "objective" and "subjective" reality. Its syntax, which approximates that of total reality for human cognition, thus includes in principle all semantical mappings of all subjective languages into their respective domains of reference... be the subjects "observers" and their referents "physical reality", or the subjects "telic" and their referents either "thoughts" or modes and patterns of neural activity (e.g., as for the "language of emotion"). Where subjectivity is mandatory for a descriptive transducer and "vicarious" with respect to described transducers, semantical mappings can be relatively intra- or intersubjective, intra- or interobjective, subjective-objective, objective-subjective, or any composition of these; all hold within the (hypotelic) universal metatransductive syntax.
- ² A *transducer* is anything that *processes information*, or "does what the mind does"; not limited to specific computational modes (e.g., the kind of digital mechanical computation deplored by some theorists for its supposed inability to model human mentation), it can be "ultraparallelized" as a deterministic or nondeterministic spatial relation capable of lower-order temporal functionality. Properly defined, such a relation can be "at once" deterministic and nondeterministic, its appearance from within depending on lower-order vantage in spacetime. I.e., determinacy and nondeterminacy are *relativizable concepts*. As a simplistic example of how this works, consider yourself making a cumulative series of what seem to you like "free choices". Your spatiotemporal picture of these selective events - your "worldline" - looks nondeterministic while you are in the process of choosing, but appears to grow progressively more deterministic as you near your last choice. When the sequence is completed, your "instantaneous" (infinitely parallelized) worldline, which started out looking quite random, appears as fixed as stone. Any assumption that it "must really have been one or the other all along" - i.e., that determinacy and indeterminacy (or destiny and choice) cannot coexist as invariance and freedom - is unnecessary without other nongeneral assumptions inessential or inappropriate to the context in question (e.g., atemporal or aquantizative logical two-valuedness).
- Most of us are familiar with the concept of an *algebraic system*, a set on which various spatial and objective relations and temporal operations are defined. Some systems contain an element equivalent to themselves, the *identity*. Imagine that reality is a closed algebraic system whose elements are informational transducers, and that this system has an identity or equivalent complex. It, and its nested subalgebras, exhibit closure under relatively-deterministic transduction (deterministic interaction and/ or cross-simulation as processed information) and so logical inference (decidability). The relationship of nested subalgebras is partially analogous to a comparable series of regressively-simulative, highly parallel deterministic/nondeterministic universal automata, where "universality" is relativized to level of transductive simulation; from the physical level, upward undecidability renders higher lev-

els subject to ambiguities downwardly apparent as virtual equivalencies. Under an inductively-stratified homomorphism from system to identity, the closure property transforms to a closed reflexive relation of the identity with itself. This relation is "paradoxiform"; like self-differentiated reality as a whole, it is informationally *autodiffeonic*.

Define the *empyreon* Γ as the transductive algebra of reality. The empyreonic identity distributes holographically among transductive elements such as the identity of a Lorentz transformation group (the c -invariant zero-velocity Lorentz operator) distributes among frames of reference; here, frames are *cognitive* and distribution is *syntactic*. Call this arrangement a *computative symmetry*. The elements, while mutually distinct, are yet described by a common "metatransductive" identity equivalent to the entire space of elements; their active and perceptual relationships are homomorphic to the autologous relationship embodied in the identity. The identity distributes deductively as the transductive syntaxes of non-general elements in stages of restriction depending on their cognitive empyreonic strata; for subjectively intentional transducers like human beings, its hidden aspects regress to unbound teleosis at the nonrecursive (Γ -recursive) limit. Empyreonic identic distribution is the underlying mechanism of Aristotle's *causes* and Kant's *categories*; it is the why and how of human *a priori* knowledge. The group of Lorentz transformations in Special Relativity is just a nongeneral computative symmetry (*empiron*) dealing with velocial, spatiotemporal information about the transmission and transformation of relative information in Γ . As evidence of quantum transducer root status, note that *any* algebraic system, including every symmetry fundamental to modern mathematics and physics, can be transductively interpreted.

In fact, because each element of reality has a "cognitive identity" incorporating its transductive syntax, and because sets can exist only *for or within* temporal or infinitely parallel transducers, any set with distinguishable elements is comprehensible only as a transductive algebra. The logical and empirical primacy of set theory thus implies that the computative symmetry concept is not merely optional; physical and mathematical reality *must* be interpreted in terms of transductive algebra. Because mutually interactive subalgebras regress inductively to a common identity which determines a meta-algebra, the empyreon is an *absolute logical necessity*.

Physicists are now in hot disagreement as to whether *computation* or *symmetry* is the more fundamental concept in cosmology. The universe appears to work computatively; yet, symmetry provides the clearest and most mathematically rewarding paradigms for specific understanding of physical relationships. The two sides of this debate are like angry parents fighting a custody battle in which the baby is in danger of being pulled in half. You, the readers of *Noesis*, have again seen in action the answer to their problems. Those of you who continue to tug on the baby will have no one but yourselves to thank if you end up with only a limb.

IA refresher may be in order. In *Noesis* 62 and 63, the incredible Jojo Einstein led you through a discussion of *inductive symmetrization* and the conditions under which it must occur. An algebraic system is just a "symmetrized dynamic" whose closure property can be seen as an informational limit. When the system is interpreted transductively, this limit distributes over the transductive syntaxes of elements through that of the "meta-transducer" associated with the entire system; their informational symmetrizations imply

systemic closure under deterministic transmission and transformation of information. Thus, the undeniable fact that all *incomplete* parts of physical reality have correspondingly *limited* transductive capacities implies that all of these parts are included in a joint *inductively stratified* computative symmetry ("inductively stratified" because *there are no logical grounds for assuming that any cognitive syntax but that of global reality is complete*, and in logic - or any logical discipline - it is simply wrong to make insupportable assumptions). Computation and cognition are symmetric, algebraic symmetry is computative or cognitive, and the true language of physics is the CTMU stratified empyreon Γ.)

As previously noted (e.g., *Noesis* 47, page 12), empyreonic inductive stratification accounts for many so-called "imponderables" including mathematical undecidability, Heisenberg uncertainty, quantum indeterminacy, and quantum nonlocality.

³Distributing unbound teleosis over reality makes closure trans-deterministic and amenable to *free will*. This provides the *logico-mathematical* (as opposed to Kantian, *emotional*) basis for a *categorical (ethical) imperative*. Thus, CTMU is a double acronym standing not only for *Computation (or Cognition) Theoretic Model of the Universe*, but for the *Church of Teleology of Multiplex Unity*. This is the first and only categorical mathematical theology; it has been designed as a basis for unifying the world's extant religions while ridding them of their more dangerous and inhumane inconsistencies, and for saving man and the earth from degeneration and self-destruction. As it has been sharply and demonstrably formulated within the realm of advanced logic, it is quite above anybody's capacity for logical counterargumentation.

Religiously (or antireligiously)-dogmatized members have nothing to argue. They need merely reflect that all rational argumentation and/or "scripture", no matter how "irrefutable" and/or "holy", is addressed to the *minds* of recipients. Mind is thus what separates us from or links us to God, and the common structure of our minds determines the relationship. So to know our *real* relationship with God, we must know how our minds relate to *reality*. The CTMU describes this relationship and is thus of paramount religious importance. To try to gainsay CTMU logic is to try to second-guess God in "His" design of our mental structures. Any religious dogma advocating this is antiteleological and therefore unworthy of belief. Since any such dogma is illogical and thus invalid, so are any and all threats or promises it offers for denial or credence. If they are CTMU-incompatible, they are irreal and made to be broken.

The CTMU does not chase followers. Being the proprietor of a human mind, you are automatically a "member". The only real question is your degree of helpfulness or recalcitrance. Prior (ir)religious affiliations are CTMU-compatible to the exact extent that they are logical. If they (and you) are not, the CTMU owes no apologies; it merely waits for you to snap out of your stupor. It cannot be logically resisted. Any attempt to resist it is thus illogical and, if not itself subject to active resistance, deserving only of pity. If you either *love God* or *love reason*, the CTMU makes you a (more or less faithful) lover of *both*. If you choose denial (faithlessness), so be it. The pool of intelligent humanity is an invaluable teleological resource to the CTMU. But my own responsibility is to know and convey truth, not to determine alone its consequences.

⁴The standard idea of consciousness is associated with a subset of neural activity in human brains. In the CTMU, consciousness can be *distributed* over global reality as follows: (1) Science and metaphysics are defined for the conscious mind (standard sense).

(2) That part of reality defined for consciousness is *modeled* in the conscious mind by the act of description. (3) So modelability in terms of conscious processes distributes over scientific and metaphysical theories. (4) This implies that for scientific and metaphysical purposes, *virtual* consciousness distributes over the semantical domains of reference of these theories. (5) As science and metaphysics refer comprehensively to Γ , and Γ respectively, *reality can be consistently treated as conscious in a generalized sense*, whereas no contrary hypothesis can ever be consistently verified (see last paragraph, page 11, *Noesis* 47). Consciousness differs only by kind and culminates in that of Γ .

It has come to my attention that at least one of you claims that the CTMU "draws conclusions that cannot be drawn". But science and mathematics are *logical*, and in logic, the one who is "wrong" is the one who makes incorrect or superfluous assumptions. I happen to have noticed that modern science and mathematics are *full* of junk hypotheses assumed so widely and for so long that they now resemble the Rock of Ages. However, nothing inessential to any theoretical model minimally implied by a set of mental or outward phenomena is scientifically justified. Such assumptions as (1) "subjective and objective reality are absolutely separable"; (2) "reality is verifiably divisible into conscious and non-conscious parts"; and (3) "anything real can be known to the physical brain" beg to be washed from science like dirt from a truffle. Such assumptions, which may initially have conceptual utility, can fast become impediments as knowledge evolves. The CTMU smashes such roadblocks with minimal compassion for old traditions.

It has been asserted in *Noesis* that the CTMU is "not original". Certain non-CTMU physicists, notably Ed Fredkin (formerly of MIT), also define reality in terms of transduction. But their understandings of reality and transduction are limited. E.g., Fredkin's guiding metaphor is the *cellular automaton*, a material construct which arose several billion years after what physicists like to call "the beginning of time". A cellular automaton is a specific kind of *algebraic representation* (an operator-algebra interpreted within a space of configurations) in which transductive cells process mutual information in rigid (unrelativistic) spatial arrays in partial temporal order according to definite rules; it is demonstrably nongeneral. As a guiding concept, it is artificially restrictive of reality. Metaphysical propositions, or comprehensive theories of reality, cannot begin with hypothetical restrictions on reality. The generalized computational symmetry embodied in the quantum transducer alone fills the bill. While this does not make Pepper any more correct, it shows that he was far from alone in the way he erred.

The CTMU, which alone fulfills the millennial promises of traditional philosophy, offers redemption even to those who chronically err. Metaphysics, along with ethics, aesthetics and theology, is now as true a science as physics; philosophy and the hard sciences can now be pursued within *one and the same formalism*, each casting light on the others. Philosophy, for centuries a confusing jumble of meaningless and contradictory wordplay, now has an elegant and well-defined mathematical structure supporting meaningful answers for the oldest, deepest, and most intractable questions we face. For those of free and open mind, it is an *awakening*.

Heed it well, lest a fool take up residence in all your mirrors.

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Societal Bibliography: *Noesis* 44-49; 55; 56; 62,63; 67,68.
I authored about a hundred pages in the first ten of these issues.