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SHAPEJOURNAL

AT THE BOTTOM

THE BOTTOMMOST LEVEL / SUB-ATOMIC LEVEL EVENTS / ELEMENTARY PARTICLES / UNIVERSAL SUBSTRATE UNITS
SECOND GENERATION PARTICLES / THE SPEED OF CAUSALITY / LEPTON SUBSTRATES / ORBITS AND SPINS / GRAVITY EFFECTS

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At the Bottom

Special Issue 49 / March 2017

- 4. Preface:
Why Copenhagen is Rubbish!
- 7. The Bottommost Level
- 15. Atomic Level Events
- 23. Elementary Particles
- 27. Universal Substrate Units
- 32. Second Generation Material Particles
- 36. The Speed of Causality
- 41. Lepton Substrates
- 42. Orbits and Spins
- 47. Gravity Effects

Preface

Why Copenhagen is rubbish!



Welcome to the 49th Special Issue of the SHAPE Journal, a collection of papers on our explorations of the bottommost levels of reality, and why we have got it so wrong.

Immediately I am forced to ask, “Why is it that the clear idealism of the *Copenhagen Interpretation of Quantum Theory* has now ruled the roost for a full 90 years?” And secondly to wonder “Why haven’t we, as Marxists, as materialist philosophers, defeated this position long ago?”

Are we to really believe that Yves Couder’s brilliant experiments alone were sufficient to finally turn a corner and allow us to carry this through to completion?

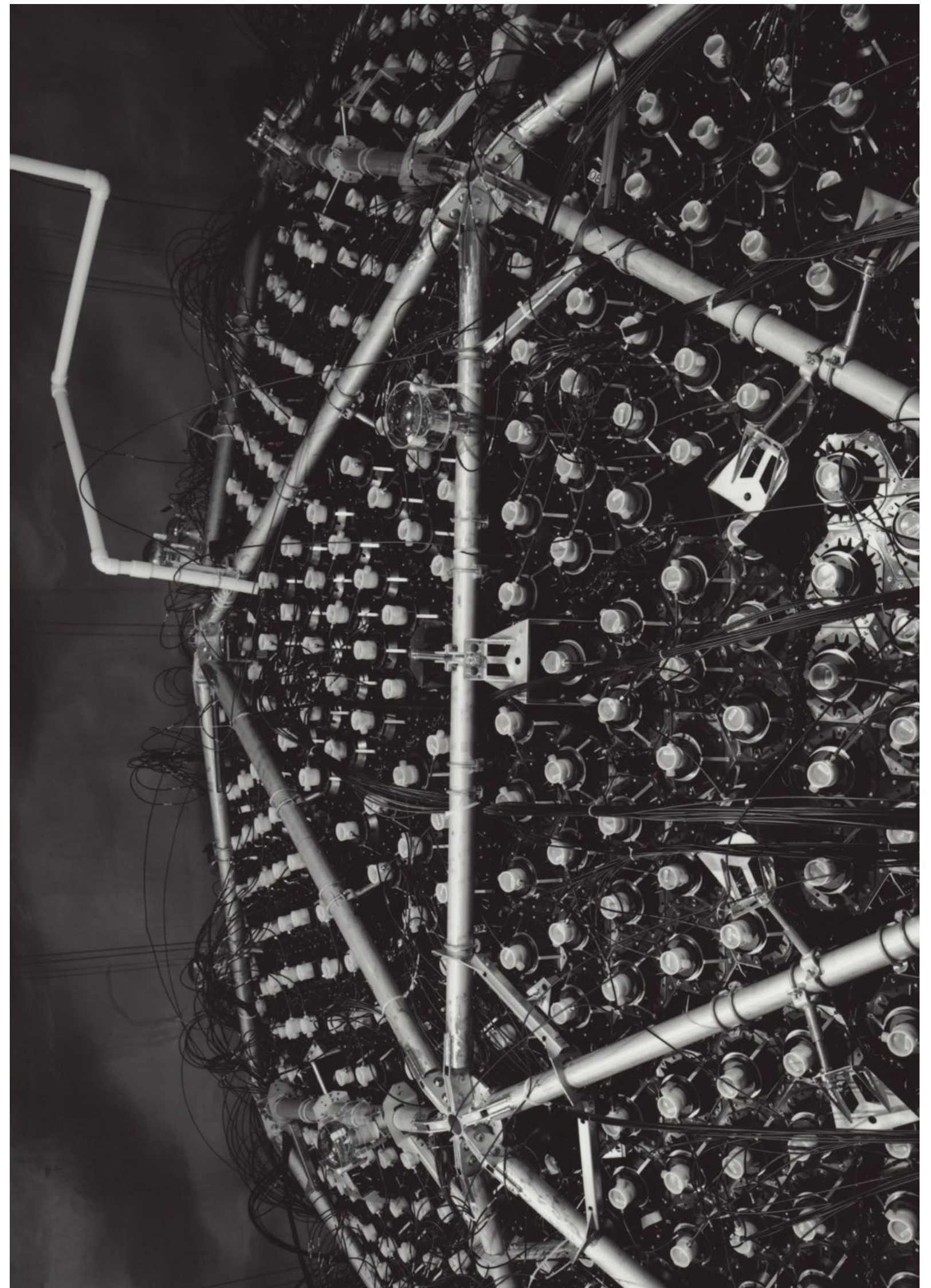
I have been a supporter of the Marxist stance since I, as a young man studying Physics at Leeds University in the 1950s, became profoundly disillusioned with my chosen subject. It was my intuitive opposition which led me to Lenin’s powerful book *Materialism and Empirio Criticism* in 1959 and to joining the Communist Party.

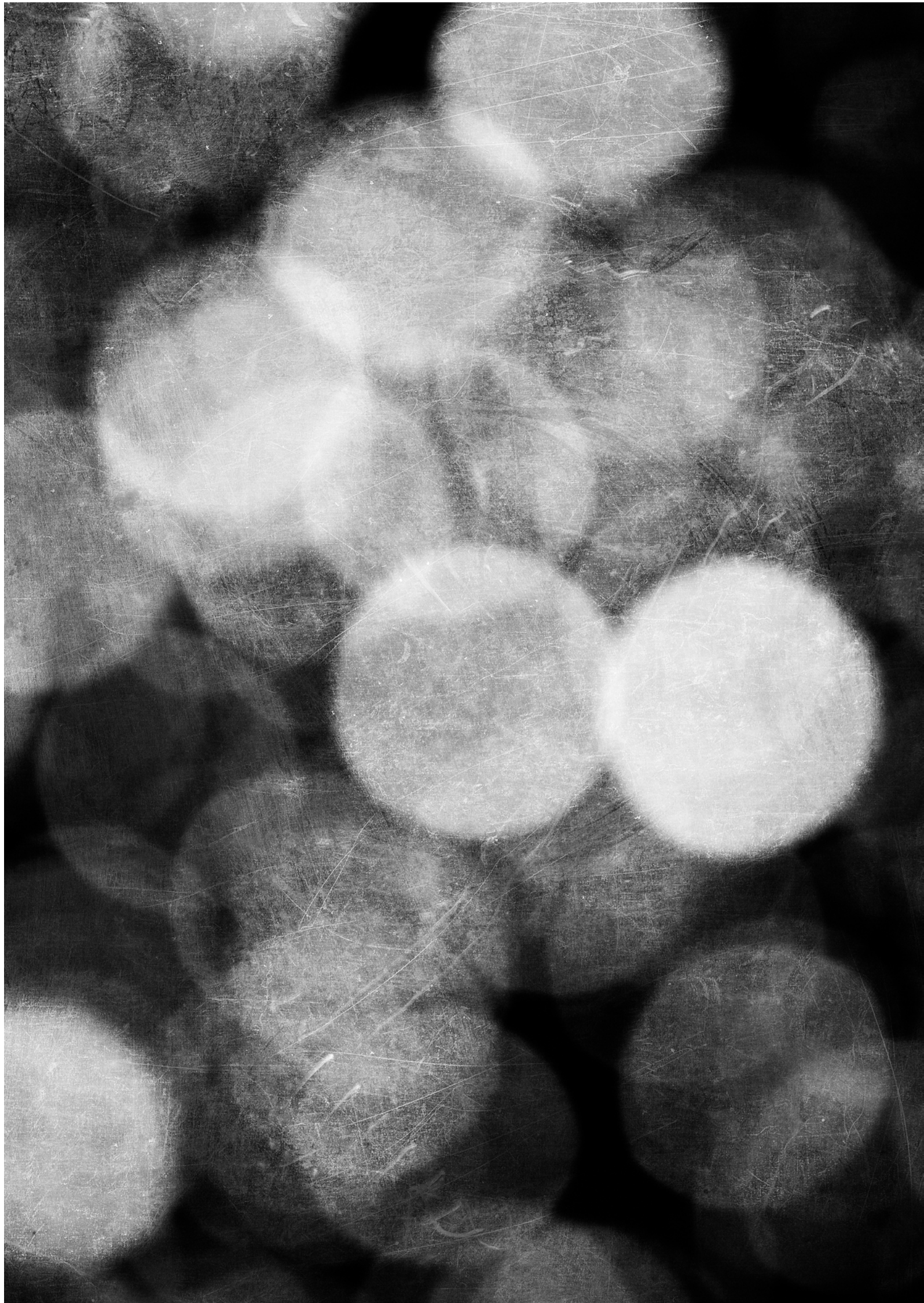
Yet sadly, as I was still an immature youth and was never equipped by my colleagues and comrades to tackle these difficult problems, only very slowly did I realise that the primary objective of Marx in abandoning Hegelian Idealism for what he termed Dialectical Materialism, was clearly to directly unify with the best practitioners and theorists of Science - and even to this day, this has never been achieved.

In fact, Lenin’s great book, written well over 100 years ago, was the last significant contribution in that absolutely crucial area. Yet, the very tendency in Physics, then led by Henri Poincare and Ernst Mach, against whom he was arguing, was the very same tendency that developed into Bohr and Heisenberg’s final irrevocable retreat into Idealism.

Why on earth wasn’t the job done before now?

Jim Schofield
March 2017





The Bottommost Level

How far can we go in size and properties?

This isn't an easy question!

We are regularly smashing our once-considered-to-be Elementary Particles, into ever increasing numbers of short-lived "components". And, the latest rejuvenation of the idea of a Universal Substrate (composed, itself, of sub-particles), not only extends things further, but seems to condemn the usual simplification of considering each-and-every-one of them alone and in totally "Empty Space", as a damaging step too far - especially, as is most certainly the case with the new theory, the Substrate is always both affect-able and affecting of things occurring within it.

Indeed, our old and long-standing philosophical assumptions, are rarely even overtly admitted, and, sometimes, they are not even aware, by those who are unconsciously using them, of what they actually are assuming.

So, we must begin our preparations by dealing with the almost universally and unconsciously assumed Principle of Plurality.

It was assumed to facilitate understanding of complex, many-factor situations, and its key tenet is that all such factors simply add together, without causing any consequent changes within each other, in order to deliver all more complex behaviours.

And, this has the important consequence that we can find and reveal any individual, component factors, by any possible means, and what we then get will be unchanged by that process, and will act exactly as we have extracted it, in all the situations in which it will naturally play a role.

This Principle is most certainly false!

It is definitely not what we get by our diverse means of exposing and extracting them, but it does give us some Objective Content, but even that will be both insufficient and always distorted.

We must then be constantly aware of the distortions due to assuming Plurality, particularly in the development of physical explanations (Theories) of phenomena, and the derived behaviours supposedly involved.

So, to avoid too much self-tripping, we will start the way our forbears did, warts and all, and bring in the modified premises when conditions dictate it. Let us start where our precursors got to when they finally addressed the composition of the atom.

Experiments had proved conclusively that it wasn't the bottommost and indivisible particle that had been thus far assumed. So, the question of the composition of both this and other compound particles, and their properties certainly needed to be addressed.

Suggestions, as to what components were in a given compound particle, led to the definition of things like the proton and the electron.

But, the various compositions of these components, themselves, were, initially, not addressed: they were in fact considered to be *Elementary* Particles!

They could have a Charge - positive or negative, and a quantified Mass, but little else at that stage.

Though a seemingly-valid comparison, with planets and moons, inferred that they could also Spin, and, if impelled by something else, they could be caused to move in various ways!

But, when such particles enter into compound, stable particles, the properties involved are always extended, or even radically changed. Indeed, as we further involve the compound forms, into even more complex close associations, new properties always emerge, which cannot be reduced to just Charge or Mass.

[And, if we think about it - level upon level of further complexity can extend properties to those of Life itself, and even Consciousness]

Let us start with the Atom.

Taking the simplest form - that of the Hydrogen Atom, it consists of a proton of positive charge mutually orbiting with an electron of negative charge. But, as the proton is many, many times larger than the electron, the appearance is asymmetrical with the electron orbiting the proton.

Clearly, the different properties, of the separate components, will be carried over into the compound form, but changed! The compound particle, externally, is entirely electrostatically neutral, projecting no overall charge, though the asymmetry, of the orbiting negatively charged electron, does cause a clear-and-sustained magnetic effect, perpendicular to the plane of its electron orbit, and, it is easy to consider that the Atom (as we could with its components) will also be able to Spin. Somehow, effects of properties like Charge or Magnetism seem to extend beyond the limits of the “causing” entity. This was indisputable, but originally inexplicable.

Now, with the particles mentioned so far, they can exist individually, but, under appropriate conditions, they can form inter-relationships, with other identical particles, to give the extended form of a Gas of those particular atoms.

In less energetic conditions, they can form, a much closer association that we term, a Liquid, and still less available energy allows them to form a close-knit Solid.

NOTE: Here, I am, at this point, only talking about atoms, but clearly all sorts of “substances” will be capable of similar forms, depending upon the available energy.

And, later, in considering a possible Universal Substrate, a similar hierarchy, related to energy, cannot be ruled out.

In addition, different kinds of atoms can combine into Molecules of, effectively-new substances. The Sodium atom (Na) and the Chlorine atom (Cl) combine to form Sodium Chloride - Common Salt.

And, it is important to realise that the entirely different properties of Salt could not be predicted from those of its component atoms. When, they do predict properties of compound substances, it is only by analogy with already known other compounds of similar component elements.

Now, let us not limit our considerations to the ubiquitous Atom, let us now consider a very different combined particle variously called the positronium or the neutritron.

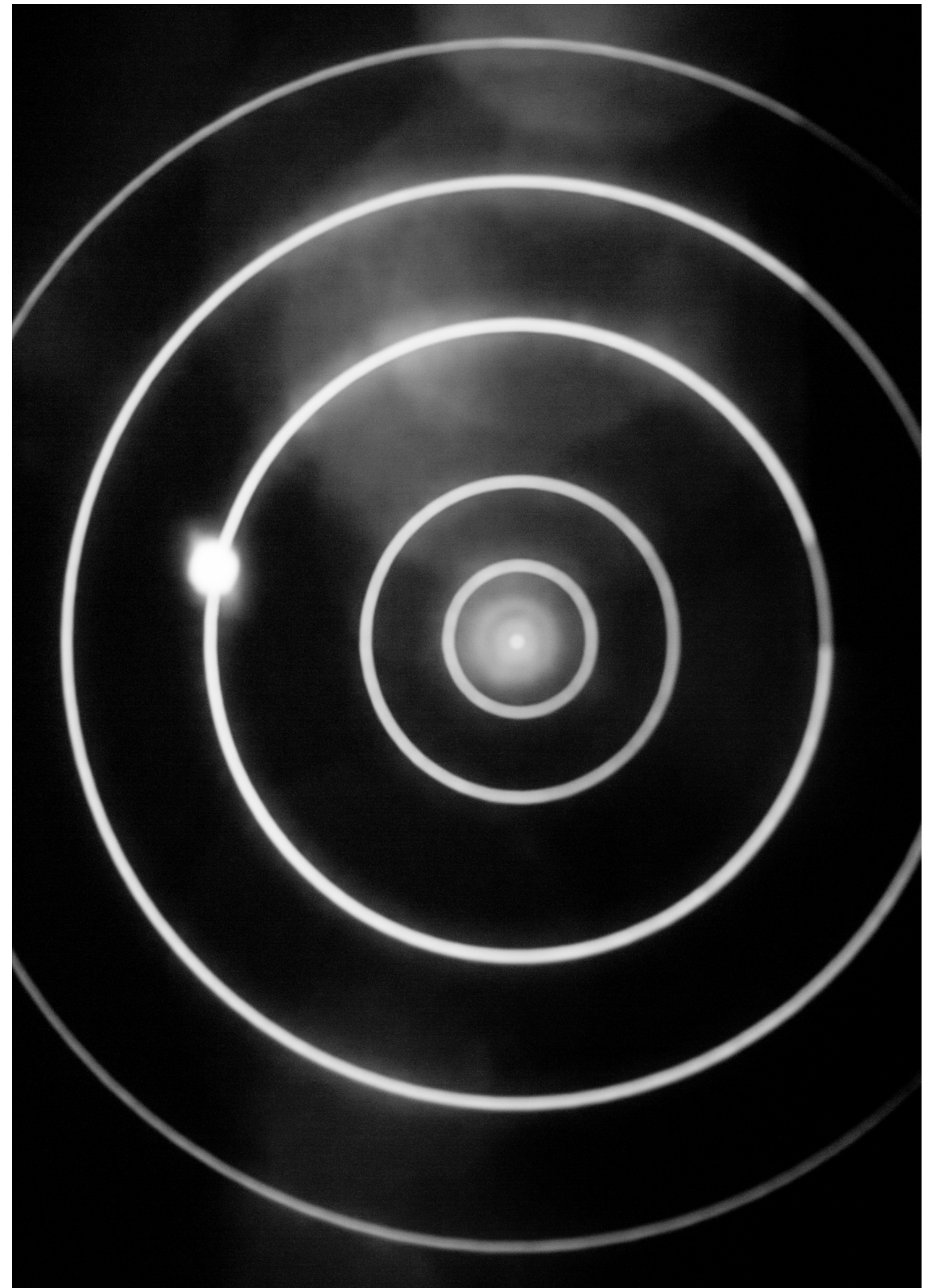
This consists of one electron, of ordinary matter, and a negative charge, along with one positron of antimatter and a positive charge, which are actually mutually orbiting one another. But, as they are exactly the same size, they orbit one another by sharing a single orbit.

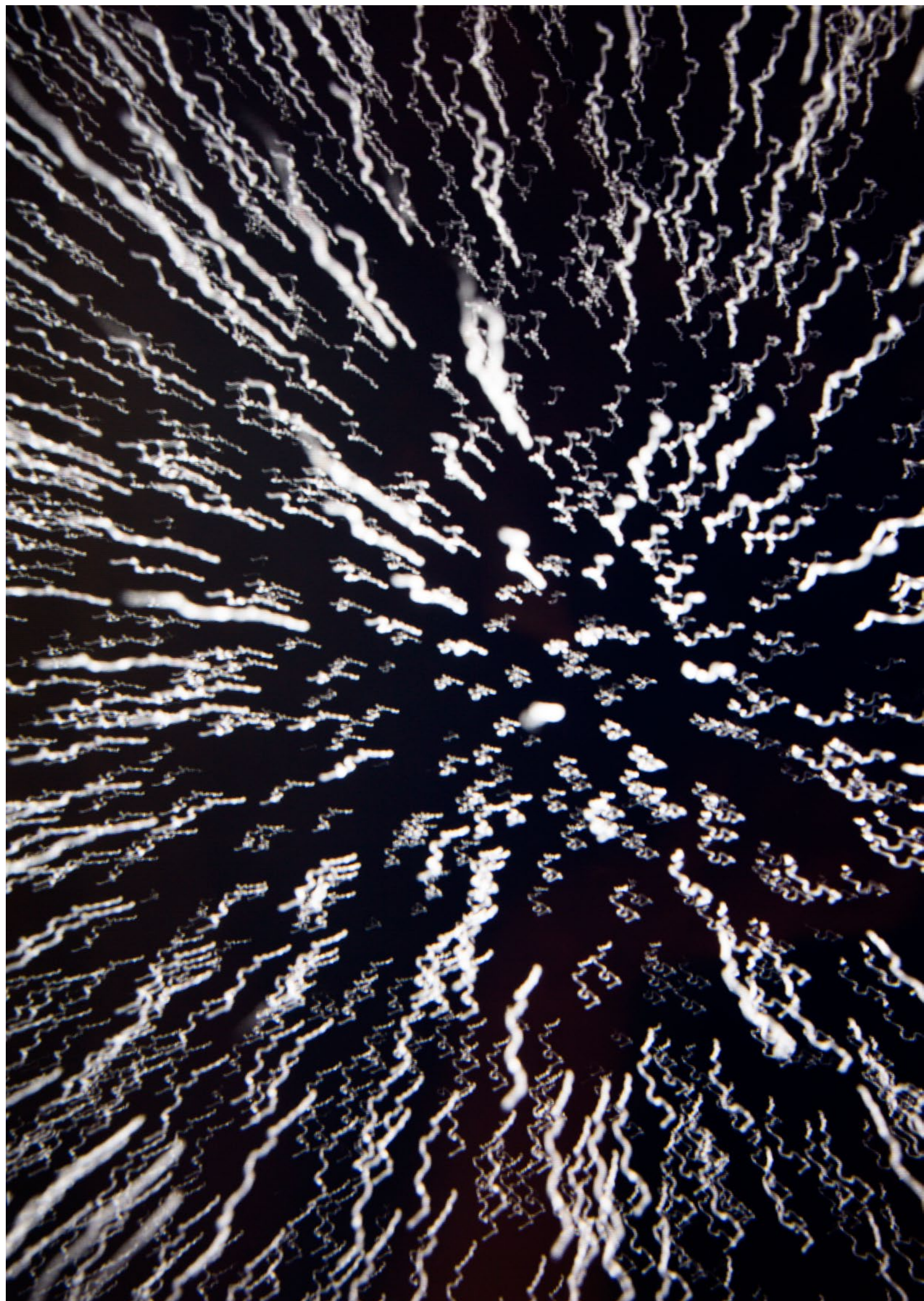
NOTE: Now, the reason for the two names is significant. It was originally, theoretically, proposed by the theorist, Jim Schofield, who called it the neutritron, but, had, completely-independently been discovered in the Tevatron at Fermilab, where they noticed its instability and named it the positronium.

Now, Schofield was seeking an undetectable unit for a re-proposed Universal Substrate, and had devised this particle, purely theoretically, to fit all the required properties for that role, but, he dismissed the discovered instability, because it had only been seen in a High Speed Accelerator.

So, instead, he suggested that, in most conditions, it would, on the contrary, be stable, and, set about relating what properties he could work out, from its defined structure, to, hopefully, deliver all the known phenomena, currently-and-inexplicably, allotted to totally “Empty Space”.

But, these would be very different from those found in atoms. The key, space-filling association of these units, was termed (by Schofield) a Paving - as it is a looser and significantly different form of association to any of those applicable for atoms. And, the nature of this kind of association is important, as it is Schofield’s conception of





the usual nature of the undetectable Universal Substrate - present absolutely everywhere.

Now, the feature of internal orbiting sub particles in both types of compound particle - the Atom and the Neutritron, allows some remarkable properties to be common to both. For, the internal orbits can be promoted by taking in energy from outside of the particle, which can then be emitted by its demotion.

Both particles can be involved with “holding electromagnetic energy”: the atom as both a source and a recipient, and the neutritron (as part of the Universal Paving, as the Means of Propagation.

Crucially, the nature of this proposed substrate means that what is passed on from unit-to-unit, bucket-brigade fashion, is via individual quanta.

And, then the Constant Speed of Light merely becomes the constant transfer speed of a single-quantum-transferred between adjacent units in a normal Paving. Such a Substrate removes the imponderables from the Michelson-Morley Experiment, and, as have been shown elsewhere, so have many other important Paradoxes - such as every single one of the anomalies in the Double Slit Experiments.

[The new Theory of the Double Slit Experiments has also been available on-line, since its initial publication in SHAPE Journal in 2010.]

One of the sub-plots of this paper, has been the wholly new properties that can emerge with more complex, or even just different, combinations.

For example, the Neutritron, which is totally neutral, at most distances away from it, in fact oscillates between attracting and repelling each other, electrostatically, but only within a very narrow band, a tiny distance away, around each and every unit, which is also very narrow in width.

It is this feature that enables the Substrate’s Paving formation, yet also allows easy-passages-through it of moving bodies, as it very easily closes-up again, into its usual continuous form, once the intruder has passed.

It is one-among-many qualitatively different properties, which arise, when entities come together to form

substance modes, or, as in this case, a Substrate Paving. Energy can go from one atom to another, directly, or, via a whole sequence of neutritron units, in the substrate, can be effectively propagated as far as is necessary - the only transaction being “downhill”, from one filled substrate unit to the next empty one: such a sequence can literally carry on, as long as the substrate is still present.

Now, these features of the neutritrons’ role, in a substrate, are dealt with, at great length, elsewhere, so, here we will concentrate upon other neutritron properties, such as when they are affected by other particles.

What has turned out to be crucial, is that, apart from easily, forming and re-forming, the loosely-connected Paving, its joint particles can also move independently, under external effects, where it becomes what we would call “a Photon”, and, also, in a analogous manner, to what happens within water (a liquid of H₂O molecules), when we see that a particle can disturb the substrate in many similar ways.

Bow waves and wakes are possible, as are vortices, and the latter, are proving to be crucially important, particularly in explaining quantized orbits within the atom, for example.

James Clerk Maxwell’s model of the Ether, the then consensus conception of a Universal Substrate, is important here for two reasons.

First, it was this model that enabled him to produce his world-famous Electromagnetic Equations, which are still used to this day. But, secondly, he also had similar ideas for his model as what has now led to today’s version.

For, his model included both vortices and moving “electrical particles”, though in his version these were present everywhere and all the time. Those assumptions, as such, were, indeed, unsustainable, but nevertheless, the potential for such features, though now caused only by moving particles - “passing through”, is solving many different problems today!

Perhaps, in conclusion, the general points about the so-called bottommost particles of matter, should be re-assessed both in their natures, and also in not restricting just how far we can go below the currently agreed candidates.

Yet, even the successful idea of a Universal Substrate composed of neutrinos, does not deliver all the features that we know must also be explained by such a Substrate.

Various Fields also need to be explained, and having the neutrino as the sole component of this Substrate simply cannot deliver them.

The next phase, therefore, in this theoretical venture, must be the devising of other undetectable particles, which can also arrange-themselves, to deliver both Electrostatic and magnetic fields too.





Sub Atomic Level Events

Interactions and assumptions at the bottommost level

Leptons

Whenever Leptons are discussed in Modern Sub Atomic Physics, they cease to be explicable entities with characteristic properties, as was always the case at the Macro Level.

Of course, they cannot be directly observed, and experimented with, as used to be the case, at that observable and hence easier and higher Level: the miracle of direct seeing was here totally excluded!

All so-called Elementary Particles are simply too small to “see”. But, instead, new kinds of investigation - principally High-Energy Collision Physics, could, and indeed did, deliver useable results, which allowed some theorising about what might be there.

Indeed, what “measurables” were possible, did deliver certain quantities, but, invariably without full and clear explanations.

So, the traditional in-parallel-explanations of Macro Physics that always accompanied the quantifiable parameters, as a meaningful accompaniment, were no longer possible - especially as analogous models, from better-known areas, elsewhere in Reality, were impossible to refer to for guidance.

The available information was simply too meagre to allow such analogy-type aids to be employed.

Even physical descriptions, of exactly what was being measured, were impossible, and attempts to explain them became speculative at best.

The whole area became exclusively descriptive, and often statistical - without the possibility of direct predictions concerning individual particles, and hence probabilities replaced the once depended upon straightforward Laws.

So now, developing almost exclusively, over the last century or so, physicists, primarily via High Energy Accelerators and Colliders, have compiled a Standard Set of Elementary Particles, organised into categories suggested by “common-describable-parameters” - while, literally all of them are still, invariably, lacking any explanations or reasons as to why they behave as they do. Spin, Charm, Strangeness (and many other epithets) are given probabilities of having particular specific quantities, without anyone really knowing what they are.

And, in addition, a proliferation of “rules” associated with such “quantities” have been extracted. The area has become, mostly, a new branch of Mathematics, where Form is primary and Laws and Rules “determine” all of Reality at this increasingly magical Level. It has become THE major area of Physics, because, it can be USED effectively, to certain required ends, even when it isn’t actually understood!

And, a crucial subset of the particles involved is that termed the Leptons!

The most important member of this subset is, undoubtedly, the Electron, which is a component of all atoms, and crucial in both Electricity and Magnetism.

It is so ubiquitous that this theorist has settled upon it, and its co-leptons, as, perhaps, the best candidates to deliver a wholly undetectable, yet Universal Substrate - filling the whole of so-called Empty Space. and capable of being the key to explaining the profuse anomalies

of the majorly-flawed Copenhagen Interpretation of Quantum Theory, which, of course, is currently the agreed consensus stance throughout Sub Atomic Physics.

Before proceeding any further, however, a more detailed account of the primary experimental tool in modern “Copenhagen-led” Sub Atomic Physics (perhaps more accurately termed Elementary Particle Physics) - The Collider, must be described.

In this area of Physics, more information about the particles involved was most certainly needed, and a chance-series-of-experiences suggested that some of these particles were dissociate-able, so the technique of firing ever-higher energy “missile-particles” at other “target-particles”, and, somehow, recording the results, as Explosions of Consequent Fragments, was gradually developed using electro-magnetically powered Accelerators to achieve the necessary energies of the missile-particles.

But, despite an ever-increasing collection of these records, explanations of what was occurring, were still not possible! All that was available, however, were masses of data, which could be studied, in order to find recurring regularities. And hence, (along with some speculative definitions), patterns could be discerned, which could be turned into formulae, or various “new kinds of Rules”!

It was a wholly data-led and use-determined methodology, but without a parallel understanding to explain what was happening, it rapidly became pure Pragmatism, and, as that approach invariably results in contradictions, anomalies and even impasses (like Wave/Particle Duality?), things did not improve!

Wholly speculative-and-idealist theories, began to be postulated, to paper-over-the-increasingly-evident-cracks, and Physics abandoned its long-held Materialist basis, for the glories of the clearly Idealist Copenhagen Stance and its methods.

Now, such a state of affairs could not be allowed to continue. It was clearly getting nowhere and merely deepening the increasingly-existential Crisis for Physics as a Science.

Indeed, the whole philosophical basis, for this important Science, had been dismantled, and has to be rebuilt, eliminating, many mistaken elements and re-establishing

a thorough-going materialist, explanatory objective, and totally rejecting the pragmatic, idealist, mathematical and pluralist amalgam for something closer to Reality’s actual nature, and its evident evolutionary development.

Indeed, the primary correction was seen, by some, to be the reinstatement of the idea of a Universal Substrate, in order to correct the clearly mistaken premises involved, and, by so-doing, transcend the many impasses caused by its abandonment, along with the equally -incorrect and consequent, turn to Pure Form as the actual determinator of Reality.

And, this turn has led to combinations of various Leptons as the most likely magnetically-active constituents within such a Substrate.

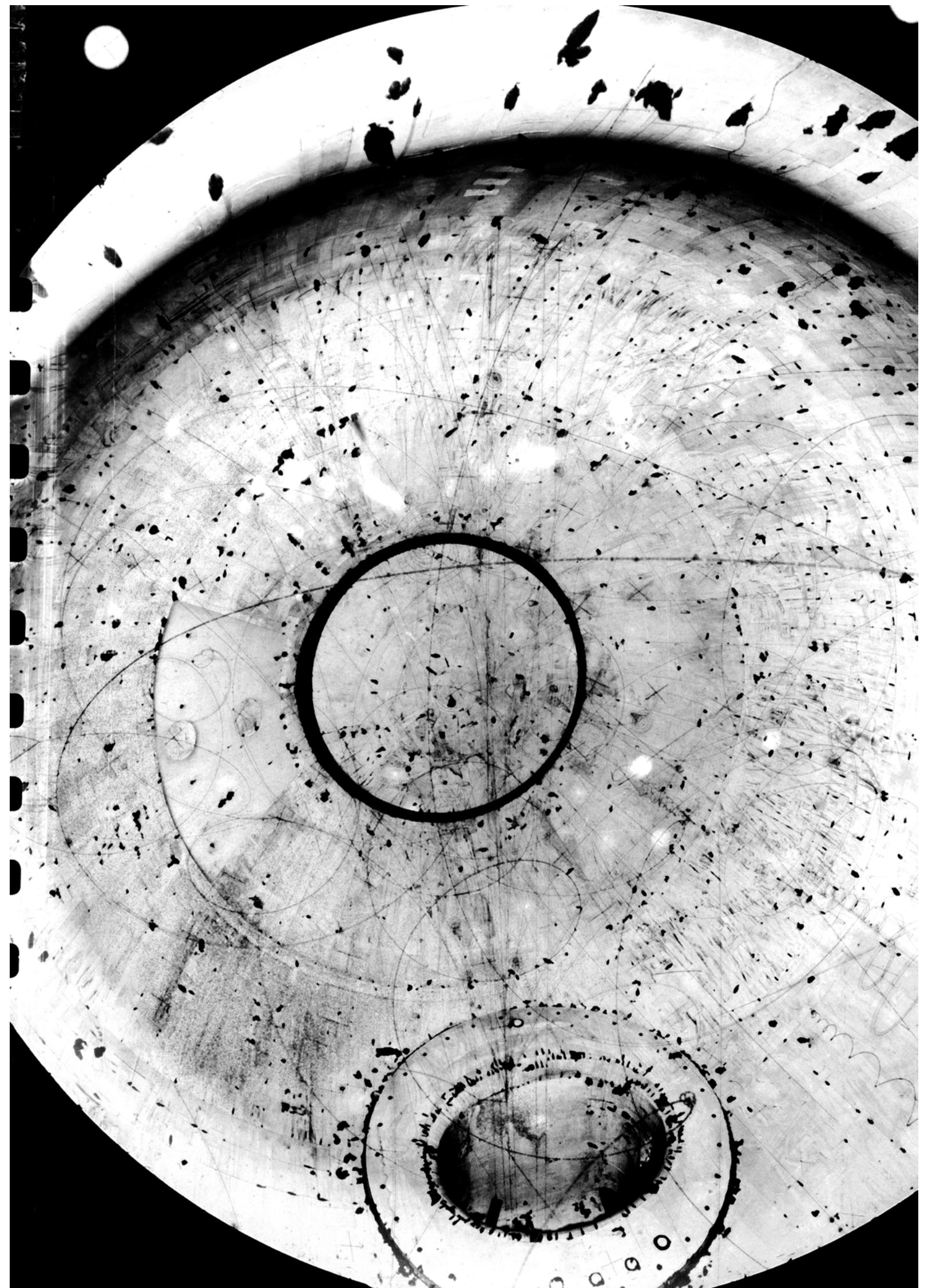
The obvious-and-necessary place to start had to be the electron and its antiparticle - the positron, for the former is, as mentioned earlier, ubiquitous, stable and small, carrying a negative charge. While the positron is opposite in every way, - in charge, matter-type and magnetic effect, but the exact same size as the electron.

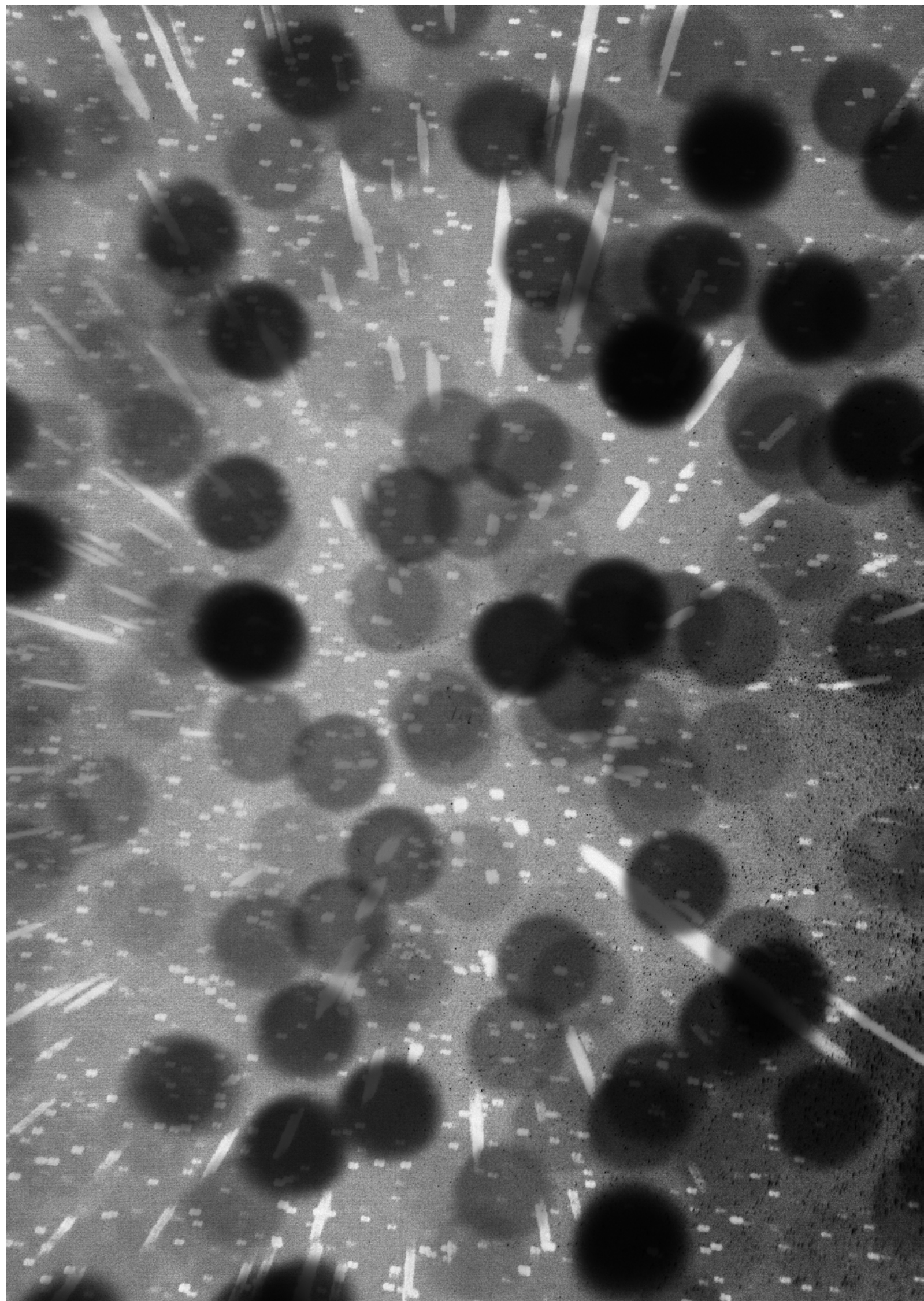
A very simple and undetectable particle could indeed be a combination of these two primary components, and it would be undetectable in every way!

So, without, at that time, any knowledge of the existence of such a joint-particle, I embarked upon a theoretical investigation, to see if it could be the principle unit of a totally undetectable Substrate, while also acting as an affected and affecting intermediary in literally all phenomena.

But, clearly, the initial impasse to be tackled, had to be Wave/Particle Duality: instead of an entity being capable of magically-transforming between a discrete particle nature, and that of an extended Wave, surely the presence of an undetectable-but-universal Substrate could allow a division of labour in these modes between the “particle” and the “substrate” - especially if Recursion allowed remarkable mutual effects, involving cause-effect-cause loops between the two participants.

The theoretical vehicle, actually occurring in Reality, which since its discovery in the Tevatron at Fermilab has been totally discounted by the Copenhagen Interpretation, just had to be reassessed.





And, it was immediately evident that the ideal area, which had to be addressed was the ill-famed Double Slit Experiments, with its many inexplicable anomalies.

So, a Substrate of electron-positron pairs - actually mutually orbiting one another, was assumed to be involved, and when it was, remarkably, every single one of the anomalies, occurring across the full set of Double Slit Experiments were, perhaps surprisingly, very easily explained, without any recourse to the Copenhagen Stance whatsoever.

Of course, this could never be sufficient, so a detailed theoretical study of this proposed Substrate Unit - now renamed the neutritron, was undertaken.

The key area had to be in how such units could deliver a kind of medium, which could, for example effectively propagate electromagnetic energy in discrete quanta, and at the constant Speed of Light.

Now, as the mutual orbits of the units could be both promoted and demoted, as in the atom, and propagation could be achieved, bucket-brigade fashion, with the speed of transfer from unit to unit delivering a “Constant Speed of Light”, this looked eminently possible, but, of course, if and only if, the neutritrons could form an equally-spaced substrate.

Careful theoretical study of such entities revealed that, though usually totally neutral, in every respect, in most circumstances, when such units were very close together, weak and oscillating electromagnetic effects would tend to keep them at a single separation distance, in what I termed a Paving!

Also, in the midst of this research a colleague brought my attention to the prior discovery of this precise unit in the Tevatron at Fermilab, where they had named it the positronium.

Now, there it had been very unstable, but it was produced in an High Energy Accelerator. I pressed on, initially assuming a totally Empty Space context and a consequent stability!

And, of course, other well established phenomena, such as Pair Productions and Pair Annihilations of electrons and positrons, in supposedly Empty Space also supported the theoretical line.

For, the weakly-associated Paving could very easily be dissociated, and, thereafter, re-associated.

Indeed, rich possibilities were opening up in many different directions.

For example, the passage through such a Paving of a high energy particle, could do various things:-

1. Initiate a propagating disturbance in the Paving.
2. Dissociate, temporarily, the nearby Paving into free-moving units
3. Cause vortices in groups of such dissociated units.

Indeed, complex sequences of modes of existence would undoubtedly accompany energetic passages through such a Paving, involving clear changes in its performance, and differing effects upon contained entities and phenomena. Traditional pluralist methods could not cope with such emergent-complexity. It required the opposite holist stance, and explanation rather than mere formal descriptions!

Now, I clearly cannot deliver a full exposition in such a paper as this - as its purpose is mainly to consider the importance of Leptons at the bottommost levels in Reality. But, there is a constant stream of papers published in every Issue of SHAPE Journal on the Web, where fuller accounts on these researches are regularly available.

But, without some reference to this research my theses upon the Leptons would not be explainable.

Yet, in spite of its successes, the concept of an undetectable Universal Substrate still fell far short of its necessary remit. For, the neutritrons could not deliver FIELDS!

There just had to be other Substrate Units, which though also undetectable, en masse, could, in the presence of a Charge, re-organise themselves to deliver the focussed properties of Fields, elsewhere normally cancelled out and hence undetectable.

Once again, the source for such entities had to be among the Leptons.

Theorists have already suggested “mock-atoms” - composed of Protons and either Muons or Taus, replacing the usual Electrons. But, the unusually large size of the Taus has suggested another interesting possibility to this theorist!

What is being investigated are mutually orbiting pairs consisting only of one of these, along with the other's antiparticle. The large size of the Tau and the anti-Tau suggest that they could play the role of the proton, while the smaller Muons or anti Muons would each orbit around its opposite central Tau.

Two exactly opposite mirror-image joint particles are suggested, occurring in exactly equal numbers, and moving about randomly as their normal mode. For, this would cause them to cancel out their opposite properties and still be undetectable in this mode.

BUT, as these, like the Hydrogen atom, will have magnetic moments, the presence of a Charge could cause them to arrange themselves around it, in concentric shells of aligned units - delivering a static but active Field, as their mutual orbiting form - echoing that of the atom, could also allow the holding and delivery of energy, via the promotion and demotion of their internal orbits!

Now, to only mention these hypotheses, without also defining the wholly new philosophic stance that led to the addressing of these ideas, would be totally insufficient!

The Crisis in Physics culminating in the wholesale Retreat of the Copenhagen Interpretation of Quantum Theory, also prohibited any other possible solution.

The Final Crisis had been maturing for a very long time. Its basic errors had been masked by the brilliant success, nevertheless, of its amalgam of completely contradictory stances, literally since its, initial conceptions millennia ago, but made to deliver via intelligent, but rationally inconsistent switching, between different stances.

But, as Hegel had shown 200 years ago, such fixes will always cause an increasing number of Impasses - characterised by what became known as Dichotomous Pairs of contradictory concepts. Indeed, with no change in the causing stance, such impasses could never be rationally-transcending - so, pragmatic suck-it-and-see experience could alone allow any further “progress”, but always at the expense of a hole in the reasoning involved.

Theory was increasingly undermined, causing regular crises, which ultimately, as Copenhagen proved, would bring Theory, as usually conducted, to its End!

Now, Hegel did not (as Zeno of Elea had done 2,300 years previously) merely warn of such contradictory reasoning, he actually devised a means of actually transcending such impasses, by the study and correction of the underlying premises involved.

This was also the method of Karl Marx (a one-time student of Hegel), but he improved it even further by his switching the whole set of ideas to a Materialist basis, instead of Hegel's resolute Idealist basis.

The Key move had been made, but it was never systematically and comprehensively applied to Science!

So, the basis for this theorist's attack upon Copenhagen was the application of the methods of both Hegel and Marx - to reveal false premises and correct them!

It helped that I am a qualified and life-long physicist, who was aware that something was gravely wrong even as a 19 year old student at University. But, it needed a lifetime of successful research in many different disciplines to arrive at the necessary philosophical understanding to be able to tackle such an enormous task.

The turning point was this theorist's development of The Theory of Emergences in Philosophy, in 2010, and the last six years has been dedicated to finding The Way in Modern Physics.





Elementary Particles

Are they what we think they are?

What is an Elementary Particle? By this I mean the usually supposed-bottommost particles of Matter that are possible in the Universe. Any compounds of these into joint particles (like atoms, for example) are not included in such an elementary list. So, what are they, and, what are they like? Are they really spherical balls of “pure basic Matter”?

Clearly, the immediate answer has to be “No!”, for they can seemingly intrinsically-possess differing properties such as Charge - they can be positively or negatively charged, or even entirely neutral - so no single, homogeneous substance could deliver that. So, a single bottommost substance can't be correct!

Now, their usual detectors and sources, which enable our further study, are the ever-more-powerful Accelerators and Colliders, and they, therefore, do not, and cannot, produce that substance. What they do instead is seek lower-order-entities, somehow, now-subsumed into what we have today!

But, such cannot be said to actually deliver what we seek. Instead, they merely compound the confusion, for they certainly do not deliver what they were intended to, and what they were constructed for!

What they do seem to produce is a collection of seeming-lesser-entities - though, as most only seem to exist for the tiniest slivers of time, they cannot be regarded, in the usual way, as basic components of everything else, but more likely as just dramatically-created, temporary fragments of others, with no real explanatory power at all!

No real answers were either forthcoming, or even actually possible.

For, since the banishment of all explanatory concepts of the nature and properties of things, as well as the

ditching of the idea of a Universal Substrate (then called the Aether or Ether), explanations now seem impossible, and mere patterns and formal descriptions are considered sufficient.

The reason for this change-around is rarely, if ever, overtly justified or even admitted. What had actually occurred was that the Nature of Reality had long been stamped with the severely-limiting Pluralist Principle - restricting it to Matter and Energy, but also, and mistakenly, to totally eternal and solely-determining Natural Laws!

And the actual philosophical basis was always a surprising amalgam, but had, indeed, long facilitated effective use via brilliantly conceived-of, purely pragmatic methods.

But, in addition, without an ever-present, affect-able and affecting Stage - a Universal Substrate, everything just took place in the presumed-to-be, totally un-reactive Empty Space, which the experimenters took great pains to achieve within their colossal Collider machines.

NOTE: Interestingly, the French physicist, Yves Couder, took the exact opposite stance - in his famous “Walker” Experiments, where he reduced the content of his investigations to nothing but a single substrate - no other material entities were included whatsoever!

Yet, he managed to not only create stable persisting entities, out of that substrate alone, but also get them to orbit, but only involving quantized radii - with absolutely no resort to any of the Copenhagen assumptions whatsoever.

Clearly, the “single-corridor” of the Accelerator/Collider methodology was leading nowhere: it was NOT producing answers! So, while they could only up-the-ante, by constantly increasing the energies involved - and hence running ever faster to “they knew not where”, a section of the scientific World began to look elsewhere,

and reconsider whether everything did really happen in a Totally Empty Environment!

Could absolutely everything have been produced merely by the current collection of Elementary Particles, which they had produced solely by the increasingly-energetic smashing of the very small - into even smaller fragments?

Important questions were not being addressed - nevermind answered: so, the mere formal descriptions that were the only products, were simply not enough.

The vital question “Why?” had been completely dropped, as being “totally beyond our ken”!

But, Couder’s “Walker” Experiments did point to a new way, which actually investigated the potentiality of substrates in a way never before addressed. And, in addition, he produced a different way of dealing with an actually holist World, that was different to the usual pluralist isolations of each and every relevant factor in their own idealised domains, and thereafter, once all had been revealed, sequentially using each extracted “law” in turn to achieve the desired final result.

Couder, instead, started with the absolute minimum - a Substrate and nothing else, and constructed phenomena, merely by introducing energetic vibrations in various ways.

But, even that wasn’t all that could be done. Stanley Miller had gone all the way back to the most direct form of holistic experiment. He had included everything he knew of that had existed in the Earth’s primeval atmosphere - within a sealed apparatus, and inserting only heat and “Lightning”, managed to produce amino acids!

And, though he wasn’t able to take this further, implicit in his method was the possibility of sequencing the occurring processes, over-time, by instituting inactive channelling within the apparatus, that was coupled with non-intrusive, time-based monitors throughout.

Then, via the analyses of the mant sets of results achieved, and consequent redesigns so suggested, an ideal channelling could be gradually achieved, which could deliver many, if not all, the actual processes that had occurred historically on the Early Earth.

Comparison with the usually applied Pluralist Methodology, where active factors were individually isolated, and thereafter each one applied separately, in a directed sequence - now finally had a nascent, applicable-and-effective alternative Holist Methodology, which apparently solved the problems in a very different, but analogous and philosophically sounder way!

Taking both Couder’s physical-translation of Sub Atomic problems into analogues in the macro world, along with his Constructivist Methodology, and also bringing in the extrapolation of Miller’s Experiment - to gradually find the factors and sequences involved, could, indeed, deliver a wholly new Holistically-Based Science, overcoming the inadequacies of both the prior Pluralist Approach, and its eclectic mix of contradictory philosophic standpoints currently endemic in Modern Physics.

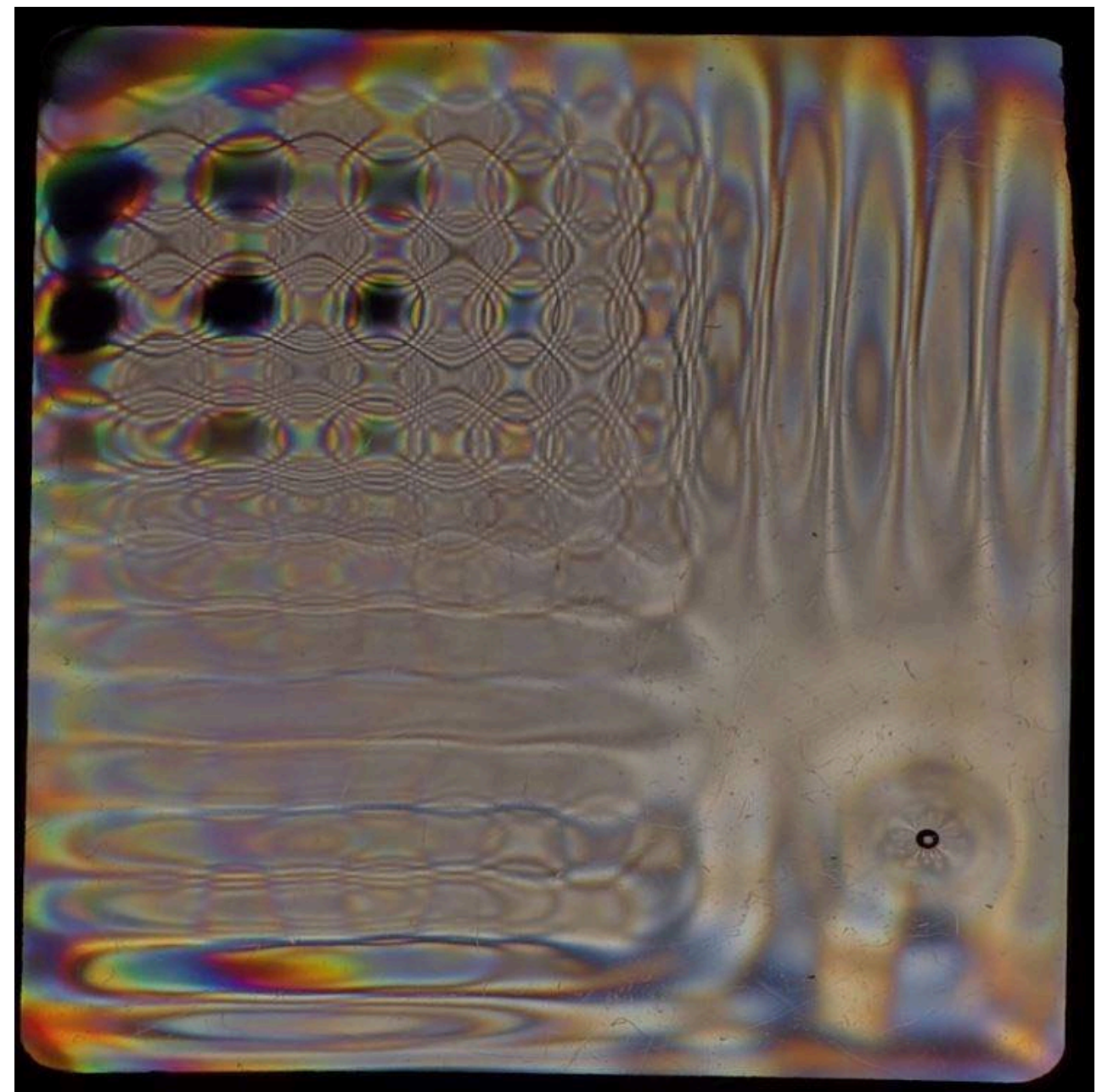
In fact, this theorist (Jim Schofield) has assumed an existing, yet also totally undetectable Universal Substrate, to solve ALL the anomalies of the famed Double Slit Experiments, and, in addition, has also explained quantized electron orbits in atoms, AND those of the Walkers in Couder’s experiments solely by assuming a substrate and the production and maintenance of Vortices within it!

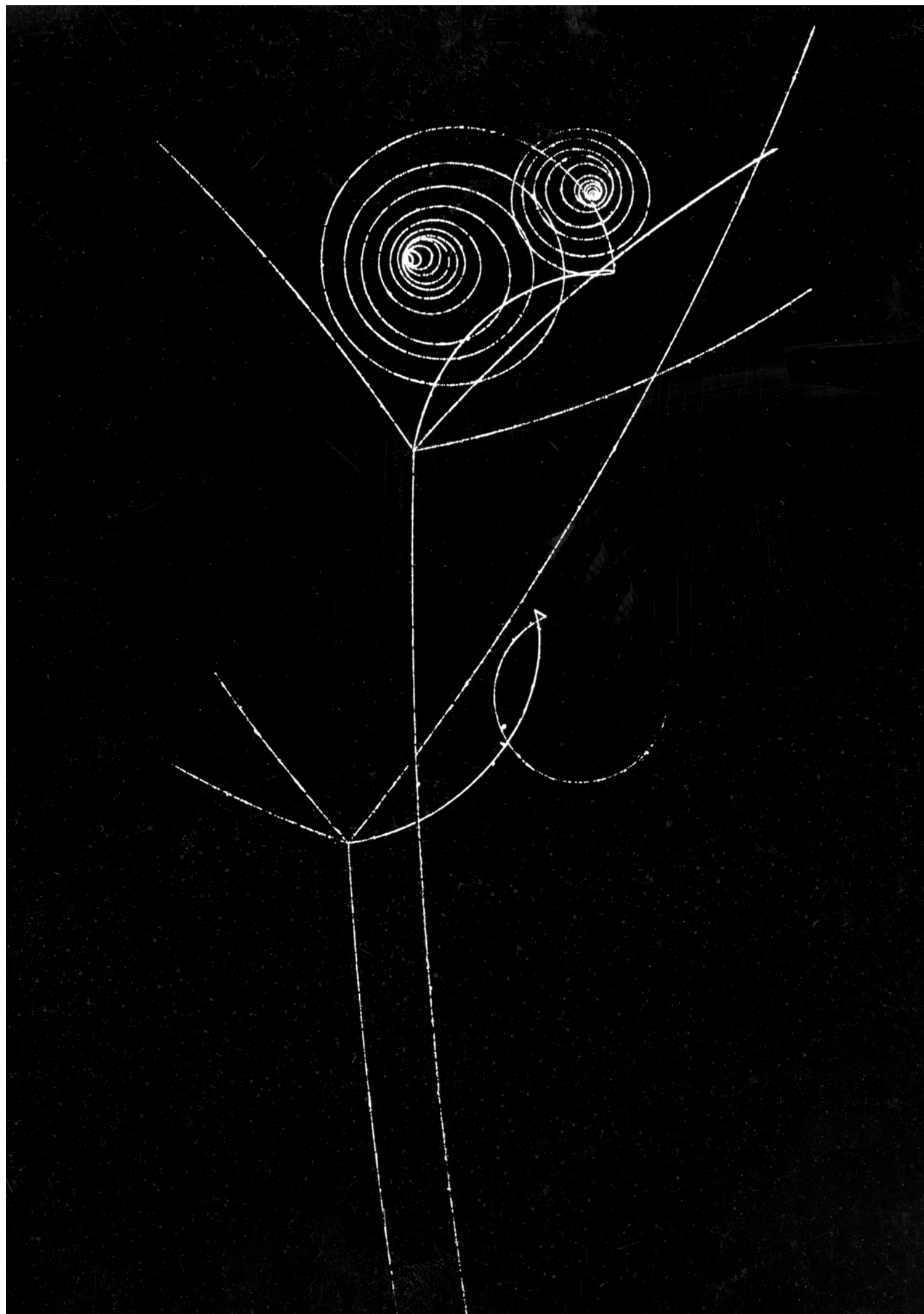
NOTE: Quantum Entanglement is currently under detailed study on the very same basis.

Though a radical set of significant changes had been shown to address crucial inadequacies in the current philosophical stance, and the pluralist methodology of Science, the close relationship of that “Science” with productive Technology was both successful and remunerative. It would not be easy to prize Physics away from its long established ways.

Only a series of successful, revolutionary achievements with the alternative stance and methods would do it. Remember even Charles Darwin’s brilliant and holistic Origin of Species had not managed it, in spite of its undoubted success.

It will be at the sub Atomic level discussed in this paper, where the breakthrough will undoubtedly occur!





Universal Substrate Units

What would be needed to deliver such a Substrate?

If we are to assume an undetectable Universal Substrate, it must have been a very early creation in the History of the Universe, and not only conducive to supporting all the subsequent colossal developments, but also, somehow, actually positively-encouraging their stability and persistence.

And, in addition, therefore, it must have been composed of extremely early embodiments of matter, occurring in remarkably facilitating ways.

After all, the mammoth extent of the Universe was possible, and definitely occurred, with this Substrate as the necessary understory of absolutely everything that was going on, particularly in actually enabling fast and almost lossless communications, particularly of Energy, across increasingly vast distances.

So, one aspect of our considerations, into this crucial basis, must be its actual composition, and, clearly, the place we must initially look in, for likely components, has to be in the simplest-possible-forms that could deliver all these things, AND, at the same time be totally either unavailable or undetectable, by all the current means known to an eager-and-investigating Mankind.

The first place that anyone would look, is likely to be the current Standard List of what are deemed to be the most Elementary Particles of Matter.

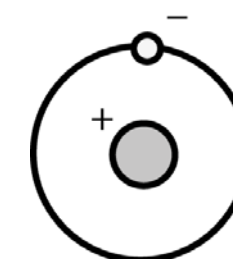
But, right away, there has to be flagged up an important danger in doing this. For, this List is almost solely the product of very High Speed Accelerator Experiments, where a very small number of elementary particles, known from other means, are smashed to smithereens, at ever higher speeds and energies, to see what can be produced, and most of the achieved products last only for extremely tiny fractions of time.

Complete experiments only last a fraction of a second, in these accelerators, so any development trajectory, or time-requiring, recursive effects will have been totally excluded.

Conclusions, from such a limited area, MUST be taken with a mighty “pinch of salt”, as has been proved by the remarkable alternative macro experiments conducted by Yves Couder, in which he produced his so-called Walker entities - entirely composed from a single substrate, and absolutely nothing else. And, he even managed to produce their quantized orbits.

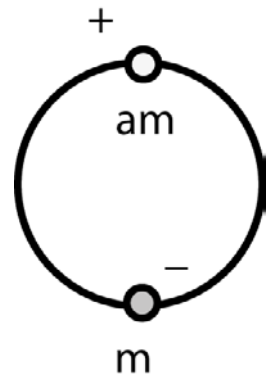
Nevertheless, it is with the results of the Particle Smashers that we must, at least initially, look for candidate components for our possible Universal Substrate.

Some candidates, known about prior to the Accelerator Experiments, are the electron and the proton. And an early combination of these two - the Hydrogen Atom, also provides, and extremely early, a significant model for further joint-particles that are, generally, remarkably stable.



And, as can be seen, this involves the mutual orbiting of these two entities, but, because of a vast difference in their sizes, it appears as if it is the electron orbiting the proton.

And, this immediately suggested another possibility, not least for its simplicity and form, which is the positronium (neutrित्रon), which is composed of a mutually-orbiting pair of one electron and one positron.



But, as the components are of exactly equal size, (as well as having direct mirror-image properties), these two, instead, shared the very same orbit.

Now, an important feature of this particle is that it is undetectable - it is “dark” matter!

It has no net charge, no magnetic properties and has one particle of matter, and the other of antimatter. It is also invisible, and hence a great candidate for our Substrate. In addition, like the atom, its orbit can be promoted to a higher energy level, so that it can take in, hold and then release energy.

You can imagine how it could be the crucial substrate communicator.

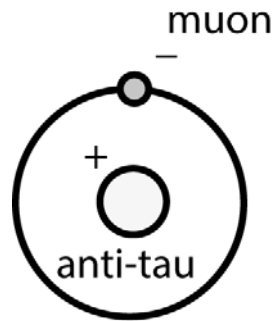
Now, elsewhere, (primarily upon SHAPE Journal on the Web) this candidate, for the Universal Substrate, has staked the strongest possible claim, not only by delivering the Propagation of Electromagnetic Energy across Space in quanta, but also by explaining both Pair Productions and Pair Annihilations, and even delivering a comprehensive, purely-physical explanation of all the many anomalies of the ill-famed Double Slit Experiments.

But, it couldn't deliver *Fields*!

Clearly, there had to be other units comprising the Universal Substrate that could deliver this crucial feature.

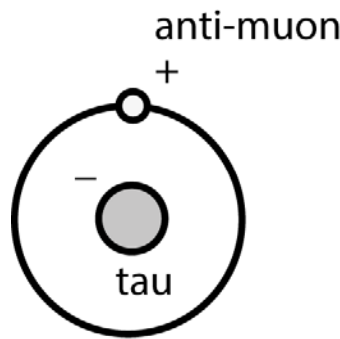
Returning to the List of Elementary Particles, the search began for other compound units that could do this. And, they would have to be composed of sub-particles of different sizes, so that the resulting joint-particle would have a magnetic dipole moment.

Indeed, a mutually orbiting pair, consisting of particular Muon and anti Tau particles would deliver exactly that!



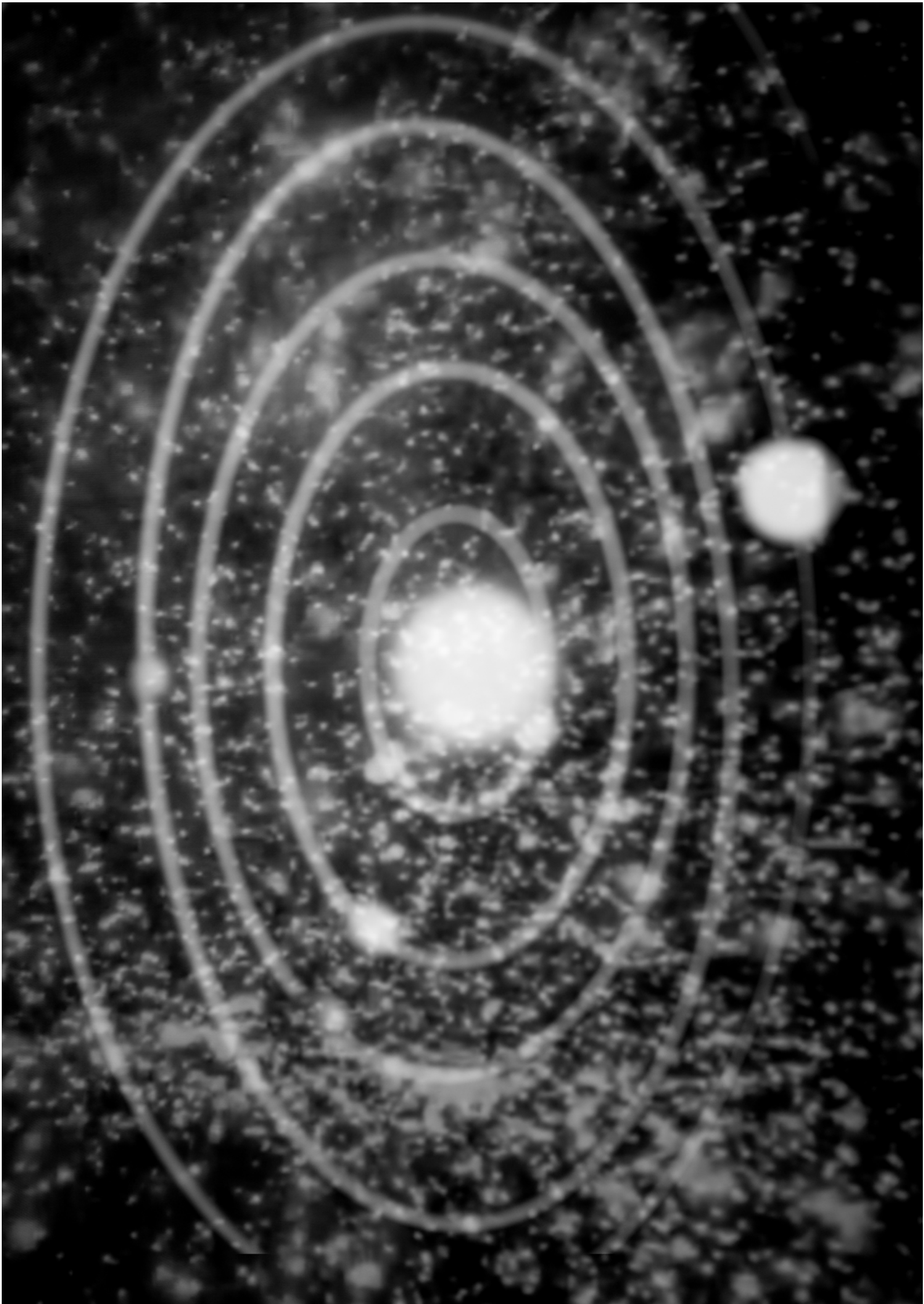
But, this would make it very easily detectable!

So, another joint-particle with exactly-opposite properties was sought. And, this was revealed as a mutually orbiting pair consisting of different Muon and Tau particles.



But, how could these two cancel out each other's properties, to deliver undetectability, on the one hand, while re-organising to deliver fields, on the other?

The answer was as a randomly-moving-population of equal numbers of each of these two particles, for, as such, these would, indeed, become undetectable as such a mixed, randomly-moving population. But, if gathered-together statically, and appropriately-orientated, around a charged particle, it could, indeed, deliver that particle's required Field.





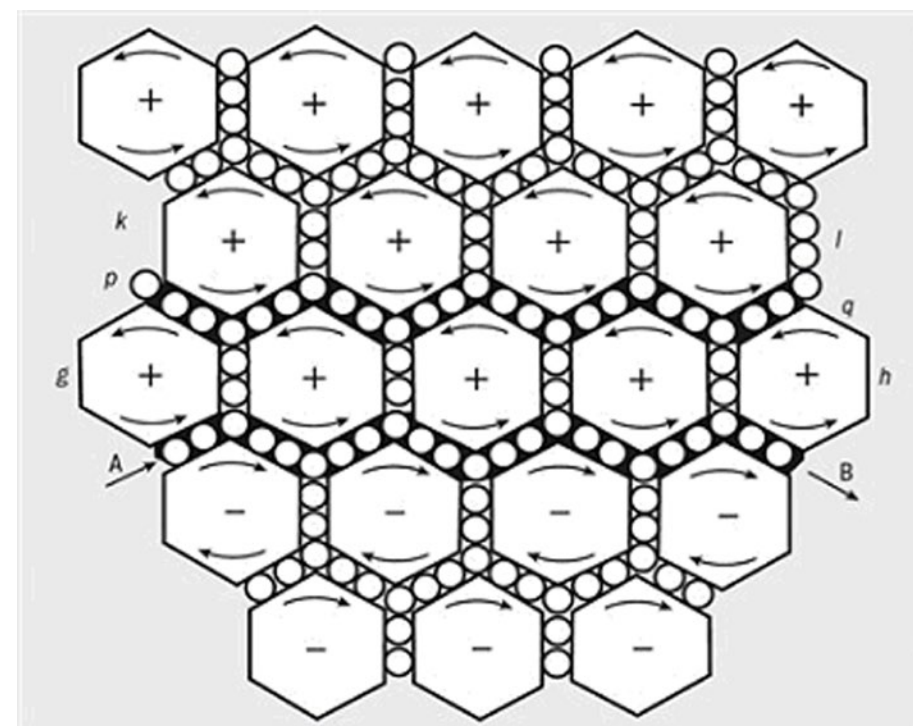
Now, even this purely theoretical breakthrough is still highly significant.

The Universal Substrate with these components, interestingly, strongly echoes James Clerk Maxwell's model of The Ether, by being composed of a relatively static Paving of neutrtrons, along with a population of randomly moving particles - the magnetons.

In this case, it is the neutrtrons that form a loose, but relatively static, Paving, while the two others, termed magneton A and magneton B, would usually be the randomly moving other components, weaving about in the gaps between the loosely-linked neutrtrons.

The presence of a charged particle would "effectively-capture" magnetons in concentric shells of magnetically-aligned units around it, thus building a Field, and the energy for "actions" of that field would be gathered entirely from around the Substrate-in-general, as ALL the units are capable of having their orbits both promoted and demoted.

This would make the substrate both a universal Sink, and an ever-available Source of energy for Field Effects. The actual supposedly-causing charged particle would need to deliver NOTHING but their initiating, charged presence!



Second Generation Material Particles

A speculative alternative origin

Let us assume that matter and antimatter are not equal and opposite forms of matter, and positive and negative are not equal and opposite forms of charge. Instead, we consider another form, which is naturally neutral.

To get the above seemingly Dichotomous Pairs of properties such as matter-types and charges, we can see both matter and antimatter as linked properties of incomplete parts of an original neutral form of matter. And, this being so, those fragments will also display the also linked fragmentary versions which seem to have opposite charges.

After all, opposite charges attract one another - as if to regain that original whole form. And, the current stance on matter and antimatter is that they too vanish in what is assumed to be mutual annihilation, but could be mutual cancellation by a re-association of some kind.

Now, if such suppositions are true, a trajectory of development that could have been produced from something which preceded it, that was a neutral matter form. And, it would then be the splitting of that form which delivered the oppositely-charged fragments, each also consisting of one of the associated different forms of matter, which, apparently, link indissolubly to the two opposite charges too. Opposite kinds of matter are believed to deliver opposite charges - the classical example being the electron and the positron!

These are actually mirror images of one another in every conceivable sense. One is negative-and-matter, while the other is positive-and-antimatter: clearly these properties are not totally independent of one another, but in the way we are considering them connected features produced by the splitting of the original form! They are created properties along with the created fragments.

Let us push the boat out even further, the re-association of matter and antimatter fragments which is said to

produce mutual annihilation, becomes, with this alternative set of premises, merely the reconstitution of the original neutral-in-every-respect form: it has been annihilated in its previous incarnations, but still exists though it cannot be detected!

It will, of course, keep the Kinetic Energies of the two fragments internally.

[See the work by this theorist on the neutritron - a mutually orbiting pair, consisting of one electron and one positron, with the capability of holding energy both in the constitution of their joint orbit, and in its potential promotion {like with the atom}. but, indeed, producing a wholly NEW association of these two fragments into a different product (or maybe it is that original source from which they both emerged), but it is always possible that they do not join with their original partner pieces, but with fragments from a quite different source, which displays these same properties in its pieces. The neutritron is perhaps a particular example, which was conceived as a wholly new entity, when first produced.]

We have no idea of how we got to that stage, for enough other combinations could occur due to other dissociated forms, and recombinations would be possible between non-original bedfellows. It was long ago, but once it began to be rent asunder into what we see now, there was no easy causal way back to deliver the actual trajectory of evolutionary events.

Let me clarify what I mean by all this, with a much later revelatory example! When plants arose based upon photosynthesis, they began to release Oxygen as a waste product. In time that Oxygen became so abundant in the Earth's atmosphere, that it transformed the environment from the very conditions that had made the producers of that change possible. Indeed, the abundance of Oxygen allowed animals to emerge - an entirely new form of life, and allowed many things to be able to burn for



the first time, Even what are now considered the most inflammable substances, like Hydrogen, could not burn without Oxygen. The point is clearly that there are always such recursive-and-revolutionary effects of evolution, which are transforming the context, regularly, in short emergent interludes, that change the game profoundly. And, as research into such Events have shown, it happens in totally non predictable ways, so that future possibilities are never solely defined merely by knowing what a situation was at a certain time!

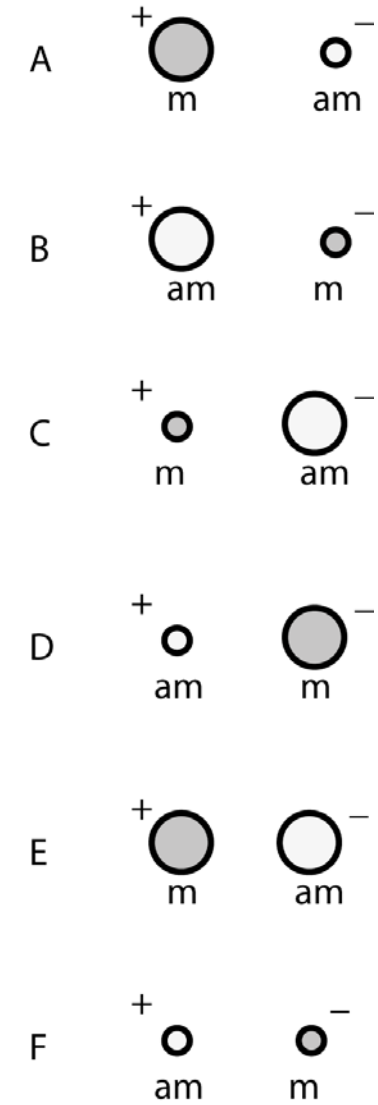
Under new neutralities that could be produced that would also be stable, a new era with new possibilities could be set in train.

Indeed, the atom is a perfect example of this. It is stable and persists Universe-wide, in spite of originating as a new kind of association. And, that same atomic structure allowed many more such associations, but with each possibility possessing a wholly new set of properties - inconceivable from the point of view of their prior level.

For such to occur, it is certain that our so-far considered example of originally neutral matter would not have been alone. Other different neutral entities also involving both matter and antimatter, as well as negatively and positively charged potential fragments will have existed. But, the original entities could be of different sizes, so any dissociations would deliver charged fragments of different sizes, which could re-associate not to simply deliver the same thing again, but with compatible charged fragments of other prior forms to produce something entirely new.

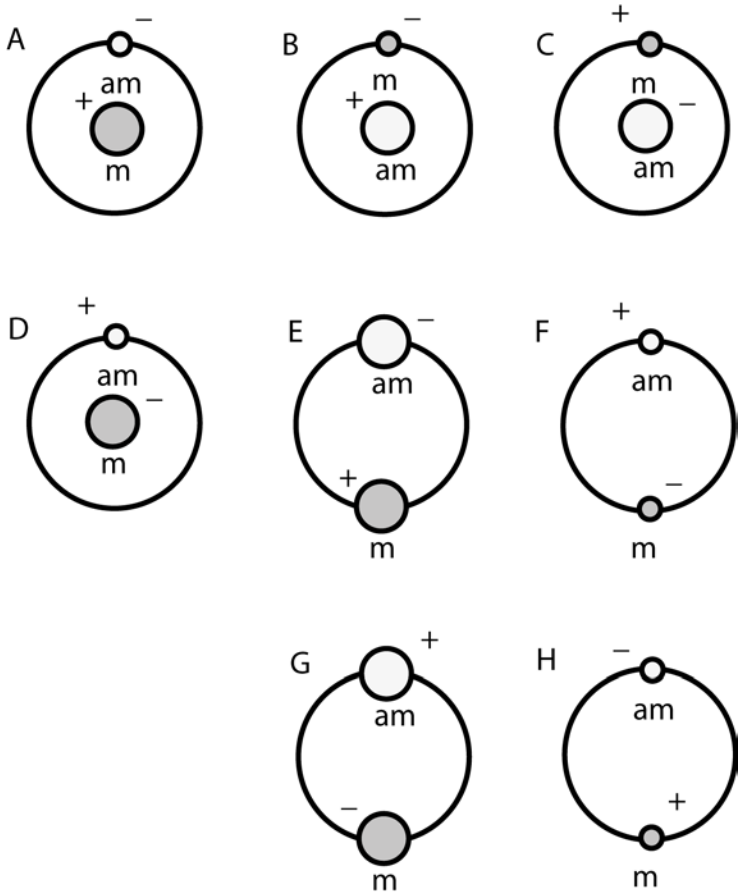
Now, clearly, so much of this is supposition that an initial set of formal possibilities must be fully considered.

We could have the following, if there were two neutral entities of different sizes for the initial content. Then splits, to produce positive and negative, and matter and antimatter components, could then form the following possibilities:-



All these would link electrostatically, that is by charge, and could, by mutually orbiting one another (on the model of the simplest atom).

Clearly, with two sizes Big(B) and Small(s), matter(m) and antimatter(am), and finally positive(+) and negative(-), there would be 8 different products when different sizes are involved, and 4 when same-size components are involved.



The Speed of Causality

Are there natural constants, as properties of reality?

There has recently emerged a remarkable tale concerning the Speed of Light!

BUT - we have, of course, to put such a concept into its producing context, to really grasp what was being both addressed and delivered. So, let us, therefore, establish the circumstances and ground for this seemingly basic “constant”!

The Speed of Light is universally considered to be a supposedly Natural Constant, and such things are consonant with a view that has Natural Laws determine literally all that there is in Reality. And, all of these being invariably encapsulate-able into Pure Mathematical Forms.

For, such Forms are always and can only be generalities, and, therefore, have to be fitted up to data from Reality to arrive at the particular Law involved. And, this involves the determining of all the as yet unknown constants of the Generalised Form to deliver as, one version of it, a particular Natural Law. To do this is certainly NOT a universally accepted position, but it is, nevertheless, the most-used approach. Now, these Laws are used, thereafter, for prediction, and as they are considered the unchanging properties of Reality, their constants are given special status - they are termed Constants of Nature.

And, in Albert Einstein’s Special Theory of Relativity a key Constant of Nature was the Speed of Light.

Now, the equally-lauded alternative approach in Science to that of equations, has always been to explain why, things act the way that they do, and why such things as the Speed of Light have the values that they do.

These two alternatives have been used in tandem for literally millennia: one for description and calculations, while the other is mostly used for explanation. And,

usually, something like a “Speed” is always to some extent a variable, depending upon the conditions through which something has to move. To make the *Speed* of Light a Natural Constant is surprising, for it seems to imply a particular medium through which it is passing. Now, it “does” pass through a “single situation”, for it is assumed to traverse totally Empty Space. But, perhaps surprisingly, the originally assumed value for this Constant was actually Infinity - effects were felt immediately, no matter how far apart they were from the supposed cause.

The trouble is, if it is passing through absolutely nothing, what possibly determines this fixed and finite speed?

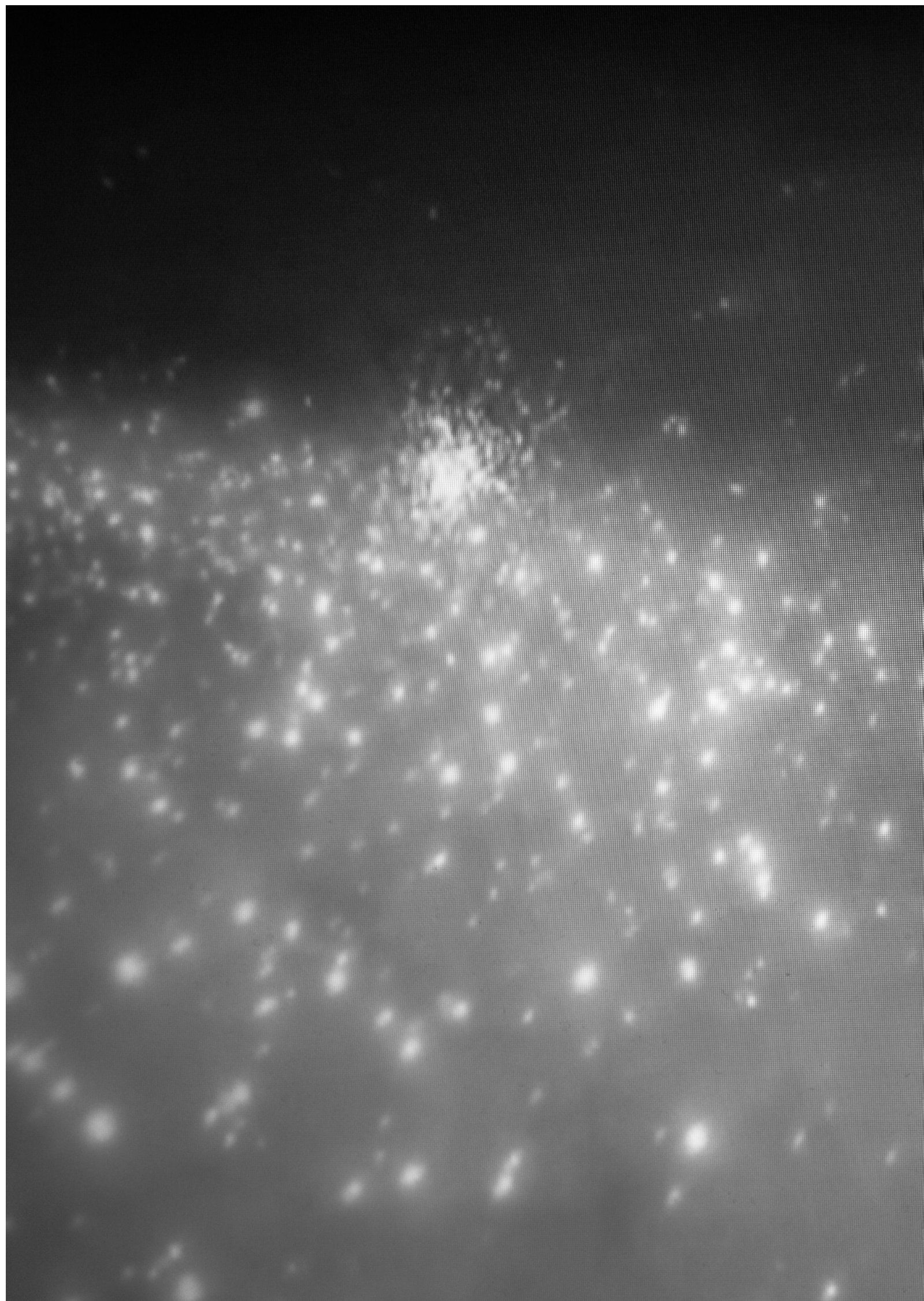
Now, these are interesting areas of discussion, especially as the two fore-mentioned approaches are totally incompatible with one another. The Formal approach is certainly idealistic, whereas the explanatory approach is just as clearly materialistic. To even use them both literally all the time is, to say the least, very odd.

But, that doesn’t exhaust all the approaches used, for there is a third - namely Pragmatism or, in a phrase “If it works, it is right!”

And, as you may guess, it is this final addition that allows contradictory approaches to be used “when they fit our current purposes”. Now, having established the involved rather uneven, philosophical Ground, we can return to our “Constant of Interest” and decide what it really is!

It seems that, some time ago, a position was developed by the physicist Lorentz, based upon the fact that the Laws of Science were clearly independent of the Frame of Reference, in which they were observed, measured and then extracted. Whether the experimenter was working on the surface of the spinning Earth, or in Space, he would derive the exact same laws.





Now, this was prior to Einstein's work in this area. But, Lorentz's conclusion was somewhat different. He decided that it was the Speed of Causality was what was constant!" Einstein took Lorentz's ideas, and from them developed his Special Theory of Relativity.

But, wait a minute!

What on Earth (or in the Universe) is the Speed of Causality? It can only be the speed of communication of a given far-reaching effect - like Gravity, for example.

Now, this, as it stands, is meaningless, if you are expecting some sort of explanation. It is as opaque as Einstein's Speed of Light. For, what actually delivers the effects, from source to recipient, whatever it is? Remember, the current wisdom is that Space is entirely *Empty*. [They say "empty of Matter" but somehow allows totally disembodied Energy] . They insist, "There is no substrate!", so they can give no physical answers to the questions posed about the determination of the speed involved.

Now, on the *Space and Time* video on YouTube, delivering this tale, the presenter actually uses James Clerk Maxwell's Equations of Electromagnetism as a confirming example, "for they too work in confirmation with a constant Speed of Causality!" But, to use Maxwell without revealing his premises is significantly misleading. Maxwell not only believed in a Universal Substrate, but actually devised his own version of it using vortices and "electrical particles". And, it was on the basis of this detailed model that he developed his Electromagnetic Equations.

His basis was a Substrate! And, that makes a significant difference to the ideas under discussion here.

So, we must interpret the Speed of Causality along with Maxwell's premises. And, they can only mean that the Speed in question can ONLY be a property of that Universal Substrate. How else could it be determined?

Now, Jim Schofield, the writer of this paper, and a theoretical physicist himself, has derived his own version of this Universal Substrate, which he has devised as totally undetectable, because, though composed of components that are already universally accepted, he has them jointly forming the individual units of the Substrate, and in them delivering entirely neutral bodies. He also has these units forming a new kind of association, which he terms

a Paving, wherein the Speed of light is, actually, the speed of transfer of a single quantum of light energy from on unit to the next, in a bucket-brigade form of propagation. Clearly, this is both the Speed of Causality and the Speed of Light, for all communication in so-called Empty Space must really be via this Universal Substrate.

Now, I am well aware, that all this could be seen as yet another speculative foray in Sub Atomic Physics, but it is certainly a great deal more than that, and is supported by many sound criticisms of the Copenhagen stance, which is "sans substrate", along with other undeniable proofs that the Substrate has to exist.

The units of the substrate, as devised by Schofield, can internally hold individual quanta of electromagnetic energy in internal promoted orbits, just like the atom does, and hence all transfers, in a propagation, will be one quantum at a time. And, crucially, ALL the anomalies of the ill-famed Double Slit Experiments as interpreted by the Copenhagen stance, have been completely explained, merely by the presence of this particular conception of a Universal Substrate.

And, in addition, phenomena such as Pair Productions and Pair Annihilations come out of the dissociating or associating of Substrate units "sweet as a nut".

Finally, this very unit has actually been observed in the Tevatron at Fermilab, where it was both named as the positronium, and then ignored because of its evident instability. But, let's face it, all that evidence was within a High-Speed Accelerator.

Schofield wondered how it would perform in Empty Space, and decided it would not only be stable, but very stable, not least because of its tiny size and total neutrality, in every respect! Further researches in many relevant areas, including how such a neutral particle could actually form a functioning substrate, convinced him that his assumptions concerning this particle were true, and he therefore renamed it the Neutrित्रon.

A great deal of research has been produced, and is proceeding apace! Clearly, there are physical reasons for both the "Speed of Causality" and the "Speed of Light": they can be explained via the nature of the Neutrित्रon and its "Paving" Substrate.

Think about it! Such an explanation does not take account of either the initially producing or finally receiving bodies: it depends only upon a substrate, in which the Light is propagated, in quanta, and in a bucket-brigade fashion from substrate unit to substrate unit, and the transfer speed IS the speed of transfer from one substrate unit to the next, and the fact that these will exist within fixed form of Paving, will make this figure in most circumstances a Constant!

The so-called Natural Constant of the Speed of Light, is no such thing. It is a completely explicable speed of transfer between stably arranged substrate units. This speed depends upon the Substrate alone, and will be independent of any Frame of Reference determined by the movements of contained larger bodies.

mass→	2.4 MeV	1.27 GeV	171.2 GeV	0
charge→	$\frac{2}{3}$	$\frac{2}{3}$	$\frac{2}{3}$	0
spin→	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1
name→	u up	c charm	t top	Y photon
Quarks	4.8 MeV $-\frac{1}{3}$ $\frac{1}{2}$ d down	104 MeV $-\frac{1}{3}$ $\frac{1}{2}$ s strange	4.2 GeV $-\frac{1}{3}$ $\frac{1}{2}$ b bottom	0 0 1 g gluon
	<2.2 eV 0 $\frac{1}{2}$ v _e electron neutrino	<0.17 MeV 0 $\frac{1}{2}$ v _μ muon neutrino	<15.5 MeV 0 $\frac{1}{2}$ v _τ tau neutrino	91.2 GeV 0 1 Z weak force
	0.511 MeV -1 $\frac{1}{2}$ e electron	105.7 MeV -1 $\frac{1}{2}$ μ muon	1.777 GeV -1 $\frac{1}{2}$ τ tau	80.4 GeV ±1 1 W [±] weak force
Leptons				Bosons (Forces)

Let us muse upon Lepton Substrates

It is, seemingly, increasingly-likely, that a single-component, homogeneous Universal Substrate will certainly-not deliver the evident phenomena already known for the supposed final-ground of “Empty Space”!

Too many features seem essential, and no single Substrate Unit can deliver them all!. And, the wide range of potential Substrate Units with the necessary qualities to actually deliver what is needed, is so spread-out in sizes, that a Hierarchy of Substrates seems the most likely delivering situation.

What I am moving towards is a sequence of Substrates with the “bottommost” (or least-wide-ranging) one

possessing the smallest units, then a substrate on top of this with larger units, and so on with other layers and bigger units as we go!

The following table shows FOUR Levels, each with different functionalities due to the currently involved Units’ Natures and Sizes. But, their individuation WILL NOT be as layers one above another, but rather all together, yet separated, by functional and size differences.

They will effectively all exist at the same level, but acting only with their own level partners.

TABLE OF SUBSTRATES

	Level	Likely Units	Size
Substrate A:	Bottommost	Electron Neutrino	3 ev
Substrate B:	Propagatons	Neutriron	1 Mev
Substrate C:	Gravity	Larger Neutrinos	18 Mev
Substrate D:	Electromagnetic	Magnetons	1882 Mev

Orbits and Spins

Certain crucial questions must long predate any attempt to deal with Orbits and Spins, so let us preface this muse, which really must start with some sort of necessary preamble - in the field!

What are fields?

When we are considering what we term as Fields - that is "extended influences over a region of what we call Space", there are various aspects about which we have common, and often unrevealed assumptions.

FIRST: each and every position, within a "field", will suffer a particular amount of the involved influence, which could affect a susceptible entity occupying that position, even though the assumed "cause" is situated some distance away.

SECOND: The actual amount of that influence, will depend upon the exact distance of the considered position from that supposed-cause, along with the nature of the susceptible occupier of that position as well.

THIRD: There will always be a single direction of any influence along-a-line connecting the given position with the centre of that assumed cause.

There is nothing remarkable in this set of assumptions: they are exactly what we assume. But, I needed to spell them out! And, the reason is that within them are some perplexing features. For example, consider the following questions:-

1. How does the influence get to the considered "active" position of the Field, presumably, from the "causing entity"?
2. What holds that influence in that position, and delivers it to any affected entity situated there?

3. What holds the direction-of-affect and implements it upon the affected entity?
4. What holds the necessary energy in that position to cause the given effect?
5. Where did that energy come from, for neither the "supposed cause" nor the "affected entity" are in any way diminished charge-wise by this interaction?

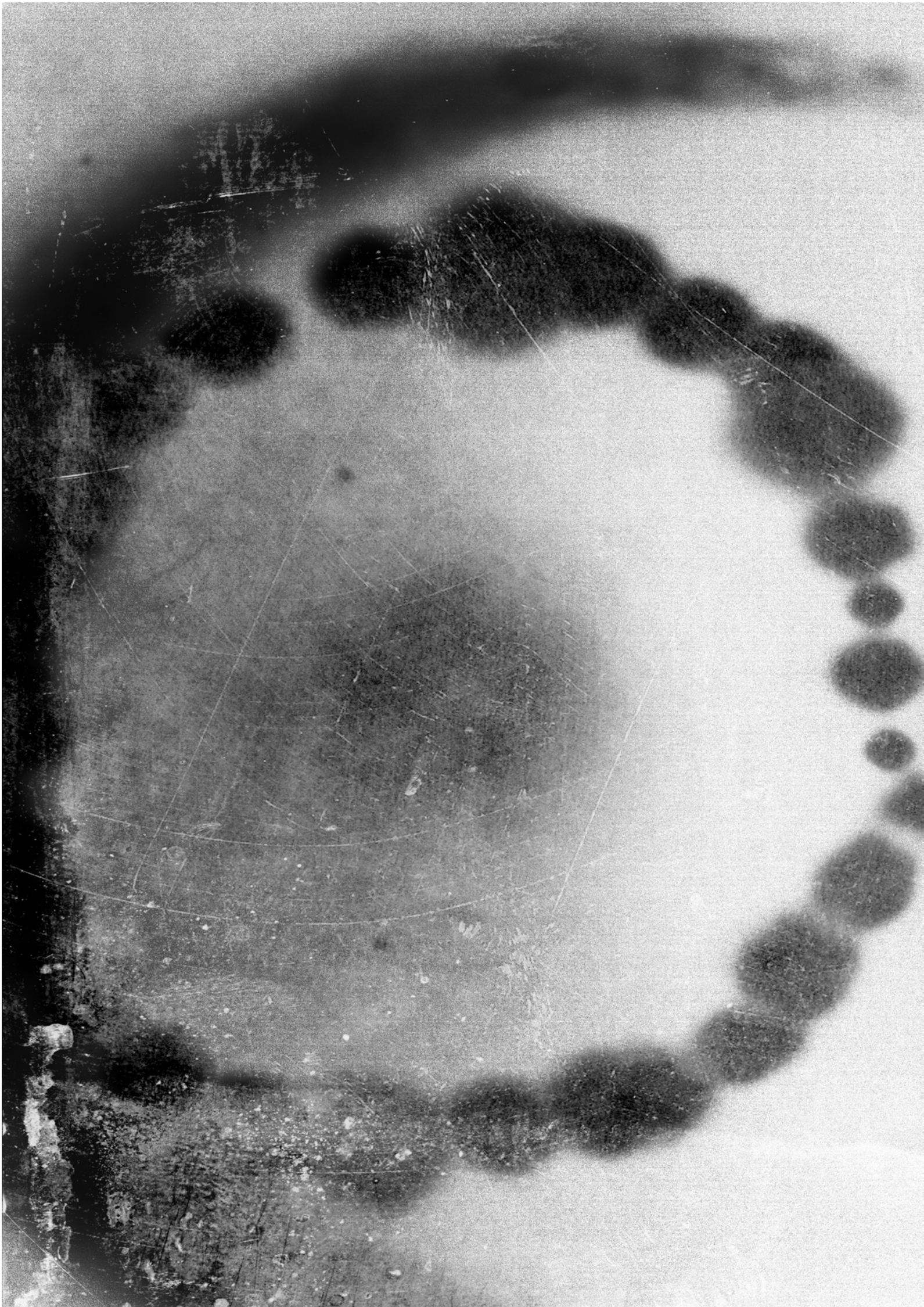
So, perhaps now, the reasons for my careful and seemingly pedantic descriptions should finally be evident.

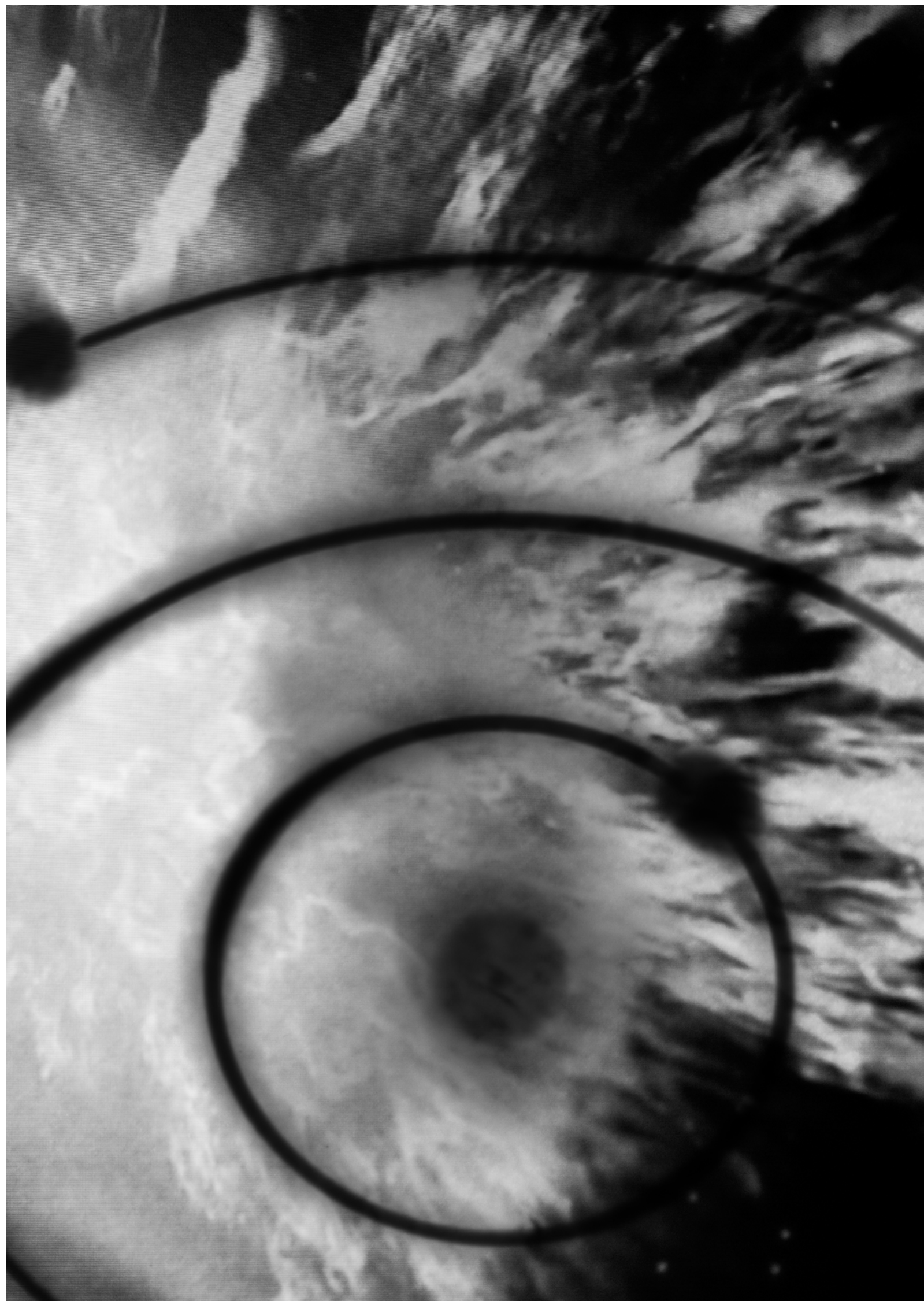
The phenomenon-in-question is really only described, and NOT explained. Some "seeming explanation" is evident, but it doesn't answer either of the essential questions - "Why?" or "How?".

It concentrates, instead, upon "What is happening", and "What appears to be involved". And, via careful experimentation and measurements, some sort of quantitative relation could be extracted and even fitted up to a known Purely Mathematical Form, which is then used to predict for any chosen future situation.

But, it is still only Description: and omits any real Explanation.

Now, many will denounce this conclusion, but they will be wrong! Without answers to my initial points NO comprehensive explanation has been given, or is even possible.





Now, before I take this muse any further, let us see what the usual investigators' primary purpose always is. It is invariably the subsequent use of what is extracted, to enable some intended objective to be achieved.

Its directing purpose is technological!
- a legitimate purpose, to be sure, but NOT that of Science. For, Mankind realised that to greatly expand its understanding of the World, and crucially develop wholly new means of investigation and revelation, they would also have to address "Why?" and "How?" as well!

Indeed, the profound excitement and extended wisdom possible by Science, was infinitely greater than could be achieved by Technology alone: even the best technologists have always depended upon the regular discoveries and explanations of the scientists, to forever enable the creation of new useful products, and, whenever True Science is neglected, or even abandoned, the vistas available to Technology become more of the same but smaller, or bigger, or easier, or prettier, or cheaper etc. etc. etc.

Now, the reader might wonder what happened to Orbits and Spins, but, maybe, my purposes, by now, are becoming somewhat clearer.

Many common underlying assumptions must be addressed if the more important and profound features of Orbits and Spins (as with everything else) are to be scientifically-addressed. Do you agree?

Let us, therefore, briefly consider Charge, a property of Matter that can be positive (+ve) or negative (-ve). It occurs, most-commonly, in different amounts, and its remarkable consequent property is that a charged-body can attract another charged-body, if it is of the opposite charge, or repel one if it is of the same charge.

In the more usual circumstances, such multiple, same-kind charges within an extended body will repel one another and hence, if they can, will all move to the surface of that body to be as far as possible away from all the others, and, we assume, they are also equally spaced about that surface, for the very-same reason.

Yet, our derived, encapsulating equations will assume that ALL the charges involved are situated in a dot (of zero extension) at the centre of the body, and all the relevant distances involved will be measured from there.

The calculations certainly work, but, it is, clearly, only an effective and useable fiction. Indeed, the constructors of ALL such equations never need to know the actual concrete situation at all - only a workable simplification-and-idealisation, that has been ensured by the careful arrangement and maintenance of both the experimental AND the subsequent production set-ups. Knowing in detail what is actually going on, turns out to be totally unnecessary technologically.

NOTE: Yet, I feel the need to give a contrasting example wherein the actual inner physical details turn out to be crucial, but would be entirely hidden and unobtainable via the usual pragmatic characterisation, of what seemed to be a simple and easy-to-deal-with situation.

It, concerns the theoretical nature of a Universal Substrate composed entirely of positronium particles (neutrित्रons), which consist entirely of a mutually-orbiting pair comprised of one electron and one positron.

The resulting substrate-unit would be entirely neutral in all respects, and hence undetectable, so, at almost all inter particle separations, projecting absolutely no inter particle effects.

But, at very close distances to one another this neutrality breaks down, as the individual sub particles in one unit will momentarily affect those in another - with the result that the neutrित्रons involved will each, as a whole, oscillate, and also stay within a certain small separation of each other, thus, overall, forming a loosely-connected Substrate, which I have termed a Paving.

And, returning to our charged body, the conclusions arrived at, when keeping-only-to the "all charge at the centre" fiction, will differ markedly from the "all charges at the surface" alternative, when a spinning of the body is considered.

For, in the former supposition, the spinning will generate no new properties, while in the latter, a magnetic dipole will be created with a single, fixed direction, along the axis of the spin. And, consequently, chains of alternately charged particles could form via magnetic links as well as the expected purely electrostatic effects.

So, our simplifications-and-idealisations, though helpful in certain practical uses of a given natural phenomenon, can be wholly misleading, when a measure

Gravity Effects

of the Universal Substrate

of understanding is required. And, very clearly, when charge and either Spins or Orbiting are involved, a whole extra set of properties, necessarily, come into play.

Let us, once again, spell things out!

Clearly, a Field supposedly due to the presence of Charge in a certain place, necessarily, delivers the same effects in all-possible-directions. yet they will always be directly towards, or directly away from the “centre-point” of that amount of Charge. Yet, it is unknown exactly how that direction is communicated to an affected object at all possible positions within that field: the ill-famed and unexplained Action-at-a-Distance comes into play.

Yet, if some rotational motion, either as a spin or as an orbit, is added to our charged entity, it immediately imposes a Field that is primarily along a single particular direction, defined by the axis of that rotation. And, remarkably, that direction is somehow communicated to a susceptible entity - once again, seemingly, by Action-at-a-Distance!

Now, the reader may be wondering at the purpose of this account, and with some justice - it must be admitted, yet it turns out to contain significant meaningful explanations, if, and only if, the intervening “space” between cause and affected entity is filled with a Universal Substrate.

And, this is because the content of a substrate-unit could now possibly include a specific direction along with a small amount of energy to enact the observed “Field Effect” at each and every point in a subtended Field.

All that would be required is the influence of the “causing” charges upon immediately adjacent Substrate Units, surrounding them. and, thereafter, to succeeding shells of those units building outwards from that supposed source.

Clearly, such units would have to be appropriately equipped to respond in this way, yet without that influence, be totally undetectable. Yet, we now know what sort of contents a Substrate Unit MUST contain to deliver what it does.

In addition to the electrical/magnetic properties outlined earlier, it must also be capable of holding and releasing energy “like an atom”!

Lo, and Behold!

such units, simply must each have something like an Internal orbit - to enable BOTH kinds of facility! Indeed, the Substrate Units present must include mutually-orbiting pairs of diametrically opposite particles, which, together, in their normal base state cancel out completely, but totally re-align themselves in the vicinity of an electrostaic charge, to construct a field.

Having pieced together a worthwhile Theory of The Universal Substrate - dealing, effectively, with many anomalies in the Copenhagen interpretation of the phenomena displayed in the famed Double Slit Experiments, as well as in explaining the Propagation of Electromagnetic Energy through so-called “Empty Space”, and latterly also both Electrical and Magnetic Fields, and their effects upon susceptible interloper particles - clearly, the next question had to be, “What about Gravity?”

And, as the earlier successes were achieved using carefully designed, but clearly possible, though initially theoretically-devised, Substrate Units, which actually delivered the required functionalities, it was reasonable to attempt to do the same to deliver Gravity too - in a similar, indeed, analogous way.

But, despite a great deal of research and effort, no “graviton” particle seemed possible, not least because such vehicles would not only have to deliver the energy involved in “Gravitational-pulls”, but also supply specific directions for those forces, which would also be necessarily delivered by those same units.

Now, the kind of features involved would have to be both complex and seemingly impossible, so it wouldn’t be at all easy.

Yet, a somewhat similar problem had occurred in attempting to deliver both Electrical and Magnetic Fields, within the Substrate, but it was finally solved by devising (actually-possible) mutually-orbiting, joint-particles, composed of differently-sized and oppositely-charged sub-particles.

For, the smaller sub-unit, in each kind of involved Substrate Unit, would effectively-orbit around the larger - giving a directional magnetic dipole moment - and that was crucial in delivering all that was required.

But, no similar means seemed possible to deliver gravitational-directions in a similar way!

But, another possibility suggested itself!

What if we consider mutually-orbiting joint particles possible entirely due to Gravity.

After all, it happens on the Cosmic scale, with Planets orbiting Suns, and moons orbiting Planets - and these too, remarkably, always occur in two dimensional planes, just as with electrostatically maintained atoms, and all the other proposed units, so far proposed for the Substrate.

Could we consider Gravitational fields around all entities involving all Matter, though usually swamped, and hence undetectable, at the micro level, by stronger effects such as electrical and magnetic ones?

For, then, joint mutually-orbiting micro units of the Substrate with NO electrical or magnetic properties (i.e. Neutral), yet formed into such joint particles by Gravity alone, certainly would involve a specific direction perpendicular to the plane of the orbit - and directly along its axis!

But, and it is a big BUT, for this to work, there would have to be another type of “force” involved!

Like Magnetism associated with moving electrical charge, there would have be this “Co-gravity Effect” associated with moving masses,along the axis of the gravitational orbit.

[After all, isn’t it analogous that such aligned planes of orbits are ubiquitous for similar though other, different causes in the Solar System?]

As far as I can see, for this to fit into a Universal Substrate Theory, there would have to be “gravitationally-caused”

mutually-orbiting micro particles delivering another Substrate Unit.

They would have to be both neutral and extremely tiny! Could the neutrinos - “electron”, “tau” and “muon” types, have similar pairings, as have been suggested to explain Electrical and Magnetic fields using their larger Lepton relations?

