

ISSUE 56 JAN 18 JIM SCHOFIELD

SUB- STRATE

SHAPE JOURNAL

THE INVISIBLE SUBSTRATE / WHAT ARE FIELDS IN SPACE? / A MEDIUM IN THE SUBSTRATE
THE NEW ELECTROMAGNETISM / WAVE EFFECTS / THE RELATIVE TRANSPARENCY OF MATTER



What's really in the background?

Substrate

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Substrate Units

The Invisible Medium

The Possibility of an Invisible but both Affected and Affecting UNIVERSAL SUBSTRATE

This is an old problem! The fact that separated entities quite definitely interact, and that many phenomena have wave-like characteristics which have long intimated that there must be some sort of intermediary between those clearly communicating entities, and one that propagates that communication by waves – just as we know occur in both water and air.

Not only did this assumption prove to be extremely useful, but it also made abundant explanatory sense too. So, we assumed that such a substrate was there, but not a visible one (just as the air cannot be seen with the naked eye).

Yet, no matter how sophisticated our means of detection became, NO such substrate was ever found.

Instead, events like Pair Productions seemed to appear out of totally Empty Space, and many wave-like effects were frequently detected (by what they in turn certainly caused) without ever finding that seemingly carrying “medium”!

Yet, remarkable theoretical achievements were being produced, assuming such a physical medium.

James Clerk Maxwell’s Electromagnetic Equations were formulated, based entirely upon his physical model of The Ether – the then widely assumed form of the Universal Substrate.

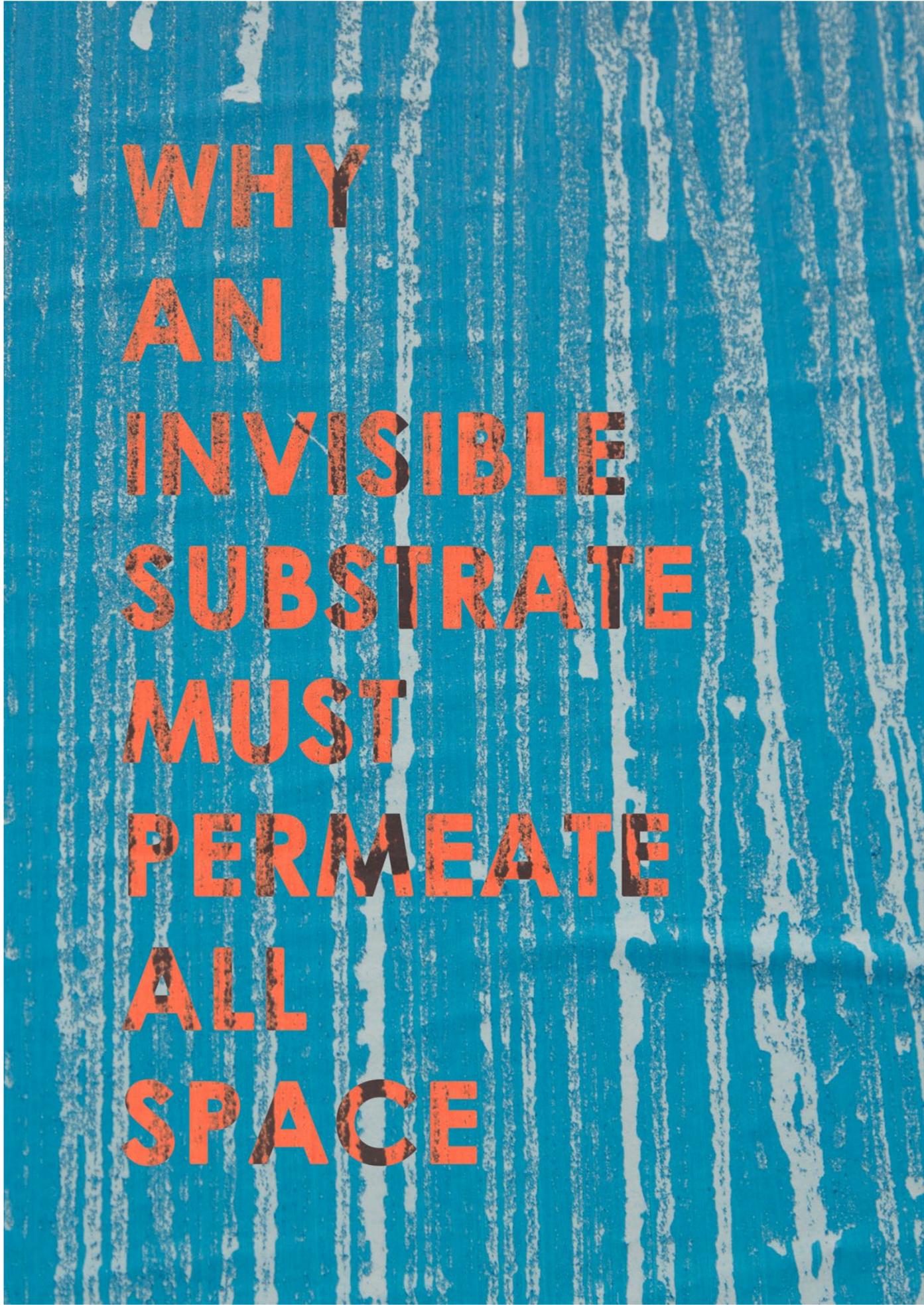
Considering a complex structure of both vortices and “electrical particles”, Maxwell developed his equations directly from his model. But, though the idea of the Substrate was subsequently dumped by literally all scientists, his Equations were kept, and are still

used to this day. Believe it or not, by that very act, a crucially important retreat had begun! Physical Theories were increasingly abandoned as too confusing and indeed “wrong”! While the purely Formal Descriptive Representations of what was going on, were considered to be much more important, and were fast being turned into the supposed Natural Driving Essences of Reality. The bugbear is surely the word “driving”, as it implies some sort of force, and coming from a purely abstract description. How could that possibly be the case?

And, by the present date this process is now pretty well complete. All phenomena in the Sub Atomic Realm, are considered to conform to the Copenhagen Interpretation of Quantum Theory - a purely abstract, formal description, and a concrete physical basis has been totally abandoned, for an amalgam of Pure Formal methods and unprovable Speculations which are now considered entirely adequate.

But, the “solution” has been considerably worse than the “cause”! Anomalies abound, and one particular one reminds us of Hegel’s researches into Human Thinking, where he discovered that inadequate premises always led to seemingly impossible contradictions – the most indicative being what he termed Dichotomous Pairs of such concepts. These, it appeared, could never be resolved, and were usually kept-and-switched-between pragmatically – “where they worked”!

Now, at the heart of the problems, of the Copenhagen Interpretation, was so-called “Wave/Particle Duality”, which concerned two totally contradictory concepts that were also kept-and-switched-between, pragmatically, to be used “where they worked”.



WHY
AN
INVISIBLE
SUBSTRATE
MUST
PERMEATE
ALL
SPACE

Now, doesn't that sound familiar?

Phenomena sometimes were explicable as Particles, while at others only via Waves.

The resonance with Hegel's findings is obvious! Could it be that the premises being used were inadequate, and a classical Hegelian Impasse was the result?

Now, this theoretical physicist, Jim Schofield, is also a philosopher and dialectician, so it was clearly evident that he must attempt a Hegelian critique of the Copenhagen stance. And, the place where he chose to start was with the problem of a Universal Substrate. The return to an assumption of such a substrate – capable both of propagation waves in a physical way, and also interacting recursively with Particles seemed too likely a possibility not to be thoroughly investigated.

But clearly, he would get nowhere without a sound physical definition of such a Substrate. Now he took his idea of what a sound definition would be from an impeccable source. You have probably guessed that it would be James Clerk Maxwell. For his definition of The Ether did explain many features of that substrate rather well, so though it wasn't ever found as such. Indeed, absolutely nothing was found, but Maxwell's model must have at least contained sufficient Objective Content for him to get several important things correct. So, it should have stayed until something better was devised. But, it wasn't!

Now, clearly, problem number one for today's theorist, attempting to define such a substrate, was to, within his definition, be able to explain both its function and why it was impossible to detect.

NOTE: A great deal of power to his elbow was delivered by the French physicist, Yves Couder, via his brilliant "Walker" Experiments, in which he managed to get a substrate (and absolutely nothing else) to actually form persisting, self-maintaining entities, using only various related vibrations. And, when he also involved rotations, he managed to produce "Quantized Orbits" too, and at a macro level.

So, Schofield sought a joint particle, comprised of sub-components of totally opposite properties, with the aim of producing a completely invisible joint particle. If he could produce this, with the right properties, he

might also be able to devise their organisation into an undetectable Substrate – exactly as required!

Two well established phenomena pointed the way forward. First, there was that of so-called Pair Production, in which a positron and an electron were produced, seemingly from "nothing material", in an otherwise totally Empty Space. And second, the discovery of the positronium in the Tevatron at Fermilab, which was an unstable, mutually-orbiting pair of the very same two sub particles - the electron and the positron. But crucially also, that phenomenon had taken place in a high speed Accelerator. Schofield assumed that in most circumstances this entity would actually be stable: so as such he renamed it the neutrutron, and proceeded to consider whether, and how, it could form a Universal Substrate.

The problem was just how these all-ways-neutral joint particles could deliver some sort of medium. But, he was able to theoretically show that, at very close proximity to one another, these joint particles formed a new kind of association, which he termed a Paving!

Now, all this was, at best, only informed speculation, so the consequences could only be legitimately pursued, if his definitions could completely explain some currently perplexing phenomena.

He knew exactly where to focus his attempt at a Proof. He would do this by tackling the whole series of Double Slit Experiments, with their perplexing bundle of anomalous behaviours, and their incredible Copenhagen "explanations".

It turned out to be just the right choice. Let us see what phenomena it was necessary for him to explain. Instead of a particle (say, an electron) somehow passing through both of the Slits in this apparatus, and then "acting like a pair of waves", somehow interfering to deliver, over a series of such events, the observed pattern on the final detection screen. Secondly, as a result of attempts to measure what was going on beyond the slits, he had to explain why such an intervention "dissociated the Wave Function" – causing the electron to return to being a particle again and producing a very different pattern on the receiving screen.

You can see what his objective was sure to be, if a Universal Substrate – a Paving of neutrutrons, was present.

The moving electron would cause Waves in such a Substrate, which would then race ahead of the electron, pass through both slits and interfere on the other side. The now following electron, would pass through either one of the slits, and, on encountering the interference pattern, either be diverted or not, depending upon its path in relation to the pattern it was traversing. Over many electrons the required pattern would be built up upon the receiving screen.

Even the "collapse of the Wave Function" had an obvious physical explanation – any interventions in the area beyond the slits would cause so many disturbances in the substrate there that the interference pattern would be lost, and following electrons would simply pass straight through.

So, let us consider a Universal Substrate as a Paving, consisting of units, which themselves each contain a mutually orbiting pair of one electron and one positron. Clearly, the model for such a joint particle is the atom, for this one also contains both charges, but this time involving particles of identical size, though this time composed of the two kinds of matter – one of matter and the other antimatter.

With such an arrangement, there would be no asymmetry – as the two sub particles are the same size, they will also share the same single orbit, with the particles positions facing one another on opposite sides of that orbit.

Clearly, the overall result will be neutral in every respect – charge, magnetism and matter type. Such a unit will be effectively both invisible and un-reactive at almost all distances apart.

Yet, within a very narrow shell, surrounding each joint particle, things turn out to be very different.

If two such particles are situated a distance apart, yet within this active penumbra, then the sub particles in each will suffer influences by those in the other joint particle.

Indeed, each joint particle will suffer an oscillating attraction/repulsion effect, whenever it remains within that shell. The affected joint particles will oscillate but remain in the same positions with respect to one another.

This is the mechanism which enables these joint particles to form a new kind of Substrate - that which I have termed a Paving

This then is the Paving of Neutrutron particles, which though undetectable, can both be influenced and in turn influence happenings going on within it.

In addition, the matter within these substrate units, occurring in that Universe Wide Paving will add up to a considerable amount, even though it is tiny within each individual unit! NOTE: It turns out that the close electromagnetic effects within the penumbras of Paving units actually deliver both electrical and magnetic effects of identical frequencies and amplitudes, varying sinusoidally at right angles with respect to one another. The closeness of this description to that allocated to The Ether by James Clerk Maxwell is, clearly, NOT by coincidence.

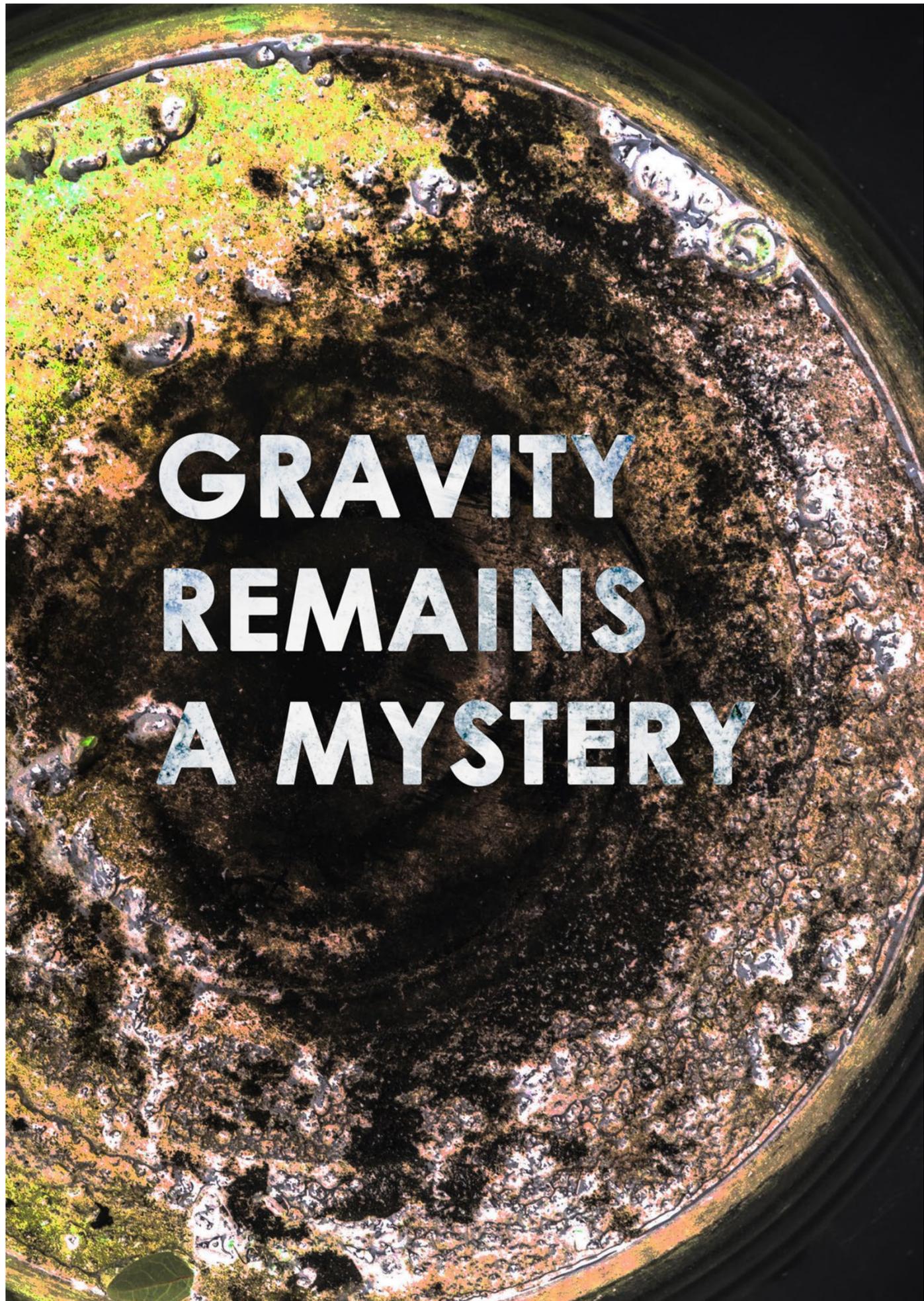
The unavoidable closeness of the units of such a Paving, means that any traversing charged particle, say, could not but affect it.

While, on a cosmic scale, the sum of all the matter within such a Paving would be colossal, but also absolutely Everywhere!

Notice also that, in any local volume of the substrate, all local effects, including gravitational, would cancel out, as there will always be equal pulls in all directions. Attempts to detect such a substrate would fail, because of its resultant absence of properties, on anything but the tiniest of scales.

But, it has to be admitted that at the present state of this Substrate Theory, there are several vital phenomena that are not yet explained. For though the assumed neutrutron units are ideal for explaining the propagation of electromagnetic energy, and also that of both Pair Production and Pair Annihilation, as well as dealing effectively with all the anomalies in the famed Double Slit Experiments, the Substrate as it stands cannot yet explain Fields!

The state of play, currently, is that the Substrate must also include other different, but also-undetectable particles - sometimes called "magnetons", which nevertheless, can deliver electrical and magnetic fields, and also "gravitons" too, to produce Gravitational Effects.



GRAVITY REMAINS A MYSTERY

But, what can these extra units be composed of, and will they have significantly different very-close and distant properties too?

What seems currently unavailable is the necessity for propagation of these effects too. For example, the presence of a charged particle must elicit some form of structure around itself, composed of “magnetons”, which must be caused by something. And, this couldn’t be a “magic disembodied force”, happening in totally empty space, so it had to be caused by an association of substrate units, themselves, gradually forming a structure.

Various alternative theories (such as those of Tambe and Schofield) exist, but they cannot be said to have achieved sufficient sound explanations as yet.

And, the equivalent Gravity particles exist as two very different models at present, but it seems also likely that the propagation will be necessary there too. But, what can they be composed of, and will they behave with significantly different very-close properties, as opposed to those at some distance away?

What seems unavoidable is the necessity for propagation of these effects too. For example, the presence of a charged particle must elicit a structure around itself, composed of “magnetons”, and this must be actively caused by something present in the situation. Clearly, a totally Empty Space can neither be the cause, nor even provide the resources for such a construction: and talk of a “magnetic Force” doesn’t deliver an explanation: it merely succinctly describes what happens in a tidy way.

And, as NO diminution of the charged particle is involved, including when actual events result, they can only be possible via the presence of a material Substrate. The active response to the presence of the changed particle, can only be by the units of a substrate, moving actively to, and forming a structure around, that “supposed” cause!

The equivalent Gravity particles also have no effective models at present to enable a comprehensive theory. And, it also seems likely that propagation will be necessary in these areas too. The “gravity particles” – the gravitons, of the Substrate, must be reactive to concentrations of matter in all the usual particles and bodies present in Reality, and also form around them, this time as a physical “gravitational field”.

But, this has a major flaw! The effecting distances involved would have to be colossal, AND, in addition, all such structures around many closely situated bodies would undoubtedly overlap. So, it is hard to see how a coherent overall gravitational field could be effective, as, so far, suggested.

Einstein’s “solution” was, of course, entirely formal, while having, also, to be continuous to allow the simultaneous action of multiple causes. His contradictory Space/Time Continuum, confusingly also involved physically affecting material bodies, but somehow due to formal causes. But, the way it is defined does “answer” the structure problem as posed earlier.

Yet, of course, modelling it purely formally, while bringing in Time too, he made it impossible to analyse things physically any further. NOTE: Once again an impasse results in taking the theory any further physically – only the formal remains. It clearly isn’t Reality!

It is an analogistic model that can reflect certain aspects of Reality, while tidying others away via its purely formal nature. I’m afraid that Einstein’s clever formal solution is nowhere near sufficient, because, as with all such models, it will certainly mislead as much as it will help! It is a formal construct that mirrors certain features of Reality, but it falls a long way short of The Truth.

The trouble with Gravity as a disembodied force, reaching across Empty Space, is that it is just another constructed model, which allows certain things to be effectively mirrored, but is clearly just a clever frig! No mechanisms are provided to enable it to explain why things behave as they do. It is the old trick of constructing a Form that matches certain aspects, but only as an analogistic Description, and NOT as a physical explanation.

All effects across Empty Space are always just formal frigs. NO Science is involved - just Mathematics!

The substrate conception has proved to be superior to the “Field in Empty Space”, and to Einstein’s purely formal description. For, without any doubt, such a Form-only description involves the abandonment of Materialism for a purely Idealist stance!

The proof, for this scientist, was the famous Double Slit Experiments. For, with the formalisms of Copenhagen only, all sorts of anomalies occur there, which they have

attempted to cover with the pure formalisms of the Copenhagen Interpretation.

But, this researcher has removed all the anomalies, just by devising a Universal Substrate, composed of real, but undetectable, and already known, particles. For, surprisingly easily, all the nonsense about Superposition, Collapsing Wave Functions and even Entanglement were wholly replaced by physical causes. And, finally even Quantization was fully explained, and all because of the presence of a Universal Substrate occurring at all levels of Reality.

Many, more explanations display increases in Objective Content that such a “solution” just had to replace the increasingly disproved Copenhagen stance. Now, the problem seems to relate to the “prejudice” of Scale Invariance. Relations with their consequent patterns in Reality, which are assumed to be either the same, or at least, repeated formally, at all scales. And, this, in my own research, does not appear to be the case at all.

The so-called neutrutron (the mutually orbiting pair, consisting of one electron and one positron), turned out to have very different properties at different proximities.

On the scale of fundamental particles, and above, it was invisible and even undetectable. No one has ever detected it.

Yet, clues as to its presence are there indirectly – for example the phenomenon of Pair Production in which an electron and a positron seem to appear from nowhere, and the mirror image process termed Pair Annihilation, in which a detected electron and a positron seem to suddenly vanish, both fit in well with the presence and properties of the neutrutron. Next, there is the indisputable propagation of Electromagnetic Energy (Radiation) across space via a Substrate of these same particles, makes a great deal more sense than occurring via Empty Space itself!

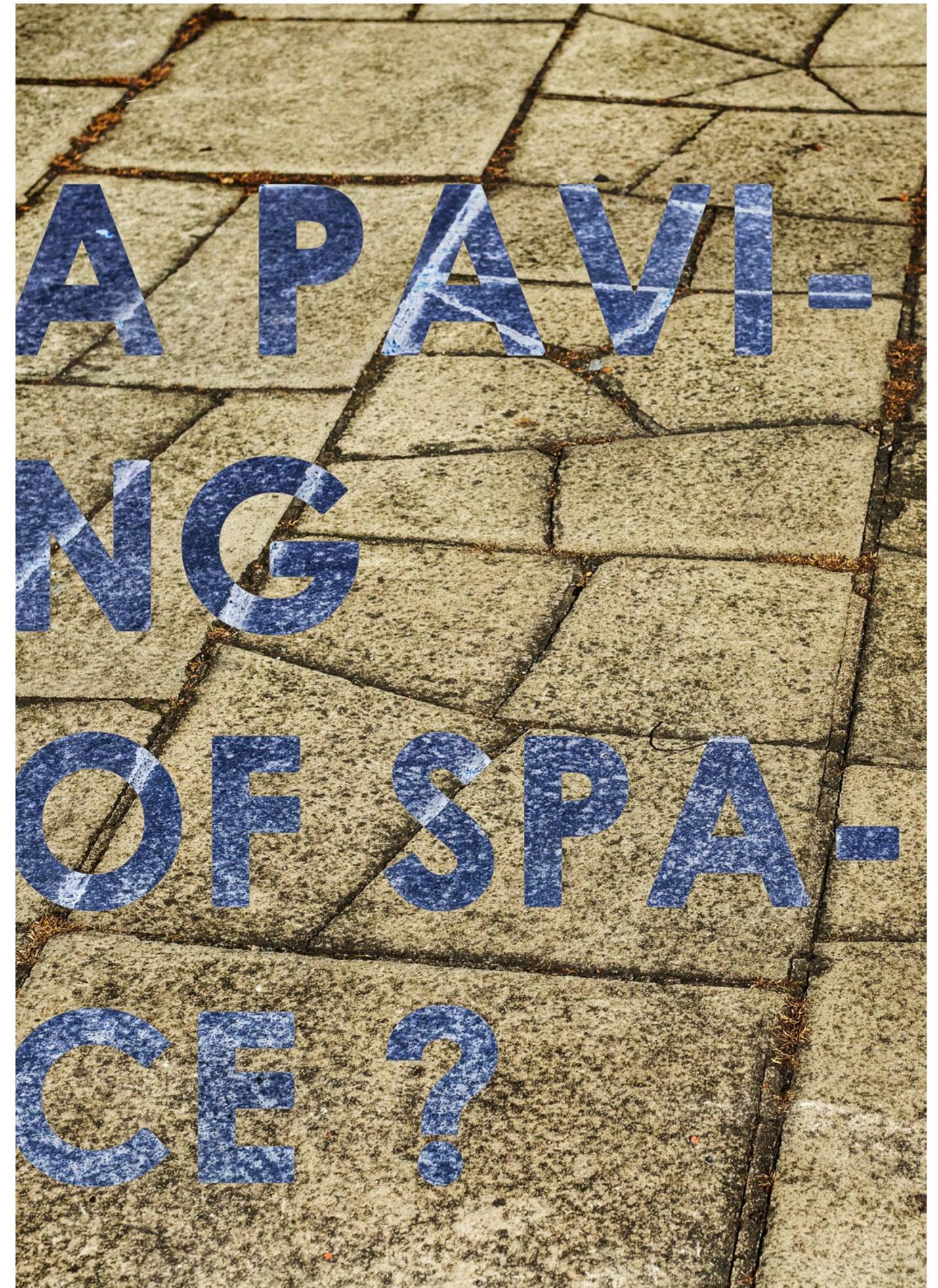
Now, upon a much tinier scale, it was theoretically established that closely adjacent neutrutrons turned out to be no longer neutral. In fact, such close particles interacted electromagnetically, caused by very close proximity of the sub particles with those in an adjacent unit.

The result was that when one neutrutron had come within the penumbra around another such particle, they, and consequently the joint particle as a whole, was via alternating and sinusoidal attractions and repulsions, maintained within that key distance apart – indeed, over many neutrutrons producing a close packed Substrate in what we call a Paving.

Once a neutrutron came within that key penumbra of another neutrutron, links were made which would thereafter, be self maintaining.

The resulting Paving would be extremely close packed and with a preponderance of the units would rapidly form this unique Universal Substrate. It was this Paving, and its clear properties, based, of course, on those of the forming neutrutrons, which were soon explaining all sorts of phenomena at this level.

I cannot restrain myself from announcing that this research has also explained quantization, both in atoms and elsewhere, without any recourse to the Myths of Copenhagen, whatsoever!





What is a Field?

The question has to be, "What is a Field?"

They definitely exist, but are they really non-material, pure-energy entities of infinite proportions?

NO, but they could be occasional energy-modes of material Substrates that actually are "infinite"!

So, I do know what they are not: they are most-certainly-not parts of a Wave/Particle discrete entity, but they could be properties of organisations of discrete particles forming organised Substrates.

The obvious ones, are what we have long been aware of in the macro world, such as the media like water and air, but the interesting ones are likely to be composed of very much smaller particles at the Micro level, in mutually-cancelling, paired-unions and/or cancelling separate pairs of mirror-image particles, like the Neutrinos, Magnetons and Gravitons, which remarkably associate into various modes or phases, and also can be dissociated into yet others. Even Electrical and Magnetic Fields could be different associations of magnetons, and there is a kind of parallelism with the usually normal matter modes of Gas, Liquid and Solid (though obviously profoundly different in their enabling linkages).

All such currently-suggested units are mutually-orbiting-pairs, and hence capable of absorbing and releasing quanta of EM energy, via the promotion and demotion of those orbits - so all would then be capable of transporting or alternatively propagating such quanta!

The propagating option necessitates associated aggregations, of which the best suited form is the Paving-of-Neutrinos (devised and theoretically confirmed by this theorist). Truly amazing features can be explained by the various modes of such organisations, and the ease of transforming between them.

The best is exemplified in the explanation of quantized orbits in atoms, made possible by the orbiting electron dissociating the Paving, through which it is passing, into free-moving individual neutrinos, and these being driven into first streams, and then vortices, accompanying the orbit, all around its path!

In a straight forward linear passage, these phenomena wouldn't last long, but the oft-repeated passage of the electron, around the same orbit, allows regular transfers of energy, both-ways, between orbital electron and the vortices, causing adjustments to the orbit radius - until finally resulting in only particular stable-balance orbits appearing and persisting.

There is an article in the New Scientist (11/11/17), which I am currently reviewing. It is interesting because of the stuff on probabilities with-regard-to a supposedly non Copenhagen view. [There will be a full review, but I have already written "Pragmatically derived Probabilities" with what I have extracted from that so far!]

But, returning to the current problem of Electromagnetic Fields, the already suggested Neutrino has proved totally incapable of delivering such effects, so the search was on for different kinds of similarly-formed joint-particles, which could deliver two absolutely necessary properties for such to fields.

The first of these was that it had to have an always active electromagnetic property, and the energy to deliver it! And the second, and, far more demanding feature, was that it had to have a built-in Direction for the application of that field's deliverable force!

For, such active fields must deliver both energy of the right amount, and the right direction, to impart to any

affected interloper - to deliver to it exactly the right force and direction for its position in the Field!

And, to further compound the felony, the delivery of those, to the affected interloper, has, somehow, to be immediately-replenished from somewhere else. The full integrity of the field must be constantly maintained!

And, of course, the “supposed-cause” of the field supplies absolutely nothing to these processes: it is totally unchanged by all actions of the field.

Now, you may conclude that the questions posed are just too onerous, but there is no choice: every one of the above things must be supplied by an appropriate Substrate - or, to be more precise, by certain appropriately-endowed units of that Substrate.

Now, the necessary Magnetons have been defined to deliver ALL these features, but the extra property of total invisibility (indeed undetectability) at first seemed a demand too far!

But, that too was solved, by defining TWO particles, one as the exact-mirror-image of the other, and occurring in equal numbers-of-each, and when not subtending wholly detectable Fields, moved about randomly and incessantly, a bit like a Gas.

Clearly, in such a Mode, the population everywhere would be totally undetectable. So, what sub-particles could deliver absolutely everything required to fulfil these very demanding requirements? Surprisingly, they chose themselves!

The neutrinos had been a mutually-orbiting pair of two leptons - the Electron and the Positron.

One negative and the other positive.

One matter and the other antimatter.

Not only was the resulting particle neutral in every respect, but it could carry-or-pass-on individual quanta via the promotion and demotion of that internal orbit!

And, there were only two kinds of Leptons left - the Taus and the Muons.

And, what is more, their different sizes also meant that with one of each in a combined particle, the result would inevitably have a Magnetic Dipole Moment. And, this would also deliver the seemingly impossible property of Direction.

Using Taus (either of matter or antimatter as the “nuclei”, and Muons of the opposite matter-type as the “orbiters”, two exact mirror-image, joint-particles with all the necessary properties were then available - exactly as required!

When as yet uninfluenced by any charged interlopers, these could be free-moving independent entities, and in equal numbers, moving randomly, would be undetectable.

But, in the presence of a charged particle. individual “Magnetons” would encounter it, via its perambulations, and attach itself via its magnetic dipole reorientated to point to the charged particle. Others would do likewise until a complete surrounding shell could be formed - cancelling-out the charge of the receiver, BUT remarkably replacing it with a magnetic alternative pointing directly outwards. And, this would capture others of the magnetons suitably orientated to form yet another shell, and these would gather in energy residing in the internal orbits of the many particles of the Substrate - sufficient to cancel the prior shells effects, but as they are dipoles actually replicate it in another shell. The simple geometry of these shells would make each shell unit carry exactly an Inverse-Square-Amount of energy to sum to match the contained charge of the interloper.

When another susceptible interloper encountered any unit of this Nested-Shell Field, it would be delivered of exactly the correct energy held in that unit in the correct direction delivered by the orientation of the unit’s Dipole! And, once used up in this way, it would be replenished from elsewhere in the Substrate, as ALL the Substrate particles with their mutually orbiting pairs would have the capability of easy bucket-brigade propagation!

Now I could go on, and deal in a similar vein with magnetic Lines of Force, for that too has been comprehensively addressed, but it would even further extend this paper with its currently limited objective.

All the rest is available in other issues of this Journal.

So, I will finish this contribution with a final coda!

Now, let me be absolutely clear, I am both an experienced, professional Physicist and a published philosopher, so conforming to both of these disciplines, I can only approach the problems of the current crisis in Sub Atomic Physics theoretically, but, nevertheless, significantly-guided by the most powerful philosophical stance so far developed by Mankind.

The criticism - “Where is your Experimental Confirmation”, is valid, but also wholly unreasonable if demanded from a position of support for the severely physically inadequate and philosophically insupportable Copenhagen stance.

Such theories as are embodied in this submission are NOT claimed as the Absolute Truth at all, but as having more Objective Content than current alternatives, and though certainly insufficient in its delivered-detail, does deliver an analogistic model of real value to the further development of Physics!

But do any experimental physicists want to test out these ideas?

Fields in Space

As a theoretical physicist, I have never been satisfied with the usual mere extraction of quantitative relations from Reality. For, though, absolutely essential in enabling effective use of what was being investigated, it couldn't, of itself, ever explain why such a behaviour actually occurs!

But, such a process certainly had to come first, of course, as Mankind's initial and powerful intellectual method was Pragmatism - "If it works, it is right!", so initial preoccupations would necessarily be to do with how something could be used to Mankind's advantage.

But also, the mere collection-of-recipes for use, soon led to more profound questions, and these slowly took precedence, for certain investigators, as such "Explanations", though always insufficient, due to Mankind's unavoidably limited experience, were still much more unifying of any associated pragmatic Knowledge gained by the usual means, and so began the definition of a different, explanatory approach, which became known as Science!

It was, of course, intimately linked to Technology (its purely pragmatic precursor) and partner-in using what was discovered, formulated and explained. And, an important relationship between the two disciplines was developed, as the technologists could both construct and maintain idealised situations, for the scientists to investigate, as well as deliver the best situations for their later effective use too!

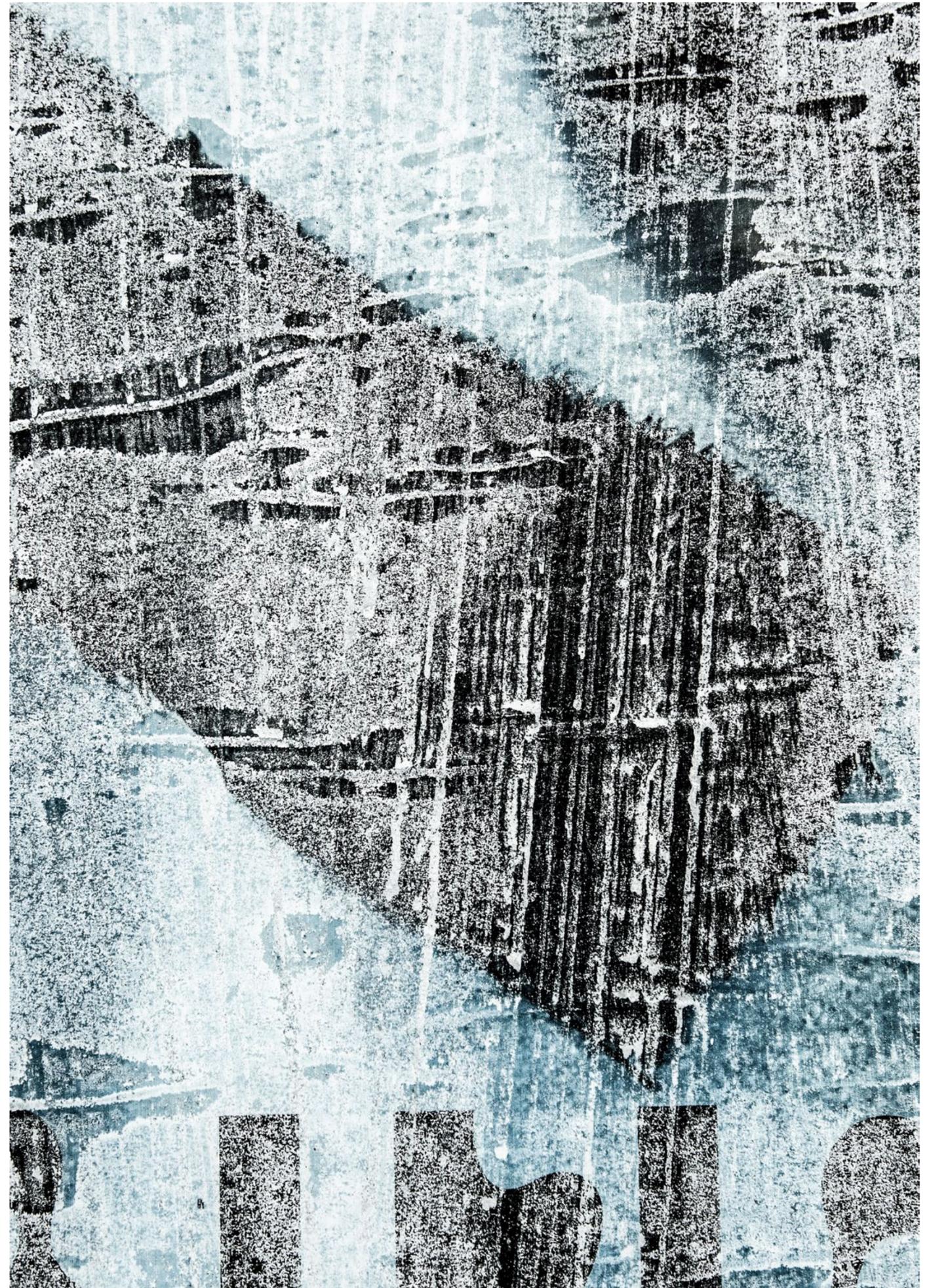
But, that relationship also had its disadvantages too - as "the tail could very easily wag the dog!" Both the technologists and the public-at-large, could be insistent that certain problems needed priority, and the more explanatory role, was criticised as not being as important as the technical advances that could bring immediate benefits to people.

But, nevertheless, this relationship was kept together by the revealed forms of the discoveries, which were ideal for the technologists, as well as being a handy theoretical shorthand for the scientists. This Form was, of course, the mathematical formulae, or Equations, which delivered the revealed relations!

But, two things were always absolutely crucial about this set up. First, NO meaningful extractions from Reality were possible, unless they were carried out in a naturally stable, or much more frequently, in an artificially arranged-for experimentally Stable situation. Indeed, literally ALL that was extracted, and formulated-in-Equations, was limited only to a particular, maintained context: it was never generally true of all of Reality-as-is! Indeed, such equations could only be used if that specially arranged-for, or indeed farmed context, was also accurately provided for use. Now, this debilitating weakness was covered-up by the proposed and universally-accepted Principle of Plurality, which stated that Eternal Natural Laws were independent of context - so the acquired Equations were indeed the Truth. But, it wasn't true! They may approximate to the truth, sometimes very closely, but ONLY in the right arranged-for context.

These Laws were NEVER absolutely true everywhere!

And, as you would expect, treating them as Absolute Laws, especially in Theory, was guaranteed to precipitate contradictions and even calamities, when their always limited ranges were transgressed. The graphs of these Laws always careered off to infinity, or swooped down to zero, inaccurately, if their limited ranges were transgressed. And, approaches close to these limits, in some cases, also produced what is termed Mathematical Chaos, which reflected but DID NOT accurately-represent what was physically happening.





ACTION AT A DISTANCE

HOW ARE THESE THINGS COMMUNICATING ACROSS THE VAST DISTANCES IN THE UNIVERSE?

Now, some of these idealised situations had involved the removal of absolutely everything that could confuse, so that experiments were, if possible, performed in a vacuum. - or what they believed existed in Empty Space, so this persuaded them that they were, indeed, revealing eternal Natural Laws.

But, was Space empty? And, were their experimental arrangements really delivering the actual Absolute Truth?

Now, it was in this supposed Empty Space that major problems were evidently unavoidable, particularly with regard to the subtending of active fields - Electrical, Magnetic and even Gravitational!

For, these were capable of affecting certain susceptible entities, and forcing them to move in a particular direction, and to continue to be so affected thereafter. And, these effects were in the precise direction of a supposed cause, but without, in any way, drawing the required energy from the source, which would be unchanged by the actions of its "presumed-to-be own field".

Now, fitting all this to a purely formal equation, would not bother a technologist, nor a user of this effect, but it would, indeed, greatly bother a scientist - who would need to know why and how such things happened.

It is the classic quandary of Action-at-a-Distance! The question is:- Where does that energy come from, and how did it get there, including-within-it the exactly correct amount of energy and accurate direction to impart to a susceptible entity? And also, how is that energy and direction held at that precise point in absolutely Empty Space?

You don't have to be a scientist to realise that such questions require answers, or that the current assumptions have no real means of delivering them. Yet, without them the premises of the usual stance are certainly proved to be wholly inadequate!

Now, there is an explanation, which delivers full answers to the above questions, but it requires the presence of a hidden Universal Substrate! The theoretical definition of what kind of particles would make up this substrate are straightforward to define, but they also have to be completely undetectable.

And, that, in the past, has scuppered all attempts to define such a Substrate, for the properties they must possess to deliver the above functions, would also be bound to make them visible, or at least detectable.

But, a theoretical solution to all these difficulties has been found! It involves several different kinds of Substrate particles, all of them possessing property-masking internal features, or, and sometimes as-well-as, cancelling collections of mirror image particles, and finally alternate modes of existence or aggregation, in differing circumstances, some of which deliver undetectability in one situation, while delivering detectable properties-and-functions in other situations.

The major break through was in considering opposite properties such as charges and magnetism, and even Matter and Antimatter! Then, linking opposite particles in mutually-orbiting pairs, was one cancelling feature, which also enabled the holding of energy in the promotion of such orbits. And alternatively, equal numbers of exactly-opposite randomly moving populations, was another way of masking opposite features.

Then coupling these with alternative-aggregating-patterns finally enabled the subtending of active fields. The most important particles involved turned out to be the two Magnetons, which, though neutral in charge, both carried opposite Magnetic Dipole Moments, and could align in either electrical fields or magnetic fields, as well as alternatively existing as a randomly moving gas.

The New Electromagnetism

Arrived at by Considering Dynamic Disturbances in a Universal Substrate

The prior theory which I have thus-far suggested, elsewhere, delivering the “electrostatic” field subtended by a charged particle, within a fully-defined Universal Substrate, must obviously be still, as-yet, incomplete. For, it is still only a static conception around a static initiating particle.

But, as the evidently still-outstanding problems were being addressed, one-by-one, the current consensus conceptions in this area were being regularly challenged, and the newly-emerging alternative ideas have begun to take things well-beyond the usual stance, and in fact, strongly-promise a wholly-new General Theory of Electromagnetism!

Clearly, such a static description, though it was the essential first-step, was, in fact, obviously insufficient, because, as soon as such a charged particle actually moves, it will not only mess-up both its own associated field-pattern, and also the pristine Substrate through which it is passing, but, in addition, naturally generate a consequent magnetic affect, as well!

Now, elsewhere, I have also produced a suggested theory of Magnetic Fields elicited, within the units of a Universal Substrate, by such things as the presence of a bar magnet, a solenoid or even the Planet Earth! But, once again, even that was only a purely static conception.

Clearly, I must now bring together those initial static theories, with others I am currently getting together, regarding dynamic disturbances and consequent, feature-generating changes and movements caused within the Universal Substrate, itself, by various kinds of moving interlopers. What is required is a theory of electrically-charged entities along-with a Universal Substrate in

a mutually-defined union of different movements! It is certainly long overdue, BUT it could, possibly, significantly-link Electrostatics and Magnetism as being basically the same property affecting its real environment - the Charged Particle PLUS the Universal Substrate, and in several different ways.

But, before embarking upon this undertaking, I must make clearly-evident my own philosophical grounds - for, though a qualified physicist, I long ago abandoned the endemic basic assumption in that discipline (as well as many others) which can be termed Plurality, for the directly opposite tenet of Holism, which makes the attachment-of-properties no longer merely a fixed part of its “evidently-causing” entity, and hence wholly independent of context, by subscribing instead, to that alternative stance, into a situation wherein I also see such things as inevitably contextually-determined. and, in my assumed scenario of a Universal Substrate, such properties will depend upon that context, as well as the previously supposed-to-be-sole-active cause.

Let me colourfully illustrate what I am talking about with a telling analogy! It is the tale of a ship sailing through calm waters.

Let us consider the disturbances such a ship makes, with the two bow-waves going off sideways, the more extensive the side-waves, and finally the wake - dragging water into following the ship, as well as causing turbulence and vortices behind it. So, in this illustrative case, my initial point is simple:

Nobody says that these phenomena are properties only of the ship!



A NEW GENERAL THEORY OF ELECTRO- MAGNETISM



Neither does anyone claim they are just properties of the molecules comprising the water!

They are clearly joint-properties of the energetic-ship-and-water-system, generated by that ship moving in that sea. I am making the fields subtended by a moving charged particle NOT merely properties of that particle, but joint-properties of both it AND the Universal Substrate, simultaneously mutually involved in that movement.

It is a holistic view as distinct from the pluralistic view, which has dominated in Physics for millennia.

To do justice to explaining exactly what will be happening, in our given case, would really require a tailor-made animation, as many different effects will be occurring simultaneously. And, it isn't only the Magnetic effects that will be considered, but also other key phenomena and their effects, concerned particularly with vortices, which have been used elsewhere to explain the "quantized" orbits within atoms, without any recourse, whatsoever, to the Copenhagen Interpretation.

You have to be clear that the usual and current ideas, about electrical and magnetic fields, have been abandoned by this theorist, who sees such things instead as local re-organisations, delivering of consequent properties of parts of a concrete, if currently-undetectable, Universal Substrate.

Indeed, with this alternative-interpretation, such fields involve the active responses of elements of that Substrate, not only to actively-form a different arrangement within-and-composed-of The Substrate, but also one equipped (from elsewhere in that necessarily energy-capable Substrate) to actively supply the energy required to fuel a force-capable field - entirely within and actually composed of suitably-energised and organised Substrate units!

From 2008 I undertook to tackle the anomalies of the ill-famed Double Slit Experiments, and after two years work, into the problem, and then via the suggestion (and thereafter the firm assumption-and-definition) of an actually existing, yet currently undetectable Universal Substrate, I managed to explain physically every single one of those anomalies, purely physically.

It was clear to me that the Copenhagen Interpretation of Quantum Theory was idealist nonsense (and a measure of the inadequacies of their assumed philosophy), and, therefore, had to be comprehensively replaced, and, with a very different philosophical standpoint and method, I set about the task of delivering that precise outcome.

The key feature simply had to be the presence of an undetectable but effectible-and-affecting Universal Substrate! For, the Wave/Particle Duality of the Copenhagen Interpretations had to be replaced by a Particle/Substrate mutual set of ongoing interactions (throughout the Particle's movement), which explained every single anomaly - with the Particle constantly causing waves in the Substrate, which were dramatically affected by the Double Slits, to produce a constantly-maintained interference pattern beyond them. So that, when the much slower "causing-particle" arrived at, and passed through, one of the Slits, it encountered the Interference Pattern (which it had effectively caused), and was deviated or not depending upon its particular trajectory delivered by the Slit.

Without repeating the full and detailed account here (for it is available-in-full via a dedicated Issue of this publication), it is sufficient here to say that many inexplicable phenomena of so called "Empty Space" have also been addressed consequent upon that work, including Quantization, Pair Productions and Annihilations, Electromagnetic Propagation and even Quantum Entanglement!

The static solutions for both Electrostatic and Magnetic Fields (are also available on SHAPE), so, here, we can concentrate upon the effect of involving Movement, and thereby exposing Electrostatics and Magnetism as features of the same Charge-and-Substrate nexus!

The electrostatic field around a motionless, charged particle was devised as a collection of re-orientated Magneton-Substrate-Units, in a nested set of concentric shells surrounding the "supposed cause". But, of course any movement, of that entity, would carry "its field" along with it, though encountering more of the very same particles it is composed of, would be in a situation where any losses could very easily be replaced from the Substrate! For, the arrangement would immediately encounter substrate units, NOT part of the accompanying field, and would inevitably both move those encountered units, while also having its field

distorted and even temporarily, partially mantled by the ongoing multiple encounters!

It is predicted that individual magnetons from the field or substrate could be ejected sideways, and naturally link up their magnetic dipole moments into many single "Magnetic Lines of Force", each of which would be roughly perpendicular to the direction of overall motion involved.

Thus, the previously inexplicable sideways Magnetic effects, of a moving, charged particle, are very simply explained, And, so far, all the both electrical and magnetic effects are clearly due to the very same magnetic substrate units!

NOTE: The experiences of Yves Couder, with his highly successful "Walker Experiments", in a macro environment, suggests that these ideas too could be investigated, and also at the macro level. using large-scale, manufactured equivalents of the magnetons on a similar "Wave tray"

Jim Schofield November 2017

A Medium in the Substrate



[Control light with magnets and olive oil?! \(Faraday effect\)](#)

The YouTube video above demonstrated the affect of a magnetic field upon Light. and required the apparatus to be totally submerged in Olive Oil for the effects to be clearly evident.

But, if my assertion of the presence of a Universal and totally undetectable Substrate is correct, then surely any explanation omitting that Substrate will NOT deliver all that is actually happening!

For, you actually have a Universal Substrate which is the normal propagator of Light "in vacuo" within the Olive Oil Medium. And, being present with elements on a much tinier scale, it will be functioning as usual within the Oil medium in its normal way.

So, the magnetic field applied in this experiment and clearly affecting the Light involved, MUST be primarily affecting the bucket-brigade propagation between the units of the Universal Substrate, and the question gets transformed into -

"What is happening in the Substrate/medium/solenoid and light complex?"

Interestingly the demonstrator terms what is behind this phenomenon - The Faraday Effect!

Resonance & Substrate

The presence of an intervening-and-communicating Substrate, between an oscillating source and its responding receiver, in a situation of Resonance, delivers many unanswered questions.

For, example, “Where does the resonating object get its energy from, to make such a big response?” It, certainly, isn’t drained from the causing source, as that continues-on, in exactly the same way, as it would without being resonated anywhere. Yet, the energy in the source seems to have somehow been amplified by the receiving resonator.

And crucially, in musical instruments, it is included, during its construction, as tuned resonant components, that apparently amplify the notes, and in wind instruments it is certainly the dimensions of the air contained in the instrument that is crucial. And, that being the case, the causing vibration cannot be the source of the energy employed in-the-resonance: it must come from two things in the resonator - its shape and the air contained within it. The shape is well understood, but if my supposition is true, the energy for resonance must come from that air within the resonating space. And that being the case, it must lose energy - for that becomes, thereafter, propagated as sound. The energy must drop in the air which gives it up, and this should be measurable.

Now, I doubt that anyone would disagree with this: but what about resonance and its propagation through “Empty” Space? If it really is empty there will be no Substrate to either propagate the oscillations or to provide the necessary energy, and resonant propagation of sound would be impossible.

But, if some kinds of resonances do occur in space (though not, of course, acoustic), it means that there has to be a Universal Substrate in Empty Space.

Of course, any such Universal Substrate cannot be an analogue for the usual physical propagating media on Earth. Many attempts have been made to reveal just such a medium, but none was found.

Taking my recent suggestions into a very different Universal Substrate, which is, at present, totally undetectable by the usual means: it would have to possess very good physical reasons for its invisibility, while possessing necessary complications to enable a different mode of propagation, which is NOT dependant upon “elastic” links between units, AND crucially still allowing the capability to absorb-hold-and-pass-on individual quanta of energy, as in Electromagnetic Propagation “across the void of Empty Space”!

Returning to Resonance, though the original emission of energy from the source would diminish that source, the actual process-of-propagation would NOT require any extra energy to “fuel-the-propagation”, but, if our ideas on Resonance are correct, there is no reason why such a propagation could not elicit a resonant reaction in some receiving entity, with the appropriate resonant characteristics to the frequency being transmitted, and once initiated, if it is to “resonate at an increased amplitude”, it would require available energy drawn-in to achieve such a phenomenon. And, where better than from the Universal Substrate itself?

Clearly, this is only a supposition, but it has the advantage of being provable (or not) by experiment!

What would be required is an area of “space” with an inflated general level of energy in its units’ internal orbits, and a space craft positioned there with an appropriately designed, isolated system of the right inherent characteristics. Then, directing at it, from elsewhere, (through Space) a propagation of the right frequency. With only the possibility of an existing

Universal substrate as the propagator, any resonance in the apparatus, MUST be drawing energy from the local “enhanced” Substrate!

A few general points about a simple Universal Substrate consisting of dual-mutally-orbiting components must be made! The internal mutual orbit could be promoted and demoted, in a similar way to that of an electron in an atom, but in this case only if an adjacent unpromoted unit was very-closely-available to take it.

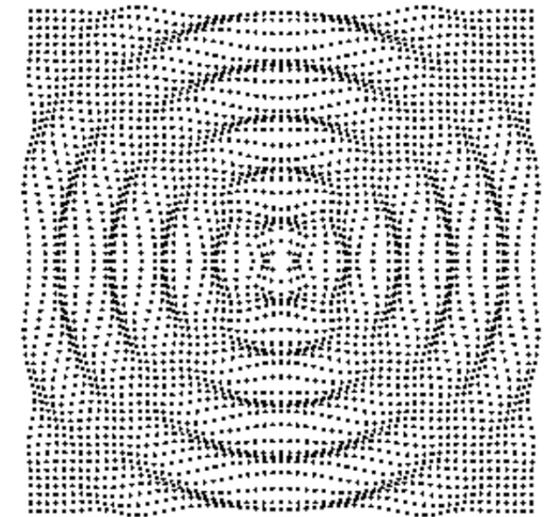
Indeed, normal propagation would be by a bucket-brigade “passing-on” of a quantum through a sequence of previously unpromoted units of the Substrate.

But, the local availability of profuse energy could have promoted ALL the units in that well-endowed area, thereafter locally-equalised by appropriate demotions and promotions until all were at the same level and would remain so while the even distribution was maintained.

Even the usual propagation of electromagnetic energy could still be accomodated, simply on-top-of the equalized amounts in all the units.

But, also, that inflated area would act as a general Source of energy when a nearby deficit required it.

Indeed, such a Substrate could act both as a Sink and as a Source for energy, such as that required in Resonance, as described earlier in this piece.





The Relative Transparency of Matter

With both the Relative Independence of and Backwards Causality between Different Levels of Reality

When such forces as delivered by electrical or magnetic fields are absent, the usual remaining and universally applicable Field was only Gravity or, much more likely physical collisions between material entities to propagate any disturbances that occurred across regions of "Space". But, though the latter initially seem to be the only universally possible means of doing this, it, in fact, depends, largely, upon the Sizes and hence the Mass-and-consequent momentum, of what is involved.

For such "propagations" are in all directions and use up energy with all succeeding collisions. And, even when such are conducive to real collisions, the effect of such interactions will be significantly affected by the nature and properties of the colliding entities.

The key phenomena which "throw light" upon such interactions, occur upon the currently very smallest scales - say of neutrinos - encountering the Earth. For, it is that they mostly pass right-through that enormous Mass as if it isn't even there!

And, the discovery, in the 20th century, that ALL atoms are mostly said to consist of entirely Empty Space, makes such suppositions about neutrinos actually believable.

In spite of the many advantages of assuming a Universal Substrate throughout that so-called Empty Space, that conception was dropped completely, when it repeatedly failed to be detected.

Now, this theoretical physicist was dissatisfied with this conclusion, and decided to investigate the possibility of undetectable, yet both effectible and affecting of any intruders passing through it, while also in special cases leaving no detectable trace of such interactions!

Indeed, the most remarkable properties were endowed to propagated Electromagnetic Radiation, without any causes-by or or a carrying-of such by a medium involved.

And, though initial researches, by this theorist, were confined to mutually-orbiting-pairs of oppositely endowed sub atomic scale entities, and many possible formulations were arrived at and theoretically investigated, such possibilities were not considered elsewhere!

[See the 10 years worth of papers, mostly published in this journal]

But, the many findings, of that original research, also opened up the possibilities of the Relative Transparency of certain forms of matter to others at much tinier scales. Indeed, it gradually became clear that a hierarchy of realms of organisation of matter could well have dominating relations of their own, without significantly affecting others at vastly different scales.

And, of course, the holist, Dialectical Materialist stance of this theorist also meant an appreciation of the roles of Emergences in the Evolution of Matter, so the pluralist stance dominating Mathematics, Formal Logic and even Science, had been abandoned, along with its supposed eternal Natural Laws and strict Reductionism.

Now, effect of such a revolutionary philosophical stance, meant a very different understanding of the actual Developments involved throughout the History of the Universe, and most especially of the developments upon Planet Earth, whereon Emergences, currently unknown anywhere else, were available for study - including Life, Mankind, Consciousness and Civilisation!

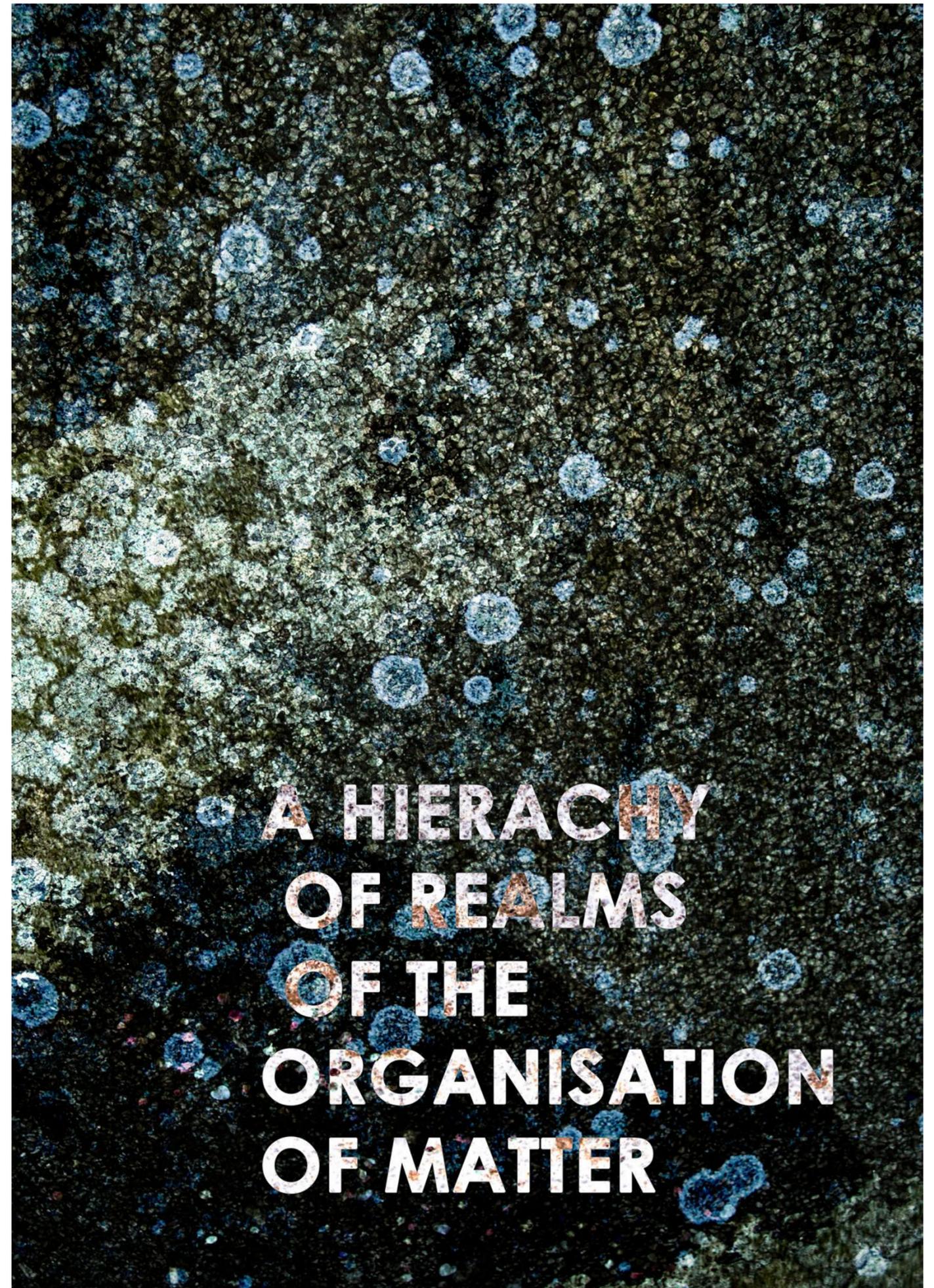
Indeed, though a trained physicist, this researcher has never limited his investigations and theories to that single subject, but has studied History, Philosophy and in particular, Biology. So by 2010 I had been able to develop both detailed research into the Processes and Productions of Abstraction, AND a totally original Theory of Emergences.

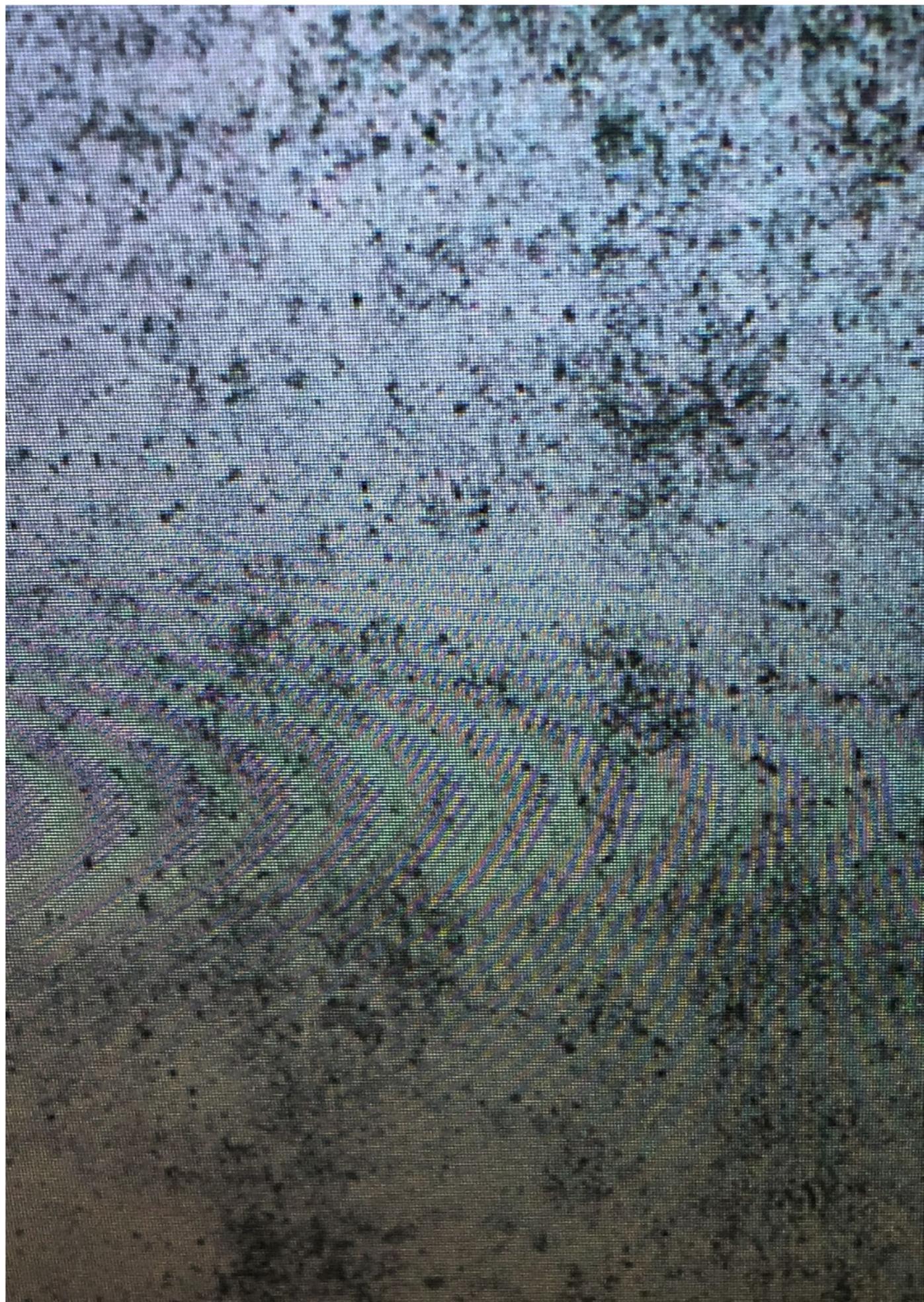
Indeed, the most important break was that from strict Bottom-Up Causality, and Straight Through Reductionism. For attempts to “step-by-step” explain the crucial Emergent Episodes in the Evolution of Reality, were finally replaced with the more-correct Dependence of the Higher upon the Lower. without the complete prediction of the Higher in terms of the Lower.

Clearly, the difference was the Creative nature of Emergences. What made this seemingly contradictory process possible was the remarkable trajectory of Emergent Episodes, which were signalled by ever-increasing Crises, culminating a wholesale collapse of the stabilising processes of one level, to be replaced by those of a wholly new Stability.

Now, the above all-too-brief premises had to be mentioned here, if not fully explained. For, all that is available in full elsewhere.

But, without reference to those premises, it would not be possible to establish the various Levels in the hierarchy that is Reality, and in particular to also explain a relative independence too, which has proved to be significant in the topic of an existing, but currently undetectable Universal Substrate.





Wave Effects

due to Showers of Particles in the Universal Substrate

Major problems have arisen in the attempt to physically explain the interaction of the Solar Wind with the Earth's Magnetic Field.

And, I must pre-empt all suggestions whose aim is merely to deliver data which can be fitted-to a standard formal equation, as such can at best only be an approximate *Description* of the actual form involved, and NEVER a causal Explanation!

Various initial simplifications did nothing to get even close to a solution, and it was clear that current "Pluralist Assumptions and Methods" would be wholly inadequate to the task.

And, this was primarily because the many and various factors involved were simultaneously both Causes and Effects, so that the old, now universally applied methods of Simplifying-and-Farming the Conditions, and then Idealising measured data by fitting-up an ideal Form to that - methods that were usually sufficient for subsequent use in Production, but were both impossible and misleading in these investigations - the purpose of which was to actually Understand what would be going on.

For, to Understand that, would require literally Everything to be considered at once!

Similarly-difficult-conditions, usually concerned with Heat Experiments, have been successfully-addressed in the past, but only by considering discerned-and-named Abstractions and relating them purely quantitatively, with literally NO attempt at a full physical explanation accompanying it.

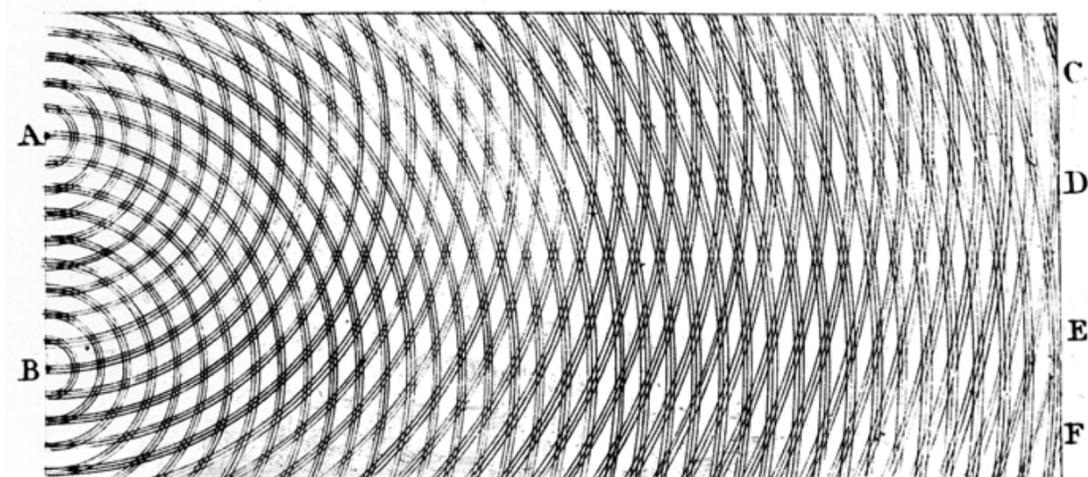
While, elsewhere, in Weather Prediction, the pragmatic get-out of using only approximate, yet currently dominant, relations until they failed - indicated by, once again testing certain formal-indicators, so as to determine exactly when to switch to another approximate and dominant relation.

Of course, all such methods were NEVER theoretically justified: instead investigations were instituted merely to monitor certain parameters, in the hope of finding at what value a switch in used formula could profitably be made.

Thus all such thresholds were (and could only be) pragmatically arrived at, to bridge between always approximate relations with limited ranges of reliability.

Now, all sorts of pragmatic frigs were devised by geometrically processing graphs of results, but ONLY when interludes of stability were either possible or assumed to be so.

BUT, in the problem which triggered this paper, the constantly-dynamic interactions of charged, high-speed particles of different kinds - first-of-all, with a Universal Substrate, and thereafter, crucially, also with the Earth's Magnetic Field, AND finally, the causal inter-reactions between all of these with each other, had finally brought theoretical reasoning to an unavoidable halt!



A Cautionary Tale:

When attempting to explain-physically the phenomena associated with the Double Slit set up, I decided to address the problem of a Charged Particle ploughing-through a Substrate composed of a Paving of undetectable Neutrino particles, and, in doing so, caused a wavelike disturbance running ahead of the moving particle.

Immediately, I had to consider what this actually meant was going on: and it was clearly NOT a single momentary event resulting in a single goblet of energy steaming ahead if the causing Particle, to later all-by-itself cause some change ahead of the Particle.

On the contrary, though the cause was a single Particle it was constantly moving forwards, so it would be constantly causing new disturbances in the substrate which followed the first constantly. The single moving Particle would therefore inevitably cause a constant stream of such disturbances, maintaining some caused effect ahead, until the causing particle itself finally arrived there too.

This realisation enabled a full explanation of the phenomena on the Famed Double Slit Experiment, without ANY recourse whatsoever to the Copenhagen Interpretations version of what was happening!

Back to our primary concern...

Clearly, the first problem must be in considering a shower of charged particles - of the same type - what would the combined fields, both electrical and magnetic, be like?

Mutually Co-existing Substrate Units

producing differing Modes and Phases of the Substrate

The gulf between Gravity on a cosmic scale and quantum effects on the sub atomic scale , may well be due to the various modes of a universal substrate filling all of Empty Space.

For, down in the sub atomic realm the substrate units and the well known fundamental particles will be of roughly the same sort of sizes, and will therefore produce “local” effects due to the very close proximity of the entities involved. While, on the cosmic scale, the substrate will be reacting with literally enormously bigger entities, which will be on a many to many basis, so that both the large entities and the substrate will be acting as integrated entities, via overall effects. Indeed the stars and planets will act as entities in themselves, while the substrate will be more like a liquid than a collection of individual particles. So such scale differences could well be an important factor in how the participants are affected.

The reason such questions have to be asked, is because in making a Paving, as the substrate is currently conceived of, it will be invisible and generally undetectable, but, nevertheless, it has been shown that down in close proximity particles of a similar size could get close enough, to get inside overall summed effects, and be effected directly by individual sun components of the entities involved and hence be “locally” affected by properties that on a larger scale would cancel out.

But, alternatively, on a cosmic scale, effects which are present but infinitesimal locally, could add up over large aggregations or an extended substrate to give ground swells of significant size across considerable distances. – like those in an ocean, amounting to something after traversing the whole expanse of that medium.

The researcher has shown that locally we can have effects, which on a large scale effectively vanish.

Could there also be the opposite effect, wherein locally any effects are swamped by much larger local forces, while at great distances, things which are negligible upon a small local scale, could en masse deliver something.

If this is true, it could explain why Gravity (as in General Relativity) and Quantum Mechanics should seem totally unrelated.

Perhaps, they are such, and only become significant in their widely diverse contexts.

It has been possible to explain the propagation of electromagnetic energy via a substrate, as well as Fields in supposedly Empty Space, via a variously composed substrate at the same level.

So, what if there is yet another different component of the substrate, which are rare compared with those involved in Propagation and Fields. For, then, locally the effects would be negligible, but over vast distances, with an alternative means of affecting one another, and only really showing itself in the appropriate substrate particles, when large concentrations of Matter are involved and cause those effects to dominate.

These contributing units to the substrate, may not be in the same proportions everywhere. And though a mix of various differing units may cause it to act in different modes in different states.

Already, there is evidence of the neutrino substrate units acting somewhat like a 3D solid, while the magnetic



WHAT

IF

GRAVITY

WAS

LIKE

A

GAS?

particles have been demonstrated to act like a liquid, with movement of the units enabling them to gather around charged particles.

Could not gravity-enabled particles in the substrate be even more special – like a gas, and only have effects over vast distances, and which need great aggregations to cause the necessary effects?

ISSUE 56 JAN 18 JIM SCHOFIELD

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