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TWO WEEKS IN JUNE

21st CENTURY MARXISM / LEVELS WITHIN LEVELS
THE ELECTRIC UNIVERSE / THE NATURE OF FORCE

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Two Weeks in June

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4. Preface - Two Weeks in June
5. 21st Century Marxism:
The New Dialectics of Science
13. Levels Within Levels
15. The Electric Universe
and the New Dialectical Physics
19. The True Nature of Force

Preface

Two
Weeks
In
June



Welcome to the 51st Issue of the SHAPE Journal.

The papers gathered here are not about the U.K. Election or Grenfell, Jeremy Corbyn and Chunkymark are effectively dealing with all that very well indeed.

But, here am I, nearly blind and getting old, stuck at home!

Nevertheless, I am a lifelong Marxist, philosopher and scientist, so what I can do is very different but still, I believe, very important. It isn't only politics which is going down the hole, but philosophy and science too! And, I can still do that!

This group of papers was written within a fortnight, and puts forward revolutionary ideas within my areas of expertise. They criticize the methods we all use to attempt to understand things.

Methods imposed upon us by the enemies of ordinary Working People.
Methods that hide truths rather than reveal them.
Methods that cover up for those that have caused the ever deepening crisis that now find ourselves in.
Methods that determinely edge us towards War as a solution.

So, though it wont be what most people feel should be done, I am convinced that apart from those who are clearly on our side, the rest of us have been misled in a thousand ways, with lies and confusion, so true human achievements are never part of our delivered News, or our Education to help our Understanding.

So, here is two weeks of what I deliver to the World.

Jim Schofield

(marxist, physicist, sculptor, activist, teacher, philosopher and lifelong socialist)

July 2017

21st Century Marxism

The final long-awaited unity of Science & Marxism is finally emerging

by Jim Schofield
MARXIST-PHYSICIST

Intimate Locality or Extended Generality?
How Extended Neutrality can become Charged Locality

I: A Philosophical Introduction

Clearly, such an objective as is being undertaken here, cannot be effectively delivered, or even adequately outlined, in a single essay. Indeed, it is a truly major undertaking and will take a substantial amount of time, the necessary developments in Philosophy, and many new theories, to establish even a mere Beginning for the endeavour. But, it will also take many contributors to the cause, and hence this brief outline may contribute to the establishing of such a team.

Several important principles were revealed in this theoretician's recent researches into finding the actual physical Causality, behind the purely formal retreat of The Copenhagen Interpretation of Quantum Theory, which has, since 1927, conquered the whole of Sub Atomic Physics, and has, as an unavoidable consequence, distorted its philosophical bases still further, from its already prior, and flawed-yet-extendable, and also mistaken, and postmodern amalgam of Materialism, Idealism and Pragmatism to consequently turn it, into the now-purposive, entirely downwards sweep to its only perceivable conclusion - the total oblivion delivered by the Second Law of Thermodynamics, via its abortive new formal union of Idealism and Pragmatism.

For, the absolutely essential search for Explanatory Theory has been totally jettisoned, for mere Formal Encapsulation alone, so while still allowing accelerated-and-prolific applications and speculations, they are both based upon a now entirely static, and non-developing "Understanding".

The Crisis, so precipitated, has merely deepened over almost a century, and despite many courageous efforts by supporters of the prior Classical (and congenitally postmodern) stance; they have all failed, due to their own continuing subscription to the old historical "solutions" that made them equally incapable of transcending the colossal Impasse so generated!

This theorist, was, for many years, equally unable to find a way forward, due to the very same major liability - a dependence upon Mathematics and Formal Logic, both of which were founded-upon and determined-by the Principle of Plurality, which, by having as its unquestioned basis, Eternal Formal Laws, and a determined insistence upon their total Independence of Context, which made both possible and indeed necessary, the amalgam of incompatible stances which have dominated Western

Thought, literally unchallenged, since around 500 B.C.

Indeed, despite Zeno of Elea's heroic revelation of contradictory concepts in his famous Paradoxes, it took a further 2,300 years, before the German idealist philosopher, Friedrich Hegel, alighted upon the beginnings of a solution, by his revealing of regularly occurring Dichotomous Pairs of contradictory concepts appearing frequently in Formal Logic, and leaving no rational means of transcending the consequent "unbridgeable Impasses" so caused!

Though, he didn't wholly solve the problem, he was after all an idealist, and his brilliant achievements were therefore limited to Human Thinking, he did indeed realise that the problem was to do with the inadequacies of Formal Logic, in totally failing to deal with Qualitative Changes, and he constructed various means of addressing some of the problems with his development of Dialectics.

Yet, it still needed Ludwick Feuerbach and Karl Marx to see that the weakness in the new Dialectics were in Hegel's exclusively idealist stance, and transported it wholesale into Materialism to enable its evident general applicability.

So, having traversed the same path, with all the above help, it was clear to this theorist that the correct path in countering Copenhagen had to be in the correct application of Materialist Dialectics to the problems of Sub Atomic Physics.

You would have thought that such a trajectory would have already been embarked upon, but amazingly, it hadn't!

It certainly had been a major objective of Karl Marx (his Mathematical Manuscripts prove that), but he knew that it was a very demanding undertaking, and would require expert status in ALL the said fields to be achievable!

He was, however, immediately able to make significant contributions in one of his qualified areas, namely History.

But, his consequent assessment was that the most important work should be in dealing with the Analysis and Understanding of Capitalist Economics - well beyond his then capabilities: so he started from scratch and dedicated himself to that study, via the then leading

English Economists in that field. It turned out to be an enormous task, and took him most of the rest of his life, culminating in his prodigious, multi-volume work Capital.

Science, except in individual papers and pamphlets, was never given a comprehensive analysis and Dialectical explanation. And, in Physics, the only relevant philosophic contribution was that undertaken by V. I. Lenin, with his book, Materialism and Empirio Criticism, early in the 20th century, which countered the philosophic ideas of the scientists Henri Poincaré and Ernst Mach, whose Positivist stance was the immediate precursor of what finally became victorious with Bohr and Heisenberg in 1927 at the Solvay Conference.

Clearly, and mistakenly, the necessary comprehensive assault upon the emerging Crisis in Physics was never undertaken, though an important philosophical start was, somewhat later, made by Christopher Caudwell, in his book The Crisis in Physics. But, he was killed, while still a relatively young man, fighting the Fascists in Spain. Literally nothing significant has been contributed since!

And, this physicist and aspiring Marxist philosopher, would consider this undertaking perhaps the most important task in Marxist Philosophy since its inception over 150 years ago!

II: The New Course

Clearly, as this fully qualified physicist had been presented only with the Copenhagen stance, from the time he arrived at University to study Physics, he was obviously ill-equipped to take on such a gigantic task, and always expected it to be addressed by older and better-qualified Marxists. But, it never was!

Meanwhile, he had gone on to pursue other areas - disgusted with the then current state of Sub Atomic Physics, but as yet unable to do a thing about it! His new areas of study included Mathematics, Evolutionary Biology and Computer Science, and enabled him to follow a varying career path, which took him finally to the post of Director of Information Technology within London University.

Early retirement, on health grounds, allowed him to finally and exclusively address the long outstanding problem with a finally adequate and widely comprehensive stance!

A wide experience in designing tailor-made System Software for researchers in an extensive range of disciplines, as different as Nursing and Engineering, Mathematics and Dance, and even Computer Control of complex test equipment, and even in Design Investigations for Oil Tankers. And, these had equipped him in many remarkable ways, for it had always to be the research disciplines that took the lead in defining what was needed, so "the Computing Tail was never allowed to wag the Discipline Dog".

Now, the possible initial contributions, from this experience, to my problems with Marxism-and-Science, were not immediately obvious, except in the necessary attitude I had just had to adopt, to be able to constructively help.

I certainly couldn't go in with a set of ideas from Computing, and "put everybody right"! On the contrary, the opposite turned out to be the essential relationship necessary in order to achieve any successful outcomes.

Indeed, the successful tasks,, in my experience always started with the discipline expert asking for something to which I had no immediate answer.

I remember working with an expert Dance teacher and choreographer, Dr. Jacqueline Smith-Autard, whose requests I invariably, responded to with, "I can't do that!" But, also, regularly, I would later call her up, with an idea that had occurred to me as a possible way forward. Then several meetings and programming stints later, we would try out what had been achieved, and she would get very excited, and invariably give me yet another impossible task to deliver.

The key relationship had to be such when attempting to serve a discipline expert: they had always to be in charge, and their purposes had to dominate!

I began to realise that many of the failed attempts at inter-disciplinary co-operative ventures had been ruined by the computer specialists, who merely foisted onto their clients what they already knew how to do: it almost never ever worked adequately!

There was a Computing Department in a Spanish University, that "knew" they could do a better job than what my Dance expert and I were currently delivering, so we were thanked for our advice to them, but not

commissioned to help with their projected Dance project.

One year later, we saw their results at an international Conference, and what they had was just a total waste of time. It did absolutely nothing for the Dance expert involved, and led to nothing further from that Computing Department along those lines.

Yet, the on-going work, which I did with my Dance Expert lasted 20 fruitful years, won a British Interactive Video Award, and ultimately had enthusiastic users in over 100 countries. We even got the British Government to pay for our packs in any U.K. schools and colleges who wanted them!"

Now, such gains were important, but were not what revolutionised the problem of uniting Marxist Philosophy with Science.

Surprisingly, though, that essential development did come from exactly the same co-operative research, but came out of important technical problems, concerned with the analysable recordings of complex movements that were solved in that work.

Computer software writing, computers-in-control, and pedagogical requirements in teaching both Dance Performance and Choreography actually transformed my contributions to Marxist Philosophy, and ultimately enabled the sound basis for a successful assault upon Copenhagen.

III: The Crucial Changes

There were also various aspects of my own teaching that had interested me, and simultaneously bothered me, for many decades. Perhaps the earliest one was in teaching Mathematics and was concerned with The Calculus - which is, perhaps, the nearest that Mathematics ever gets to Qualitative Change, but usually still limited, at base, to the much easier area of purely Quantitative changes.

Nevertheless, it necessarily involved extension into Rates of Change of certain quantities, and even, in turn, to their rates of change too.

The most easily tackled area was that concerned with Movement, and relating Distance and Time. The rate of change of Distance-with-Time is, of course, Speed: and

that of Speed-with-Time is termed Acceleration.

The Calculus involved a way to deal with these things via the Geometry of Graphs, where distances-and-times could be plotted, from real world data, delivering a line-connected series-of-points - a Graph!

What soon became clear, to mathematicians, was that the speed at any point on the graph was given by the Slope of the connecting line at that point.

Both Leibnitz and Newton, had, quite separately settled upon a way of evaluating that Slope algebraically, by using the Formal Equation matching that line-of-points, and transforming it, via a found process, which became known as Differentiation (or Fluxions).

They had each separately derived this method, theoretically, by considering two points on the Graph - first, the required point, and along with it, another fairly close to it. Joining these two points with a straight line gave a rough approximation to the desired Slope, and knowing the exact positions of the two points enabled a calculation of that Slope (though clearly only an approximation)!

The approximate Slope was given by the ratio of two sides of a Right-angled Triangle, having the acquired line as its hypotenuse, and measured in the appropriate units of the graph.

And, both of these mathematicians realised that if these two points were brought ever-closer together, the "calculated slope" would also get ever-closer to its required value.

Ideally, the correct value would be achieved ONLY when the two points were actually "coincident", but then the two values in ratio would both be zero.

Now, this was impossible! How could zero divided by zero give a finite answer for the slope? Well, it mattered how they were approaching zero - the rates-of-approach: and when they were different, they always gave a finite result!

Both Leibnitz and Newton found ways of manipulating the line's Algebraic Equation to give that answer directly. And, that manipulation of the Equation was what became known as its Differential Form, and substituting in it

the defining values at the required point delivered the "Precise Slope". Nevertheless, it rightly continued to puzzle students!

For, any explanations for the Rules-of-Differentiation were soon lost, and replaced first by the geometrical frig, and then by the formal manipulation of the line's equation, until finally only those Rules, remained!

And, as ever-more-complex equations were conquered in the same way, you could thereafter either work out the result from geometrical First Principles on a graph, or merely remember the differentiated form. And, in my experience, most students just did the latter.

But, I had sympathy for their problems, and recounted the famous Zeno Paradox of the race of Achilles and the Tortoise. For, in that race, an infinite sequence of steps, exactly like the approaching points in differentiation, occurred there too, but did indeed (in Reality) terminate in the Tortoise being reached.

I, clearly, showed that both methods were tricks that got closer and closer to coincidence, but, because of invalid assumptions within their definition, could never terminate: they were unavoidably infinite processes.

They were NOT about Reality, but actually about an idealised reflection of Reality that we call Mathematics. We were actually using circumstances in Ideality - the World of Pure Form alone, to find solutions in Reality!

Once again, as Hegel had revealed, mistaken assumptions would always lead to Dichotomous Pairs of contradictory concepts that appeared as rationally impassable! But, cautionary tales are never enough!

What had to happen was a means of transcending such impasses in all cases, and in addition to Hegel and Marx's Dialectics, there had also to be a more general Real World solution, perhaps involving a Universal Substrate, not only as Hegel's missing premise in reasoning, but also as the missing source of a vast and intricate Physics-of-the-Substrate in all possible circumstances.

In spite of the advances of Dialectics philosophically, there had also to be significant advances physically, in the Nature of an undetectable Universal Substrate too.

IV: Theoretical Speculation

A whole series of problems emerged when such a Substrate had to be included! It was clearly undetectable, for in spite of many complex attempts to detect it, none had ever succeeded. So, how could its effects be evaluated? On what basis could such phenomena be addressed?

But, many universally-accepted-properties of "Supposedly Totally Empty Space" were surely inconceivable without some sort of Substrate!

A purely theoretical investigation of a yet-to-be-defined, Substrate could, nevertheless, be pursued, using these well-established properties. But, clearly, if, and only if, those hypothetical assumptions turned out to be positive, so the actual nature of the Substrate would surely have to be delivered too!

Indeed, this theoretician found even that to be impossible without at least some basic criteria, and instead had to institute another level of theorising about the possible Nature of the Substrate, before he could even begin to carry out the investigation using those known supposed "Properties of Empty Space".

The "device" he settled upon as Units of this Substrate, just had to be particles possessing absolutely no-charge and no-magnetism, yet capable of holding and passing-on quanta of electromagnetic energy.

It just had to be composed of a dual-particle, based upon the very same model as the atom - a joint-unit, involving just two sub-particles, but here equal in size, yet opposite to one another in every other respect! And, they had to exist as a mutually-orbiting-pair!

This was, indeed, a speculative entity, though based upon known phenomena of so-called Empty Space - the best we could do at that stage! It would be an intelligently-devised "placeholder", with which we could theoretically construct our Universal Substrate, and then insert the resultant whole set of suppositions into known phenomena to see if they not only fitted, but also led to other testable derivations too.

The place to start was clearly obvious!

It had to be with the whole series of Double Slit Experiments, on which Copenhagen had been primarily

established. This was done: and all the anomalies of the idea of Wave/Particle Duality simply melted away!

The Wave features were now due to the Substrate, while the Material-Effects were down to particles, and it was the two-way-causalities, between these two, that explained everything! Even the apparent inversion of cause-and-effect was easily explained by the differences in speed between Substrate propagation and individual particle movements.

V: The Local and the General

But, now, the real work had to begin!

A whole new and Universe-wide entity had to be inserted-as-Ground into all phenomena. And, without any doubt, it would NOT be Unimodular: it would undoubtedly exist in a variety of phases determined by different conditions, not only in Space, but also in Time - it would, most certainly, evolve along with the Universe itself, and its ever multiplying, diversifying and developing content!

And, to have any hope of making significant progress in such a task, the old Classical and current Copenhagen philosophical stances would just have to go! Amalgams of multiple, contradictory stances had been essential, when so many contradictions were unavoidably generated in the past by erroneous or missing premises: so, consequently, now, a major Revolution was certainly unavoidable.

Universally-underlying Plurality had to be jettisoned, in favour of a still barely understood Holism, and a comprehensive Materialism instituted, instead of any-and-all of the prior postmodern amalgams.

And, this would certainly scupper both Pure Mathematics and traditional Formal Logic as continuing-to-be-valid primary bases, and would, in its place, demand the development of a Dialectics well beyond its current enactments.

And, this is already underway, with the intended full replacement of the Copenhagen Stance in Sub Atomic Physics, by the alternative now emerging - based, also, upon a Universal Substrate.

Let us consider the current trajectory in this area!

The initial placeholder for a Universal Substrate Unit has been the Neutrion - a joint particle consisting of a negatively-charged Electron (of ordinary matter), mutually orbiting with a positively-charged Positron (of antimatter).

This particle has definitely been observed in the Tevatron at Fermilab, where it was clearly unstable, and termed a Positronium. But, as a provisional, theoretical-placeholder within a Universal Substrate, it was, by this theorist, taken to be stable, and a new scenario, conforming to the new requirements, built up around it as a valid, if temporary, placeholder in a Universal Substrate!

Yet, its inclusion allowed the now essential definition of the Universal Substrate as a diverse, and even a developing, System-of-Ground!

The initial problem was, of course, the Propagation of Electromagnetic Energy via such a Substrate - and with all the established features of this already known-to-occur phenomenon.

The Neutrion with its internal orbit could take in a quantum of such energy, via the promotion of that orbit, and could pass it on by a subsequent demotion and acceptance into another-and-adjacent and, as yet, unpromoted such unit.

But, how would such units relate to one another in the way we know they would have to?

Being entirely neutral, the most likely existence seemed to be as randomly-moving, non-interacting entities (like a gas?).

So, a theoretical investigation of how such units might behave, when in very close proximity to one another, was undertaken, and the results were very revealing indeed.

As each unit consisted of a mutually-orbiting pair of one negatively-charged electron, and one positively-charged positron, things would NOT continue to be neutral when they got very close together.

Indeed, a sub-particle, within one Unit, might approach very closely to a sub-particle in the other, and affect it with either attraction or repulsion.

Also, as these sub-particles were orbiting, these moments-of-close-approach would be both changing-in-affect and also temporary. Indeed, BOTH Substrate Units, as a whole, would suffer alternating and sinusoidally-varying attractions and repulsions, whenever they remained close together.

[Remarkably this effect is identical to what James Clerk Maxwell had extracted from his version of The Ether (the then idea of a Universal Substrate), which he encapsulated in his Equations of Electromagnetism, which are still used to this day]

And, In addition, once such a close encounter of this kind had occurred, it would be very likely to remain, as the Units would be captured within that distance-apart, and simply oscillate in-situ!

Now, clearly in a relatively undisturbed situation, with minimal movements, one close encounter after another would gradually form a loosely-linked, yet equally-spaced, Connected Substrate, which I termed a Paving.

Now, with such a structure, and such regular moments-of-closest-approach, exactly when-and-how a single quantum could be passed-on, becomes very clear. And, the rate of passing-on would always be the same: the Speed of Light would simply be the speed of such transfers!

Already then, we have TWO very different Phases or Modes possible for these Substrate Units:-

1. A Random Gas
2. A loose-linked, propagating Paving

And, the very weakness of the Paving-links allowed other common Phases too.

For example, the very passage-through of a moving electron, say, would easily dissociate the Paving, into a driven stream of individual Substrate Units, and even the production of temporary Vortices.

And, perhaps, most profoundly of all, a recurrently-traversed path of such an interloper, as in an orbit, for example, could not only produce such Vortices, but maintain them, by energy transfers with each succeeding encounter with the driving, orbiting particle.

Indeed, such energy transfers could occur in both directions, and, if the relations of vortex-speeds with orbital-speeds were finally harmonically-optimum, it could explain the stability of Quantized orbits in a very different way indeed.

Now, of course, I have not lost sight of the completely theoretically-speculative nature of these developments, but, nevertheless, there is, already, more Objective Content in them than in the Copenhagen interpretation of the Double Slit Experiments. And also, the developments in a Theory of the Universal Substrate outlined above, which can be taken still further by addressing both Pair Productions and Pair Annihilations too!

Consider an independently moving Neutrion, with an already promoted internal orbit, and existing in a very high-energy context. It could have its internal orbit promoted many times until it is close to its limit.

Then, any more energy going into such a joint-particle would certainly dissociate it into its components - one electron and one positron, with their once-orbital energies transformed into Kinetic Energies.

Could that be a Pair Production?

And, if an appropriate speed-and-direction encounter of an electron and a positron occurred, it could mean that they didn't mutually-annihilate one another, but instead mutually-orbited one another!

Could that be a Pair Annihilation?

Clearly, we are still in the realm of speculation, but it is based upon Physics and not Mathematics: it is about properties and causality, and NOT mere Form! It is explanatory and not merely descriptive!

What is being constructed is Investigating Physical Possibilities, and not mere Form Matching and Manipulating! It may well turn out to be mistaken, but, along the way, it will have re-directed Physics away from the myths of the Idealist Copenhagen Stance, and back into the correct area of study for that Science.

And, there is already brilliant experimental evidence for the physical approach in the Walker Experiments of French physicist, Yves Couder, who was able to produce persisting entities entirely out of a single substrate,

and absolutely nothing else, by merely inserting, and arranging-for, both resonating and recursion effects within the substrate, which also produced quantized orbits at the macro level.

In this remarkable way, he too was commencing upon an extended Theory of a Substrate!

But, we have not yet exhausted the possibilities inherent in this approach. For, relying solely upon the Neutrion as the sole component of the Universal Substrate, was simply insufficient: because in spite of its "successes", it was totally useless in explaining Fields.

Indeed, neither the Physical Presence of such Fields, nor their built-in, locally-positing and appropriately-graduated ability to perform energetic actions upon certain interlopers, across the whole range of such a field, was NOT, nor ever could be, explained in terms of the Neutrion.

Now, various features of all Fields demanded a very different kind of Substrate Unit: nevertheless, whatever any new Basic Substrate Units were, they would still have to be just as undetectable as are Neutrions.

But, if you consider that devising the Neutrion as difficult, the new Units were immediately incomparably worse, and indeed almost impossible to define, because all the features that were needed to deliver Fields, also made them very easy indeed to detect. And, not only did the units have to contain applicable-energy to be applied to affect susceptible intruders, but they would also have to deliver precise directions, in which to push or pull them too. And, such features seemed also to make them impossible to be actually undetectable units.

But, as it turned out, these contradictory properties could indeed fulfil both the undetectability and the Field Effect requirements entirely, via two wholly new Modes of Existence and the unique nature, of the two new Units that had to be involved.

The Physics of the Universal Substrate was growing!

Some features of new Units were already decided. To maximise their undetectability, it seemed essential they should both have a similar structure to the NeutrionL that is they would each have a mutually-orbiting-pair of sub-particles with totally opposite properties, but with a

single exception: - their sub-components would have to be of different sizes.

For, this, alone, would deliver a new and essential pair of properties:

1. A magnetic moment
2. A built-in Direction

So, very clearly the two new Units would also have to exist in two different Substrate Phases. One mode would have to somehow make them totally undetectable, while the other mode would deliver a very evident and effecting Field.

A way was found to deliver the former by conceiving of TWO such units, which were effectively exact mirror-images of each other, would have to exist as equal quantities of each, and move about constantly as a Random "gas"!

Such an existence would cause them to effectively "cancel-out" their individual unmaskable magnetic moments, as well as their uncanceled, within-particle matter-antimatter proportions.

They also could be constructed out of known Leptons, in this case, both the matter and antimatter versions of the Taus and the Muons! Once again, these are theoretical-placeholders, conceived-of to indirectly allow the necessary investigations into an undetectable Substrate in terms of their actual known effects.

And, once again, these speculations do deliver physically-feasible- undetectability, as well as their produced active, energy-possessing Fields - having both force-and-direction capabilities to affect any charged interlopers into the fields.

What allows the assembly of that Field-Mode, is, of course, the necessary presence of a charged particle, supposedly subtending an Inverse-square active effect around itself, but, in fact, only acting as an initiator-by-its-presence for these new moving Substrate Units (termed Magnetons) to find, and gather round, that particle in Concentric Shells, with all their magnetic moments oriented towards (and away from) the enclosed charged particle.

And, in addition, all elements of the Field will have to be capable of possessing extra energy, by the promotion of its internal orbit, achieved by propagation of energy from elsewhere in the Substrate, which moves in to negate the charge upon the initiating particle, and replacing it, and its assumed electrostatic effects, remarkably with an equivalent, magnetic directional field.

Thus our concept of a "fabled, action-at-a-distance electrostatic field" is entirely replaced by a real, physical mode of the Substrate, possessing the wherewithal to move interlopers in precise directions with a physically-explained and substrate-delivered inverse-square-law Magnetic Field.

While in the absence of such conditions, the mode melts away once more into an undetectable "moving gas", composed of the exact same Units.

The prophetic words at the head of this essay are now justified:-

Intimate Locality or Extended Generality?
How Extended Neutrality can become Charged Locality

Both Neutritrons and Magnetons have been devised to possess various seemingly contradictory Phases: yet another example of Dichotomous Pairs of concepts, that appear as such only because of inadequate, flawed or missing premises.

Is the adoption of a Holist, Dialectical and physically-explanatory approach winning any converts yet?

Levels Within Levels

Are there Whole Complex Levels of Reality within Others, and Hidden beyond Access?

What if our usual concept of the Levels of Reality is hopelessly incorrect? And, that it actually continues to extend much further, well below where we currently believe it ends, in a meagre set of Elementary Particles, and, maybe, even existing at very different energies than we usually assume.

For, our view of the tiniest of levels is governed by our current beliefs of the Origin of Everything;, as occurring at stupendous energies at the start of the Universe via a Big Bang of colossal proportions.

But, could it be the exact opposite: the universe-as-we-know-it may have "started" with a whimper, at tremendously low "temperatures". For, why is it, for example, that many "wholly-new-to-us" phenomena are being shown to happen at such tremendously low temperatures, via totally unhindered movements such as happen with Super-conductivity, and an increasing variety of surprising phenomena, as happen with super-cooled Helium?

So with the current idea of a Universe simply running down (via the Second Law of Thermodynamics) towards a terminal Oblivion, how can its clearly evident constructivist trajectory be explained? Yet, real development and Evolution is indisputable! Indeed, in the Theory of Emergences (by this very theorist), it was found to be totally impossible to explain Emergent Events, without a "Third Law", which did the exact opposite to that Second Law, and actually required "Total Chaos" to be able to work.

Indeed, instead of the assumed dominance of Stability, a very different trajectory just had to be instituted, which both explained exactly how such Stabilities could become established: how they could persist by self-maintaining mechanisms, and exactly how they in-the-end were

bound to undergo increasingly tumultuous crises, until and finally and irredeemably totally failing. NOT, it must be emphasized into a terminal oblivion, but, on the contrary, actually into a "Chaos" wherein constructivist processes were the creating norm.

To those who condemn such ideas as pure speculation, I must ask, "Just how did the creations of the wholly new ever occur? What were the Origin of Life on Earth, and the first appearance of Consciousness"?

Indeed, you don't have to merely depend upon the Revolutions. The qualitative transformations surrounding us on every hand, of Birth, Development, Reproductions and Death, in repeated cycles of qualitative change just HAVE to be addressed by something better than "Inevitable Decline"!

Now, this isn't meant to be a carefully argued opus upon a philosophical stance, though I couldn't undertake it without at least a reference to such.

It is a muse upon "Levels of Existence", and has been demanded by the present parlous state of Science in today's World. Though I will concentrate upon sub Atomic Physics, as being the most critically challenged area of Human Intellectual Development, it is true of the whole panoply of such disciplines too!

Clearly, the current and contradictory amalgam of Pragmatism, Idealism and Materialism, based upon an unshakeable belief in the Principle of Plurality, is incapable of going any further. The reductionist dive to ever lower levels, though NEVER implemented "in full", could only lead to a Base Level, of Elementary Particles and Eternal Formal Laws. For, it is a "Blinkered Dive" to a false Ground State, which is terminating our purpose of understanding Reality due to a totally inadequate

philosophical Stance! Going further requires a new direction in our Philosophy of Science (as it also does in all the other spheres of Human Understanding.

Indeed, this philosopher and physicist has found it necessary to embark upon a new course for the Philosophy underpinning the Sciences, by extending the gains of Karl Marx, in Dialectical Materialism, deep into Sub Atomic Physics. And to explain where this has inevitably led him via the father of Dialectics Friedrich Hegel's study of Dichotomous Pairs of contradictory concepts, as they naturally arose in Formal Logic. For, the unavoidable impasses in Formal Reasoning accompanying the emergence of such contradictory Pairs, could only ever be transcended by Hegel's discovery that only a thorough-going critique of the assumed premises that generated these terminations in Logic, could identify the causes and correct them.

Now, of course, Hegel was only concerned with Thinking, but Mark has transferred Dialectics wholesale into Materialism, so the contradiction THERE in concrete Reality must also be included in Hegel's technique.

And, it worked in Sub Atomic Physics! What was missing in the premises of the physicists, wasn't a logical premise, but a physical omission!

Physicists had banished the concept of a Universal Substrate throughout the Universe, when the Michelson/Morley Experiment couldn't find it: indeed they "proved that it didn't exist!" It is perfectly true that no-one could find it, and later when the Copenhagenists "hit bottom", and could find no other at that level, which could ever deliver such a thing, it could NEVER be re-instituted!

But, this theorist thought otherwise: he considered that its undetectability might well be for very good, but as yet unknown reasons. So he embarked upon an unusual endeavour. He would attempt to explain all the anomalies of the ill-famed Double Slit Experiments (a cornerstone of Copenhagen), by the re-inclusion of a Universal Substrate, as the missing physical premise, and use it in a purely theoretical undertaking, to explain every single anomaly physically.

He succeeded 100%, and he achieved it with a known-to-exist unusual particle, the positronium, as discovered in the Tevatron at Fermilab, but with one key theoretical change: it would be assumed to be stable.

Now, such an assumption is entirely valid in a purely theoretical investigation. Indeed, ALL Copenhagen theorists do something very similar all the time. But, here, in this theoretician's task, it was merely to test the possibility, generally, that a substrate with a possible producing unit, might well physically explain, what Copenhagen most certainly could not!

But, of course, though significant, such an achievement would never be enough, especially with the crucial tenets of the Copenhagen stance concerning the Uncertainty Principle, and a consequent lower limit on considering absolutely any entities and interactions below it. Clearly, that full-stop upon possible entities and relations in any lower Levels, could only effectively terminate any developments in that direction as impossible to investigate.

But, altogether too many, really major, and still outstanding questions have yet to be answered. Take for instance the actual origin of Charge, the natures of Matter and Antimatter, not to mention the finding of where \dark Matter and Dark Energy resides (if they exist as such at all).

And, of course, the success of the theoretical work upon a maybe existing Universal Substrate, must also pose many questions, not only around any actually existing Units of the |Universal Substrate, but also with regard to the modes or phases possible within such a Substrate, and finally, a very different Origin and Trajectory for the Universe. Current research is already defining new particles to deal with Fields within such a Substrate, and some unit, perhaps existing at a wholly different level, to deliver Gravity!

But, most crucial of all, and as yet, barely begun, the consequences of an entirely different Holist and Dialectical basis for Science, must be carried through to completion..

This theorist is satisfied that the Copenhagen stance is both totally inextensible and completely wrong, being a pluralist approach, assuming only an incompatible mixture of Idealism and Pragmatism alone!



The Electric Universe & The New Dialectical Physics

Having returned to re-assessing The Electric Universe Stance, as a consequence of encouraging, current developments in my own Dialectical Physics, I found both interesting resonances, but also very clear bifurcations, clearly due to the very different origins of the two stances.

Yet, both approaches seem to arrive at very similar positions, in many important areas (though for very different reasons), particularly concerning attitudes to the major retreat that is The Copenhagen Interpretation of Quantum Theory, as well as both Einstein's Theory of Relativity and The Big Bang Theory in Cosmology.

But, both of these different origins have their merits! And, because mine was initially based upon the crucial

need for Materialist Explanation, and then later, upon a developed philosophical critique of the universally-established "western" approach to both Mathematics and Thinking via Formal Logic - that equally involve a surprising amalgam of Pragmatism, Idealism and Materialism, I feel that I can also understand the alternative approach of the supporters of The Electrical Universe, as they seem primarily to be Electrical Engineers and Experimental or Observational scientists, rather than either being Mathematicians, or mathematical physicists, as is now the norm in Sub Atomic Physics. So, the reader will understand, that the resonant strands I have discovered in both views, as well as how they were impelled from both sensible and sufficient grounds, are seen as worthwhile criticisms of the current consensus Copenhagen position.

I have also been a long-time student of Human Prehistory, and surprised by the preponderance, as well as the clear successes of Pragmatism over the vast majority of Mankind's existence upon Planet Earth.

For, long before Civilisation began to be firmly established, this physically weak descendant of the Apes, Homo sapiens, had not only conquered Fire, and the making of flint tools, but, geographically, had also spread-out across almost the whole Earth, and even, thereafter, carried-through the remarkable Neolithic Revolution, to significantly change from being mere hunter/gatherers to actual competent farmers, with new skills in Animal Husbandry, Weaving, Pottery-Making and, most crucial of all, growing crops in a settled place, and having an increasingly rich and communal lifestyle.

And though, all this was achieved with Intelligence, for sure, it, literally, only involved Pragmatism as its sole intellectual methodology.

So, most certainly, I then had to discover just how Mankind has also inserted both Idealism (as in Pure Mathematics) and Formal Logic, into its Thinking, and integrated all of these with a strongly Materialist stance too!

For these are not exactly conducive to one another, yet have persisted, in that remarkable contradictory amalgam even to the present day!

The remarkable survival of this amalgam was surely down to a still-strongly-adhered-to Pragmatism - "If it works, it is right!", which could always be used to paper-over the unavoidable, inherent contradictions, by references to pragmatic successes in concrete Reality.

But, such a contradictory set of simultaneously-held positions was sure to lead to major problems, perhaps most certainly of all in Science.

Pragmatic justifications and Applied Mathematical methods may be sufficient in finding productive solutions, but they turn Explanatory Science into a patchwork of cases with more papered-over links than revealing Understanding.

In Theoretical Physics, and increasingly at the Sub Atomic Level, it was becoming an absolutely insupportable mess.

So, while the Technologists were forging ahead with ever-more effective applications, particularly in electrical and electronic areas, the theorists were more-and-more delving, ever-deeper, into Elementary Particles, using ever more powerful and expensive kit.

Yet, the theories of those physicists were falling apart: they couldn't string them together into coherent, consistent and comprehensive explanations. Theorists tended to rely more and more upon mathematical forms alone, which they had managed to usefully-fit to phenomena, but increasingly without any underlying physical explanations.

The ultimate resulting situations were becoming inevitable! While the technologists stuck ever closer, via their Pragmatism, to concrete Reality, the theorists began to speculate, from their useable equations, into wholly new idealist entities - governed by rules rather than physically explicable relations.

It should have been no surprise that a major and contrasting alternative, based upon highly competent, materialist-yet-pragmatist technologists, would arise, and, thereby, attempt to do the theorists job for themselves. That is the contribution of The Electric Universe group! They are still wedded to Materialism, but by solely-pragmatic ties.

Now, another group, led by first de Broglie and then Bohm, still sticking fast to the old, classical amalgam of philosophic stances, did attempt to counter the Copenhagen tendency. But, they were bound to fail! For, the main plank of their position was exactly-the-same as that of the Copenhagenists! Both groups subscribed implicitly to the Principle of Plurality.

Now, this premise is very old indeed. It arose, because Mankind's awareness of Reality was unavoidably limited to a belief in the un-changeability of Reality: most things seemed entirely fixed to them. So, they assumed that Reality was determined by fixed (indeed actually eternal) laws, which were always totally independent-of-context! Now, this certainly isn't true, and it seriously disabled those critics, just as much as it had their now dominant opponents.

So, a third group was possible, but it did not exist, as yet, within the Scientific Community".

It did exist, however, in the Philosophic Community, and had been re-invigorated by the German Idealist philosopher Friedrich Hegel, some 200 years before. For he, in his study-area of "Thinking about Thought", had realised the inadequacies of Formal Logic by being incapable of dealing with Qualitative Changes of any kind whatsoever.

So, he built upon Zeno of Elea's Paradoxes of around 2,300 years earlier, by generalising such contradictions into what he termed Dichotomous Pairs, and put these down to the validity of qualitative changes actually occurring!

Indeed, a much more accurate tenet of Reality was considered to be the Principle of Holism - "Everything affects everything else!".

So, he decided that a thorough-going critique of Formal Logic, based upon the holist position, was absolutely necessary, which for the very first time would accommodate qualitative change, and hence ultimately deliver a Science of Logic.

His approach was to seek out Dichotomous Pairs of contradictory concepts, as occurred when un-traversable impasses unavoidably cropped up in Formal Logic. He discovered many of them, and decided that they were due to erroneous, flawed or even missing prior premises, as the cause. So that, if corrected, the impasse would be replaced by a eminently transcend-able bifurcation or fork-in-the-reasoning-path. But, in addition, the actual causes of directly opposite pairs required explaining: and this he did not succeed in delivering!

But, he did describe a methodology of addressing the opposites to get at the "changeable truths" of Reality, which he termed Dialectics!

Now, certain of his followers, especially those well versed in History, such as Karl Marx, immediately recognised that Hegel's discoveries extended validly a great deal further than just Human Thought: they also applied to developments in human history, and the sequence of economic bases for a succession of societal forms. Indeed, he and his colleagues transferred Hegel's Dialectics wholesale to concrete Reality itself - to a Materialist Stance, which he termed Dialectical Materialism!

Clearly, the prospect of applying these gains to Science was the most exciting revolutionary prospect! But, sadly, it never happened!

Marx was first preoccupied with his primary specialism, History, but also soon realised that he had to tackle Economics to take even that to any necessary conclusions. So, he spent many decades upon Capitalist Economics, in his work, Das Kapital. But, the basic Sciences were never addressed in this comprehensive way!

In spite of single contributions by Lenin and Caudwell in the key area of The Philosophy of Science, absolutely no root-and-branch critique of that Philosophy was ever undertaken by Marxists, and the whole trajectory of developments in Science (and particularly in Physics) has been with the total absence of any postulated dialectical alternative. So, the chaotic mish-mash of contradictory stances still stands, though more and more, currently, as equally inadequate "warring camps".

Sadly, the justifiable rebellion of, first the neo-Bohmians, and, currently, from those of The Electric Universe persuasion, are both still founded upon alternative amalgams of contradictory stances. Neither have tackled the inadequacies of their long-held underlying assumptions.

The Copenhagenists are entirely without any genuine Materialist Explanations (they have retreated into Mathematics and Speculation), while the Electric Universe adherents are without a comprehensive, consistent and coherent set of explanatory theories (their technological origins are still not only evident, but remain dominant).

So, both of them are also still without any means of breaking-through the inadequacies of their still strictly "pluralist stances" - and the crucial problem of qualitative change is never even considered!

In spite of many valid criticisms put forward by the Electrical Universe adherents, they don't wash with the Copenhagenists who now "dwell" in an entirely formal World - Ideality. But also do not and indeed cannot present a coherent, eminently extendable alternative. It is like the Technology that produced them, a collection of pragmatic achievements and relatively unsophisticated, though clearly materialist, explanations.

The True Nature of Force

Action-at-a-Distance in a Universal Substrate

They now, more than ever, require the thinking of well-established and well-equipped theorists, which are unobtainable from the Copenhagenist tendency.

It now seems clear to me that an entry into these ranks by Dialectically-competent theorists could make real headway. But, only if the topic of the Philosophy of Science is allowed in!

No matter how we describe Disembodied Force, or how we formulate its effects, or even attempt to “explain” it, we always leave unanswered the explanation of Action-at-a-Distance.

There is inevitably involved an almost magical communication, across “totally Empty Space”, that is never ever actually addressed.

Earlier scientists immediately saw the problem, and, fairly quickly, suggested that some, currently invisible, but definitely-present-everywhere Substrate or Medium, simply must be the actual means by which such effects were communicated.

Indeed, the roles of Water in lakes, ponds and seas, as well as that of our gaseous Atmosphere, actually do a “similar job” literally everywhere.

So, those experiences were simply extrapolated onto an as yet unrevealed Universal Substrate - termed The Ether.

But, in spite of many complex efforts to detect that Substrate, it was not only never found, but, finally, those investigations also achieved results that even torpedoed the idea of it being a stationary elastically-connected entity as well.

The whole concept of the Ether was abandoned, and, almost immediately, new and various problems began to arise, which could no longer be “explained” by that prior, “solve-all” conception.

It, or, at least, something very similar, was, thereafter, sorely needed, but the final “nail-in-that-concept’s-coffin, was the discovery of the Quantum.

Electromagnetic Energy (like Light) was no longer considered to be propagated in infinitely extended Waves in a Medium, but, only in discrete quanta, or Quanta! Not only was Light propagation through Empty Space scuppered, but also literally all the other main forms of Electromagnetic Radiation too.

Physics had shot itself in the foot, and no longer knew how to cope theoretically!

The consequent decline following these discoveries, was extremely rapid, and in no time at all, first via the Positivism of Henri Poincaré and Ernst Mach, and then by Sub Atomic Physics beginning to abandon physical explanations altogether, and, instead, call their purely descriptive and idealised Equations “Causative Theories” instead!

They weren’t of course!

For, such a belief would be out-and-out Idealism!”

But, the New Sub Atomic Physics was able to both predict and produce, within its new narrow aegis, without an explanatory Theory, by not only depending upon Equations alone, but also, by actually, in so doing, also inevitably switching from a Materialist stance to an Idealist one, and considering that their discovered Equations actually determined Reality all by themselves!

Worrying about Action-at-a-Distance ceased to be a problem, and Einstein’s Space/Time Continuum, transferred waves into his four-dimensional-Abstraction, determined by - “you’ve guessed it” sophisticated Purely Formal Equations.

So, with, in addition, a large dose of miss-appropriated Probability Theory (maths of course), and an even larger dose of old-fashioned Speculation, the outstanding

Physical Questions were dispensed with for ever! But, of course, not only wasn't it true, but it also left things hanging in an unsubstantiated form: they just had to excuse their retreat "philosophically" too!

So, arguments were introduced "quite naturally" limiting the investigation of Reality at the Sub Atomic Level via Heisenberg's Uncertainty Principle and other similar constructs.

The necessary consistency of physical theories was now replaced by the consistency of Mathematical Rules embodied in formal Equations, and their supposed entirely legitimate manipulations.

But, that wasn't true either. For, Mathematics is only an idealised description of Reality, and, its purely formal rules position-it-entirely in an incomplete, reflected version of Reality termed Ideality!

And, consequently, Sub Atomic Physics, theoretically, had to cope with a never-ending series of increasingly Major Crises!

While those few, remaining physicists who rejected the now dominant Copenhagen Interpretation of Quantum Theory, had to go back to basics, and commence with a thorough-going critique of all past premises in Physics - to first find, and then once again feel the solid ground of concrete Reality beneath their feet, and re-build their Most Basic of the Sciences once more!

Now, this is exactly where the writer of this paper has been working for many years, and, elsewhere, in his writings, the track of this development is available in full. But here, that course has taken me, once again, back to Action-at-a-Distance, so, I will be outlining current developments associated with that perpetual conundrum!

The philosophical premises will not be laid out in full here, as they will involve an almighty, but absolutely essential philosophical detour, going back to the Ancient Greeks, and the 2,500 years of developments and wrong turnings ever since.

So, here, I will concentrate upon a purely physical approach, coupled with the author's own suggestion of a currently undetectable, but definitely-existing Universal Substrate.

Now, the old assumptions for the discredited Ether, as a continuous, elastic Medium, simply won't do here, because of the Quantum. So, the new conception of a Universal Substrate, will have to be very different in its composing Units to deliver not only all its already known functions, but crucially also to deliver its total undetectability too.

These are major questions, and have initiated a whole new branch of theoretical investigations in Physics, which are already at an advanced stage (currently addressing Gravity), but still on-going, and available as far as they have reached currently, in other publications by the writer of this paper.

Here, in order to begin to consider Action-at-a-Distance, we will take that research and use it to tackle this long unexplained problem.

Let us pose the key questions to be solved! They are, on the one hand, the Propagation of scalar quanta of Electromagnetic Radiation, while, on the other, the subtending of vector quanta in Fields over extensive volumes surround initiating "supposed causes"!

But, in both cases, it has to be wholly handled-and-delivered by the actual physical components of a Universal Substrate.

Now, these two functions have very different objectives!

Propagation is to deliver merely scalar energy of electromagnetic form to ultimately promote orbits in receiving atoms, while

Fields will set up an extended volume of Substrate Units carrying differing amounts of vector quantities of energy to ultimately impel susceptible entities in particular directions with consequent Kinetic Energy.

NOTE: though as yet unaddressed, the Low Temperature properties of Superconductors in presenting zero resistance to electron currents may also be relevant here too.

Clearly, no easy, elastic means can be employed in either of these necessary functions, even though both involve propagations.

Instead, both must involve automatic mechanisms for bucket-brigade-like transfers between adjacent discrete units, serviced by both the handling of scalar energy in quanta, and also, and very differently, vector energy delivering energy that has both quantity-and-direction with very different ultimate recipients and effects.

Clearly, the perennial problem of carrying Quanta of electromagnetic energy at specific frequency and energy, seems to demand a very similar carrier to that of the atom - with differently-sized components, delivering an internal orbit which can be both promoted and demoted. And that same model also "suggests" how a direction can also be involved, via the orientation of such a joint Substrate entity's internal Orbital Plane and consequent axis. Though here, each receiving Substrate Unit will also have its own internal orbit re-orientated by the transfer too! And, crucially, that propagated-orientation will be part of what is transferred ultimately to a final affected recipient.

Clearly, these two sets of functions cannot be from the exact same Units for both. Indeed, a major part of the on-going research has been in defining a set of Substrate Units to deliver all the known functions, currently supposedly delivered by totally Empty Space!

Now, the propagation of electromagnetic scalar quanta is not the purpose of this paper, and has been dealt with elsewhere, on an identical basis to all atom-to-atom transfers of the same type, so it will not be repeated here.

On the other hand, the subtending of vector fields around "apparently-causing" active sources, is, indeed, the task of this contribution, not least because it is wholly carried out and achieved by different Substrate Units to those involved in E.M. propagation.

For, that "apparent" source is only ever acting as the initiator, and it is the Substrate, itself, reacting to that presence, and actively surrounding the initiator in concentric, spherical shells of appropriate activated-and-orientated substrate units - also equipped with the correct amount of vector energies throughout the Field, delivered from elsewhere in the Substrate. And, indeed, replenished from that same source when quanta have left the Units to impel other entities in their appropriate necessary directions.

The crucial processes involved are:-

First - the establishment of the required contents for certain adjacent elements of the field, and

Second - the propagation of both energy amounts and their directions to all points in the field, and

Third - how the amount of energy, and its direction are delivered to a finally affected body

Now, the above divisions-of-labour are by no means yet Explanations, because the natural assumption is always to assume the "Causing entity" the sole active source of everything involved. But, that cannot be so, for that entity is totally unaffected by all the to-be-described and subsequently active features.

It doesn't even attract the Substrate Units to it, to form the start of the field.

Indeed, randomly moving, specially-endowed substrate units "come across" the initiator, in their normal random perambulations, and move to positions immediately adjacent to it. In addition, they orientate their internal orbits, via those orbits' Magnetic or Gravitational effects, with their axes towards the initiator, and gather just enough energy (from elsewhere in the Substrate) to balance the initiator's property via a complete shell around it.

Then, the outwards pointing other ends of the dipoles, then collect further shells, each with appropriate dipole orientations, but with less gathered energy per unit, due to increasing numbers of in all succeeding shells.

Such a process hence delivers an Inverse Square Law Field surrounding the initiator.

But, though such Fields are products of the Substrate, when influenced by the presence of certain propertied entities, they can, and indeed do, affect any other susceptible entities entering their aegis. They can move such interlopers either directly towards, or directly away-from, the Field's initiator.

And, to do this each unit of the Field. suitably organised and correctly equipped with available energy linked to a single direction within that affecting Unit. What it means is that such an encounter with an interloper

triggers the discharge of that unit's energy, precisely in the direction of the axis of its internal orbit, thus impelling the encountered entity in that direction.

Of course, that Unit has then lost its field charge of energy, so, by the exact same means as when it was originally charged, it will be replenished from elsewhere in the substrate, by successive propagations, to repair the Field at that point.



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