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CATEGORICALLY REJECTING THE PLENUM: THE PHILOSOPHICAL FOUNDATIONS FOR GENUINE SCIENCE

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Abstract

Present-day science remains tainted by the notion of the plenum and particularly by its inconsistent rejection, especially by Einstein's Relativity. Yet a categorical rejection of the plenum in all its manifestations is necessary for the proper understanding of the nature of light. Under modernity, there is no recognition of Galileo's singular achievement in negating the universal plenum – and even the atomic plenum – as against the plenum-soaked theorizing of Descartes. The difficulty of removing the plenum is magnified by its intimate connection to the *pleroma*, an all-embracing all-controlling divine sanction or harmony which 'links' religion to science in a covert manner. With the ontological understanding of the absolute difference between matter, space and time, the plenum is abolished through understanding the nature of subatomic particles as vortices, inherently nonlocal as they are not point-particles but possess extension in space. Not only is matter infinitely divisible, denying singularities, but the Doppler Effect is shown to be fundamental to the motion of light. The arguments advance via the insights of Fehrenbach and Ritz towards the insight of Herbert Dingle's question as to the nature of light emission and absorption by objects in mutual motion.

Keywords: Phillip Adams, David Bohm, Democritus, Descartes, Herbert Dingle, Einstein, Epicurus, Charles Fehrenbach, Feyerabend, Galileo, Kuhn, Lakatos, Lerner, Lorentz, Lucretius, Paul Marmet, Newton, Popper, Walter Ritz, Vigier, Woldemar Voigt, modernity, modern science, Doppler effect, reversing prism, vortex motion, singularity, infinite divisibility, special relativity

Contents

Having disposed of the modern theorizing that creates logical paradoxes by elucidating its physical manifestations in the static thinking of Newton's Absolute Space and the stagnant aether-sea light-propagation medium, we must first identify the *origin and development* of this static thinking through enumerating the missteps leading to Special Relativity (SR). Along the way the genuine insights that were misinterpreted are highlighted.

Newton's Absolute Space was for him the indication of the presence of the Divine, sidelining scientific endeavor through reinvoking Aristotle's Unmoved Mover, the ancient Greek embodiment of the universal plenum. In this way Galileo's fundamental insight that all motion is relative was entirely negated, this fatal flaw of Newtonian thinking nevertheless obscured by his many other achievements, notably in this regard his explanation of the tides through the intimate interaction between centrifugal force and gravity, an explanation not requiring the plenum.

PART I – EXPOSING THE PLENUM

I:1 The Six Missteps from Newton to Einstein

Retracing the missteps that led from Newton to Einstein, we must begin with Newton's own misstep, replacing Galilean Relativity where all motion is relative, with an absolutist conception of the universe viz.

Absolute Space – the First Misstep: The notion of the universe being static overall was embodied especially in the teachings of Rene Descartes and his Vortex Theory, Absolute Space largely being Newton's distillation thereof. It is the primary misconception as it reintroduces the universal plenum, denying that *all motion is relative*, the absoluteness of Newtonian motion reflecting the absoluteness and one-ness of his Arian God! However Newton could not absolutize *linear* motion by demonstration, so instead, by invoking the centrifugal force upon a spinning bucket leading to a paraboloid water surface in said bucket, could only claim to demonstrate that *rotational* motion was absolute, i.e. "relative to space itself."

By the end of the 19th century however Ernst Mach had found the way around this Newtonian misconception, intuiting that all rotational motion was also relative, in that the spinning bucket was not rotating absolutely, not rotating relative to space itself, but rotating *relatively*, i.e. rotating relative to the cosmos, to the fixed stars, a claim that was nevertheless ambiguous to the early 20th century mind. In this way, Mach, perhaps unwittingly, restored Galilean conceptions through a primary insight, since motion is between entities made of matter, not rotation between matter and space. Thus did Mach reaffirm the ontological distinction of matter and space, not treating space as a material aether, a diffuse universal medium, a *universal absolute reference frame* (ARF), relative to which objects rotate.

While Einstein would later take advantage of this observation when deriving general relativity (GR) upon separate considerations from special relativity (SR), Mach's insight stands alone without superimposed Einsteinian misconceptions – such misconceptions notably fostered by Einstein's alternating invocation of an ARF at one moment of an argument, then the denial of said ARF at the next! Nevertheless, Mach's insight was gravely impaired by the fact that he regarded atoms as fictional entities – as will become clear where we discuss the atomic plenum (part I:5) below.

Second Misstep – the Stagnant Luminiferous Aether: Newton's Absolute Space subsequently acquired an electromagnetic equivalent in the form of the stagnant aether-sea or

luminiferous aether, an imagined static transmission medium for light, as water and air are for sound. Light has readily uncovered wave properties, which even Newton uncovered, although trying not to draw conclusions from it. The indications for light being a wave came from the phenomena called diffraction or interference. These occur with sound as well, the analogy between sound and light being in some ways very close.

Sound occurs in an essentially static medium – air, but also water and rock, the last comprising 'sound waves' (i.e. pressure-waves or P-waves) mainly familiar through seismic detectors in search of earthquakes. Sound waves also involve *longitudinal* wave motion, back-and-forth motion in the direction of travel of the sound waves; this is very different to light waves whose wave motion is *transverse*, at right angles to the direction of motion.

In this respect the transverse motion of light waves resembles ordinary surface waves e.g. the up and down of water waves and earthquake surface waves (S-waves), counter-intuitive in the sense that light is not a surface phenomenon but a 3-D something within space. So despite Newton's attempted rejection of the fluidic wave-bearing nature of light, many researchers including Christian Huyghens, Thomas Young and others developed the wave theory of light extensively. The crucial experiment arose in the 19th century when Augustin-Jean Fresnel demonstrated the diffraction pattern produced at the edges of a shadow of a circular disc illuminated from behind by pointillistic light source. Mathematical theorist Siméon Denis Poisson doubted this as he realized that if Fresnel's claims were true then there should be a bright spot in the center of the disc's shadow, this eventually demonstrated by a formerly doubting Dominique Arago – now called the Arago Spot – and affirming the wave structure of light once and for all.

These extraordinary demonstrations led naively to the belief that light was transmitted by a medium, a stagnant aether-sea, a fluid plenum permeating the whole universe since starlight had to be explained in the same way. The analogy of the transverse motion of surface waves was now applied improperly to internal motion *within* a static fluid, such motion within a fluid actually comprising longitudinal waves as found with sound and P-waves. The imagined static structure of the aether was sometimes even considered to be a transparent solid, a crystalline-aether, a solid plenum!

<u>Third Misstep – explaining the Negative MMX</u>: Since sound waves undergo a change in frequency (1/wavelength) when objects are moving in air – the Doppler Effect, a common phenomenon as shown by a car engine or siren passing by in the street – the analogy was soon applied to light. If the stagnant aether existed, whether fluidic or crystalline, it should be possible to demonstrate motion relative to it – i.e. absolute motion – since the motion of light through it should affect light's motion. If such absolute motion could be proven, it would both demonstrate the plenum's existence and quantify such motion.

So despite the repeatedly negative Michelson-Morley Experiment (MMX) revealing the nonexistence of the ARF and the plenum, the belief in a stagnant aether (and Newton's absolute space) persisted, leading to George Fitzgerald's *improper* suggestion that objects underwent length contraction (LC) in their direction of *linear* absolute motion, explaining away the negative MMX to satisfy the naïve and deluded majority of physicists in that era. That Fitzgerald's suggestion is improper, thus un-scientific, lies in the fact that LC must apply to both test objects and to measuring devices and even to space itself, rendering the measurement and quantification of LC essentially impossible.

<u>Fourth Misstep – Length Contraction Mathematicized</u>: Fitzgerald's qualitative suggestion was paralleled by Hendrik Lorentz who mathematicised the imaginary LC with the Lorentz Transformation Equations (LTs). The question therefore arises – where did Lorentz get these equations from if he did not concoct them himself? This question is essential since Einstein ultimately used the same LTs to validate his own *special relativity*

theory (SR). Evading the absurdity of time dilation, Lorentzian Relativity lives on today as the simple-minded alternative to SR, even laid out as bait by the 'heroic' Sir Karl Popper when considering the anti-Einstein implications of the Aspect Experiment demonstrating instantaneous-action-at-a-distance (IAAD).[1]

Dedicated Lorentzians not only interpret the null MMX as supporting their ideas, but claim that a modification of the MMX device into a SAGNAC, two oppositely directed 'circling' paths of light that recombine, proves Absolute Space because the SAGNAC device gives a positive result, unlike the MMX.[2] They forget Mach's Principle in that the SAGNAC device is measuring not absolute motion but motion relative to the Cosmos, relative to the fixed stars and so is but a demonstration of inertia, not "motion relative to the universe *as a whole*." However, this subject will require elaboration in a later paper.

Fifth Misstep – concocting Time Dilation: In 1903, mathematician Henri Poincaré noted the form of the LT equations and misapplied them to time measurements as Lorentz had already done to spatial measurements. Hence the concoction of "local time" by Poincaré, a concept not to be confused with the geographical time conventions.[3] The assertion that objects undergoing mutual motion also undergo *differential rates in the passage of time* is an anti-Newtonian assertion embodied in the concept of time dilation (TD). Analogous to LC and in combination with it – i.e. TD&LC – time dilation *necessarily* creates logical paradoxes. These logical paradoxes evoke mutually exclusive physical situations, the fundamental result of applying TD&LC, either alone or in combination.

Lorentz welcomed this further misdevelopment of his theorizing, imagining the universe to be static, centered upon a universal and absolute plenum. Lorentz's conception reflects the Newtonian view of a universe centered upon the Milky Way,[4] a universe functionally finite and static despite space being infinite. Since Newtonian space is an empty infinity, the sky is black at night because his universe is simply empty.

Sixth Misstep – TD&LC based upon a *Subjective* Plenum: Einstein combined the functionally finite Newtonian conception of a static universe with not only the two severe misconceptions – TD&LC – but also with Ernst Mach's correct observation of relative motion alone applying to rotating situations, despite this last being Galilean, totally incompatible with the former claims.[5] From this essential inconsistency and incompatibility – reducing everything to mere perspective, to what is seen by the one and only ego considered always to be at rest, invoking Max Stirner's solipsism – is derived SR, along with all that follows from that theory. Thus is inconsistency fundamental to SR, there being a pressing need for Einstein and his supporters always to invoke the mathematics as quickly as possible in order to hide the fundamental physical impostures within mathematical equations – particularly the LTs which comprise the mathematical heart of SR.[6] Thus too the perennial attempts to resolve the difficulties using mathematics, a sign not of profundity but perversity: that the fundamental presumptions of Einstein and of his predecessors' conjectures were fatally flawed to begin with.

The central perversion embodying Einsteinian thinking – over and above that of his predecessors, and especially Hendrik Lorentz – is that Einstein *inconsistently* invokes a plenum.[7] While this is done by his claiming that the universe is static due to the bulk of its stars being at rest, as demonstrated in previous articles,[8] Einstein also justifies the plenum using general relativity (GR) with its claim of curved spacetime. The presence of any matter at all means the presence of gravity which causes spacetime to curve, thus even a universe comprising one atom of hydrogen would also be finite, since spacetime would ultimately curve back on itself to form a 'sphere', even though such a universe, with less matter than our own, would be *larger* than our universe! Likewise the present-day dogma as to "the expansion of the universe" due to the "stretching of space", implicitly affirms a finite

universe, spatially and temporally, by attributing to space the qualities of matter rather than understanding that space is instead the universal *container* for matter, i.e. ontologically and thus causally separate from it.[9] Nor is there anything beyond this supposedly expanding universe – that which the universe would be replacing – since the whole argument is merely one of presumptuous mismeasurement of existing data, using curved spacetime to deny infinity altogether or to concede only temporal infinity, reducing a spatially finite universe to endless cycles of a stereotyped eternal repetition.

I:2 The Pleroma and the Plenum

Einstein's crucial sixth misstep, invoking a *subjective* plenum, one based upon the observer, is the one creating the greatest intellectual difficulty. Due to the influence of the mainstream media (MSM) and prominent promoters of his theory, e.g. Arthur Eddington, a devout Quaker, this difficulty was ignored and sidelined, since to invoke a subjective plenum also invokes the concept of the *pleroma*.

The pleroma, alluded to in a previous paper,[10] is the divine, mental or supernatural equivalent of the plenum. It can refer either to one God or all the gods in some sort of agreement – and also to such all-embracing divine influences upon the minds of physical beings. More subtly, it invokes the divine realm (or God) as static and all-supervising (if not all-controlling). In consequence, it also invokes Deism and Pantheism, notions that imply that the universe is God, a notion we have already seen with Newton's Absolute Space as "the sensorium of God."

Such deist and pantheist teachings have been welcomed by agnostics and *modern* atheists alike as they seem to offer a *rational* or *rationalistic* escape from established religion towards a 'scientific' – *modern* science – perspective, an entirely rationalistic perspective sanctioned by Einstein and his teachings. The end result however is the embrace of logical paradox by science and atheists alike, committed *philosophical* agnostics like David Hume and Sir Karl Popper revelling in the power which this rationalistic perspective supplies: everything is logical and fully ordered, anything outside this perfect rational realm is *not* treated as science but rather, as mere irrationality.

Hence science and the universe are treated as wholly rational and are thus reducible to mathematical equations, any discrepancies reduced to probabilistic equations (e.g. quantum theory), discrepancies whose origins are not treated as caused but as acausal, indeterminate because they occur for no reason whatsoever (e.g. the inability to predict a single particle's path in the two-slit experiment)! This creates the *hierarchy of modern physics* whereby Einstein's relativity represents the ideal in physics as it is 'rational' whereas quantum theory – since its probabilistic basis cannot be removed by rational mathematical procedures reducing it to a fully ordered procedure (i.e. to determinism) – is treated as a secondary, phenomenological or second-rate physics which modern physicists one day hope to replace.[11]

In this way too, *religious* and *philosophical* agnosticisms are combined, the uncertainty about divine beings in the former being 'rationalized' by accepting the deterministic pantheistic features of the latter – then labelling the result 'science'. This renders God or gods into a physical being embracing everything, leading to strange religious notions appearing in what would seem to be arcane questions of science. A most striking example is the Cosmic Microwave Background Radiation (CMBR), which was falsely invoked[12] as being residual radiation from the Big Bang and so was used as definitive proof for it. Rather than being smooth overall the CMBR was eventually found to vary in different regions of space, the resulting mapping of the variations even being described as "looking into the face of God,"[13] hence the obscuration and blurring between plenum (static matter) and pleroma (universal mind).

The end result is the subordination – and thus trivialization – of philosophy to modern science. Not only physicists such as Weinberg[14] but social scientists like Herbert Marcuse dismiss philosophy as mere 'ideas' whereas science, i.e. *modern* science, instead comprises mathematics at its core. Marcuse's peculiar phrases – "universe of domination", "historical universe" (p. 171) – serve to highlight his intention to obscure and trivialize philosophical understanding in *any* science, though only when one understands the implications of his second highlighted sentence below, standing clear among his endless convolutions.

> Here is the original link (within the universe of domination and scarcity) between science, art and philosophy. It is the consciousness of the discrepancy between the real and the possible, between the apparent and the authentic truth, and the effort to comprehend and to master this discrepancy. One of the primary forms in which this discrepancy found expression was the distinction between gods and men, finiteness and infinity, change and permanence. Something of this mythological interrelation between the real and the possible survived in scientific thought, and it continued to be directed toward a more rational and true reality. **Mathematics was held to be real and 'good' in the same manner as Plato's metaphysical Ideas. How then did the development of the former become 'science', while that of the latter remained metaphysics?**
>
> The most obvious answer is that, to a great extent, the scientific abstractions entered and proved their truth in the actual conquest and transformation of nature, while the philosophic abstractions did not – and could not. For the conquest and transformation of nature occurred within a law and order of life which philosophy transcended, subordinating it to the 'good life' of a different law and order. And this other order, which presupposed a high degree of freedom from toil, ignorance and poverty, was unreal, at the origins of philosophic thought and throughout its development, while scientific thought continued to be applicable to an increasingly powerful and universal reality. The final philosophic concepts remained indeed metaphysical; they were not and could not be verified in terms of the established universe of discourse and action.[15]

For Marcuse true science equals only mathematics! Not only Plato's insights, but by inference all ideas, are here reduced to philosophical idealism, to mere metaphysics and/or crude philosophical materialism.[16] In turn, there is the reduction of science to mathematics, the latter *alone* becoming the "universe of discourse and action," just as we find with the modern philosophers *of science*. In this way the dualistic separation between science and philosophy becomes absolute.

Hence too the high regard for psychologist Karl Jung by Marcuse and other modern philosophers. This is because Jung invokes the pleroma without explicitly invoking the supernatural i.e. without considering the influence of gods or other divine beings. Jung's key doctrine in this regard is the 'collective unconscious' a term that necessarily implies that all minds (and perhaps not just human minds) are unconsciously linked to one another, one pleroma uniting humanity (and perhaps animals and aliens too) into one inferred collective mind. Not only is the distinction between mind and matter blurred but that between any and all minds too – the doctrine becoming the foundation for pseudoscientific claims such as mental telepathy, morphic resonance etc. In this paper however we need to limit ourselves to the issue of the philosophical foundation of science, rather than the wider effects on psychology of teachings like Einstein's and Jung's.

I:3 Modern Philosophy's Circular Reasoning: Prisoners of Weaponized Waffle

When dealing with physics and cosmology the end result of Einsteinian theorizing is to lead the reader back to the starting point of Western philosophy – Aristotle's static universe comprising a 'fullness', a.k.a. the plenum. Einstein 'completes' Western philosophy through mere circular reasoning negating *all* philosophical underpinning for scientific discoveries after Aristotle, the philosophical succession being as follows:

Aristotle > Galileo > Newton > Einstein > ARISTOTLE.

The result is shown diagrammatically in figure 1.

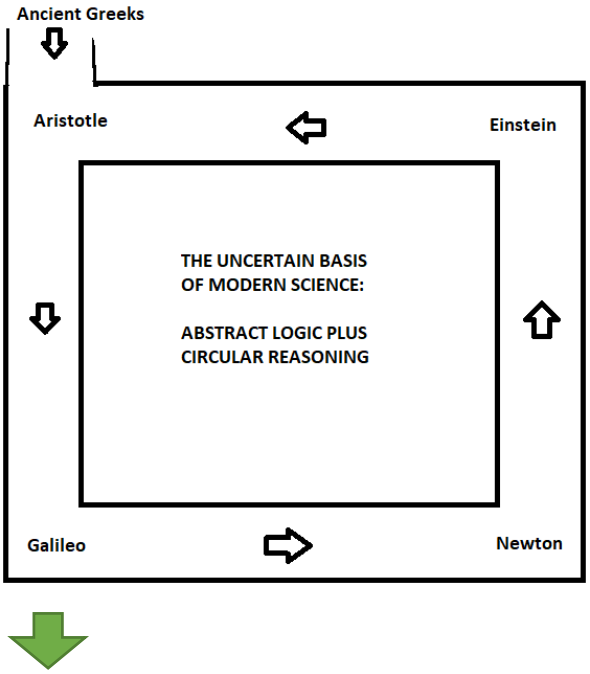

Figure 1: **The 'Four Square' Circular Reasoning** of the Modern Philosophy of Science. The resemblance of this diagram to that of a SAGNAC device that allegedly demonstrates absolute space – and thus absolute motion – is more than mere coincidence. The Green Arrow indicates the direction of genuine understanding from Galileo, but this has long been sidelined by tendentious conjecture!

The lack of a universal philosophical grounding for science has thus become a fixture in *modern* science. Hence philosophers dedicated to modern science, notably Imre Lakatos, tried to create a clear demarcation between science and non-science, his task falling to Karl Popper, Thomas Kuhn and Paul Feyerabend.[17] Further entrenched disagreement over the nature of the demarcation was the result!

In this regard, the primary offender in Galileo's lifetime was Rene Descartes and his 'vortex theory'. Each vortex comprised vast numbers of colliding particles on a scale larger than that of the Solar System; this vortex somehow led to mass and planetary rotation, Descartes' reasoning dominating the epoch between Galileo and Newton. In his earlier work Thomas Kuhn describes this as follows:

> Descartes introduced a concept which since the 17th century has greatly obscured the corpuscular basis of his science and cosmology. He made the universe full. But the matter that filled Cartesian space was everywhere particulate in structure, and in determining the behavior of this particulate plenum Descartes made constant imaginative use of the void [i.e. space]. He used it first to determine the laws of motion and collision for individual particles. Then, to discover how these laws operated in a plenum, he seems first to have imagined the particles swimming in a void where their inertial motions were punctuated by collisions, after which he gradually squeezed the void out of the system, bringing the particles closer and closer together, until finally their collisions and inertial motions merged into a single process in the plenum.[18]

I.e. the eventual effect overall was to deny space, deny the void altogether, since for Descartes space and the plenum essentially amounted to the same thing, the plenum *also* the same thing as matter, and *especially* the same thing as the vortices of his theory. That is, Descartes' vortices are no longer *in* space but constitute *space itself*! This situation embodies Descartes' *ontological monism*, i.e. everything reduced to one constituent thing, the situation inadequately appreciated even in the 21st century.

Having correctly exposed Descartes reasoning above, Kuhn yet failed to develop the insight in his subsequent and far more notorious publication. Hence in *that book*[19] Kuhn sidestepped the question of ontological monism when he explained the rationale of the philosophy of science merely as follows.

> One often hears that successive theories grow ever closer to, or approximate more and more closely to, the truth. Apparently, generalizations like that refer not to the puzzle-solutions and the concrete predictions derived from a theory but rather to its ontology, to the match, that is, between the entities with which the theory populates nature and what is "really there."
>
> Perhaps there is some other way of salvaging the notion of 'truth' for application to whole theories, but this one will not do. There is, I think, no theory-independent way to reconstruct phrases like 'really there'; the notion of a match between the ontology of a theory and its "real" counterpart in nature now seems to me illusive in principle. Besides, as a historian, I am impressed with the implausibility of the view. I do not doubt, for example, that Newton's mechanics improves on Aristotle's and that Einstein's improves on Newton's as instruments for puzzle-solving. But I can see in their succession no coherent direction of ontological development. On the contrary, in some important respects, though by no means in all, Einstein's general theory of relativity is closer to Aristotle's than either of them is to Newton's. Though the temptation to describe that position as relativistic is understandable, the description seems to me wrong. Conversely, if the position be relativism, I cannot see that the relativist loses anything needed to account for the nature and development of the sciences.[20]

Einstein's pivotal role in this ongoing obscuration is now clear, since Kuhn rightly sees the lack of any "coherent direction of ontological development."

In consequence Kuhn sees no role for ontology either; rather, there is only confusion, paradigms and incommensurability, especially as by inference he lumps all Newton's predecessors together, failing to appreciate Galileo's distinctive claim for the relativity of motion while being extraordinary tolerant towards Descartes' agenda of identifying space (the void) with a plenum!

> What occurred [to explain gravity] was neither a decline nor a raising of standards, but simply a change demanded by the adoption of a new paradigm. Furthermore, that change has since been reversed and could be again. In the 20th century, Einstein succeeded in explaining gravitational attractions, and that explanation has returned science to a set of canons and problems that are, in this particular respect, more like those of Newton's predecessors than his successors.[21]

Unable to grasp the occult influence and implications of the plenum, his blithe tolerance towards Descartes required new terminology to describe these obscurities in his and others' understanding. The word 'paradigm' merely refers to the hidden context, the hidden, largely unconscious, ideas and presumptions that govern thinking in a particular field of research; the realization that there are many different and mutually exclusive paradigms means that each paradigm has a distinct and often exclusive way of explaining a given physical situation.[22]

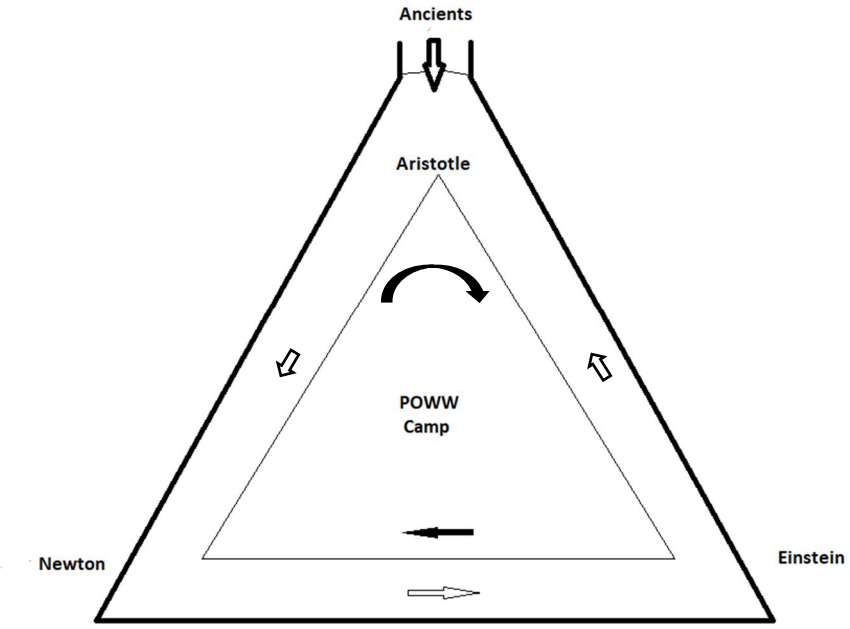

Figure 2: **Descartes' Tolerance Camp** for modern scientists and Philosophers of Science – *Prisoners Of Weaponized Waffle*.[23] Here, intolerance towards Einstein's ideas will not be tolerated. The bidirectional circling motion reminds us less of the SAGNAC experiment but more of Lerner's description of the exploding double-layers of the rectifiers in the older Swedish power grid![24] Internal motion of the POWWs creates the illusion of diversity, such motions appearing meaningful – along with 'quantum tunnelling' – in that they embody Popper's *Unended Quest* which will supposedly lead to a satisfying scientific resolution.

The result is the *incommensurability* of two different explanations given by two different paradigms; i.e. that there are two or more different ways of *measuring* the data, depending on the paradigm adhered to. Nor are such paradigms readily revealed, since they comprise the accepted models or presumptions which are *shameful* to reveal.[25] Under Kuhn, the "four-square" layout emphasizing Galileo's understanding and Descartes' subversion has not been appreciated – along with any opportunity to progress with the green arrow from Galileo. Rather we have a three-cornered path as in figure 2 – ancients and moderns entering

from the top with Aristotle then moving anticlockwise through Newton and Einstein and back to the start. Like the prisoners trapped in the metaphor of Plato's cave, able only to guess what reality is like from shadows dancing on the walls, in Kuhn's philosophy of modern science humans remain but prisoners of language unable to ground their conception of truth. And so they remain, mere Prisoners of Weaponized Waffle (POWW), controlled by intellectual fences and the guardians of modern philosophy.

So we might represent the situation of *modern Western* science as three-sided or as a flask of some newly-synthesized psychedelic or even a mystical pyramid, but in essence it is just a POWW camp, the Descartes Tolerance Camp. Under the one-eyed monocled gaze of the commandant the scientists and philosophers, as much guards as prisoners, trudge anticlockwise around the camp. Meanwhile, in seeming opposition, in the philosophical center of the camp and seemingly incommensurable with the guards, Sir Karl Popper's heroes trudge clockwise, but through this procedure reach a 'deeper' understanding in that both groups affirm their Einsteinian thinking.[26] Feyerabend remains but a Red Cross official handing out parcels to all indiscriminately, his dirty spectacles not permitting him to distinguish prisoners from guards.[27] In the 20th century, the *only* philosopher to escape the camp was Martin Heidegger, his specialized knowledge enabling him to flee backwards as it were from Aristotle to the Pre-Socratics like Heraclitus and Parmenides.[28] Not a philosopher of science, Heidegger could readily be *dismissed* by the monistic Kuhn as irrelevant, maintaining the modern fiction that there has never been a successful escape from modernity's intellectual POWW camp: Stalag-Einstein.

Nevertheless, despite the sitcom metaphor, the inescapable conclusion is that the monistic circular reasoning via Descartes' mediation, melding Einstein to Aristotle – and/or Stoicism – is based upon the plenum. So far however we have dealt with the plenum only in the sense of a universal plenum, the ARF/aether-sea (or as its subjective counterpart, the pleroma). The Einstein-Aristotle connection is deeper however, involving the atomic plenum too. The atomic plenum is multiple, being centered upon each and every atom – atoms being treated as little solid balls bumping into one another in the manner of the original Greek atomism – that of Democritus.

I:4 Subjectivizing Lucretius' Spear – the Plenum as a Solipsistic Pleroma

A universal plenum, an ARF of whatever kind, could be invoked in various ways, e.g. through 'fixing' permittivity (ε) and/or permeability (μ) to space itself – and therefore light too – rather than a physical field *in* space, newer scientific discoveries also uncovering new means for manipulating science unless genuine science is armed with genuine philosophic understanding. For example, the Tolerance Camp could even be treated as the 'Absolutely Stationary Space' – a collective insanity masquerading as objectivity, the pleroma of the 'divinely-appointed' modern scientists and philosophers itself embodying the static plenum! Or would such a plenum only be a figment of the commandant's imagination? However, the universal plenum question delves further into cosmology which is to be the subject of later papers; here the issue is to outline the ways of thinking that lead to erroneous invocations of a plenum – and even a pleroma – to solve unexplained physical facts, the most pressing case being the cosmic origin of inertia.

The plenum of GR persists in science today, through its Cartesian denial of space itself as an independent being, and of spatial infinity, and thus too the universe's infinite matter content – hence today's speculation about "other universes" as well as that invoked by Hugh Everett's Many Worlds Theory. Nor can the issue be investigated clearly by modern science, not only because the plenum is just as much a philosophical question but also because the plenum of Einstein is inherently inconsistent and ultimately merely subjective i.e.

the egoistic individual, like our Cartesian commandant positioned at point $x, y, z = 0$, constitutes his or her own pleroma! Due to this impasse, Einstein's approach actually reveals the fundamental importance of the plenum as the hallmark: indicating what is *not* the correct approach to science of all types, the correct approach being to identify and consistently *reject* the plenum (and pleroma) in all its manifestations, wherever it may appear, despite the need for arbitrary mathematical conveniences.

The materialist philosophers of ancient Greece arose from their championing of the doctrine of atomism, a doctrine naively thought to be the basis of atomic theory today. The doctrine of atomism was founded upon observations such as the mixing of liquids, the melting of ice, the pervasiveness of light and the spread of odors. Thus what they would call atoms, we would also call molecules and light quanta today. The key innovation of atomic doctrine was to distinguish matter and space, i.e. to establish their ontological separation.

Without diverting into an extended discussion of Greek atomism and its fundamental differences from the actual nature of atoms discovered from the 19th century, the task here is to note how the Greek tradition of atomism also includes the plenum! Here the plenum is not the 'substratum' of the universe overall, but, far more insidiously, is the substratum of each and every atom itself!

Atomism however also included teachings about the universe, these teachings generally similar in both early (Democritus) and later atomism (Epicurus). In the later form of atomism, that of Epicurus, his Roman champion Lucretius imagined hurling a spear into space, a spear overcoming gravity and moving ever onward. This process would be infinite, since Lucretius claimed that space and matter are ontologically distinct; the spear would travel on and on forever since space is mostly empty with only the off-chance of the spear hitting something like a star or planet.

Well known for his religious atheism, Australian writer Philip Adams, embodying the intelligent 'Leftist' layman, encapsulates the modern sabotage of this issue since in his early essay *Abyss of Eternity*, a classic not only of Australian but of world literature, he placed his own childhood body – and thus his mind – in place of Lucretius' ever-advancing spear.[29] The reason for this was his parents' divorce during the Second World War, his alienation from God and religion deriving from that time as he imagined himself hurling away from Earth on an endless journey through space. Thus was his crucial childhood experience dominated by *fear*, the final intellectual result being merely agnosticism, i.e. corrosive scepticism towards the material world as well as metaphysics, a stance acquired also from his later experiences and mass media influence, *not* through academia![30]

This ultimately led to a collaborative writing with modern physicist Paul Davies about cosmology and physics, where his agnosticism was elaborated in its essentials. Rather than accepting Lucretius' infinite universe, which terrified him, Adams felt more comfortable accepting curved spacetime so that he could return to his starting point. By this means he unguardedly affirmed Parmenides Block Universe (i.e. block time)[31] as taught by Davies, a teaching which reduces evolution merely to a pre-established harmony, an unrolling of a pre-sown tapestry, already complete to the finest details.

Thus believers in modern science such as Adams ask whether *modern* "science can take us beyond the reach of evolution." Paul Davies replies without irony:

> It takes us beyond the reach of commonsense. Evolution has equipped us for commonsense and for visualization, if you like, of everyday affairs, strategies that have survival value. *There is no survival value in being able to visualize what is going on inside an atom*, and yet we can still come to understand atoms in a certain way without this inner visualization or intuition! We achieve this by using mathematics as our sure guide. So: "Abandon common sense all ye who enter here."

> If you remain wedded to commonsense ideas of reality when you tackle topics like quantum mechanics, you can be sure that they will lead you astray.[32]

Abandoning commonsense, i.e. good sense in this case, means accommodating oneself to ideas manufactured by the experts of modern science, abandoning one's capacity to think and accommodating oneself even to ideologies embodying belief in and acceptance of the pleroma e.g. Jung's collective unconscious whereby the answers to our survival are generated and guaranteed by the mysterious pleroma, the occult unification of all minds into One!

Thus, according to Davies' italicized sentence for example, a better understanding of internal atomic structure is of *no use to humankind whatsoever*, hence the resultant failure of controlled nuclear fission and nuclear fusion under modern physics is assured forever, guaranteeing that the growing energy crisis and the wars over shrinking energy resources will soon destroy humanity itself.[33] Yet the underlying reason for Davies' surprisingly negative stance is that he believes in the atomic plenum – the atom's essential *fullness* and ultimate inertness – and its counterpart: the pleroma of a 'universal mind', tapped into by Einstein to generate all the answers [*sic*] for mankind's troubles without bothering with commonsense!

The teaching as to atoms being internally inert is the classic atomic teaching of Democritus, a deterministic world where the future is absolutely controlled by the past. While affirming basic Democritean principles, Epicurus instead averred that atoms had a free-will of sorts manifested as an individual atomic *swerve*,[34] but this claim was used either to ridicule the latter's teaching or was subsequently built upon by religious authors like St. Paul to justify emerging Christian monotheism among pagans.[35]

I:5 The 'Atomic Plenum' and the Singularity

The atomic doctrine is based upon there being *two* ontologically separate kinds of being – space and matter. The question of time did not concern the Greek atomists.[36] Hence Democritus and his forebear Leukippus subverted Parmenidean Monism through affirming the void (space) as being ontologically separate to matter.

> "the void is a *not-being*, and no part of what *is* is a not-being; for what *is* in the strict sense of the term is an absolute plenum. This plenum however is not one; on the contrary, it is many, infinite in number and invisible owing to the minuteness of their bulk. The many move in the void (for there is a void)..."[37]

This means that for Democritean atomism every individual atom is a plenum, but is also internally inert and incapable of "moving of its own free will", in contrast to the later Epicurean atomism with its own distinctive teaching. Bertrand Russell further explains that:

> Each atom, [Democritus] said, was impenetrable because it contained no void. When you use a knife to cut an apple, the knife has to find empty places where it can penetrate; if the apple contained no void, it would be infinitely hard and therefore physically indivisible. Each atom is internally unchanging and is in fact a Parmenidean One.[38]

However, what Russell and fellow monism-preaching Freemasons did not admit is that when expressed correctly in this way, the Democritean teaching is fundamentally inconsistent.[39]

Democritus imagined atoms to vary in size and shape – e.g. smooth and rough atoms, and those with hooks to account for molecules etc. Hence, if atomic theory is to be credible it has to admit that there *is* space within atoms, within each and every atom! Otherwise the size and existence of the roughness and the hooks, for example, could not be justifiable and so would remain mere conjecture. In contrast, the strict Democritean (and Epicurean) atomism

itself necessarily implies that the atoms are *a-tomos*,[40] i.e. uncuttable and impenetrable, meaning that space and matter absolutely exclude one another.

In other words, the *solidity* of the essential components of matter is an essential part of Western thinking from the ancient Greeks to the modern era. Fluidity, whether liquid, gas or plasma, is treated as a *secondary* manifestation – a metonym, a phenomenological appearance.

We know of course that the familiar atoms, i.e. the atoms of chemistry, Hydrogen, Helium, Lithium etc. are divisible and possess both different sizes (as Democritus would admit) and different weights (which only Epicurus admitted). However, these are *not* atoms in the Greek philosophical sense of *ultimately indivisible particles*. Modern physicists like Stephen Weinberg, ignoring even the insights of Epicurus, assert the existence of such indivisible minute particles – in the form of quarks and gluons, abstract entities inferred to exist rather than being actually observed, unlike the demonstrated constituents of atoms: electrons, protons and neutrons.

The assertion as to the existence of quarks – entities with 1/3 and 2/3 of the unit charge of protons and electrons – is based upon speculative mathematics, not observational evidence, since there is no physical proof whatsoever for entities with fractional charge. Being fundamental particles in the sense of Democritus, quarks would be uncuttable and impenetrable, each of them constituting a singularity, being point-particles without spatial extension but attributed an electromagnetic field as a mere probability cloud like Max Born's "statistical interpretation of quantum theory."[41] Likewise the Big Bang, a singularity from which the universe allegedly arose – and from which it is eventually to return, via the Big Crunch, to a singularity, the core doctrine of the *cosmic* Chicken Little.[42] Another large-scale entity asserted to be a singularity is a black hole; these superlatively powerful gravitating objects supposedly lie at the centres of galaxies and even some stars. Thus the notion of a singularity and an atomic plenum lie at the heart of Democritean atomistic thought – its ideas today dominating modern cosmology as well as particle physics. As Weinberg says in the very last sentence of his popular work on subatomic particles, returning to an era before the discovery of quantum theory.

> When the poet William Blake needed to summarize all of science in one line, he spoke of "the atoms of Democritus, and Newton's particles of light." From the Greece of Democritus and Leukippus to Blake's time and our own, the idea of the fundamental particle has always been emblematic of the deepest aim of [modern] science: to understand the complexity of nature in simple terms.[43]

Weinberg's words only make sense when we qualify the word 'science' with the term '*modern*' since Weinberg's agenda is to claim that nature is based upon something fundamentally simple but actually impenetrable, i.e. *singularities* such as quarks, black holes and the Big Bang.

This modern misconception applies particularly to another fantasy particle whose theory Weinberg upheld – the Higgs Boson.[44] This particle, whose existence has supposedly been proven since he wrote, is somehow meant to provide all other particles with mass, and therefore weight, a notion that directly contradicts Epicurus since he, like all of chemistry today, assigned his atoms the property of weight, unlike Democritus.

Hence with this quintessentially modern approach, *genuine* scientific investigation comes to an end, since all research is to be shoehorned into notions where everything is either predetermined (e.g. Einstein's relativity and its worldlines) or acausal (e.g. the particular spot at which a subatomic particle falls in the quantum two-slit experiment), meaning that scientific investigation is inherently impossible – the false alternatives being upheld by entities like quarks, Higgs Bosons, black holes and the Big Bang, entities created *entirely* by

mathematical speculation without physical models or understanding. The social result of this is that we have the resurgence of religious mysticism and fundamentalism from the 1960s when *modern* science was normalized in the West, a stunted science whose believers are forced to look elsewhere for any deeper understanding whatsoever.

Rather, what Weinberg's last underlined sentence really means is that the complexity of nature is to be reduced to a simplistic explanatory agenda, continuous supplementation required to explain otherwise inexplicable experimental results – such supplementation ending even in religious supplication! This mess occurs because Weinberg's belief in 'singular' particles denies infinite divisibility and thus the infinite complexity of nature.

Hence the reductionist teaching of atomism has always had powerful religious overtones, since religions, notably monotheist ones, generally demand a teaching that requires matter to be inert. Life and mind were then said to reside in a separate realm: as soul or spirit attached to matter arranged in a highly developed form (e.g. humans and animals). With a plenum residing in each atom however, obscuring the nature of mind and soul as emerging from complex atomic and subatomic interactions in brains, atoms became inert playthings subject *entirely* to mathematical speculation (and/or the spirit world). For example, Hugh Everett's Many Worlds Theory now becomes the irrefutable justification for Einstein's SR and relativity-tainted quantum theory.[45] Each atom and its atomic plenum becomes the potential site for an observer, this being the Einsteinian solipsism of modern science taken to the ultimate degree, since every perspective flatly contradicts every other perspective with no hope of reconciliation or consistent physical understanding. The end result of modern science is thus the postmodern condition of gnawing uncertainty and 'provisional understanding', not just in science but in the arts and society at large – this embodied as the 'postmodern condition'.

As we saw above, the philosophers of modern science have no answer for this dead-end situation; indeed their 'solidly Democritean' epistemological efforts could charitably be described as merely knuckleheaded.

PART II – REPUDIATING THE PLENUM

Galileo founded genuine scientific understanding through establishing Epicurus' insight, contra Weinberg's modernist argumentation. It was Epicurus who hypothesized a cosmic speed limit and, against Aristotle, affirmed it as the equal rate of fall of bodies despite their different masses.[46] Galileo merely demonstrated it as fact! Epicurus' Roman champion Lucretius wrote that:

> Empty space can offer no resistance to any object in any quarter at any time, so as not to yield free passage as its own nature demands. Therefore, through undisturbed vacuum all bodies must travel at equal speed though impelled by unequal weights.[47]

Yet Epicurus, like Greek atomism generally, kept to the notion of *solid impenetrable* atoms implying that atoms, or their 'ultimate' constituents, were point-particles, impenetrable and/or dimensionless abstract objects.

Weinberg does not seem to grasp this issue as he is happy with *complementarity* whereby point-particles are *complemented* by 'fields' or 'clouds' of "probability density".[48] Faced with the question of subatomic particles – electrons as high-energy cathode rays – passing through matter, he notes only that:

> [J. J.] Thomson noted that this idea of very light cathode-ray particles fitted well with the observations of Philipp Lenard (1862-1947), who observed in 1894 (as Goldstein had done earlier) that cathode-ray particles could travel thousands of times further through gases than could ordinary atoms or molecules. Since cathode-ray particles are much lighter than atoms, the possibility was open that they are the constituents of atoms.[49]

Lenard had already noted in his lifetime the attempt to rewrite the history of physics by minimizing his vital contributions.[50] Weinberg continues the attempt here, sidelining Lenard by discussing only the penetration through *gases* by cathode rays!

II:1 Demonstrating Space within Atoms

That chemical atoms themselves were vortices was not suggested until the 19th century by Hermann von Helmholtz. Given that atoms are vortices, so must their constituents be too, electrons notably, but also protons and neutrons, though much smaller, heavier and denser than electrons. With the emerging realization of the Periodic Table and its recognition of essential differences between types of atoms, the notion of *subatomic* particles as vortices was first put forward by Philipp Lenard.[51]

Yet the crucial step to get beyond the Democritean-Epicurean notion of simple solid-ball-based uncuttable atoms is to demonstrate that space also exists within atoms themselves. That atoms themselves – notably atoms of the most dense and solid materials – consist mainly of empty space was first demonstrated by the same Phillip Lenard in the 1890s by passing cathode rays through *solid* blocks of matter.

> Let us imagine a cubic metre block of the most solid and heavy substance known to us, say, platinum. In this block we find altogether not more impenetrable proper volume than at most one cubic millimetre. Apart from this pinhead-sized portion, we find the remainder of our block as empty as the sky. **We ought to be astounded at the insignificant degree to which the space in matter is actually filled!** What we have found in the space occupied by matter have only been fields of force such as can also form in the free ether. What are then the basic constituents of all atoms to which we have been led by the mass dependence of cathode-ray absorption? Clearly they too are in the main only fields of force in common with the whole atoms.[52]

Cathode-rays, being high-energy electrons, are also vortices – not point-particles, but dynamic fields of forces in space, called 'ether' in the old terminology. This contrasts with the static and *full* "plum-pudding" model of the atom favored by J. J. Thomson!

Only when the fundamental emptiness of atoms was realized was it then understood that fast-moving positive charges in the form of α-particles (He nuclei) could be used to investigate the existence of the positive charges within atoms. The result was the discovery of the atomic nucleus,[53] not a solid ball either but *denser* vortices comprising protons and neutrons, despite the general lack of appreciation of this at the time. Hence the continued rendition of atomic constituents as if they were billiard balls, the nucleus treated as being filled by a cluster of two types of balls, as if protons and neutrons were like raisins and sultanas 'squeezed together' by the strong force.

That protons and neutrons too consist primarily of empty space, being vortices, is not normally appreciated even today, hence to conceive of the vortices in any given atomic nucleus interpenetrating one another has been entirely excluded in favor of a mathematical formalism of abstract point-particles and probability densities, both obscured by the populist raisins-&-sultans image of hard or soft 'balls in two colors'.

The belief in atoms and subatomic particles as solid – solid balls in this case, as well as Voigt's 'crystal aether' – has been a persistent theme in Western thought. We see this reflected even in religious imagery as solidity being the preferred and favored condition – the Rock of the Church, the hardness of diamonds (playing on the name 'Adam') and even the favored images of Free-masonry all privilege the static solid over a dynamic high-energy fluid – liquid, gas, plasma or other – state of matter.

II:2 The Infinite Divisibility of Matter

At this point we can more readily appreciate the fact that matter is infinitely divisible and that its fundamental constitution is not solid but fluidic, in dynamic motion. As Carroll Quigley had pointed out,[54] space and time too are infinitely divisible, the combination of these observations being embodied in the recognition that the three ontological constituents of physical reality – matter, space and time – are each infinitely divisible.

Huyghens' Principle of the combination of wavelets and Bose's Principle of potentially infinite energy density (bosons) both embody this insight implicitly. Although these two principles arose in Western and/or modern philosophy – Satyendra Nath Bose being of Hindu Indian background – there has been no explicit affirmation of infinite divisibility. Rather, the presumptions of singularity (Big Bang, black holes, quarks, point-particles etc.) continue to dominate all Western philosophy, Marxism included. Nor is this merely a post-Einstein confusion: Pierre Laplace had first suggested the notion of black holes, an object so heavy that light could not escape from it.

Revealed here instead is the fundamental defect in Western philosophical thought, its *monistic* thinking – underpinned by monotheist habits of thought – its belief that everything, including matter, space and time, is reducible to One Thing, one underlying stuff.[55] In Eastern philosophy too, there *can* be found a tendency to do the same, notably in Hindu philosophy where every god can be considered an avatar of every other god, all gods ultimately reduced to being avatars of the Hindu trinity or of Vishnu alone (e.g. the Upanishad doctrine)!

In complete contrast Chinese philosophy had already escaped domination by monistic singularity-based thinking by the 4th century AD! Even though this is embodied in only one minor school in philosophy, it created the basis for more elaborate understanding, once more popular philosophies were and are discarded. This philosophical trend is the Hui Shih school embodied in a dialogue involving a philosopher called Hsia Chi answering the questions of a King Thang. (The eight directions referred to in the quote below include the intermediate compass directions: NE, SE, SW, NW).

> **King Thang**: "In the beginning, were there already individual things?"
> **Hsia Chi**: "If there were no things then, how could there be any now? If later generations should pretend that there had been no things in our time, would they be right?"
> **King Thang**: "Have things then no before and no after?"
> **Hsia Chi**: "The ends and the origins of things have no limit from which they began. The origin (of one thing) may be considered the end (of another); the end (of one) may be considered the origin (of the next). Who can distinguish accurately between these cycles? What lies beyond all things, and before all events, we cannot know."
> **King Thang**: "What about space? Are there limits to upwards and downwards, and to the eight directions?"
> **Hsia Chi** *said he did not know, but on being pressed, answered*: "If they have none, there can be an infinitely (great). If they have [limits], there must be an indivisibly

> (small). How can we know? If beyond infinity there were to exist a non-infinity, if within the infinitely divisible there were to exist an indivisible, then infinity would be no infinity, and the infinitely divisible would contain an indivisible. This is why I can understand the infinite and the infinitely divisible, but I cannot understand the finite and the indivisible…"[56]

The complete severance from Einsteinian misconceptions is contained in Hsia Chi's last words as he was forced to consider issues of infinity *consistently*. He affirms the infinite universe and infinitely divisible matter as understandable, so categorically rejects the basis of modernity's *finite* Big Bang universe and its realm of *indivisible* singularities, i.e. point-particle atoms, black holes, quarks and gluons as *inherently* incomprehensible.

Nevertheless, Joseph Needham, an Anglican whose work revealed Hsia Chi's words to the West, did not appreciate the implications. This is an odd outcome given that he had argued with Einstein over the latter's definition of science as deriving *exclusively* from ancient Greece, treating Chinese civilization as *pre*-scientific until contacted by the West![57]

II:3 The Photon as a Vortex

When Bohm & Vigier suggested the vortex-structure of an electron they had to consider that the vortex-particle itself, while roughly spherical, is not "longitudinally bland" but may contain a concentration of matter, asymmetric to the whole vortex but located at or near its equator.[58] As a spin-½ particle the electron-vortex has magnetic poles around which the fluidic content (the Madelung fluid) spins.

While as Lerner pointed out,[59] the Schrodinger equation implies a vortex-structure to subatomic particles, Schrodinger himself avoided a physical interpretation, adhering to the same mathematical dominance as Bohr & Heisenberg did, even though differing in the details. One Johannes Stark, discoverer both of the Doppler effect in canal rays then of the splitting of spectral lines in an electric field, for which he won the Nobel Prize, took exception to the mathematical domination of physics. Calling mathematics-dominated physicists 'dogmatic' he found that they "present things as though their theories and formulae exhaustively covered the whole range of phenomena treated by them; they can see no further problems in this field, and thought and inquiry are ice-bound in their formulae." With these words one might think that Stark had only the Bohr-Heisenberg Copenhagen interpretation in mind, since that theory considers there to be no physical reality underlying subatomic particles, just mathematics.

As a 'pragmatic physicist' Stark considered that "there is no such thing as classical physics or modern physics, but only physics."[60] However, from the first decade of the 20th century the dogmatic mathematical physics – *modern* physics – had gained ascendancy, Einstein embodying this mentality. As for Schrodinger…

> …he obtains as a final result first a differential equation. He then asks what sort of physical significance the function that occurs in his equation may have, and for this he makes a suggestion, according to which the electron is arbitrarily smeared in a large spatial region round about the atom[ic nucleus]. In characteristic fashion, however, other dogmatic physicists (Born, Jordan, Heisenberg, Sommerfeld) give to the Schrodinger function another dogmatic significance, contrary to fundamental laws of experience. They make the electron dance round the atom in an irregular manner, and allow it to act externally as though it were simultaneously present at every point round about the atom[ic nucleus] with a charge corresponding to the statistical duration of its sojourn at each point.[61]

Modern physicists like Schrodinger would never consider a physical structure, positing mere mathematics and wave-particle dualism instead.

Hence Stark, like Lenard, realized that subatomic particles, spin-½ particles, had to be vortices in order to explain fundamental findings like Planck's constant – embodying the angular momentum of the particle's vortex.

Similar considerations arise when considering the photon as a vortex, but as the photon is spin-1 we have to understand that its structure is more complex, possessing two different axes of motion. Its primary axis is in its direction of motion, this more obvious for shorter-wavelength photons. Its vortex motion however is a separate axis, and this axis is aligned variably with respect to the direction of motion. The phenomenon revealing this is called polarization. Stark visualized the nature of the two axes of the photon-vortex thus.

> The rotational axis of a quantum-vortex is to be distinguished from the axis of its motion or direction. With the observation (absorption) of a light-vortex, the axis of the observer's line of sight at least comes close to the axis of direction. *If the axis of direction of a light-vortex is perpendicular to the rotational axis, so it appears to the observer as linearly polarized; if the rotational axis of the light-vortex aligns with the axis of motion it appears to the observer as circularly polarized*.[62]

If the axes are at an intermediate angle the light is elliptically polarized. Modern physics textbooks however do not clearly explain the reason for the polarized light differences, describing it instead by interaction between two waves implicitly in a stagnant medium, one horizontal, the other vertical.[63]

Nor can Stark be imprisoned in Descartes' Tolerance Camp for his advocacy of vortices – for the simple reason that, like Lenard's dynamid-vortices, his vortices are *in* space, and so are not to be identified with space itself so as to embody the plenum.

II:4 Woldemar Voigt and the Voigt Doppler Equation

The Lorentz Transformation Equations (LTs) were not Lorentz's own invention but were hijacked, presumably indirectly, from the work of Woldemar Voigt, who created the equation to describe the wavelength (= 1/frequency) changes involved in the Doppler Effect on light – a fact obscured by the nonsense and misrepresentation on Wikipedia which presents him as a muddled forerunner of Lorentz. Instead we can see from articles such as E. Falkner's,[64] and https://physicstoday.scitation.org/doi/10.1063/PT.3.4429, that Voigt's interest was *solely* in explaining changes in the Doppler Effect – changes to wavelength and its inverse, frequency, including both light and sound. He was *not* postulating either time dilation or length contraction; TD&LC were no part of his thinking, even though the mathematics he invented seemed, in retrospect, to imply TD&LC such that Lorentz so readily utilized the maths in this way!

Voigt's seemingly insurmountable difficulty was that he believed in the plenum embodied as a light-transmitting medium, a static crystalline aether analogous to the atmosphere as the static medium transmitting sound. He interpreted v in the equation as referring to the frequency seen by a moving observer as opposed to the absolute velocity (and frequency) undergone by the light's wave motion of speed c passing through the stagnant aether-plenum.[65] Dealing with a light beam as a 'propagating oscillation' moving along the x-axis in an incompressible medium, Voigt imagined it mathematically as two different Cartesian systems in mutual motion,[66] this, as Einstein's biographer admits, in its laying out of the sequence of thought, being the essence of the Lorentz equations.

> Voigt, the first to write down Lorentz transformations; Fitzgerald, the first to propose the contraction hypothesis; Lorentz himself; Larmor, the first to relate the contraction hypothesis to Lorentz transformations; and Poincaré…[67]

Fitzgerald's original paper is from 1889; Lorentz's from 1892;[68] whereas Voigt's original paper referred to above is from 1887, where we find the characteristic 'contraction' formula: $1 - v^2/c^2$, the contraction increasing as the observer's speed v approaches speed c.[69] Voigt applied this formula *only* to the Doppler effect, as the "physical components" of his reasoning were only light, treated as a plane-wave motion, and the crystalline aether through which the wave is passing. Applying mathematics, he did not try to produce any physical clarification as to what he found – allowing Lorentz and Poincaré to interpret the mathematics in a very different and improper way, creating logical paradox in physical applications and thus serving as the foundation for SR's own impostures.

The result is that the misapplied LTs are actually the Voigt Doppler Equations and indicate that the equations are to be applied *only* to light itself to quantify the Doppler effect *without* the presumption of a stagnant aether. The ontological separation of matter, space and time means that the Voigt Doppler Equations apply to some kinds of matter, specifically light, but *never* to space and time! The mathematics however, while correct in the abstract, continued to confuse researchers in the most profound ways. Most notably, having discovered the Doppler Effect in canal rays in the late 19th century and…

> Seeking to determine the scientific significance of his discovery, Stark attempted to make the optical Doppler effect proof of Einstein's theory of SR and, a year later (1907), with the quantum hypothesis as well. Stark was thus one of the earliest defenders of the [quantum] hypothesis, and he remained in the forefront of research until 1913. Curiously, after that year he turned vehemently against both the quantum theory and the general theory of relativity.[70]

In other words, Stark believed that the LC inherent to SR was operating within light itself to account for the Doppler effect in canal rays. In this way he managed to get the answer back to front – evidently in part because at Göttingen he had been encouraged by none other than "Woldemar Voigt to investigate this electric analogy to the magnetic Zeeman effect",[71] i.e. the splitting of spectral lines in an electric field, the Stark effect, linking the earlier component of his Nobel prize to the latter component, the connection via SR! In ways such as these we see the pernicious role of logical paradoxes working through systematized misconceptions such as SR.

So to avoid mathematical speculation involving the plenum, crystalline or stagnant fluid, we need to consider observations from outer space.

II:5 The Constant Speed of Light and Spectroscopic Binary Stars

Since we are now to work with redshifted spectra in the cosmos, once again the primary task is to rid ourselves consistently of notions that presume a plenum. Eric Lerner illustrates some of the issues, but, in 1991 he was not fully cognizant of the plenum question, ending his ground-breaking *The Big Bang Never Happened* in a 'tired' and thus unsatisfactory impasse.

> According to Paul Marmet and Grote Reber, quantum mechanics indicates that a photon gives up a tiny amount of energy as it collides with an electron, but its trajectory does not change. …

This implies that photons and electrons are vortices, the interaction *not* being a billiard-ball one.

> …As the photon travels, its energy declines, shifting its frequency to the red. Marmet has calculated this effect for our own sun, showing that it explains a long mysterious redshift between the limb and the center of the sun. … But for explaining galactic redshifts there is a fatal flaw. Here, Marmet assumes that the light is redshifted in traveling through intergalactic space. Yet his calculations imply that a density of ten thousand atoms per cubic meter is required to achieve the observed redshifts. This is far more than the one-tenth of an atom per cubic meter that has been observed locally, or even the ten atoms [per cubic meter] by dark matter theories.[72]

It is clear that the "atoms per cubic meter" inferred to fill intergalactic space are merely the invocation of a universal plenum, a plenum given the property of redshifting distant light – tired light. Lerner realizes that this explanation cannot be true, but has to invoke SR and GR to disprove it!

He now invokes other theories to explain the cosmic redshifts, trying to find a mechanism for the tired light invoked to explain Halton Arp's observations for the mismatch of galaxy-quasar redshifts. Lerner tries to support the two proposed alternative explanations but thinks that the answer lies in experimental testing, viz.

> The first is another version of the idea of 'tired light' – the loss of energy as light travels. In this version however, J. P. Vigier has hypothesized a new term in the equations of quantum mechanics which cause the vacuum itself to absorb the energy.

The answer is ontologically illegitimate according to our new philosophical understanding that absolutely separates space, time and matter. Instead, the vacuum, space itself in Vigier's theory, is now to be attributed the qualities of matter, able to 'hide' energy by storing it away as light travels, leading to modern misconceptions about the 'energy density' of the vacuum. The other suggestion is more familiar:

> Dirac proposed that instead of the space between the galaxies expanding, as GR predicts, all space is expanding because the basic scale of all objects from electrons to galaxy clusters grows with time, due to an unknown physical law. … That is, the size of everything – objects and the space between – evenly expands, so distant objects only appear to be redshifted…[73]

This notion does not work either, since with the traditional idea of space between galaxies expanding there is an earthly standard of reference for length measures, but with *all* space and *all* objects expanding there is clearly no standard of measure, hence Dirac's theory fails fundamentally.

Dirac's theorizing also reveals the absurdity of the Big Bang, since the equivalent of that theory is that the universe remains the same finite size but every object in the universe – galaxies, stars, planets and humans – is ever-shrinking. Light however does not do so, hence the apparent redshift in such an absurd situation!

While all agree on the constant speed of light, the relation to the Doppler Effect has been essentially ignored. This is not the case with spectroscopic binary stars. What is seen as one star in a telescope is often revealed by spectroscopy to be a binary star, the two or even three stars rotating about a common center of gravity. The stars are distinguished spectroscopically since their absorption (occasionally emission) lines reveal different patterns and strengths proportionate to the chemical constitution of each star. Since the stars are in mutual motion sometimes one star and sometimes the other approach the earth. In this way we can distinguish the two spectra unequivocally and observe regular Doppler shifts as one star approaches and the other star recedes from the Earth. *There is no change in the speed of light during such observations*.

From his original doctoral thesis in 1947, Charles Fehrenbach pioneered the method of Fehrenbach reversing prisms to measure the radial velocities of stars,[74] quantifying not just redshifts but the rotational periods and speeds of spectroscopic binary stars, confirming them through comparing optical and spectral changes in ordinary binary stars. Relying on Galilean relativity, that all motion is relative, his work has stood the test of time and reveals the constant observed speed of light despite the Doppler changes necessarily involved in the observations of stellar spectra – a plenum need not be invoked.

For the Fehrenbach procedure one takes two photographs of a star-field, a prism rendering starlight *le beau spectre lumineux*.* One is with the prism in the forward, the other in the reverse position, using a stationary laboratory reference light source such that the antiparallel spectra align along a prominent absorption line: H-gamma (Hγ). Then, when stars are observed, the distance between the Hγ lines for mutually reversed spectra of any particular star indicate and *quantify* a mutual redshift or blueshift of the starlight, enabling that star's radial velocity relative to the Earth to be established.[75]

II:6 Walter Ritz – Light is not Propagated but Projected.

We have now broken from the notion that light is propagated in a medium i.e. a plenum, as would otherwise be invoked by analogy to the Doppler effect in sound. Space does not limit or tax light in any way, neither through curved space, nor a retarding plenum of any kind – updating what Epicurus had already concluded. A contemporary and persistent opponent of Einstein's viewpoint was Swiss physicist Walter Ritz, whose views clashed with Einstein's at the most fundamental level. Their only joint paper was a terse statement of disagreement over *the Contemporary Situation on the Radiation Problem*.[76]

The paper provides an equation for the electromagnetic process in a given space, an equation with two different solutions, one for advanced potentials, the other for retarded potentials for a given electromagnetic process. The text concluded:

> Ritz considers the limitation to the form of the retarded potentials to be one of the roots of the second law [of thermodynamics], while Einstein believes that irreversibility is grounded exclusively upon probability.[77]

This paper was from 1909, the very year Ritz died from tuberculosis, yet another disaster favoring the acceptance of Einstein's teachings since Ritz, unlike Lenard or Stark, had opposed SR from the beginning. Thus is Ritz's work both highly controversial and yet incomplete.

Even more so, since the Ritz-Einstein disagreement highlighted above concerns the question of the reversibility of nature, the directionality and reversibility of time, the very *arrow of time*. The ontological separation of matter, space and time clearly favors Ritz in that time itself is irreversible and cannot be reversed on probabilistic mathematical grounds – as the quotation by the two authors avers! This is why *only* Einstein favors *advanced* potentials: they are like ripples suddenly appearing improbably around the edges of a pond, then converging in an ever-shrinking circle, finally coming together to throw out a stone from the pond's surface! Waves of predestination, they are embodied today in mathematical fantasies called tachyons, particles traveling faster than light and *backwards in time*![78] Rather, the forward progress of time is somehow built into nature, but the second law of thermodynamics which embodies it is based *entirely* upon probabilistic grounds, a situation of which Einstein takes full advantage, hence the complete disagreement between the two authors!

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* the beautiful luminous spectrum.

This troubled the editors of the Dictionary of Scientific Biography (DSB), hence Ritz's very long entry there, despite his abbreviated career. The Ritz combination principle in spectroscopy led to Bohr's first formulation of quantum theory. As his understanding grew Ritz turned still further against Lorentzian relativity[79] – still the standard relativity teaching even in 1909, Einstein hardly being acknowledged at that time. His opposition to Einstein was a new recognition as to the unphysical and negative implications of Einsteinian thinking, hence the DSB editors write of "the fundamentally reactionary character of Ritz's scientific and methodologic inclinations".[80]

By 1907, Ritz came "finally to the result that vortical processes must be involved here, and with it the idea of the magnetic field immediately arose," Ritz finding "insuperable resistance to his electrodynamic ideas" in 1908.[81] Ritz's older theory, usually quoted as his standard position, was that of an emission theory of light where the light maintained the same velocity relative to the object that emitted it.

Ritz confronted the two light postulates of Einstein – 1) that all motion was relative (imitating Galileo), and 2) that light in a vacuum always revealed a constant speed – by first denying the second postulate, as Maxwell-Lorentz electromagnetic theory had not been reconciled with the emerging quantum discoveries. Herbert Dingle noted the outcome, but with a positive observation!

> This was the belief of Ritz, who put forward a theory along such lines – which however he later discarded, though at the time of his death he expressed the belief that he was on the track of a much sounder theory.[82]

Indeed he was – but was only able to put forward the *initial* step of the correct theory, the theory to be outlined in the next paper.

> The emission theory does not introduce absolute motion. If on the contrary light is *propagated*, it is only able in a body different from the material body, and filling out all space; that body will necessarily introduce the motion called absolute; therefore experience demonstrates that there is no *propagation*. Thus are we brought to consider that luminous energy is *projected*, and not *propagated*. In a certain sense we come back to an emission theory of light and of electricity, but under a form necessarily very new, and without forgetting at any time that it is only about this, an image destined for us yielding an appreciable delay, such being tested for by luminous and electrical actions, a delay which is solely the object of experiences.[83]

Still in the first decade of the 20th century, Ritz's aim was directed essentially at Lorentzian relativity, hence:

> Of course it is not about a *return* to actions at a distance; but whether a 'physical space' or a fictitious emanation is chosen as an intermediary milieu – from the instant at which the action, felt by an electric charge, depends only on the disposition and the state of the milieu in its immediate environment – it is perverse (*pourra*) to say that there is no action at a distance. Perhaps this exposition will contain the same concept in the new hypothesis, a very great part of reality as in traditional conceptions. Because, according to the views of Lorentz, we have seen that the ether is not modified by the action of matter; it remains immobile.[84]

Here the plenum is embodied as the immobile aether, Ritz realizing that the plenum-aether must be abolished *in toto* – but not by the agnostic and solipsistic reasonings of Einstein. It is the realization that any action or modification of an action is *never* the result of 'the universe as a whole', but nor is the action merely locally controlled, in that there are instead multiple factors, *local* and *nonlocal* (the two terms only relative) involved.

The question now is what the projection of light consists of, since the very word *projection* implies instantaneous-action-at-a-distance (IAAD), a concept forced upon Newton for his gravitational equations to work, as it would be upon Ritz had he lived long enough to develop the implications. This will become clear in the next paper.

II:7 Dingle's Question

Herbert Dingle was the singular British astronomer-physicist, who, after two decades believing in and preaching Einstein's SR, suddenly came to realize the logically paradoxical implications of SR. Specifically, its concept of mutual time dilation from mutual motion is not physically possible – clock A cannot be faster than clock B *and* clock B faster than clock A. Shunned by the establishment when he could not get a clear answer from them in arguments lasting over a quarter of a century, he published *Science at the Crossroads*, a book which revealed the conundrum starkly.[85]

Dingle's subsequent extraordinary correspondence with *Nature*, after its publication, was forced upon the editor, John Maddox,[86] under threat of legal action; this correspondence is listed not in the references but here in endnote 87.[87] Nevertheless, this writer has been informed that the articles referred to do not exist; rather, on the online edition of *Nature* there are claimed to be only advertisements found at the pages given for the later correspondence of 1974 and 1975![88]

The most important reply to Dingle is the very last one by Maddox in mid-1975. Dingle's subsequent riposte merely claimed that Maddox's "technical example involving 'lasers' and 'algorithms' refers to a completely different phenomenon which has nothing at all to do with the matter,"[89] revealing that Dingle did not see the *primary* Doppler connection via the Voigt Doppler Equations. Maddox's words, while an escape from Dingle's demand for a clear answer to the clocks paradox reads:

> Dingle's error is primitive, as can be told from his penultimate paragraph. He says it is a "physical impossibility" that clock A should work more slowly than clock B and that the reciprocal should also be true. Let him measure time by the frequency of a laser, and suppose [that] two identical lasers pointing at each other are in relative motion. The light received at each laser will be out of tune with the local standard and the phenomena observed at the two lasers will be identical. Knowing that the two lasers are identical, each observer can construct an algorithm so as to infer what time is being kept by the other and will rediscover the familiar and the relativistic Doppler correction. In other words, each frequency comparison will show that the distant laser is "running slow". Dingle's assertion that this is a physical impossibility is tantamount to the assertion that it is physically impossible for the velocity of light to be independent of its direction.

Instead of dealing with clocks, Maddox reverts to lasers shining at one another while undergoing mutual motion, becoming "out of tune". So while Dingle is correct in asserting that Maddox has avoided answering the question about clocks, neither Dingle nor Maddox seem familiar with the fact that Lorentz originally hijacked the LTs from Woldemar Voigt who used these equations to quantify the very same Doppler effect, which issue has returned under the guise of two mutually-moving lasers.

Maddox has unwittingly placed the two lasers in a situation of Galilean relative motion – and then applies the SR misconception of local time, claiming that each laser-observer, seeing the other laser-observer as "out of tune" would infer that the other was undergoing time dilation, quantifying the difference through the Doppler effect![90] Not

wanting to understand the implications, Maddox avoids them, while Dingle is misled by thinking that the answer given by Maddox is about a "completely different phenomenon."

> Dingle's confusion stems from his assertion that special relativity requires that the differences of rate should "actually and not merely apparently" occur. The truth of course is quite the opposite. The theory is cast in that positivist mould in which no meaning can be attached to physical quantities unless they are observed or made "apparent." It explicitly rejects the use of physical quantities which cannot be measured. By supposing that there are measures of time more "actual" than those based on measurement, Dingle is simply asserting that he holds to the pre-relativity notion of absolute time.[91]

Hence if we apply absolute time to the mutually-moving lasers we will get an entirely different answer to that which arises from 'positivistically' applying SR to the same situation!

So with this in mind we can at last address Dingle's question.

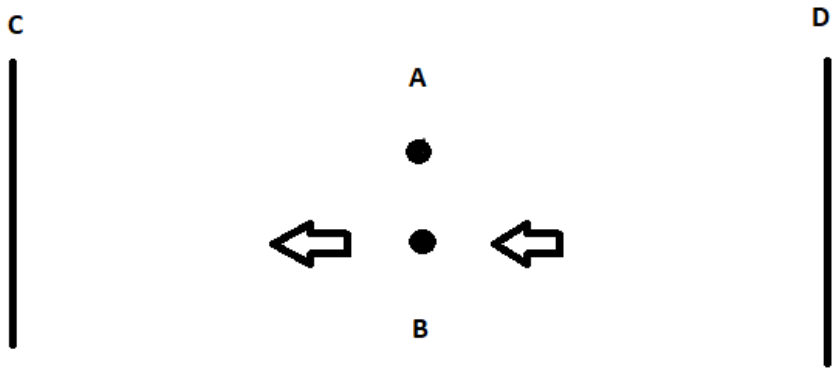

Figure 3: **Dingle's Question** (from *Science at the Crossroads* p. 210) – observer at A is equi-distant from recording devices C and D, all three mutually stationary. Observer A simultaneously emits lights at identical wavelengths at both C and D just as observer B is passing A, traveling to the left. At this very instant when B passes A, observer B too emits lights of identical wavelengths at both C and D. What will the devices at C and D record?

This question was not answered by Maddox to Dingle's satisfaction. Rather, it has been ignored for well-nigh 50 years. Maddox's suggestion of using lasers is a welcome one, since lasers emit monochromatic light, light emitted with a very narrow wavelength band. However, his subsequent evasion of the implications of two such lasers in mutual motion leaves the question hanging, its subsequent suppression in later years revealing that the elites of modern science have something vitally important to hide!

So with reference to Dingle's question let us also presume that A and B too emit laser light of exactly the same narrow wavelength when seen by someone at rest with the emitting source, whether B or A.

However, B is moving to the left towards receiver C. So when and how will be the emissions be received at C and D respectively?

References

- *Specific references to the Dingle-Maddox correspondence are found in endnote 87.*

Adorno, Theodore W., Else Frenkel-Brunswik, Daniel J. Levinson, R. Nevitt Sanford, in collaboration with Betty Aron, Mariz Hertz Levinson & William Morrow, *The Authoritarian Personality*, Harper & Row, New York (1950)

Bailey, Cyril, *The Greek Atomists & Epicurus*, Oxford University Press, Oxford UK (1928).

Barnes, Jonathan, *Early Greek Philosophy*, Penguin, London (1987).

Born, Max, Nobel Prize Lecture 1954, *Nobel Prize Lectures*, Elsevier, Netherlands (1972) pp. 256-267.

Combourieu, Marie-Christine, "Karl R. Popper, 1992: about the EPR Controversy", *Foundations of Physics* 22:10 (1992) 1303-1323.

Davies, Paul & Phillip Adams, *The Big Questions*, Penguin Australia, Ringwood, Victoria (1996).

---------, Paul & Phillip Adams, *More Big Questions*, ABC Books, Sydney NSW, Australia (1998).

DeWitt, Norman Wentworth, *St. Paul and Epicurus*, University of Minnesota, Minneapolis, USA (1954).

---------, Norman Wentworth, *Epicurus and His Philosophy*, University of Minnesota, Minneapolis, USA (1954).

Dingle, Herbert, *Science at the Crossroads*, Martin Brian & O'Keeffe, London (1972).

DSB – Marshall de Bruhl et al. eds., *Dictionary of Scientific Biography*.

Einstein, Albert, *The Meaning of Relativity*, abbrev. MOR, trans. Edwin Plimpton Adams, appendix I trans. Ernst G. Straus, appendix II trans. Sonja Bargmann, Routledge, London (2003){1922} – Original page numbers given after / (note that page numbers in this 170 page edition do not correspond to the original English translation, the page numbers of which are not provided in the text, in contrast for example to editions of Plato, but it certainly reveals the publisher's actual contempt for the material published!).

----------, Albert, *Relativity: The Special and the General Theory: a Clear Explanation that Anyone can Understand*, 15th edition, Crown, New York (1961){1952}.

Elkana, Yehuda, "The Myth of Simplicity" pp. 205-251 in: Gerald Holton & Yehuda Elkana, eds., *Albert Einstein: Historical & Cultural Perspectives*, The Centennial Symposium in Jerusalem, Dover, Mineola, New York (1997).

Feyerabend, Paul, *Against Method*, Verso, London (1980).

Galilei, Galileo, *Dialogue Concerning the Two New Sciences*, trans. Henry Crew & Alfonso de Salvio, pp. 125-260 in Great Books of the Western World Vol. 28, Encyclopaedia Britannica Inc., London (1989).

Halliday, David & Robert Resnick, *Physics* vol. 2 (revised 2nd edition), John Wiley & Sons, New York (1966).

Heidegger, Martin, *Parmenides*, trans. André Schuwer and Richard Rojcewicz, Indiana University Press, Bloomington, Indiana, USA (1998); original text, Vittorio Klostermann, Frankfurt am Main{1982}.

Highfield, Roger & Paul Carter, *The Private Lives of Albert Einstein*, Faber & Faber, London (1994).

Kuhn, Thomas S., *The Copernican Revolution*, Harvard University Press, Cambridge, Massachusetts (1985){1957}.

-------, Thomas S., *The Structure of Scientific Revolutions*, (2nd edition with postscript), University of Chicago Press, Chicago (1970).

Lenard, Philipp E. A., Nobel Prize Lecture 1905, *Nobel Prize Lectures*, Elsevier, Netherlands (1972).

---------, Philipp E. A., *Errinerungen eines Naturforschers,* kritische annotierte Ausgabe des Originaltyposkriptes von 1931/1943, ed. Arne Schirrmacher, Springer, Heidelberg, Germany (2010).
Lerner, Eric J., *The Big Bang Never Happened*, Simon & Schuster, London (1991).
Lucretius*, On the Nature of the Universe* (*De Rerum Naturae*), trans. R. E. Latham, Penguin, London (1994).
Maddox, John, *The Doomsday Syndrome*, Macmillan, London (1972)**.**
Marcuse, Herbert, *One Dimensional Man*, Abacus, Sphere Books, London (1972){1964}.
Marx, Karl "Difference between the Democritean and Epicurean Philosophy of Nature" in Marx-Engels *Collected Works* Vol. 1 pp. 25-107, Lawrence & Wishart, London (1975).
Michaud, André, Electromagnetism According to Maxwell's Initial Interpretation, *Journal of Modern Physics* 11 (2020) 16-80, https://doi.org/10.4236/imp.2020.111003
Needham, Joseph, *The Grand Titration: Science and Society in East & West*, George Allen & Unwin, London (1969).
Nietzsche, Friedrich, *The Portable Nietzsche*, ed. and trans. W. Kaufmann, Viking, New York (1954) pp. 345-347, 360-363, 413-415.
Pais, Abraham, *Subtle is the Lord*, Oxford University Press, Oxford (1982).
-----, Abraham, *Niels Bohr's Times: In Physics, Philosophy and Polity*, Clarendon, Oxford, UK (1991).
Popper, Karl R., *Quantum Theory and the Schism in Physics*, (Postscript No. 3 to *The Logic of Scientific Discovery*) Unwin Hyman, London (1982).
---------, Karl R., *The World of Parmenides: Essays on the Presocratic Enlightenment*, ed. Arne F. Petersen and Jorgen Mejer, Routledge, London and New York (1998).
Ritz, Walter, *Oeuvres*, https://archive.org/details/gesammeltewerkew003778mbp/page/n484/mode/2up .
-----, Walter & Albert Einstein, Zum gegenwärtigen Stand des Strahlungsproblems, *Physikalische Zeitschrift* 10 (1909) 323-324.
Russell, Bertrand, *A History of Western Philosophy*, George Allen & Unwin, Sydney, Australia (1979){1946}.
Stark, Johannes, *Die Axialität der Lichtemission und Atomstruktur*, A. Seydel, Berlin (1927).
------, Johannes, The Pragmatic and the Dogmatic Spirit in Physics, *Nature* 141 (1938) 770-772.
Weinberg, Steven, *The Discovery of Subatomic Particles*, Penguin, London (1993).
Williamson, John in "Chomsky, Language, World War II and Me," in Peter Collier & David Horowitz (eds.) *The Anti-Chomsky Reader*, Encounter Books, San Francisco, USA (2004) pp. 236-238.

Endnotes

1. Popper, QTSP, 1982 Preface, p. 29: "This *could* be interpreted as indicative of an action at a distance; and if so it would mean that we have to give up Einstein's interpretation of special relativity and return to Lorentz's interpretation and with it to Newton's absolute space and time. We need not in that case give up any formula of special relativity theory. For special relativity is an interpretation of a formalism; and the same formalism can be interpreted either by special relativity or by Lorentz's view that we have an absolute space and time but cannot detect it, for reasons that are revealed by the formalism."

   The formalism is of course mathematical and based upon the LTs, revealing that for Popper physical reality is to be based *solely* upon mathematical formalism. Under this one-eyed perspective Popper *dismisses* any consideration for the physical world being primary over mathematical constructions.

2. For the Sagnac Effect see: https://en.wikipedia.org/wiki/Sagnac_effect#:~:text=The%20Sagnac%20effect%20manifests%20itself%20in%20a%20setup,allowed%20to%20exit%20the%20ring%20and%20undergo%20interference.
3. Geographical time conventions, i.e. time zones and the International Date Line, are merely differences in times associated with adjusting daylight hours to the Sun as the Earth rotates. Here the *rate of passage of time remains unchanged*, a situation totally different to time dilation.
4. In the Newtonian Universe, the Milky Way is presumed to hold together by gravitational attraction.
5. This is also why Einstein later dumped Mach's Principle when elaborating GR. The *instantaneous action at a distance* (IAAD) presumed by Newton to make his gravitational equations work also applies to the action of inertia, both rotational and linear, a situation that GR avoids and misrepresents, if ever it deals with the situation at all. "If the universe were quasi-Euclidean, then Mach was wholly wrong in his thought that inertia, as well as gravitation, depends upon a kind of mutual action between bodies." (Einstein MOR p. 102/105 "The General Theory of Relativity [continued]"). In other words, the instantaneous impulses effected by IAAD are obscured by the concept of the field.
6. This is particularly evident in Einstein's 1922 work translated as *The Meaning of Relativity* (originally *Vier Vorlesungen über Relativitätstheorie*) where Einstein hurries the reader into the mathematics as quickly as possible. Only occasionally does he have to deal with other issues, notably with Ernst Mach about inertia. (pp. 58-59f)
7. Under Niels Bohr, such systematized inconsistency was given a new name: *complementarity*, a new kind of relativity (Pais, 1992 p. 309ff.).
8. Lofts GSJ #8440 §5; #8468 C1 & nn. 27-28.
9. The correct answer of course is that galaxies at greater distances are receding faster from the Milky Way in proportion to their distance, this being why the sky is dark at night. Space itself is not expanding nor "being inserted" between galaxies; it is merely there and infinitely so. At a certain distance the galaxies are receding from us at the speed of light in all directions. Much follows from this but cosmological discussion can only commence after the replacement for SR has been presented here and in the next article.
10. Lofts GSJ #8440 §§1-2.
11. E.g. the feature article in *New Scientist* No. 3334 (15th May 2021) pp. 36-40 about the 'Predestined Universe', such perverse interpretations of quantum theory being a regular feature of this magazine.
12. Lerner BBNH pp. 272-278. Microwave radiation is emitted by all galaxies, the CMBR being a 'soup' resulting from the multitude of galaxies in our cosmos.
13. **https://www.universetoday.com/116938/new-cosmological-theory-goes-inflation-free/**. The pantheism is clear in that God is treated as the universe itself: matter, space, time and the supernatural all rolled into *one* – a capitalized One, like Einstein's original spherical universe, metaphorically a plastic ball-world like that toyed with by (https://www.youtube.com/watch?v=-jj-PaqFrBc).
14. Lofts GSJ #8468 C3.
15. Marcuse §9 p. 180. Note that Marcuse puts the word 'science' in quotation marks as a qualifiable escape hatch, just in case someone should query him too closely about what is meant.
16. And this is why Einstein has to distance himself from Platonism: "…to drag down from the Olympian fields of Plato the fundamental ideas of thought in natural science, and to attempt to reveal their earthly lineage." Wanting to achieve "greater freedom in the formation of ideas or concepts," he credits David Hume and Ernst Mach for this "critical conception" (*Relativity* Appendix V p. 142) without revealing that this greater freedom consists not only in extravagant logical-paradox-tolerant speculation, all based upon speculative mathematics, but in the notion of complementarity or dialecticism, a.k.a. "Hume's fork", "two-tier thinking" (Elkana *The Myth of Simplicity,* p. 210 §§7-8 *et seq*.) and "doublethink" (George Orwell, *1984*).
17. See e.g. T. Theocharis & M. Psimopoulos "Where Science has gone Wrong", *Nature* 329 (15th October 1987) 595-598, where the writers call for "putting forth adequate definitions of such fundamental concepts as objectivity" but, trapped in the *modern* circular reasoning (and not only because they are physicists) are constitutionally incapable of doing so.
18. Kuhn, *The Copernican Revolution* ch. 7 p. 240. The accompanying diagram on p. 241 illustrates Descartes conception of the plenum of vortices!
19. I.e. *The Structure of Scientific Revolutions* (abbrev. *SSR*).
20. Kuhn *SSR* Postscript §6 "Revolutions and Relativism" pp. 206-7. Underlined sections in quotations are added by this writer to clarify the quote.
21. Kuhn *SSR* chapter 9, p. 108.

22. It should not be presumed that Karl Popper fully agrees with Kuhn's famous formulations on scientific procedure. Popper (*World of Parmenides* 7:12*(2) p*. 161) uses the term 'research programme' viz. "The function of such a comprehensive research programme is in some respects very similar to the functions that Thomas Kuhn attributes to those dominant scientific theories that he has unfortunately called 'paradigms': a research programme, if it becomes dominant, exerts a directing influence upon scientific research. However, research programmes do not form part of science in the way that Kuhn's dominant theories do. They are metaphysical, epistemological, and methodological in character."

While Popper and Kuhn are essentially on the same side, it is clear that the former considers Kuhn an intellectual subordinate in that he sees, hears and knows nothing about the deeper philosophical issues involved – so see note 26 below.

23. Ever sinister, the Frankfurt School's debasement of culture through *eros* (Adorno *et al*. ch. 23 p. 976) stalks even the sitcom itself; see https://ew.com/tv/2019/08/26/bob-crane-hogans-heroes-unsolved-murder/!

24. Lerner pp. 196-198.

25. The word 'paradigm' has fiercely fundamentalist overtones as we can see from a *derivative* of the original Greek word: παραδειγματίζω "to put to shame", where it is found in the New Testament, *Hebrews* 6:4-6: here Jesus/the Holy Spirit is *put to shame* by the backslider from the faith!

26. Nevertheless, in a 1992 interview late in his life, after having acknowledged that SR also breaks down, Popper confessed to not having believed in GR for decades!

> **Popper**: "Let me tell you since when I don't believe anymore in the general relativity; since I heard about the Russian Sputnik. Then, I thought: 'If I sit in a spaceship and the latter goes reasonably fast, then the world in front of me will be *blue-shifted* but the world at my back will be *red-shifted*. That should not be because, according to Einstein, the world should always be the same, however fast I go. Here you are'!"
>
> **Combourieu**: "What would be the impact of that prediction on our actual knowledge?"
>
> **Popper**: "The sacrifying [? – *sacrifice*] of general relativity. The world does not look like Einstein said. The world does not seem the same everywhere to every observer." (Combourieu 1992, p. 1311)

Especially when you get out of the *Kommandantur* and take off your sitcommie prison uniform, although so many acolytes still have to learn to distinguish between doublethink and Doppler, let alone paradigm and Popper!

27. Feyerabend (chapter 15 p. 175) wrote: "Thus the [critical rationalist] ideas of the Popperian school were obtained by generalizing solutions for methodological and epistemological problems. Critical rationalism arose from the attempt to solve Hume's problem and to understand the Einsteinian revolution, and it was then extended to politics and even to the conduct of one's private life. Such a procedure may satisfy a *school philosopher*, who looks at life through the spectacles of his own technical problems and recognizes hatred, love, happiness, only to the extent to which they occur in these problems. But if we consider human interests and, above all, the question of human freedom (freedom from hunger, despair, from the tyranny of constipated systems of thought and *not* the academic "freedom of the will"), then we are proceeding in the worst possible fashion.

> "For is it not possible that science as we know it today, or a 'search for the truth' in the style of traditional philosophy, will create a monster? Is it not possible that an objective approach that frowns upon personal connections between the entities examined will harm people, turn each person into a miserable, unfriendly, self-righteous mechanism without charm and humour?"

The 'objective approach' that Feyerabend refers to comprises what Popper defines as 'objectivity', i.e. mere *intersubjectivity* (see Lofts GSJ #8389 §8; #8468 C2 para. 3). Hence, rather than reveal the underlying issue, academic attacks on Feyerabend concentrate on the underlined phrase above – i.e. his alleged dirty spectacles!

28. The question of infinity and infinite divisibility in Western philosophy is implicit in Heidegger's *Parmenides*, particularly where it concerns the meaning of 'truth', embodied in the stark difference between Greek (ἀλήθεια - *aletheia*) and Latin (*verum*) words for this concept. The latter implies something requiring to be *guarded*, the former something *open* without anything hidden! Compare these with the Chinese conceptions in part II:2 here, particularly in reference to what can and cannot be understood.

29. Though readily available at https://www.austlit.edu.au/austlit/page/C256908, the text is hidden behind a paywall.

30. The effect of fear on understanding can be extreme. See Nietzsche's *Thus Spoke Zarathustra* IV:4 "the Leech" and especially IV:15 "On Science" where the narrowly specialized expert on leeches replies:

> "For fear is the original and basic feeling of man; from fear everything is explicable, original sin and original virtue. From fear my own virtue too has grown, and it is called: *science* (*Wissenschaft*)."

The original German word is of broader meaning i.e. "systems of knowledge" rather than the English "science." Thus a science not motivated by fear, unlike that of Philip Adams, will be very different to *modern* science. The *opposite* understanding to that of Philip Adams was perhaps best expressed by the wonderful words a student who had attended a lecture by Phillip Lenard. Not motivated by fear, in 1897 she wrote:

> "I don't think the structure of the human skull is to be blamed for man's inability to understand the concept of infinity. He would certainly be able to understand it if, when young, and while developing his sense of perception, he were allowed to venture out into the universe, rather than being cooped up on Earth or, worse yet, confined within four walls in a provincial backwater. *If someone can conceive of infinite happiness*, *he should be able to comprehend the infinity of space* – I should think it much easier" (quoted in Highfield & Carter p. 42).

The student's name? Mileva Marić – who later married then divorced Albert Einstein!

31. See Davies & Adams, *Big Questions* pp. 64-66; and Popper, *World of Parmenides* 7:16 pp. 164-166 but especially 7:19 p. 175: "Anybody who upholds a Parmenidean or block-universe view of objective reality must, of course, introduce a subjective theory of time that makes time, and change, illusions of our consciousness. Thus illusion or consciousness becomes an adjunct to the real world." So we are back in the world of Anglican Bishop Berkeley viz.: "the world is but a dream."

32. Davies & Adams, *More Big Questions* p. 111.

33. Yet *modern* physics had prophetically reassured us that this would not happen. John Maddox, physicist and editor of *Nature*, wrote in 1972 of the coming resolution of the energy crisis:

> "It is now plain that ways will be found, *before the end of the 20th century*, of converting hydrogen into heavier elements so as to release still larger quantities of energy. Each bucketful of water may yet be made to yield energy equivalent to 100 tons of coal. By these standards, the hydrogen in the water of which the oceans are made may be thought of as equivalent to a coal seam covering the whole surface of the earth and extending downwards for a thousand miles. So why should anybody wring his hands about the prospect of increasing scarcity of one marginal source of energy, petroleum?" (pp. 84-85)

34. Also called the 'declination' or 'clinamen.'

35. See Norman W. DeWitt, *St. Paul and Epicurus* e.g. pp. 78-79, with St. Paul subverting Epicurean ridicule against the gods by parallel ridicule to establish Christian monotheism among Pagan polytheists. DeWitt's earlier work on Epicurean philosophy (pp. 271-274 especially) reveals that philosopher's somewhat obscured teaching of *isonomia* (ἰσονομία), a sort of 'cosmic justice'. While isonomia demonstrates some clear material implications, it is also a broad concept blurring the distinction between plenum and pleroma, little-known and discussed because of the incompleteness of advanced ancient texts on Epicureanism.

36. In his 1841 PhD Thesis, Karl Marx elaborated the differences between Democritean and Epicurean atomism, coming out in favor of the latter – to the bafflement of later Marxists as only Epicurus affirmed human free will. Marx's work predates *all* the German and English bibliographical works quoted by Bailey (pp. 595-596) in his magisterial text on the atomists – but he does *not* deal with the fragmentary doctrine of *isonomia*. Bailey's references to *isonomia* are also less developed than DeWitt's.

37. Quoted in Russell p. 86.

38. Russell p. 88.

39. Russell is unreliable in significant details, falsely inferring (ch. 9 para. 6 p. 83) that Epicurus taught that heavier [combinations of] atoms fell faster than lighter [combinations of] atoms. Rather, Epicurus taught, contra Democritus, that atoms varied in weight, but that all atoms fell at the same rate, irrespective of weight, his insight demonstrated by Galileo, who, however, was not allowed to mention Epicurus by name, given the latter's atheism.

40. From the Greek α- meaning 'not', and τομός meaning 'cutting, sharp' & τέμνω 'to cut.'

41. This being the title of Born's 1954 Nobel Prize lecture.

42. More correctly, a doctrine taught by the foxes of modern science, see: https://www.bing.com/videos/search?q=disney+chicken+little&&view=detail&mid=46D73EA43AF2EE2DDD6346D73EA43AF2EE2DDD63&&FORM=VDRVRV!

43. Weinberg DSP p. 167.

44. Weinberg p. 166.

45. Philosophical interpretations of Quantum Theory invoke three very different positions:

Type A: **Local Realism** (*Hidden Variables type 2*) – Einstein, Popper: Physical reality comprises point-particles without extension in space, the world being deterministic *except* for uncaused/acausal accidents which by their nature are incapable of scientific research.

Type B: **Nonlocality** (*Hidden Variables type 1*) – Blokhintsev, Bohm, Vigier: Physical reality demonstrates extended matter in a mysterious fluidic form with potentially infinite complexity.

Type C: **The Copenhagen Interpretation** (*Complementarity*) – Bohr, Heisenberg: There is no physical reality for subatomic particles, just equations manifesting as "probability clouds."

Types A and C are usually combined by *complementarity* in wave-particle dualism (e.g. by Max Born), the wave being the probability cloud (type C component), the particle being the dimensionless point-particle (type A component). The *only* genuinely scientific position emerges from type B, even though the three advocates (listed in temporal order) did by no means always follow the implications consistently.

46. Galileo does not express his debt to Epicurus directly, *DTNS* First Day p. 141 (Online Library p. 35):

> **Salviati:** Thus one can easily imagine a small ball of gold expanded into a very large space without the introduction of a finite number of empty spaces, always provided that the gold is made up of an infinite number of indivisible parts.
>
> **Simplicio:** It seems to me that you are travelling along toward those vacua advocated by a <u>certain ancient philosopher</u>.
>
> **Salviati:** But you have failed to add, "who denied Divine Providence," an inapt remark made on a similar occasion by a certain antagonist of our Academician [i.e. Galileo himself]. … But let us remember that we are dealing with infinities and indivisibles both of which transcend our finite understanding, the former on account of their magnitude, the latter because of their smallness.

Nevertheless, the answer is clear when we ask who the ancient philosopher was *who denied Divine Providence*. Was it Democritus or Epicurus? For the latter, the Gods live in the 'interstices', having nothing to do with humans. For Democritus however:

> The gods both in the past and now, *give men all things except those which are bad harmful and useless*. Neither in the past nor now do the gods bestow these on men, but they come upon them themselves because of the blindness and folly of their minds. [B175] (Barnes p. 266)

Thus Democritus affirms divine providence – in a polytheistic milieu. That is, Epicurus' name could not be mentioned in Catholic Italy because he was an atheist in practice.

47. Lucretius II:235-239.

48. E.g. Max Born, *Nobel Prize Lecture* p. 262. The "probability density" is Born's interpretation of Heisenberg's matrix mechanics explanation of quantum theory – Heisenberg's matrix mechanics predating the Schrodinger Equation.

49. Weinberg p. 70.

50. "Sinister ignorance and severely malicious activity initiated during my lifetime still wanted to humiliate me to the end of my life. All memory of me, a 60 year residence at a Heidelberg become so favorably disposed, is also to be eliminated." (Lenard, *Erinnerungen*, 1946 Coda p. 321).

<u>Original</u>: Finstere Unwissenheit und die in meiner Lebenzeit stark eingerissene Niederträchtigkeit wollten mich noch zum Lebensende erniedrigen. Alle Errinerung an mich soll auch in dem mit 60 Jahre lang so freundlich *gesinnt gewesenen* Heidelberg ausgemerzt sein.

51. Despite having been the first to hypothesize that subatomic particles were also vortices, he mistook their form, imagining his 'dynamid' particles to have charged poles surrounded by spinning magnetized fluid, each dynamid being of neutral charge.

52. Lenard, *Nobel Prize Lecture* p. 128. In the mid-1990s Eric Lerner (BBNH p. 370) was unaware that the German Physics movement taught that subatomic particles were vortices. Guess who informed him otherwise!

53. Described by Weinberg in some detail (pp. 121-131) while ignoring the truly revealing implication that the Greek atomism of solid-ball atoms had now been experimentally overthrown in favor of vortex-particles.

54. Lofts GSJ #8468 C4.

55. Some will vigorously protest that the West does accept the infinite divisibility of matter, e.g. Vladimir Lenin in his *Materialism & Empiriocriticism* (International, New York, 1970, V:2 para. 5 p. 267) writing about the 'inexhaustibility' of matter, a work written against the agnosticism of Ernst Mach. However the Western view of infinite divisibility is merely repetition of the same at ever-smaller levels, embodied most vividly in Mandelbrot-set mathematics and the abstract world of Hilbert spaces – three different *x*,*y*,*z*-type spaces assigned to each and every designated subatomic particle. So the butterfly effect, assigned to the sorcery of modern mathematics as deterministic chaos, still dominates narrow considerations – but where wider issues are involved, the 'physical' result amounts only to a Mickey Mouse world of multiplying brooms and overfilled buckets! See note 33 too.

56. Needham pp. 222-223. See also note 28 above re the radically different derivations of the concept of 'truth' in Greek and Latin.

57. Needham pp. 42-44. In the half-century since the book was written it is difficult not to conclude that the intellectual stagnation of Einsteinian thinking today embodies the decay and decadence of Western economies and *not merely* Western philosophical and scientific thinking – in contrast to China's strong economy and developing philosophical tradition combining the best Western ideas with original Chinese insights. Einstein's classification of Chinese thinking as pre-scientific dovetails with Herbert Marcuse's similar treatment of Galileo (Marcuse chapter 6).

58. I.e. something like the Great Red Spot of Jupiter. See David J. Bohm & Jean-Pierre Vigier, Model of the Causal Interpretation of Quantum Theory in Terms of a Fluid with Irregular Fluctuations, *Physical Review* 96 (1954) 208-216.

59. BBNH p. 369 especially.

60. Stark (1938) p. 770 column 2.

61. Stark (1938) p. 771 column 1. Note that mathematician Pascual Jordan was a member of the Nazi Party.

62. Von der Drehachse eines Quantenwirbels ist die Achse seiner Geschwindigkeit oder Fortpflanzung zu unterscheiden. Bei der Beobachtung (Absorption) eines Lichtwirbels fällt die Sehachse des Beobachters wenigstens angenähert mit seiner Geschwindigkeitachse zusammen. *Steht die Geschwindigkeitsachse eines Lichtwirbels senkrecht auf seiner Drehachse*, *so erscheint er dem Beobachter als geradlinig polarisiert; fällt die Drehachse des Lichtwirbels mit seiner Geschwindigkeitsachse zusammen*, *so erscheint er dem Beobachter als zirkular polarisiert*. (Stark p. 122).

Reconciling Stark's result with illustrations of linearly polarized light using standard electromagnetic representations (e.g. Michaud figures 1 & 2, pp. 17-18) is not immediately clear since the magnetic vortex axis in circularly polarized light would align with the axis of motion. Nevertheless, Michaud's recognition that light's transverse inertia is half that of its longitudinal inertia clearly concurs not only with the spin-1 demonstration of the doubled deflection of sunlight by gravity (Michaud p. 21 entry 2; Lofts GSJ No. 8389) but – given light comprises a combination of two oppositely-charged spin-½ particles (e^- and e^+) – also that the total amount of energy "induced in each accelerating charge amounts to *twice* the energy of the longitudinal momentum… or *twice* the energy of the transverse relativistic-mass/magnetic-field component… both amounts" being "equal by structure and that this sum can only be made of their simultaneous induction..." (Michaud p. 28).

Some may now even try to defend Einstein with this paper, given Michaud's "closet Einsteinian" argumentation – by citing his use of Hilbert spaces in the form of 'trispatial geometry' (p. 25 fig. 3; p. 30 fig. 4 where the oscillation can however be the effect of a longitudinally asymmetrical vortex), the experiments of Breidenbach etc. which grounded the belief in 'tri-pointillistic' quarks in a nucleon (pp. 54-56), and the Conclusion's seeming invocation of *localism* (type A quantum theory – see note 45) in the phrase "localized photons at the submicroscopic level", analogous to chemical molecules (p. 76). Yet, as these are either definitional differences or incidental situations, none of these Einsteinian conceptions can serve to overturn Michaud's primary conclusion whatsoever, i.e.: "electromagnetism can finally be completely harmonized with Quantum Mechanics."

63. E.g. Halliday & Resnick pp. 1163-1164.

64. The Voigt Transformation, GSJ No. 7356.

65. Voigt actually used the Greek symbols $\varkappa$ and ω respectively.

66. An English translation of Voigt's 1887 paper is here: https://en.wikisource.org/wiki/Translation:On_the_Principle_of_Doppler; originally *Göttinger Nachrichten* (1887) 2:41-51.

67. Pais (1982) p. 120-121. Larmor's "sideways" contribution reveals the comic obtuseness of both Fitzgerald and himself (see Pais p. 123)!

68. Pais (1982) p. 122; p. 124.

69. Equation 10) in Voigt's 1887 paper. Other 'Lorentzian' formulas invoking observer speed or relative speed (*v*) and the speed of light (*c*) are also used, depending (hopefully) upon experimental data, and include the simplest form *v/c*. E.g. the Doppler-shifted wavelength (λ′) compared to the original wavelength (λ) in the formula (from Halliday & Resnick p. 1007 eq. 40-18):

$$\lambda' = \lambda\sqrt{1 - v^2/c^2}/(1 - v/c)$$

The formula here is rearranged to measure wavelength rather than its inverse, frequency (this is done *solely* to avoid confusion from the dual use of the symbol *v*). They call the equation: "The Doppler frequency predicted by the theory of relativity," their misconception essentially the same as Stark's.

70. https://www.encyclopedia.com/science/dictionaries-thesauruses-pictures-and-press-releases/stark-johannes.

71. DSB Voigt p. 614.

72. Lerner BBNH pp. 428-429.

73. Ibid. p. 429.

74. https://fr.wikipedia.org/wiki/Charles_Fehrenbach; the article has to be translated from French; the English Wikipedia entry is too brief!

75. The monocular monochromatic hierarchy at the philosophical *Kommandantur* may have more than a little difficulty understanding Fehrenbach's inherently *nonlocal* procedure. Indeed, had the commandant at Stalag-Einstein even heard of Fehrenbach, who was French? Might one then suggest that he would *dismiss* Fehrenbach's work as filthy activity by a cockroach?

76. The original title: *Zum gegenwärtigen Stand des Strahlungsproblems*.

77. Ritz betrachtet die Einschränkung auf die Form der retardierten Potentiale als eine der Wurzeln des zweiten Hauptsatzes [der Thermodynamik], während Einstein glaubt, daß die Nichtumkehrbarkeit ausschließlich auf Wahrscheinlichkeitsgründen habe (p. 324).

78. That social critic and Einstein of linguistics, Noam Chomsky – the most quoted living intellectual at the time of writing – once claimed that the USA aided the Nazis and their Ukrainian allies in 1944, betraying its Soviet ally during WW2! Chomsky's reference however was to US aid to anti-Soviet Ukrainians given in 1946, after WW2 ended. Nevertheless, *tachyons* could clearly demonstrate his claim, though how subatomic particles or advanced potentials could specifically transport guns, ammunition and tanks from 1946 back to 1944 remains an impenetrable mystery (see John Williamson pp. 236-238). Truly was Albert Einstein the Chomsky of physics!

79. DSB Ritz p. 476.

80. Ibid. p. 481 n. 42.

81. Ibid. pp. 478, 480.

82. Dingle SC p. 212.

83. La théorie émanative de la lumiere n'introduisait pas le mouvement absolu. Si au contraire la lumière se *propage*, ce ne peut être que dans un corps différent des corps matériels, et remplissant tout l'espace; ce corps introduira nécessairement le mouvement dit absolu; l'expérience démontre donc qu'il n'y a pas *propagation*. Nous sommes ainsi amenés à considérer l'energie lumineuse comme *projetée*, et non comme *propagée*; nous reviendrons, dans un certain sens, à une théorie émanative de la lumière et de l'électricité, mais sous une forme necessairement toute nouvelle, et sans oublier un instant qu'il ne s'agit que d'une image destinée à nous rendre sensible le retard qu'éprouvent les actions lumineuses et électriques, retard qui seul est l'objet des expériences. (Ritz, *Oeuvres* p. 459 = p. 485 of the electronic pagination).

84. Il ne s'agit pas, bien entendu, d'un retour aux actions à distance; mais que l'on choisisse comme milieu intermédiaire un « espace physique » ou une émanation fictive, dès l'instant où l'action éprouvée par une charge électrique ne dépend que de la disposition et de l'état du milieu dans son entourage immédiat, on pourra dire qu'il n'y a pas action à distance. Peut-être cet énoncé contiendra-t-il même, dans la nouvelle hypothèse, une plus grande part de réalité que dans l'ancienne. Car l'éther, nous l'avons vu, n'est pas modifié, suivant les vues de Lorentz, par l'action de la matière; il reste immobile. (Ritz, *Oeuvres* p. 460 = p. 486 of the electronic pagination).

85. Like Arthur Eddington, the foremost Einsteinian in England, Herbert Dingle was of Quaker background, but a most striking exception to the general Protestant attitude revealed in GSJ No. 8468 n.57.

86. From the time of his 1967 editorial condemning Dingle's line of thinking, Maddox preferred publishing *anything else* cosmological in place of replying to Dingle: e.g. the "Cosmological Significance of Time Reversal", *Nature* 218 (1968) 663-664 by one Kary Mullis! Shocked at seeing his substance-fuelled student speculation published, Mullis swore off the nonsense and went on to win the Nobel Prize for the invention of the Polymerase Chain Reaction (PCR) to multiply strings of DNA & RNA – and, before he died, going on to condemn those whose misuse it e.g.: https://www.bing.com/videos/search?q=kary+mullis+on+anthony+fauci&docid=608042742124136272&mid=91B8A12214ED5CDFF8E591B8A12214ED5CDFF8E5&view=detail&FORM=VIRE.

87. The relevant Dingle-Maddox correspondence relating to publication of Dingle's book is:

Maddox, John (ed.) Don't Bring Back the Ether, Editorial, *Nature* 216 (14th October 1967) 113-114.

----------, John (ed.) Dingle's Answer, Editorial, *Nature* 239 (29th September 1972) 242. The distraction introduced into the first paragraph – e.g. tossing pancakes on Shrove Tuesday – is "delightfully English in quality" in its sly attempt to toss Dingle's question aside as irritating, obsolete and irrelevant!

Dingle, Herbert, Dingle's Question {Letter 'L'}, *Nature* 244 (1973) 567-568.

--------, Herbert, Integrity in Science (I), *Nature* 255 (June 12th 1975) 519-520.

Maddox, John, {Integrity in Science: Reply to Dingle's Question}, *Nature* 255 (1975) 520.

Dingle, Herbert, Integrity in Science (II) *Nature* 256 (July 17th 1975) 162.

Pyenson, Lewis, Review of "Science at the Crossroads" *British Journal for the History of Science* 9 (1976) 336-337.

Dingle, Herbert, Letter to the Editor, *British Journal for the History of Science* 10 (1977) 94. This last letter was prompted by Lewis Pyenson's 1976 imposture in claiming that Dingle had died in 1974 – rather than 1978 – revealing the *extreme antipathy* that the establishment felt towards him for rejecting Einstein, and the intent to hide the correspondence of 1974-1975!

88. *If the reader finds that this is the case then this is prima facie evidence for a coverup at the very highest levels*. When notified of this continued suppression, yours truly will provide the complete correspondence – derived from material from original hardcopy *Nature* volumes, now largely pulped in tertiary institutions!

89. Dingle, *Nature* 256 p.162.

90. Any Einsteinians, then laughing at Stark's opposition to GR but acceptance of SR as explaining the Doppler Effect, will not be laughing now!

91. Maddox, *Nature* 255 p. 520.

Corrections: French text in II:6 n.84 corrected along with clearer translation thereof. French words in main text translated in footnote.

Note 87 enlarged with further reference.

Hyperlinks corrected (removing the fake title imposed over the link thru malware).