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A Truly Alternative Natural Philosophy:

by

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Introduction: the Vital Issue of '*c*'

From the recent overflow of e-mail exchanges it seems that in ANPA something of real significance for Natural Philosophy has now emerged. This is of such a nature as should concern every conscientiously thinking person within a Philosophical Association such as this. It is the clarification of a definite divergence between two whole continents of reason in the selection of conceptual approaches to modern physics – two distinct *paradigms* of *Natural Philosoph*y, in effect.

The point of departure between these two distinct thought-systems (lateral thinking alternatives, as Eduard de Bono calls them) turns on the fact that there are two radically different and, indeed, incommensurable interpretations of the distance-time quotient *c* as it configures in modern physics generally. In the conventional, or Einsteinian, interpretation, *c* is conceived as a *velocity,* the so-called 'velocity of light *in vacuo*'. In the Bondi-Pope alternative, *c* is no more than a constant for interconverting distance-measures in metres into time-measures in seconds, its value being purely conventional – that is, depending on the choice of measuring units used (*e.g.* 300,000 metres to the second in Metric and 186,000 miles to the second in Imperial). Otherwise, there is no significance whatsoever in the *number* accorded to *c*.

Now it has been proved, by both Bondi and Pope, confirmed by professional mathematicians such as A.D. Osborne (Keele), A.F.T. Winfield (UWE, Bristol), P.M. Davidson (Swansea), J. Hopton (Burton on Trent), J.R. Jones, (Swansea), K. Popper (London), and many others, that all the practical consequences of Relativity, both Special and General, can be deduced from both interpretations. However, these consequences can be deduced far more simply and economically in the Bondi-Pope-Osborne way than in the historical Einsteinian way. (See website www.poams.org)

The altogether vital difference, for Natural Philosophy, is that in the 'velocity' interpretation of *c*, light has to be conveyed, or *mediated* by something. If what is conceived as travelling are 'waves', then those waves have to be transported by a medium, such as, say, an 'ether', a 'field' or the like, in which light propagates in a manner analogous to waves in air, water or whatever. And if what is conceived as 'travelling' are particles (*i.e.*, wave-particles, or 'photons') travelling in the manner of bullets (but, mysteriously, in

arrival patterns typical of waves), then the light has to be thought of as mediated by ordinary mass and momentum. In any case, it is typical of this whole batch of explanations that something 'travels', taking a measurable time to do so.

In the **alternative** interpretation, there is no need of any such mediating agency for light, whether it be 'ether', 'field', 'electromagnetic conduction', 'photons' or whatever. Instead, in the way that was once projected by the likes of Feynman and Wheeler, all interacting atoms do so *directly and instantaneously*, by Newton's Second Law, of equal and opposite action/reaction. That is to say, these tele-sympathic resonances ('quantum touchings', as G.N. Lewis described them, in *Nature*, 1926), are not mediated by anything whatsoever. They all take place within an overall-conserved angular momentum nexus in which free-moving bodies seek to orbit one another in automatically paired and balanced, therefore correlated relations, such that any forced change in the motion of any one body instantly affects or perturbs the motions of all the others in the manner projected by Mach (famously known as Mach's Principle).

The full details of this Pope-Osborne Angular Momentum Synthesis (POAMS) are now widely published, so no detailed description of it is necessary here. Suffice it to say that this Synthesis is now as fully worked through and authenticated as any other known paradigm of physics. To cram that fifty years work into one hour would be like trying to fill a cigarette lighter from a petrol bowser. The most compact encapsulations of it, anyway, are on the POAMS websites and in the published books. All that concerns us here is the logical juncture leading to the two radically different approaches to physics, which diverge over their respective interpretations of *c*. In keeping with standard dialectical procedure, wherever two equally well-formulated but radically divergent theses are presented, the correct way forward is, conscientiously and dispassionately, to disprove one of the two co-exclusive theses, thus validating the other. But trying to disprove one of the theses simply by *affirming* the other is a classic logical fallacy known as *ponendo tollens*. ('To deny by affirming'). This process of logical selection and elimination is called *reductio ad absurdum*: or 'reduction to absurdity'.

The proper logical test of a thesis, therefore, is not to seek '*proof*' of that thesis, as is all too often mistakenly assumed. This, of course, is because what is taken as proof of a theory may well be taken, equally, as proof, of some other theory or any number of altogether different theories. A prime example of this is already provided, here, by the fact that the discovery of *c* may be taken as proof equally of both the velocity and non-velocity theories of relativity. Also, as is well known, the most detailed observations of planetary orbits provide equivalent proof of both the Copernican and Ptolemaic theories of planetary motion, hence cannot logically distinguish between the two.

The correct dialectical procedure, therefore, in validating any theory is, if possible, to *disprove* all other possible alternatives. This characteristically involves pointing out any flaws that may be found in the claims of competing theories. Moreover, it is a principle of science that no true experimental results can prove something that is not logically possible. So any experimental or theoretical claim to have proved that some situation X and non-X both exist simultaneously (*e.g.*, that some particle X such as, say, that the so-called 'photon', both has and does not have mass) is obviously self-contradictory and should be abandoned. So if any theory, however logically and mathematically well-formulated ends in such a contradiction, then that is a reduction to absurdity of the theory on which that experiment was conducted. In that case the theory has to be removed as quickly as possible. This is so as to keep the way clear for the presentation of other theories in a continuing dialectical process of selective elimination of erroneous theories towards some final synthesis. Anything less, simply produces a log-jam of theories-upon-cherished-theories, in which there can be no free flow of ideas, bringing all progress to a halt.

But of course, some will argue that it is wise to record at least some of the theories that fail in this way, just in case they may be found to have some later significance, especially if they are regarded as 'aesthetic', or 'elegant'. However, for the purpose of true and rapid progress, those 'logs' that have to be pulled out should be kept either high and dry or else floating in some historical backwater, somewhere, where they cannot interfere with the main flow. Otherwise, any undue sentimental attachment towards those ideas, preventing them from being removed and stored away, is bound to cause the sort of stultification that, as reported in recent ANPA emails, Dr. Michael Duffy (of PIRT*) and I agreed is so much a feature of all too many science conferences and associations nowadays.

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* For those who may not know, PIRT is the Physical Interpretations of Relativity Theory, a biennial conference, sponsored by the British Society for the Philosophy of Science, held at Imperial College, London.

In keeping, then, with proper dialectical procedure it behoves us all at ANPA, in the interests of true Natural Philosophy, to distinguish, as clearly and conclusively as possible, between the two theses in question, that is, the *velocity* and *non-velocity* interpretations of *c*, respectively, leading to such radically different philosophical approaches to modern physics as Mechanical Realism and Phenomenalism. The distinction, in this case, is so clear that there can be no hedging on it. As the main proponent of the alternative non-velocity interpretation of *c* at this present time (see websites www.vivpope.org and

), here are my reasons for rejecting the standard, conventional 'velocity' interpretation.

My aim in this talk will be, first, to prove that, logically, *c* need not necessarily be a 'velocity' and, second, to prove that *c cannot* be a velocity. First, however, let us remind ourselves what *dogma* means. A dogma is the selection of just one out of two or any number of logical alternatives as though it were the *only* one. My 'attack on ANPA' as someone has called it, is therefore no more nor less than a conscientious pointing-out something that some members of ANPA have steadfastly refused to recognise. This is that there is another logical approach to Natural Philosophy that is radically different from that which has been preconceived by the ANPA in-group. That logical alternative is virtually debarred from study within the provisions of the Association. This puts ANPA in danger of presuming to be, not *an* 'Alternative Natural Philosophy, as its title and statement of policy proclaim, but, implicitly, as *the* Alternative Natural Philosophy, which would stamp the current ANPA as simply, and by definition, a *dogma*.

In contrast to this, POAMS is essentially *anti-dogma*. In the Synthesis there is no theoretical guesswork involved. All it is, is an exercise in carefully joined-up logical thinking based on a selection of the most minimal and economical premises, and then tracing out their superstructure of implications by means of strict commonsense-logical and mathematical rules. Every move leading to POAMS is a *perfectly logical* one.

Let us see, then, what that debarred Alternative Natural Philosophy approach called POAMS is all about. Here are ten short arguments against the interpretation of *c* as a 'velocity'.

First, let us consider why *c* need not be a 'velocity'.

1. Herman Bondi says:

'Any attempt to measure the velocity of light is . . . not an attempt at measuring the velocity of light but an attempt at ascertaining the length of the standard metre in Paris in terms of time-units.'[Bondi, H.: Assumption and Myth in Physical Theory: Cambridge University Press, (1965). p.28.]

Bondi is here stating the most minimal, most empirical and least conceptually embroidered fact about *c*, namely that it is what he calls a dimensional 'conversion factor'. There is no logical contradiction whatsoever in this, since the discovery of *c* (by Römer, Michelson, *et al*) is *by no means* equivalent to having discovered a 'velocity'. The undeniable fact that *c* has the dimensions of distance divided by time explains all that is known about the times taken for communications over distances. But the fact that all velocities are distances divided by time by no means entails that all distances divided by time are

velocities. That would be as absurd as saying that because all chickens are animals, all animals are chickens.

2. If the non-velocity interpretation were false, then how could it possibly support such a tightly structured logical edifice such as POAMS? How could such a large and healthy tree grow from allegedly barren ground?

Added to this is James Lindesay's experimental support of Pope's contention, here at ANPA, that 'there is no such thing as the 'photon'. (See Lindesay's contribution to our recently published book: *Immediate Distant Action and Correlation in Modern Physics: the Balanced Universe*, by Edwin Mellen Press, USA and Britain (2005), Chapter 11, page 271.)

Such, then, is what might be called the 'weaker' refutation. Now let's look at t he stronger one, namely, that *c cannot* be a 'velocity**.**

3. For light to be seen, photographed or detected in any possible way, it has to shine on *something*. In a vacuum there is, by definition, *nothing* on which it can shine. So, logically, light cannot be seen, photographed or in any other way detected in the vacuum of space. (This is a case, as we have said, of a reduction to absurdity of Nils Abramson's claim to have photographed 'light travelling *in vacuo*'. Those of you who may have been following the recent flux of e-mail discussions will have seen that the only attempts by Abramson's supporters at refuting this logically negating argument of mine have been offered on the basis of my alleged 'lack of respect' for these experimenters and their claims (see following).

4. To be seen or otherwise detected travelling in a vacuum, light would have to give off light. And for that secondary light to be seen *in vacuo* it would also have to give off light; and in order for that tertiary light to be detected it, too, would have to give off light … and so on, *ad infinitum*, in a logical regress to infinity – an absurdity, in other words.

5. If *c* is interpreted as a 'velocity in the vacuum of space (*pace* Einstein's Second Postulate), then in a *vacuum* to what can that 'velocity' possibly be referred, constant or otherwise?

6. Light is quantised in units of Planck's constant *h*. These quanta have been interpreted as 'flying photons', claimed to have been photographed 'in flight' by Abramson, a claim which has been vigorously supported by members of ANPA. However, since the 'photon' is defined as a single, irreducible light-quantum, it has no energy to spare in manifesting itself anywhere between its point of emission and point of absorption. A quantum interaction between a pair of atoms therefore has to be *instantly* consummated, with there being no sensible question either as to where it is or what it does between its source and sink. There are simply no parameters to describe that motion. Any attempt to photograph or otherwise detect it absorbs its whole packet of energy at that

point, so that there can be no question of how it exists or behaves (*i.e.*, travels) when undetected.

7. In order to conform to the law of conservation of energy, a 'photon' cannot just hang around unconsummated in limbo, waiting to be absorbed. As Tom Phipps (Jr.) put it, 'the "photon" doesn't have a holding pattern!'. What, then, is a 'photon' when it is supposed to be travelling, say between galaxies or, as it might be, *en route* to nowhere? That question is impossible to answer, hence is logically meaningless.

8. Can light be scattered by light, as some experiments have claimed? If a powerful laser-beam is shone across the path of another, do their 'photons' collide or their 'waves' interfere? In a simple experiment devised and carried out at Brunel university, in 1980, by Pope and Louwerse, two powerful lasers were beamed across each other's paths and also shone head-on at each other. No blocking or interference whatever was detected. If any such interference *were* to take place, then that light would suffer dispersion. Considering the amount of light that is allegedly criss-crossing' around, it would be amazing if visual acuity was possible over the length of a single metre. All the light that is allegedly shooting around in all directions would be as much a barrier to vision as the densest fog that can be imagined. The fact, then, that there are photographs of the farthest galaxies that display awesome clarity militates against the validity of any such experimentalist claim, especially in view of the caveat already provided, that no true experimental results can confirm something which is *not logically possible*.

9. All velocities, properly so called, obey the rule of the composition of velocities, according to which the velocity of an object is different relative to differently moving observers. But *c* is, eminently, the same for all relatively moving observers. Therefore, logically, it *cannot be a velocity*.

10. For a velocity to *be* a velocity it has to be the velocity *of* something that is physically identifiable. In physics both ancient and modern, there is *nothing* that can be physically identified as light travelling *in vacuo*, especially in view of Heisenberg's Indeterminacy Principle. If we think of what 'travels *in vacuo*' as 'waves', then what can possibly 'wave' in a *vacuum*? And if we think of what 'travels' as 'photons', then if those 'photons' travel at the speed of light, then their mass has to be relativistically infinite at that 'speed'. The mass of a single 'photon' would have to be as great as that of the whole universe. Otherwise, if their 'stationary mass' is zero, as Jean Pierre Vigier claimed in the NPA conference, Storrs University, Connecticut, Canada, in August 1997, then in what sense can it ever be conceived as a 'particle'? And, anyway, when is a photon ever regarded as stationary since, axiomatically, *c* is the same *in all observational frames*? In calmly pointing this out to Vigier I was slated by someone, who shall be nameless, for being 'disrespectful' to the man in whose honour the conference had been convened. Another member is reported to have

responded to my talk by saying 'When he said he was a philosopher, I got up and walked out!'

This mention of 'respect' brings me to the issue, at ANPA, Cambridge, of my alleged 'lack of respect' for Nils Abramson's claim to have photographed 'light in flight'. This is the issue has loomed so large in some e-mail exchanges within the Association. The following are samples of experimental claims by highly respected scientists which have subsequently been discredited. They reveal that 'respect' alone is no guarantee of veridity of any experimental claim, far less that it can be used as a logical refuting tool.

Discredited experimental claims of highly respected scientists:
Photographing auras around plants; ectoplasm leaving bodies at death; flying saucers, ghosts and so on, to name just a few of the well-known many that have since been discredited, Note also Peter Rowlands' criticism of Eddington's solar eclipse photos. (Was Peter's proof of interference with and selectivity of these photos motivated by 'disrespect' for Eddington? Hardly, wouldn't you say?)

Discredited discoveries for discussion
1. The Piltdown hoax. The Piltdown man, hailed as the 'missing link between apes and humans, discovered in 1908 by the highly respected Charles Dawson in Sussex England, is now known as one of the greatest scientific forgeries ever.

2. Cyril Burt: 1920s studies claiming to prove that intelligence is inborn, Selection of evidence; he scandalously left out studies that did not support his hypothesis. Kamin 'blew the whistle' on this, showing evidence of this subjective selectivity

3. Georg Stahl's 'phlogiston' theory of burning; and of 'caloric', the 'elastic fluid' theory of heat. This remained highly respectable for a while, until it eventually sank out of sight.

4. Hwang Woo Suk, South Korean scientist notoriously faked stem-cell data.

5. Martin Fleischmann and Stanley Pons Univ. of Utah, 1989, claimed discovery of cold fusion. Their experiments could not be replicated, hence their claims were discredited.

Anyone who would like to see just how much damage has been done to the integrity of science by some of the most eminent and academically respected scientists is urged to read the book *Betrayers of the Truth*, by Simon and Schuster, New York (1982). His has also been published in the American Journal of Physics, Vol. 52, issue 4, April 1984.

The 'respect' issue

1. Did Einstein and Bohr disagree out of 'disrespect' for each other?

2. Was the tussle between Einstein and Bohr merely a battle for respect? Or was it a conscientious attempt, by both parties, to get at the truth on the professional understanding that one or the other of them would be proved right and the other wrong?

4 Did Copernicus, Galileo and Giordano Bruno do what they did out of 'disrespect' for the Church – *i.e.*, simply with some sort desire to 'slag off' the scholars in that institution, in the sort of language that was aimed at myself? (Some perspicacious readers of the recent e-mails may perceive what has happened in the recent e-mail exchanges as a microcosm, in ANPA, of what happened to Socrates, Galileo and Bruno at the hands of the 'authorities' of their time. Indeed, it was quaint to be debarred from the ANPA Discussion Group on the grounds that 'We'll have none of that "Socratic" kind of argument here!'

5 Doesn't the outright rejection by some ANPA members of what Herman Bondi says about the non-velocity interpretation of *c* show 'disrespect for Bondi? Is Bondi any less deserving of 'respect' than Abramson?

6. Did Bohr's tussle with Einstein over EPR show 'disrespect for Einstein'?

7. Was it 'disrespect for Einstein' that led Pope to question him?

These sorts of charges are absolutely absurd – as if that needed saying! And if there are people who cannot see this, then one would have to question their logical integrity and fitness for involvement in matters of Natural Philosophy, especially in an association such as ANPA.

ENDS