

Intimations of a New *Aufklärung* in Modern Physics

by

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Abstract

Has an over-reverence for its Great Men blighted our Physics? Was Newton's First Law a mistake, and his Gravitational Law unnecessary? Do we really need Einstein's Second Postulate for the derivation of relativistic time-dilation?

We seem to have forgotten that these axioms and postulates are not 'Laws of Nature' but laws of men and, as such, subject to continual review, with the ever-open possibility of revision.

In this talk, some 'files' on Physics, that have long been considered closed, are re-opened for public, commonsense scrutiny.

Transcript of talk (*verbatim*)

Let me ask you good people a plain commonsense question. Do bodies *anywhere* travel in straight lines?

We all know that when an object is thrown, it follows a curved trajectory. Even balls on a billiard table and pucks on ice, would be seen to travel in curves if the surfaces on which they travel were long enough.

So here is another question. Why has it been assumed, for *three centuries*, that the natural state of motion for a free-moving body is in a straight line when *nothing* travels in that way?

We are taught that all bodies *should* travel in that way, but that they don't because there are all sorts of hidden *forces*, like those of 'gravity', 'electrostatics', 'magnetism' and so on, which prevent them from travelling in straight lines. This is on account of Newton, who gave us two laws for the price of one, laws which precisely cancel each other. His first law tells us that all bodies travel in straight lines, while his fourth law tells us that they never do because of some universal and invisible force that he called 'gravitation'. Whatever makes us swallow that?

Here is another perfectly plain commonsense question. Who, in their right mind, could accept that because all Al Qaida terrorists are Muslims, all Muslims are Al Qaida terrorists? Yet there are Scientists who, with that same travesty of logic, knowing that the spectrum of the light from any receding body is shifted towards the red, on seeing the light from distant galaxies shifted towards the red take it as *fact* that those galaxies are receding. And this is in spite of what commonsense regards as the *reductio ad absurdum* that if true, then the whole universe, of space and time must once have been all magically crammed together, some fifteen billion years ago! Not even the most primitive of cosmologists have ever contemplated anything so quite so absurd!

What on earth, then, makes us countenance such nonsense? Fortunately, not everyone does. There is a small but growing number of scientists whose dedicated aim is to drain this swamp of institutionalised irrationality and rebuild our collapsed natural philosophy on good, solid, commonsense-logical ground.

So now I can tell you what POAMS is. POAMS addresses the need for a new *aufklärung* in modern physics; that is, it proposes a systematic clearing out of an accumulation of sheer historical junk.

POAMS, then, is the acronym devised by a group of dedicated free-thinkers, for the ‘Pope-Osborne Angular Momentum Synthesis’ that forms the basis of the group’s agreed philosophical approach to modern physics. This seeks to winnow-out those fallacies in the traditional approach which merely ‘blind us with science’. In other words, it seeks to re-establish physics on the cleaner and more conceptually streamlined, *observationist* lines introduced by Ernst Mach. Mach’s programme for physics was to base the subject on what we actually *observe*, not on things and events that we merely imagine – or are told – underlie those observations. There is also the criterion of efficiency and economy of observational interpretation, called Ockham’s razor’. You can count horses by counting their legs and tails and dividing by five. But, like Ockham, Mach would say that it is far simpler – and safer – to count horses direct.

Now in free space nothing is stationary. Everything is moving with respect to everything else. Nor, among those motions, is there any absolutely straight-line free momentum or ‘inertia’. All free motion is *angular* momentum, in which every bit of mass is, by definition, automatically paired and balanced with each and every other around a common centre of moment. In that case, the only straight-line momentum we may think of is that of a body travelling in a circle of *infinite* radius, hence, with an *infinite* angular momentum, which is unreal. So it follows that in all real cases, where bodies are *finite* distances apart, their angular momenta are also finite, hence naturally curved, with no question of any invisible *in vacuo* ‘forces’ being responsible for that curvature. POAMS presents an angular momentum equation according to which, particles with large amounts of *spin* (such as that ascribed to what are traditionally named ‘electrons’ and ‘protons’) follow orbital trajectories with parameters significantly different from those of non-spinning bodies. In this complete inversion of Newton’s thinking, POAMS explains the different types of forces – that is, *real*, sensible and measurable forces – as those that have to be applied to prevent bodies from moving – no, not in Newton’s fictitious straight lines but in their free and natural *curves*.

In POAMS, then, there are no static attractions between bodies, whether called ‘gravitational’, ‘electrostatic’, ‘magnetic’ or whatever. This dispenses with ‘electric charge’ and its associated ‘Coulomb force’ in conventional electrostatics’. Indeed, POAMS dispenses with ‘Electrostatics’ altogether, replacing it with equations describing the motions of plain masses in one angular momentum configuration or another. And with no *in vacuo* ‘forces’ there are no ‘fields’ or ‘ethers’ for the mediation of those fictional ‘forces’. All the free motions of bodies in space are *correlated* in an overall-conserved balancing relation of angular momentum, in which every body seeks, naturally, to orbit every other. With no ‘fields’ to speak of, the problem, which defeated even the great Einstein, of how to ‘unify’ those fields is automatically solved. This, by Ockham’s principle, is simply by getting rid of those ‘fields’ altogether.

Now by the law of conservation, the overall angular momentum of a system, or universe cannot change *en bloc*. Logically, then, the only way in which the angular momentum of such a system can change is *internally*, by local changes in its angular momentum subsystems, where each change in the angular momentum of the mass of, say, the ‘electron’ around a ‘proton’ in the customary ‘electrodynamical’ depiction of

an atom, is *immediately* accompanied by a compensatory, resonant change in the angular momentum of some other atom somewhere else. (It has to be immediate because, of course, any intervening time-lapse would disconserve the overall angular momentum, counter to the conservation law.)

Thus, while the angular momentum balancing-connections are instantaneous, or *non-local*, these *local* changes in angular momentum are propagated among the surrounding subsystems at what is customarily called the ‘finite and constant speed c ’. In POAMS, this is not really a speed. It is a *constant* of the observational scenario, with no more than the dimensions of a speed; that is, a constant ratio of observational distance-measures in metres to time-measures in seconds, as first determined by Olaus Römer. Originally interpreted as ‘the speed of light’, this constant was re-interpreted by Bondi, in 1965, as simply a dimensional ‘conversion factor’ for converting observational measures in metres into observational times in seconds. This was not a ‘speed’ in any true mechanical sense of the word, and Bondi succeeded, as I myself had done, ten years previously, in reproducing Einstein’s relativistic results much more simply in these non-light-velocity terms. Opposed to this, of course, is the traditional Faraday-Maxwell hypothesis, according to which light is a ‘wave’ consisting of alternately generating electrostatic and magnetic field-vectors, rippling away into what is otherwise a void. But this, surely, is just another bit of nonsense, because whatever can possibly ‘wave’ in a *void*?

In our observationist, non-velocity interpretation of c , light is more like the action in a movie which consists of time-sequences of purely distance-extended, static celluloid photographs which the movie-maker calls ‘frames’ or ‘stills’. True, then, to its Machian lineage, POAMS requires no all-pervading, continuous medium for the conduction of distant quantum interaction. The quantum ‘stills’ are, themselves, both their own interaction and their own *medium* for that interaction, and their observational *sequences* are the only time there is. In those interactions between atoms an amount of angular momentum lost by the one atom is *immediately* gained by the other, in a quantum jump of transferred energy. The transfer has to be immediate because, since the overall angular momentum is conserved, there can be no delay between the disappearance of the quantum at the one place and its appearance at the other. And because the quantum is irreducible, there can be no way in which it can be detected, or manifest in any way whatsoever, between its ‘emitter’ and ‘absorber’, since there is no portion of its energy for the quantum to spare in operating any intervening instrument. The amount of energy it possesses is all it has, so there is no way in which the quantum can be conceived as existing in a state of time-delayed transition, far less of non-consummation between its source and sink. In short, there can be no sensible question as to what happens to that quantum after emission and prior to absorption in the distance between the two atoms.

There is, then, no meaningful way in which the quantum can be conceived as a ‘photon’, emitted at random and left wandering around looking for a billet. In its own proper time, it is ‘there as soon as it starts out. The ‘speed’ at which we say it ‘travels’ is simply the ratio of the observational distance in metres, over which it acts, to the observational time-equivalent of that distance in seconds, the ratio that has been traditionally interpreted – or, rather, misinterpreted – as the ‘speed of light *in vacuo*’. So far as POAMS is concerned, there can be no self-sufficient ‘vacuum’, nor any ‘speed’ of anything involved in the transaction. Nothing is involved but the two inter-resonating atoms and the observationally extrapolated distance-time between them.

Certainly there is no intrinsic property of some intervening, pre-existing, self-enduring and absolute 'space', 'vacuum' or 'void'.

In sum, then, since the constant c , in this Machian interpretation, has the *dimensions* of a speed but none of its mechanical accompaniments, there is no need to think of anything travelling *in vacuo*, whether in the form of a wave, a particle, a wave-particle or anything else. This dispenses with a whole load of mysteries as to how, in certain experiments, the 'photon', conceived as moving like a bullet, in an entirely 'hit-or-miss' way, can 'guide' itself to its target by what appears to be some kind of 'superluminal' telepathic influence. The quantum interaction between a pair of distance-separated atoms is direct and immediate – what Gilbert Lewis, in *Nature*, 1926, described in relativistic terms as a proper-time-zero '*quantum touching*'. Like a collision between two vehicles, this is a direct and reciprocal action and reaction in accordance with Newton's Third Law. Conceived in this manner there is no way in which the quantum can exist in itself, as a 'photon' travelling between the two atoms, any more than a collision can exist in itself as, say, a '*colliseron*' travelling between two colliding vehicles. A prime source of bemusement, therefore, in modern physics is to describe *interactions* between particles as though they were all particles ('bosons') in the same sense. Imagine a newspaper reporting a collision between two vehicles as an accident involving *three* vehicles: the two vehicles and the collision itself! What special dispensation should physicists claim, to abuse the common language in this altogether mystifying manner?

As I say, then, it is this so far unchecked historical proliferation of sheer nonsense that POAMS seeks to purge. Numerous papers have been published, and Workshops have been convened for like-minded physicists to discuss the relevant issues. Discussions following the first two Workshops, at Swansea university, have now run into well over a thousand pages of e-mail, a boiled-down and analysed version of which is available on compact disk for anyone who might be interested. A book on this debate is now contracted to be published, in due course, by Nova Science Publications, New York.

Now I'm sure I've said enough, here, for those who might not have slept through it, either to stun you into silence or to stir in you a sense of outrage. One thing's for sure: none of this can be dismissed as some fanciful idea that has just now 'come in off the street'. Having been logically and mathematically honed for more than forty years, it is serious stuff. Nor is it some new and exotic theory to be added to the mix along with all the others – or not, as the case may be. Far from being a *theory*, it is simply what is revealed to commonsense observation behind all the theoretical clutter. It is an empirical default position, you might say, a clear-cut, no-nonsense account of the *phenomena* of space, time, matter and motion, as read out directly from light *as we see it*, that is, as an informational complex of pixel-like *quantum data*. This *hologramiform* informational complex, in all categories of sense and instrumentation, is the *real* world of actual and immediate physical *phenomena*. It is the world in which we are every day immersed and interactively involved, not some abstract nether-world that exists only in intellectual fancy – or phantasy, as is more often the case. These four-dimensional quantum complexes are the base-line of all physical knowledge, not something nonsensically travelling invisibly *in vacuo* to inform us, belatedly, of some sub-phenomenal, God's-eye-view reality which exists, behind and beyond all our physical knowledge of it.

Now if I am right, then we have conned ourselves rotten for more than three centuries with our peculiarly presumptuous God's-eye-view notions of what distance is and how bodies interact across it. Impossible? Why so? What guarantee do we have that the dinosaurs did not have, of infinite survival in a moribund state of non-adaptability?

Before I stop and answer questions, let me leave the last word to William of Ockham: 'I say', says Ockham, 'that the thing itself is known immediately without any medium between itself and the act by which it is seen or apprehended.' Now if you agree with that, then, plainly, you cannot also agree with Einstein, who says that the 'thing itself' can *never* be known immediately but only through the medium of light, which may take, in some cases, aeons to reach us.

So, which is it to be? Is the world of *physics* the world we are *in*, and which is familiar to us terms of informational patterns of light and shade, and of interactive events in the way that is familiar to ordinary human experience? Or is all that no more than an illusion created by some other world of entirely dark and inscrutable, completely alien things-in-themselves which are forever 'behind the scenes', hidden from us by an *in vacuo* veil of 'Einstein separation'?

One thing's for sure. Other than by continuing to fool ourselves and others with the usual academic double-talk, we can't have both.

Thank you,
Over to you!

(20 mins.)