Noesis

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$$477367601379^{6171} + 477111628932^{6171} = 477370431683^{6171}$$

THE TWELVE PLAGUES OF SOUTHERN CALIFORNIA·
(with apologies to the Passover Hagadah)

[Self-deleted by Editor for being boring and obvious. We didn't suffer much quake damage. I've been using lots of super glue on busted dishes and crystal.]

ARE YOU AUTISTIC?
by Rosner

In the December 27, '93 issue of the *New Yorker* was a long article by Oliver Sacks on a high-functioning autistic woman. She's a researcher at Colorado State University with a doctorate in animal behavior. (I can't look up her name; our library is closed 'cause of the quake(s).) She's more comfortable with animals than with people; she finds human expressions and emotions incomprehensible, except for a small assortment of common behavior she has painstakingly taught herself to recognize and respond to by rote.

The article says autistics come in two flavors. Low-functioning autistics are generally institutionalized. They're pretty vegged. High-functioning autistics do better with people and everyday tasks. Most autistic savants are high-functioning.

After reading the article and a book, *Nobody Nowhere*, by another high-functioning autistic, I decided that, to some small extent, I'm autistic. As a kid, and even as an adult, I lost myself in repetitive rituals. I count compulsively. My spoken language can be slow, except when repeating a phrase I've already said a few thousand times. As a bar greeter, I've interacted with over half a million people, but my interactive

skills and intuition are not as developed as they should be, considering. So, on a scale of zero to ten, where zero is a sensitive, empathetic person and ten is autistic, I'm about a one point five.

True or not, the autistic model, applied to my own and other people's behavior, has yielded interesting results. One observation--most people can be considered autistic to the extent that they don't communicate to their best advantage. Rather, they remain withdrawn into their own quirks. In the last week, I've tried imitating the woman in the *New Yorker* who approaches communication in an empirical and mechanistic fashion. She does what it takes to facilitate interaction, simulating emotions she lacks. This cold-blooded, synthetic approach is effective at generating the appearance of warmth

I suspect lots of mathematically talented people have a smidgen of autism, which increases concentration and reduces distraction. It's commonly believed that scientists and mathematicians do their best work before the age of 30. My guess is that this reflects a late-blooming breakdown of autism rather than age-related decay--the construction of a better-integrated brain that's more responsive to immediate stimuli (and that can no longer hold onto abstract thoughts in isolation). Some people are at home in their bodies from an early age. It took me into my twenties to become somewhat coordinated. Weight training helped develop neural pathways. It brought me into the dopey human arena; it made me distractible.

So, are y'all autistic? Do you find yourself more at home in abstract mental structures than in the world of people? Do you, like me, have trouble with eye contact? Do you have some miraculous abilities at the expense of competence in other areas, or are you, like Feynman, supercompetent in general? (Feynman himself used some mechanistic strategies to seduce women. He might have had more sexual conquests than any other Nobel Prize winner in physics.) Please write and let me and other *Noesis* readers know your thoughts and experiences.

POMFRIT'S ANAGRAMS & STUFF

1. HE'S LARGE AND ILL-PERSECUTED
2. PERSON WHOM ALL READ
3. LAUD'D NORSEMAN
4. OUR BEST NOVELIST SENOR!
5. FINGER A MARCH SO FINE
6A. WE ALL MAKE HIS PRAISE
   B. I ASK ME, HAS WILL A PEER
   C. A SHAME WILLEE IS KRAP!

7. GREATEST IDEALIST BORN
8. HATED FOR ILL
9. GAL, DICKENS WIFE
10. TRUTH SEARCHER
11. GENERAL TAXED EARTH
12. ACTOR, INDEED!
13. BEST LAW DERNIER
14. IN LONE ABODE

[Editor's comments: I dunno about some of these. Number ten, for example, is an obscure president not celebrated for the pursuit of truth, or for anything else. Here's a topical one (well, probably not topical by the time you get this) I was lucky to devise: NO HIDING A RAT. Wait. Shucks. I screwed up. How about NO HYDING A RAT. Nah, I'm a geek.]

		QUESTION MARK +
86. COMMA + PERIOD	SEMI-COLON	EXCLAMATION MARK
		PSYCHO-PHYSICS
87. INFERIORITY COMPLEX	ADLER	DALEK
88. SUPERMAN	KRYPTON	

ZZ. 1, .707, .480, .353, .275, .224, .188, ?

[Pomfrit also writes that Peter Schmies solved most of his questions appearing in Noesis 81, 82, 83. --Ed.]

HARDING REPLIES TO LANGAN & HANNON, HANNON REPLIES TO LANGAN

Rick Rosner
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U.S.A.

Dear Rick Rosner:

With reference to your issue of Noesis number 87 for November 1993 and Chris
Langan's reply to the 'Chomsky puzzle', I contend that he has not answered the
question. If he believes he has then I suggest that he try it on N. Chomsky.
I've seen Chomsky on our Australian T.V. and believe you me he has the
intellect to be capable of understanding Langan's CTMU. My objections if that
is what they are is simply that CTMU can in this particular context be shown
to be no more than repeditive emptyness clever for sure and of this point
there can be no doubt, and even in general perhaps in itself valid, but
lacking any means to such insight it is not science in the traditional sense.

If Chris doesn't believe this then let me try another one on him, this time
one which can have immediate proveable status: LET HIM GIVES US THE ANSWER TO
THE PROBLEM OF ARTIFICIAL INTELLIGENCE; something I know a considerable amount
about having laboured this one for the past 30 years without success . It
appears 'bottomless' simply because I and everyone else lack the required
insight. If Chris' theory is a theory of everything he should be able to
provide us with a workable on-going solution, one I can immediately type into
my computer here, and then give a simple yes or no to. Failure on my part to
be able to do this speaks volumns for all objections. Even the common man can
judge at this point. I must of course keep an open mind on the matter and am
ready to be convinced if I am wrong. Well then, I await the line listing that
will bring my computer to life !. I will compile it here.

But I have an even more fundamental objection to CTMU. I PERSONALLY DON'T
BELIEVE THE UNIVERSE IS COMPLETE. This tends to color my reactions some what
and I admit to this bias. In an article to the International Mensa Journal
last year I gave evidence for a loose-knit association between space and time.
It may be that this expresses only one example of such 'flabbyness' on the
part of our world.

Robert Hannon should take heart. I don't believe he is right in what he gives
us but is right in believing Relativity to be a sham. For those who missed
it in the press academicians in Cambridge England ran the relitivity equations
on super-computers and found it tragically flawed about two years ago. Their
work showed that relativity breaks down with naked singularities. Their
program was said to have 10,000 lines of code in it not that this impressed me
much having written one with about 200,000 lines of code in it that compiles
to 13.1 megabytes and uses more than 50 megabytes of memory !. And on that
point I return to Langan: I want him to know this. I'm use to proving or
disproving something via the computer. In the case of my own program used to
PREDICT markets - either you win or you loose. The market has no time for
loosers. If you are wrong you don't get a second chance, you go to the wall.

Please note: NONE of the above is an attack on the person personality or
good intentions of the above named gentlemen (which I take as given) any more
than it is an attack on myself. I have suffered myself and continue to do so,
partly from the way I am treated by people in general, partly from events
within ISPE, and partly by failed health which after 13 years remains a
mystery to every medico specialist or otherwise who has examined me, and
don't wish to undermine anyone. At our level we need each other.

A random thought occures to me: HOW ABOUT A THEORY OF MEDICINE '. Worth the
persuit ?.

I have enjoyed reading the works of both Hannon and Langan: Hannon because I
enjoy attacks on that great sacred cow of 20th century science whose
limitations for future human achievement offends me deeply and always has
since the age of 10 (40 years ago this year); if there ever was a jewish
plot this would have to have been it: and Langan partly because he uses
language in a way one would need to search a long way to find, partly because
he is doing what I have longed to do and gives me hope for the future without
which I don't think I could continue for very long, but more for it's
gutsyness and his personal ego strength in confronting an establishment that
has long ago betrayed my youthfull dreams. All I ask is for answers: that is
the common thread of my life.

                                    Sincerely,

                                    Chris. Harding

ROBERT J. HANNON   4473 Staghorn Lane   Sarasota FL 34238-5626
11 Jan 94

Chris Langan
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Speonk NY 11972

Dear Chris,   Re: NOESIS 87

Unlike you, I do not write "outraged responses". Only cold
objectivity is appropriate to serious scientific discussion.

1) I am not a spacehog. You do not compete with me for "airtime".
I send my stuff to Rick, offering it for publication. He
publishes it or he doesn't. He once told me he publishes
everything he receives, but not necessarily right away. If
censorship arises it will result, as always, from intellectual
bigotry.

As I interpret your message, I must not offer my views for
publication in NOESIS because you and Chris Cole and unnamed
"others" have decided they are wrong and a waste of space. Since
your group are all vastly superior to me, I am indeed wrong just
because you say so.

2) I read your commentary, carefully and several times. I
understood all that you said. You proved nothing. If there are
"schoolboy errors", they are entirely yours.

You went on for pages without a single proof that the conventional
LT is properly finished algebra, and that $x/t = C = x\#/t\#$ is not a
fundamental and necessary algebraic premise of all derivations of
the LT. You introduced invalid arguments, and you even implied
that the basic rules of algebra can (perhaps must?) be bent to fit
the desires of its user.

And, to my surprise and disappointment, you resorted to ridicule
and calumny, which are unacceptable in serious discussion between
sophisticated adults.

3) We will never learn the truth about nature if it is forbidden
or considered presumptuous to question all of those who have gone
before. To question the conventional wisdom is not to imply that
others are stupid. To propound ideas and arguments that, if true,
invalidate the conventional wisdom does not imply that everyone
else is stupid. There have been many theories accepted by the
greatest minds of the time and later proven invalid. Some of
those theories seem downright naive to us, but they were very
seriously believed and vehemently defended by the smartest, most
highly-educated people at the time.

I find it laughable that you take the position that I am implying
that thousands of bright, well-educated people are "dumb", and then
you presume you possess the intellectual and educational

superiority necessary to lecture me about algebra and physics, and specifically about a subject that I have intensively studied for the past four-plus years.

4) Algebra is objective and literal; its principles and rules can not be varied to suit the whims of its user.

5) Simple ideas, concepts, theories that are widely accepted often have all manner of absurdities plastered on to them as time goes by. Einstein's Theory of Special Relativity is an example. My experience with "experts" in that field is that very, very, very few have ever read Einstein's seminal 1905 paper, "On the Electrodynamics of Moving Bodies", and even fewer have gone through his derivation of what we now call the LT as presented in that paper, step-by-step, assumption-by-assumption.

6) If the Michelson-Morley experiment proved anything, it is that the velocity of light does not change in "empty space" between a source and a detector that are at rest relative to each other, whether or not source and detector are jointly moving relative to something else. It is a fact that C has not been proven to be invariant.

7) I did not say that "any scientific hypothesis requires no (logical) support." I said that "relativistic logic" is not necessary to support the (restricted) principle of relativity". You confuse "relativity" in the sense of Einstein's "principle of relativity" with other, broader concepts of logic. The word "relativity" does not mean the same thing as the word "relativism". Here is Einstein's Principle of Relativity, quoted from the English translation of his 1905 paper:

"The laws by which the states of physical systems undergo change are not affected, whether those changes of state be referred to the one or the other of two systems of co-ordinates in uniform translatory motion."

This is the totality of what Einstein meant by "relativity" in 1905, and many years thereafter. He later called it the (restricted) principle of relativity because it is restricted to uniform translatory motion.

Used in reference to Einstein's Theory of Special Relativity, the "relativistic logic" to which I referred in previous comments is the BS that has grown up about the distortions of space and time commonly associated with the Theory of Special Relativity.

8) Despite all your huffing and puffing, it is a fact that the LT, as derived by Einsteinian logic, is a simple mathematical construct predicated on a very specific physical situation and very specific assumptions, using simple, straightforward, mathematical procedures. (That situation and those assumptions are what you call "the context being modelled".) You seem unaware of that physical situation, and that an absolutely essential element of that situation is a "ray of light", moving at C = x/t, relative to an IFR that is, in turn, moving at V relative to the observer's

IFR. It is that "ray of light" that is being observed; it is the
instantaneous coordinates of that "ray of light" that are being
mathematically "transformed" from the origin and metrics of the
IFR relative to which it moves, to the origin and metrics of the
IFR of the "observer".

It is incorrect to apply the LT (assuming it is valid) to any
physical situation that does not fully conform to "the context
being modelled".

You say "you must allow for the entire range of motion". I
suggest you direct that "must" to Einstein and all others who have
derived the LT. He and they failed to do so in their algebra.

What you say about allowing "for the entire range of motion" would
be very desirable. Indeed, it probably is what Einstein
intended, but it is not a factual statement about the algebra by
which he and many others derived the LT. They all failed to
integrate that intention into the mathematics. It may be assumed
that something other than a ray of light is being observed in the
physical situation, and that said "something" is moving at x/t = Z
(Z not equal to C). Then the LT equations will contain Z, <u>not</u> C.
Then Z is not a constant, but a variable whose value depends on
the actual velocity of the "something" that is under observation
in another IFR.

x/t is not an "open variable" in the LT. It can not equal
anything but C.

9) You seem unaware that Einstein specifically assumed:

(9-1) $2AB/(t'A-tA) = C$

to be a universal constant. He did not qualify "universal" in any
way. 2AB is a linear distance corresponding to a round-trip taken
by "a ray of light" from A to B and back. 2AB is a distance, x.
(t'A-tA) is the time interval required by the ray of light to make
the trip 2AB = x. Therefore, (t'A-tA) is a time interval, t, and
(9-1) is:

(9-1A) $x/t = C$

Since C is a universal constant (that is, it is the same
everywhere and everywhen), it is the same in all frames of
reference, inertial or not. This means:

(9-1B) $x/t = C = x#/t#$

which is the sole definition of the relationship between x, t, and
C that Einstein uses throughout his derivation.

Example: Immediately before starting his derivation, Einstein
says:

(9-2) $x' = x - Vt$

and applies this definition of x' in his succeeding steps. Then, a few steps into his derivation, he says:

(9-3) $\qquad x'/(C-V) = t$

which is the same as:

(9-3A) $\qquad x' = Ct - Vt$

comparing this with (9-2) it is crystal clear that:

$\qquad x = Ct$

This is not a special case, but a step in Einstein's derivation of his supposedly general "transformations".

Contrary to your argument, there is no mathematical or logical or physical inconsistency in $x/t = C$, where C is a constant velocity. It does not imply that C is "variable", or that x and/or t are constants. x may have any value so long as $x/t = C$; t may have any value, so long as $x/t = C$. x and t must always be in the ratio C, because C is defined as a constant velocity. There are other situations in math and physics in which a constant is the ratio (or the product, or sum, or difference) of two (or more) variables.

I get a vague impression that you think C is just a number. That is absolutely not true. C is a velocity, which is algebraically represented by the ratio x/t. Sure, you could say $C = K(x/t)$, but the K would either vanish in the derivation of the LT or it would appear in the LT equations.

Having defined x/t as $= C$, the rules of algebra do not allow x/t to equal anything other than C within the same derivation, or in applying the results of that derivation. To then assume that $x/t = v$ (v not equal to C) is invalid, incorrect, just plain wrong, and will yield spurious results.

10) Einstein's mathematics and logic in his 1905 derivation, and in his later "Simple Derivation" are simple, old-fashioned, prosaic algebra, differential calculus, and logic. If there is any "group" property in the LT it arises from the fact that it is predicated on a ratio: $x/t = C$; and x^* seems interactive with x, and t; and t^* seems interactive with t and x, in the unfinished algebra of the conventional LT. When the algebra is finished, that appearance of a "group" property vanishes in the sense that x^* is not a function of t, and t^* is not a function of x. The only remaining "group" property arises because the LT equations are simultaneous, and have valid physical meaning only when evaluated simultaneously, as x^*/t^*.

No "internal inconsistencies" in the LT? It flatly violates three of Einstein's crucial initial assumptions.

11) Einstein, in his 1905 derivation of the LT, makes it crystal clear that "a ray of light" moves at (C-V) or (C+V) relative to

an observer who is moving at V relative to the source of that ray. If you were in a vehicle moving at 10C toward a source of light in empty space, (assuming you had the technology to make such a measurement), you would measure the velocity of that light relative to your vehicle to be 11C. The Doppler effect is a physical impossibility if light does not behave in that manner. I suggest that you read what Einstein actually said about C in his 1905 paper.

You don't understand that C is the velocity of propagation of light in a vacuum, relative to its source. You also seem not to understand that if C is "invariant" then so is V, and every other velocity under the same conditions.

12) Since writing my "Completing the Lorentz Transformation" I have found that the LT is not only unfinished algebra, but it violates one of the most basic (and specific) physical assumptions on which Einstein predicated his derivation: the homogeneity of space and time (HST).

In HST $x*=x$, $y*=y$, $z*=z$, $t*=t$, everywhere and everywhen. Those relationships are independent of V.

The LT is completely invalid.

13) I do, indeed, take the position that the rules of substitution and reduction and all of the other rules of algebra must be pursued to their final conclusion. Failure to do so involves the risk of invalid interpretations of the meanings of the unfinished "results". Special Relativity arises entirely from such misinterpretations. One can not derive a relationship using specific assumptions and properly applying the rules of algebra, and then apply the results using contradictory assumptions and/or violating the rules. Algebra is not subject to the whims of those who want to use it to "prove" or "demonstrate" things which are external to the inescapable rules by which algebra must be applied. It is just plain wrong to change the rules to suit the "players".

Applying your view, anyone can bend any mathematical relationship to apply to anything and yield any desired result.

If your views are valid, then there is no need to go to the trouble of deriving mathematical relationships. All you need do is decide what you want that relationship to be and write it down. Then change it any way that may be necessary to make it seem to describe what you imagine to be "reality"...any "reality".

14) "Einstein's algebra is "tautological"? It is "a needless endless repetition"? I assume you mean that in the sense of "unnecessary"? Are Maxwell's equations also tautological? Why do our scientists use the LT to "prove" or to "predict" this, that, and the other thing? Why bother with the algebra? Just make up the "facts" of nature to suit your mood.

We used to honor The Scientific Method, which required rigidly

5

controlled, multiple experiments to "prove" theories. Now that
has long been abandoned. Oh yes, I know about all the "proofs" of
the LT; its easy to show that none of them factually "prove" the
LT.

15) Maxwell's field equations are asymmetrical under the Galilean
Transformation, which is properly stated as:

(15-1)   x# = x-Vt   z# = z
                         y# = y   t# = t

The asymmetry arises because of V, which is due, in turn, to the
simple fact that Maxwell didn't consider V in that physical sense
in developing his equations.

Hertz eliminated the asymmetry in 1892, well before the
Einsteinian LT.

Einstein failed to recognize that the asymmetry can also be
ascribed to the arbitrary way in which the GT is defined: the
values of x# and x are locked to the origins of their frames of
reference. This is not necessary. I have developed a simple
variant of the GT, which I call the Metric Transformation:

(15-1)   X#=X   Y#=Y   Z#=Z   T#=T

where the symbols represent metrics (=standards of measurement)
which are independent of origins or other arbitrary references and
independent of V.

Maxwell's field equations are symmetrical under the Metric
Transformation, eliminating the logical premise of the LT.

16) Causality Paradox? It is a physical impossibility to "see"
light before it is emitted. We see everything as it was in the
past: the more distant an object in space, the earlier the time in
its past that we see. No matter how fast we may move toward a
distant object, we can not physically reach it's place in space at
any time other than its local "present", nor can we see it's
future. When we travel toward an object, we do not travel "into"
the past; instead we speed up the rate at which the past of the
distant object is revealed to us. The closer we come to that
object, the more recent the part of its past that we see. There
is no such thing as "time travel" in the sense of travel into a
real, physical past with which we can interact. You might "see"
your grandfather if he lived on a planet an appropriate number of
light-years away from earth, but neither you nor he could not
interact with the other.

17) The Luminiferous Aether is not necessary to the GT or the MT.
The physical processes by which EM radiation propagates empty
space remain completely unknown to our science. We haven't the
vaguest idea as to why empty space has permittivity and
permeability, nor as to how and why those properties determine C.

18) Minkowski "spacetime" is a theory based almost entirely on

6

uproven, possibly unprovable assumptions. It is not a premise of either of Einstein's two derivations of the LT.

19) The theoretical origin of C is Maxwell's equation:

$$C = 1/\sqrt{\epsilon_0 \mu_0}$$

which applies only to EM fields.

20) A question: $\phi = F(v)$ is the complete description of ϕ, and v is a constant. What is the value of ϕ? If v is a variable, what is the value of ϕ?

Another question: A and B are coplanar two-dimensional vectors. If A and B are orthogonal, what is their vector sum? If A and B are parallel, what is their vector sum?

21) I've enclosed a copy of the English translation of Einstein's "On the Electrodynamics of Moving Bodies". Study it; you may find it a revelation.

Best regards,

Robert J. Hannon

7

PRICE REPLIES TO HANNON

Dear Rick:

I am sure that Robert Hannon is correct when he says that many who talk about black holes and wormholes "are not really familiar with the original, basic physical premise of such ideas." Who these people are is not so clear. It is my experience that the scientists who formulated these theories and concepts do understand the issues and premises.

Most of the observations Robert makes address the issue of the reality of black holes. That an object falling into a black hole never crosses the event horizon is well known and fully discussed in the literature. It is true that as a star collapses, on the way to forming a black hole, time slows down exponentially. In this sense the star never collapses within its Schwarzschild radius. For this reason such stars were referred to as "frozen stars" in the literature prior to 1967. However even though collapsing stars are locked in stasis they behave as if they are one-way funnels, cloaked by an event horizon from which matter can never return. There are two reasons for this: the surface cannot be seen and cannot be reached.

The surface of a collapsing star is unobservable because time slows down asymptotically as it approaches the Schwarzschild radius (as Robert says). This redshifts the radiation emitted. For a solar massed star the light is redshifted by many orders of magnitude within the first second of collapse. Within an instant the surface of the star darkens towards total blackness. That is why black holes are called "black".

The surface of a collapsing star is unreachable because all objects contract in the radial direction as they approach the Schwarzschild radius. This is equivalent to space stretching around the star, increasing the distance to the surface. Thus matter falling towards the star has nothing to support it. Hence the star acts like a vacuum, gravitationally sucking up all matter around it. That is why black holes are called "holes".

The exterior of a collapsing star very rapidly approaches the exterior solution as formulated by Schwarzschild. This object we call a black hole. If we ever come across a black hole this is what we will observe. The interior solution with its singularity at centre is non-physical and, I agree, may not exist anywhere. But this is the conventional wisdom.

For these reasons the term "black hole" was felt appropriate. For a fuller description of the reasons see the discussion in *Gravitation* WH Freeman (1973) ISBN 0716703440 by Charles W Misner, Kip S Thorne & John A Wheeler in the section headed 'Why "Black Hole"?', pages 872 - 875. John Wheeler, one of the authors, coined the term black hole in 1967.

Robert's claim that the algebra of special relativity is flawed has already been dealt with, to my satisfaction, by Chris Cole and others. Anyone who wants to read about the extensive empirical verification of general relativity I recommend *Was Einstein Right?* by Clifford Will.

Mike Price   price@price.demon.co.uk

PS Enterprising or foolhardy black hole explorers take note. Beyond a certain point the mass of an infalling object locally contributes to the mass, and hence radius, of the black hole. The event horizon "reaches out" and swallows an object that too closely approaches it, in finite external time. Munch, munch!

PPS I was most tickled by Robert Dick's "Heavy Ice vs Light Water".

WAVE-PARTICLE DUALITY AND THE PHOTON BY ROBERT J. HANNON (continued)

It is apparent that deBroglie's equation does not deal with conversion of the internal energy of the rest-mass of a particle into a wave, but deals instead with conversion of a moving particle's momentum into the energy of a wave.

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B) In the other story, not often found, deBroglie did something more scientific. He had devised a theory to explain a part of Bohr's theory of atomic structure, in which the orbiting electrons can occupy only specific orbits around the nucleus. deBroglie postulated that the electrons are guided around the nucleus by pilot-waves. If so, he postulated that the diameter of an electron-orbit must always equal an exact integral number of wavelengths of those pilot-waves. He also concluded that the wavelength of a pilot-wave must be inversely proportional to the orbital velocity of the electron in a specific orbit, which implied a fixed physical relationship between an electron and its associated pilot-wave.

DeBroglie knew that the energy, E_q, of a quantum of electromagnetic waves is equal to hf, and that the momentum of an electron along its orbit is mv. He assumed that the pilot-wave imparted motion to the electron, but that it could not transfer its energy to the electron, because that would consume the pilot-wave. He apparently assumed that the electron could somehow be given a velocity, v, by the pilot-wave without transferring any energy in the process. deBroglie knew that electromagnetic waves propagate at c, and that wavelength L = c/f. So he concluded:

(1-4) $$L = h/mv$$

All of the foregoing seems logical, except that deBroglie had no known physical premise to equate the momentum of the orbiting electron with the quantum energy of the pilot wave divided by c (mv = h/L = hf/c). By some unexplained process, the pilot-wave transferred velocity to the electron without transferring energy. In addition, the electron is assumed to have a specific physical relationship to the pilot-wave as both proceed in their common orbit around the atomic nucleus, yet the wave moves at c, while the electron moves at v. Nor had he any specific reason to assume that only a single quantum of the pilot-wave must be involved.

The logic leading up to (1-4) does not imply that the orbiting electron is converted to the pilot-wave, but rather that the electron and the pilot-wave co-exist. The source of the pilot-wave and its energy is not explained. Why and how the pilot-wave propagates in a circle centered on the nucleus is not explained. Why and how the electron is locked into orbit by the pilot-wave is not explained.

The possibility of the co-existence of a pilot-wave with an
electron in a specific orbit within an atom does not require
that electrons are associated with pilot waves when they are
moving freely through empty space. (1-4) is predicated
solely on the motion of an electron in an atomic orbit.

There is no necessary logic that mandates that (1-4) applies
to all masses in motion.

Nevertheless, the scientific community presumes that (1-4)
describes the "conversion" of an electron to a wave, and the
conversion of any mass to a wave, and that (1-2) describes
conversion of any wave into a mass or particle. And the
scientific community presumes that (1-4) and (1-2) mandate
that all particles have wave-equivalents, and that all waves
have particle-equivalents.

It is a most peculiar logic that leads to the conclusion that
deBroglie's equation implies a "duality" between any particle
and a wave or between any wave and a particle.

How about the "proofs" of wave-particle duality?

* Electron Diffraction does not necessarily demonstrate that
electrons are converted to waves, but only that fast moving
electrons, which carry electromagnetic fields, may generate
EM waves under certain conditions when they interact with the
fields of other particles.

* The Photoelectric Effect does not necessarily demonstrate
that EMR quanta are converted to particles (Photons) to free
electrons from atoms. It is possible that the electrons are
liberated by some other effect of EMR of a specific threshold
frequency.

* Electron-Positron Annihilation is the sole evidence that
particles can actually be converted to waves. The situation
is very different from that envisioned by deBroglie.

It is interesting to note that while today's physics accepts
deBroglie Wave-Particle Duality, and the physical existence
of Photons, it no longer accepts the physical model of the
atom on which deBroglie predicated the logic by which he
devised his equation.

THE COSMOLOGICAL REDSHIFT

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ABSTRACT

The Cosmological Redshift is generally assumed to result from the mutual recession of gravitationally-independent bodies associated with the expansion of the universe. An alternative explanation is offered.

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* A redshift is a uniform percentage reduction in the frequency of every line in a spectrum.

* A redshift does not refer to or (necessarily) involve a relative increase in the intensity of the normally-red lines in a spectrum,

* The cosmological redshift refers to the redshift of the spectra of distant objects that are not gravitationally-bound to our galaxy.

* The cosmological redshift seems to increase linearly with the distance of objects from the earth. Applying the purported geometry of General Relativity then infers that the cosmological redshift increases linearly with the relative distance of any pair of objects that are not gravitationally bound. All such objects appear to be receding from each other; the farther apart, the faster.

1) The conventional wisdom attributes the cosmological redshift to the Doppler effect which would arise from the expansion of the universe predicted by General Relativity. The "relativistic" definition of redshift (Z) used by cosmologists is:

$$(1-1) \qquad Z = [(1+V/C)/\sqrt{(1-V^2/C^2)}]-1$$

By this formula Z approaches infinity as V approaches C.

From the observational standpoint:

$$(1-2) \qquad \begin{aligned} Z &= (C/Fo - C/Fe)/(C/Fe) \\ &= Fe(1/Fo - 1/Fe) \\ &= (Fe/Fo)-1 \end{aligned}$$

Where Fe = emitted frequency and Fo = observed frequency, and Z approaches infinity as Fo approaches zero.

According to (1-2), $Z = 1$ when $Fo = Fe/2$, that is, when the observed frequency of every spectral line is exactly half of its frequency as emitted from a source at rest here on earth.

2) There is an alternative that will produce a true redshift corresponding to observation and which will increase linearly with the distance between bodies that are not gravitationally bound. A small constant acceleration of the velocity of propagation of

light in a vacuum (C) will yield the observed cosmological
redshift. An acceleration of about 0.0075 meter/second per year
will suffice, if we assume $Z = 1$ at about 20 billion light years,
as implied by observation.

Thus a quantum of light emitted a billion years ago would move
through empty space at $(3\times10^8)-(0.0075\times10^9) = 2.925\times10^8$
meters/sec, and would appear to us to have a lower frequency than
light from the same kind of atomic source here on earth.

My estimate of the acceleration of C is based on observation,
which infers that at a distance of about 20 billion light years,
all frequencies in a spectrum are reduced by 50%.

This acceleration would not affect light already propagating
through empty space, because such an effect would violate the most
fundamental of all physical laws: conservation of energy. This may
imply that the acceleration of C is due to a continual change in
the physical processes by which energy is transferred to light
(and all other electromagnetic radiation) as it is emitted by
atoms.

The conventional wisdom says that Einstein's Theory of Special
Relativity does not permit C to change. That opinion is not
supported by anything that Einstein said about C, or by
observational evidence.

3) Is it possible to determine if C is accelerating? I expect
that such a measurement is far beyond our current technology. The
measurements would have to be performed using light from a source
having an exactly-known distance of at least 100 million
light-years. However, if I am right, we can not know the exact
distance corresponding to a light-year, further complicating
matters.

However, if I am right, the distance which light travels in a year
also varies with time, so the distance in time to objects is
proportionally greater than that assigned by the conventional
wisdom. By my theory, the velocity of light 20 billion years ago
was 0.5C (based on observation of the CR). That means that
objects we think are 20 billion years away in time are actually 40
billion years away in time.

Obviously, my theory describes a universe that is different from
the conventional, one that is not (necessarily) larger, but which
is older.

4) As presented above, my theory implies that C was zero at a
distance corresponding to 40 billion "light-years". That would be
true if the acceleration of C (Ac = dC/dt) is constant. That is
not necessarily true. Observation indicates that the curve of Z
vs distance deviates from linearity beyond about 15 billion
"light-years", although it is uncertain whether the rate of change
of Z with distance increases or decreases beyond that distance. I
suspect that the acceleration of C is not constant, but has
increased with time.