

## Autumn Leaves

10/28/05

*Random Thoughts in the Arts and Sciences,*  
*Roy Lisker*

### **I. Humanities**

(a) Those who claim that fiction is about "content" are in error. Those who claim that it is about "form" are also incorrect. Content is always important, but what distinguishes "fiction" from "non-fiction" is that content in fiction *is just another one of the elements of form* , sharing place with style, structure and above all, language.

Narrative relates more to the history of narrative, and contemporary fashions in narrative, than it does to "real life". This does not mean that life ( psychology, historical events, data, moral messages ) is unimportant, but it is a curious observation, which I've also made with respect to my own writing, that those works which appear to have the greatest "verisimilitude", are those in which the author was primarily occupied with translating the "language of verisimilitude" onto the page.

'Don Quixote' is so real to us that we can laugh and commiserate with 'his' foibles 400 years after he saw the light of day. The strong impression of realism conveyed by Cervantes' novel is due largely to his appropriation of, and farcical treatment of the high-flown language of the ever-popular chivalric romance of knights, dragons and damsels in distress.

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In the same way, 'Hamlet', written about the same time, continues to feel real to us, (to the extent that many people believe that Hamlet was a real person living in the 17th century) because, among other things, Shakespeare was appropriating, satirizing and enriching the stage and linguistic vocabularies of the "Revenge Tragedy", the Elizabethan equivalent of the B-movie that captivates audiences today.

The concept of Form is large enough to include Content, Structure and Language. All three must be present in their totality for a work of fiction to succeed in its aims. Even political messages, morals and dry factual information can legitimately inform the content of a novel or story and succeed *as fiction*, if these elements are treated as components of the formal whole.

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(b) *Hamlet, Act III, scene v.*

The only way to reconcile the impossible series of situations portrayed in this scene, is to place the Ghost's reappearance *before* it, that is to say, *between* the time Hamlet leaves the Chapel and his entrance into his mother's bedchamber.

The Ghost is indeed, stern, filled with rage and admonition, though *not* because Hamlet didn't kill his uncle in the Chapel. It's because his unwholesome presence *can't enter* the sanctuary of the chapel to exercise his demands upon his son. Chagrined by his own impotence, he blames his son for the undeniable truth that only a total villain can murder anyone while at prayer in a holy precinct, even a complete villain.

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In my version, Gertrude *comes running out* into the corridor. Hamlet points to the Ghost: "Don't you see him?" Gertrude is horrified: "No ... etc." Then ,to herself : "(my son is mad)! "

*Then* Hamlet enters the bedchamber. It all makes sense! Hamlet, shamed by his father, strikes out rashly at the presence behind the arras, killing Polonius. Then he turns to the "shriving" of his mother, etc...

The standard version, which puts the re-appearance of the Ghost mid-way through this scene, makes no sense whatsoever. In all productions I have seen, when Hamlet, at the prodding of his father, says to his mother, "What is it with you, madame?" one is struck with the ludicrous nature of the juxtaposition.

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(c) It will probably be forever impossible to change the "mind-set" of elementary education, which is based on the principle that children must be given "facts" and "answers" until they reach college, at which time they are, in theory at least, encouraged to develop inquiring minds.

Because of this tradition , there will be no teaching of philosophy or the history of philosophy in secondary education. This is very unfortunate as it is the only proper solution to the whole issue of "Intelligent Design" and the pseudo-conflict with Evolution.

Considered as a philosophical position , Intelligent Design has a long and respectable history. Plato's dialogue , the *Timaeus* is the very prototype of an intelligent design theory. There are also Aristotle's Prime Mover; Kant's synthetic apriori ; Hegel's dialectic

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process; various doctrines that go under the heading of "Personalism" (Royce, Peirce, Berdyaev) ; Whitehead's "Process and Reality", even Paley's "watch metaphor"

. Nor should one forget Einstein's oft-repeated insistence that "God does not play dice with the universe", or "The Lord may be subtle but he is not malicious."

These are *not* scientific ideas, although they will certainly influence the daily practice of science. Rather they are philosophical cosmologies. Neither they, nor the dogmatism of "Creationism" should be permitted to usurp the status of Evolution as a well-established theory of modern science.

However they all have a legitimate place in a course in philosophy. If such courses were offered or required in high school education, the so-called "Intelligent Design" debate would fall flat on its face. There could even be a place for discussing the dogmas of "Creationism". What could be more appropriate to a philosophy course at the high school level than to open up a serious dialogue on all theories of creation of the universe through divine intervention? The Bible, the Titans of Greek mythology, the Poopul Vuh.....

However, as I've said, there is very little chance that philosophy will ever be taught as a high school subject. Science sets out to solve problems ; it compiles "facts", or raw data. Both Science and Religion give "answers", via hypothesis, theory, experiment, etc. Philosophy is all about asking questions, and elementary school teachers and administrators would be disturbed

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indeed if one were to suggest that the "art of asking questions" be included in the basic curriculum.

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(d) *On the absurd claim of molecular biologists, that they are on the threshold of creating life in a test-tube.*

The first objection that one can make is that Biology doesn't study life. What it studies are the machines that house life. The general procedure in most cases is to kill the life of a creature before examining its body. Sometimes the creature is tortured as well. So far in this from an understanding of the connection between life, living machines and matter, that they haven't got the least notion that such behavior carries a karmic debt that must be paid in terms of personal suffering in this life or future lives. Morality and Truth really are inseparable, and if one seeks knowledge by immoral means, the result is bound to be failure.

This possibility doesn't occur to them *because they're not the least interested in what makes a living creature live* . Were they to be asked to treat human beings, in particular those persons close to them, in the same way, they would instantly recognize that when one tortures and kills living beings to learn about the nature of life, one is doing something akin to insanity.

The next objection one can raise, is that every scientific observation since antiquity has shown that the distinction between a living mind and a piece of inanimate matter is at least as great as the distinction between space and time, or two dimensions and three dimensions. Perhaps these molecular biologists believe that it

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might be possible to "create time" by boxing off space in a certain way. (Of course one would have to wait awhile for the effect!)

Likewise couldn't one "build" a 4th, 5th, or nth spatial dimension by doing the same thing? Granted that some of the building blocks would be oddly shaped.

With respect to the creation of life: does anyone have any evidence whatsoever that molecules have sensations? Can one instill "*hope*" and "*fear*" into a batch of chemicals if the potential for them did not exist beforehand?

Like space, time and matter, it is undeniable that the living and the dead are closely entangled. As the Christian philosopher, Paul says, "In the midsts of life we are in death." But *Life* and *Death* are principles, not attributes, and, as Aristotle would argue, they cannot act on each other *as principles*. As attributes of a body they can alternate, so that the body which is alive today is dead tomorrow; and that dead body can serve as a meal to keep another body alive for a stretch of time.

Life per se, as principle, apart from the bodies in which it chooses or ends up inhabiting, is as indestructible as Space, Time, Matter, Energy and Radiation. It cannot be killed, in the same way that demolishing a building does not have any effect on the space it filled, or the quantity of matter in the rubble.

What is most intriguing for me is the origins of this Frankenstein monster mentality. All the science magazines, journals and many textbooks take it for granted that "life" is just a combination of chemicals. Science demands data, that is to say,

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evidence, and I've yet to see any evidence that a chemical has understanding or, as Husserl would say, "intentionality".

Here is my view on the source of this strange dogma, as peculiar in its own way as those of the Creationists:

For 2 millennia European science was crippled by fanatical and dogmatic religion and superstition. The unbelievably arduous task, since the Renaissance, of throwing off the yoke of ignorance, has resulted in a situation in which scientists go too far in the opposite direction. This has resulted, in all too many quarters, in a self-righteously amoral science. We are all the recipients of the terrible harm that this has brought upon us.

It is this smug, self-serving and arrogant doctrine of the amorality of science that has led some particularly confused religious groups to advocate Creationism or the thinly veiled substitute labeled Intelligent Design.

My belief that Truth and Morality are inseparable may be taken as an article of "faith". This may be interpreted as a religious bias, but it is far from being a superstition or a dogma. Despite assertions to the contrary, the physics community has been deeply wounded by its role, (indirect and no so indirect) in the creation of the nuclear bombs. And the notion that torturing and murdering an animal will have no psychological effects on the person who does it, because he is a truth-seeker trying to understand the nature of "life", is as ignorant in its own way as the belief that an old man in a white beard cried "Shazam!!", and the universe came to be.

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## II. Physics

(a) By virtue of Relativity's Light Principle the traditional roles of "Time" and "Space" have been reversed: we now measure distances in terms of units of time .

Long distances are measured by light years. Even the length of the standard meter at the Parisian Bureau of Standards is determined by lasers and atomic clocks. Thus, the most basic measurements with rulers are based on units of time.

"Time" is measured by clocks. It appears that the "standard clock" is generally taken to be the caesium atom, the vibrations of which are calculated by quantum principles. Therefore *all spatio-temporal measurement today*, even the most elementary, depends equally on Relativity and Quantum Theory: Relativity for the Light-Principle, and Quantum Theory for the theory of discrete energy levels and quantum jumps.

(b) Given the Light Postulate and the Relativity Postulate, it becomes possible to compare time measurements by translating time into distance. That there exist two distinct ways of doing so suggests the possibility of the existence of two distinct time dimensions.

*Method I:* Fix a standard length  $L$  in the universe, a kind of "great ruler". Then the standard unit of time will be the amount of time in which a light photon goes between the terminal points of the ruler. As light "escapes" into the universe and indeed cannot be recaptured, we may call this the "linear" measure.



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*Method 2:* A photon is already a clock. It "pulses" at a frequency which is directly proportional to its energy. This "pulsation time" is intrinsic in some sense.

Thus, "Linear Time" is Relativistic Time; "Pulsation Time" is Quantum Time. One can ask if these two methods of time-keeping give the same answer.

Imagine an experiment in which a photon is reflected back and forth between mirrors set a large distance away from each other. A coherent light beam of, say, ultra-violet light can go back and forth between these two mirrors indefinitely. The time of a complete trajectory gives the relativistic measure; the frequency of the ultraviolet gives the quantum theoretic measure.

(c) Owing to the absolute value of the speed of light in all reference frames one can express time intervals in terms of length, and vice versa. We restrict the kinds of measuring instruments to clocks and rulers

*Type-1 clocks* : One decides on a standard unit, say a notch on the ruler. The "unit" can be very large, like the distance between Earth and C, a nearby star.

The time it takes for a ray of light to make a round-trip from Earth to C can be taken as the standard unit of time. Subdivisions along the straight line between Earth and C allow one to measure any subdivision of that unit of time.

This is not enough: one also needs a *clock* with which to do the measuring. This can be constructed from a collection of mirrors between Earth and the designated subdivisions. This "*mirror reflection clock*" is derived from Special Relativity.

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*Type-2 clocks* are based on Quantum Theory:

Since light is both a wave and particle phenomenon, one may treat the vibration of a photon at a given energy as the standard clock. The translation from "energy" to "frequency" is as direct as that from "length" to "time":  $E = h\nu$ .

In this case, if the frequency of a certain kind of light is accepted as the "standard", the photons at this frequency will beat out the units of the standard clock.

However, type-2 time cannot be subdivided, as I show in my paper *Time, Euclidean Geometry and Relativity*:

<<http://philsci-archive.pitt.edu/archive/00001290>>

Taking the vibrations of the caesium atom as the standard, one cannot *bisect* this minimum time unit by any method other than by finding *another* system that "happens" to pulse at exactly double the rate of the caesium atom.

It is intriguing to speculate how these two forms of "absolute time reckoning", one of them based on Relativity, the other on Quantum Theory, happen to tie up with the two kinds of time in the universe, the "local time" of the Poincaré group, and the "cosmic time" of the Hubble Expansion Field. Observe that we actually use a Type-2 clock calculation when employing the red-shift to calculate distances in the universe. This is based on a theoretical assumption that the Hubble constant is uniform throughout the entire cosmos. Therefore an association of the form:

*Local Time --->Inertial Frame ->Relativity Type- 1 Clock;*

*Cosmic Time --> Quantum Theory--> Hubble Field--> Type 2 Clock*

may be too simple, but it's a beginning.

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*(d) Observations on the age of the universe*

*( Thoughts inspired by listening to astronomers in a PBS*

*NOVA program about the expanding universe)*

It appears that astronomers themselves are confused about the definition of the word "universe".

*Here is the problem* : Let us say that we are collecting information from light that (using Hubble's constant and the theory of red-shifts) is believed to have been traveling for 14 billion years before reaching us. One will find them saying, loosely, that its source is "14 billion years distant". But there is something wrong with this, since according to the theory of the Big Bang, this source was very close to "us", (wherever that was) at the time of the beginning of the universe.

Then there is some vague talk of the "stretching of space", as if space itself were expanding, rather than a situation in which stars and galaxies are just flying apart. At the same time, there was another astronomer on that program who said, "The universe is basically infinite"!

What one has to do is start with something much simpler: *The light has been traveling for 14 billion years* . without any speculations as to where its source was when its journey began, or where it is now. This makes *time* the principal quantifiable dimension. Around this one can build whatever universe model is consistent with this fact.

The implications of making time the principal, and only real dimension of the external world, and treating 1,2 or 3 of the spatial

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dimensions as derived "illusions" are intriguing . It makes sense however once one accepts the thesis that the only way we really have of measuring distance is through the amount of time it takes for a signal to pass between two points.

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(d) The standard physicist's cliché that Aspect's Experiment negates EPR and vindicates Quantum Theory is incorrect. What happens is that Quantum Theory makes a prediction which, when confirmed, undermines its own credibility!

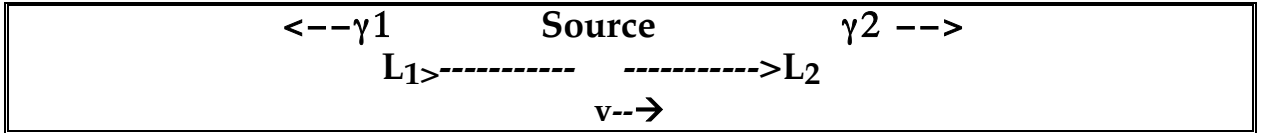
The formalisms of Quantum Theory are unequivocally based on a temporal asymmetry of "before and after". The "U" process is "before. The "R" process is "after". This is the "collapse of the wave packet", which is not bi-directional in time. Uncertainty exists after a measurement, not before.

Bell's Theorems and Aspect's Experiments imply *non-locality* . Non-Locality is a spatial connection that is instantaneous and somehow acausal. It cannot even be considered a form of motion, as this would violate Relativity.

At the same time, both SR and GR maintain that time is effectively just another a spatial dimension. A *velocity* is a rotation in a special vector space, the Minkowski geometry. *Therefore, if space is non-local, time must also be non-local ,*

This implies that, contrary to the inherent asymmetry of the "R" process of quantum theory, there exist universal correlations in time:

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Measuring instruments are placed at  $L_1$  and  $L_2$ . The pointer at  $L_2$  is shifted, causing a correlation change of spins of streams of particles  $\gamma_1$ ,  $\gamma_2$ . The instruments are moving relative to the source from left to right with velocity  $v$ . Since the stream  $\gamma_1$  adds its velocities to  $v$ , while the stream velocity of  $\gamma_2$  is subtracted, the Lorentz contraction will be greater for  $\gamma_1$  than of  $\gamma_2$ . Thus the observer will "see" that the spins of the particles at  $L_1$  are "correlated" at a later time, with those of  $L_2$ . This would appear to violate causality. After all it was the instrument *at  $L_2$*  which changed the direction of its pointer, although the staggering in time of the correlation implies that the cause was at  $L_1$  and the effect at  $L_2$ .

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