



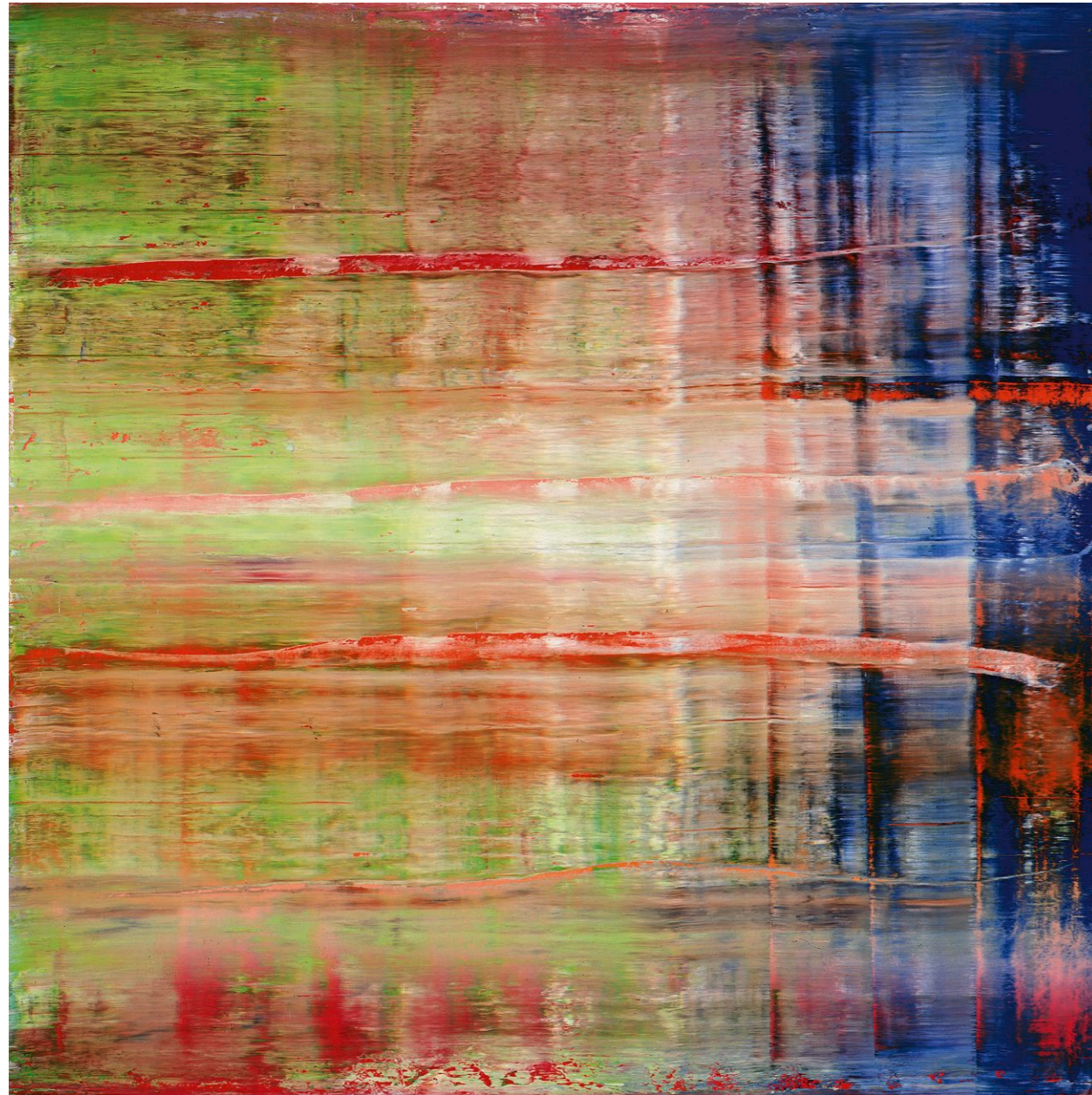
SHAPE JOURNAL

THE ESSENTIAL UNIVERSAL SUBSTRATE

A NECESSARY PREMISE / SUBSTRATE DYNAMICS
DIRECTIONS IN FIELDS AND FORCES

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The Essential Univeral Substrate

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The Necessary Premise

A Holist Ground and Context for Reality

The Substrate was an early assumption, and it certainly performed well in explaining many phenomena, but it could be neither detected nor studied in itself. Certain phenomena, such as with the propagation of Light across seemingly empty Space, this did infer that there would have to be some sort of *medium* present to facilitate such a transfer of energy.

But, as Science moved inexorably into a “forms-primary” stance, such an invisible and unformulateable ground, just had to go!

20th century Physics denied that there was any kind of Universal Medium or Substrate! And thereby, terminated any attempted explanation as to what both caused and then facilitated these evident phenomena.

Everyone, it seemed was wholly satisfied with useable equations alone. Real understanding was becoming surplus to requirements.

That isn't Theoretical Physics: it is mere Technology!

Though the majority of scientists swiftly proceeded with their ever-increasing catalogue of formulae, many anomalies were constantly cropping up, and what is even more important, the explanatory side of this important Science, dwindled into an inessential (merely excusing) narrative, and was then banned altogether as speculation.

However, a minority of the Physics community was still not convinced, especially as the anomalies in the Copenhagen Interpretation of Quantum Theory continued to proliferate, and they insisted that there has to be such a Substrate.

And, as soon as such a substrate is assumed – so that nowhere is there the alternative Perfect Vacuum, Everything Changes!

All the assumed Fields, from Electrical to Higgs', must be effects upon a Universal Substrate.

So, clearly, conceptions of the actual nature of that substrate become of paramount importance, in order to explain the phenomena acting both within it, and indeed, upon it.

NOTICE: The alternative was that there was only completely Empty Space, so no attention whatsoever was given to such a myth as a Substrate, and their vast store of formulae was all they really needed.

Such a stance could only go one way – the formula became the nitty-gritty of Reality and all further studies would have to start with those as the primary objectives. Naturally, our descriptive Form is only ever a consequence, and never the prime cause, so the new mathematical physicists thereafter felt free to speculate about what grand abstractions could be conceived of as a purely “Formal Ground”.

I read many papers describing various disembodied fields that are, it seems, the “real causes” of all presumed “forces”, but, what are they? What could be the substrate, and how do observed phenomena interact with it?

To answer such questions, let us investigate a common phenomenon, and attempt to explain it!

The initial assumption could be that a given particle, with some physical properties, such as charge, must have some sort of effect upon the substrate, even though we cannot get direct evidence of any such an effect.

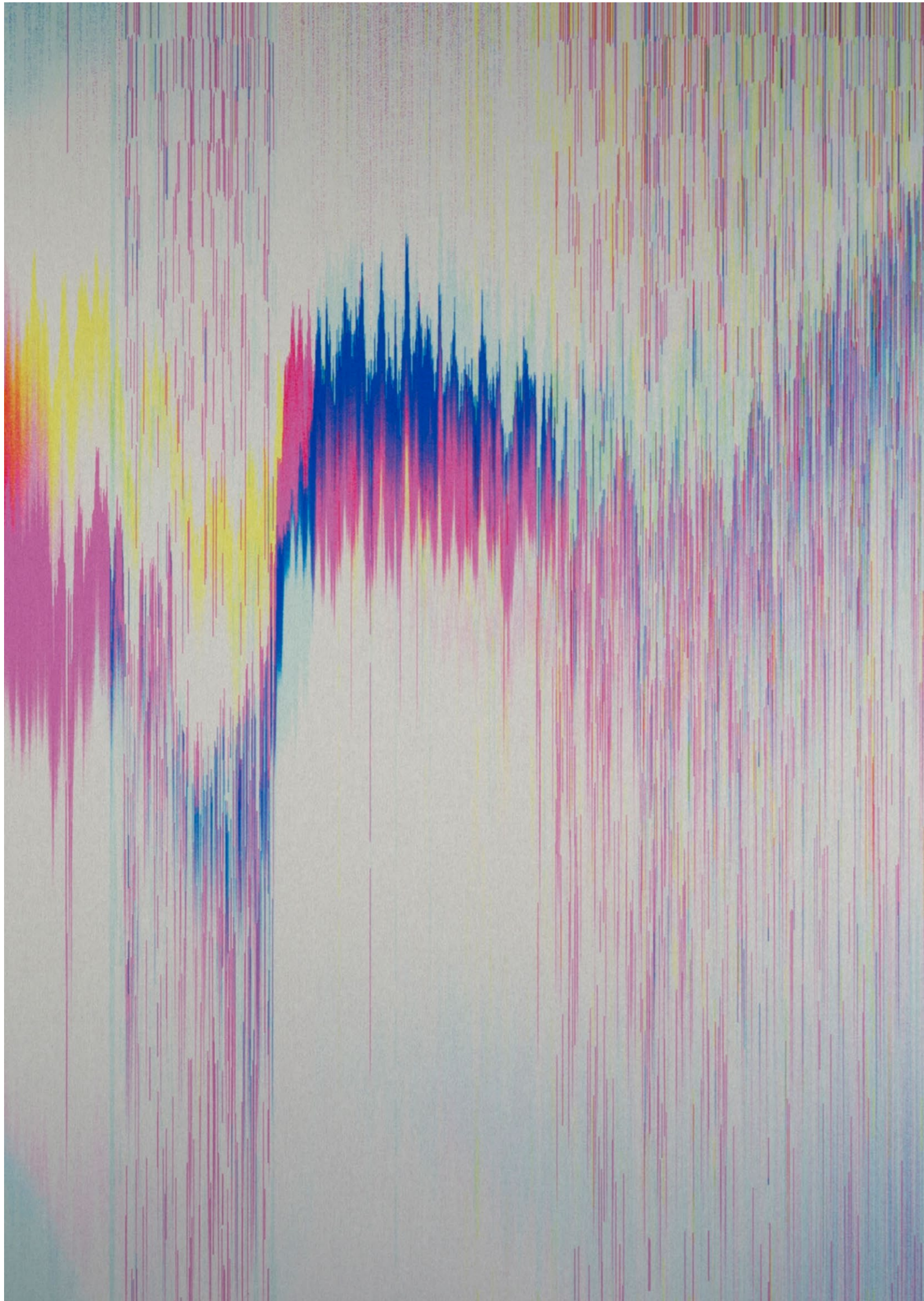
This is surely the nub of the two alternate views, yet explanations are impossible with the formal stance, yet are possible, but hidden, on the alternative physical stance.



Now, deciding between these two may seem impossible to judge, until we define what the units of such a substrate could be. To make them (as yet) undetectable, all those involved in this research had to conceive of impossible-to-detect substrate units. And, to give them their undetectability they were conceived of as having both positive and negative charged sub-particles within every type of substrate particle, which were also composed as one of matter and the other of anti matter.

One resultant design – the neutritron (initially termed the positronium by its discoverers in Fermilab), would indeed be totally undetectable. Yet, with its two sub-particles mutually orbiting one another, it could actually hold energy internally in promoted versions of its orbit, and release such energy by demoting it.

So, considering just such a candidate Substrate Particle, it was unavoidable that the structure of this, and any other possible substrate units, be first theoretically



devised consistent with both the above suggested form and all known phenomena. If experimental evidence, from the past, along new tailor-made experiments are used to rigorously test such possible forms, they could be either confirmed or proved inadequate. So that is what was done in considering the effect of a charged particle upon the substrate units surrounding it.

Starting immediately next to that “source” the particle must be reacted to by the immediately adjacent substrate units to somehow establish changes in them and to further propagate similar effects in the units ever further away from that particle as initiator.

Notice the key fact is that the “causing” particle is NOT providing the energy for these changes: they are instead the natural response of a complex dual-particle substrate unit in a system, which then can influence other such units in a kind of Field Propagation.

The discovered Inverse Square Law of charge fields and Gravity Fields, makes it clear that it is the successive surface areas of spherical shells of changed substrate units around the initiator, which make this the only possible Law as the surface area of a sphere is $4\pi r^2$, so that the response of the units will be successively reduced with each succeeding shell.

Notice that the substrate units have organized themselves into this concentric shell environment, in response to the presence of the particle. And this will continue to be the case until such threshold is passed, which terminates further effects in the substrate.

Some theoretical research has already been undertaken by this theorist (J. Schofield), and it has made clear that the substrate must be composed of more than one unit (in addition to the forementioned neutrutron).

But, the problem was that, after having very successfully cleared up all the anomalies of the Double Slit Experiments, which was achieved using that single neutrutron unit alone, attempts to explain electrical fields with that unit proved to be impossible.

Yet, the gains achieved by the neutrutron could not be discarded, so what had proved appropriate in its design must be applied again, but this time attempting to produce an electrical field, by means of other undetectable units!

Why should there be only one type of particle in the substrate?

Now the implications of such a set of assumptions could only be that the substrate would also include these different particles. Well, that seemed reasonable, if the type that could be defined could produce an electrical field, but when not so activated, still in other circumstances be wholly undetectable, and as before supplying the energy that the field required solely from the substrate.

The conclusion was that the particles required would consist of two mirror-image forms, which, in equal numbers, and moving randomly would “in-sum” cancel out all properties again, but instead of within a single particle, it would be across all areas of the substrate.

Now, this alternate statistical cancelling-out of properties, overall, allowed them to be extant within particular particles, but cancelled in sum.

Now, this might seem to be a long shot at explaining electric fields, until you conceive of these normally randomly moving mirror-image particles aggregating around the “causing” electrically charged particle. In a system based upon their magnetic dipole effects, with radially orientated units making up concentric shells around the “cause”.

Now, before going on to these new particles, it is necessary to stress the problems solved by the neutrutron, in the Double Slit phenomena, included not only Wave/Particle Duality, but also Electromagnetic Propagation through “empty space - and to cap it all it also explained both Pair Annihilations and Pair Productions too!

The objective for our new units was becoming clear – it was, of course, to give them a magnetic dipole effect, so the joint particles would again be made up of two sub particles of different sizes and opposite charges. In sum, over collections of these particles, all the properties would cancel out, if moving about randomly, but gathered together and statically oriented around a charged particle, they would deliver an Electric field (or to be more accurate, give exactly the same properties an ideal electric field was supposed to have).

These first efforts did begin to explain phenomena, but, of course, Copenhagenist theorists have been surmising

all sorts of fields (even the Higgs' Field to explain the existence of matter, which it certainly did not achieve!). It seems to me that the basic new assumptions are on the right track, but as with all new theories, in any new area, the best we could expect is that our models will better reflect Reality – will contain more Objective Content than the theories that they replace.

I always, in a discussion such as this refer to James Clerk Maxwell's Theory of the Ether – with its interacting vortices and “electrical particles” that was never confirmed, physically, yet, nevertheless, delivered his Electromagnetic Equations into our hands.

Maxwell's Theory clearly had superior Objective Content to its predecessor.

NOTE: It is interesting that Maxwell's model, having relatively static, but rotating, vortices, which were associated with relatively free-moving “electrical particles”, for, these ideas have resonated with the initial steps in a wholly new model – with relatively stationary neutritrons and free moving “magnetons”.

More of these ideas will be dealt with later.

So, dumping the Ether (because it could not be detected) meant also throwing away its Objective Content, and merely keeping his equations, as the essences of the situation!

Such actions make crystal clear some of the basic assumptions of the scientists involved in this decision. To dump the analogies that enabled the devising of the equations, yet keeping those equations, tells us exactly where they stood.

The simplest explanation is that it was a purely pragmatic decision, and partly, at least, that was true. But, the more revealing reason is that they considered the equations had actually captured the essence of what was being studied – “as all equations do!”

It made Natural Laws the drivers of Reality; it was a step in the direction, which ultimately led to Copenhagen!

Now clearly, I do not trust only my ideas and theories: I have always searched for colleagues with similar objectives to my own.

So, I have become aware of several serious scientists with similar stances but different solutions. And, needless to say, several have shown up the weaknesses in my contributions and have given me new areas to both address and integrate.

Many years ago I read about David Bohm, and read his book *Chance and Causality in Modern Physics*, and am aware that neo-Bohmians still exist, But, my first real contact was with Mohan Tambe (of Bangalore in India), and his concern about fields in an existing Universal Substrate, for he made it clear that my current ideas were inadequate in the areas he was tackling. Following first contact we kept up a furious interchange for most of early 2013.

Somewhat later I came across Glenn Borchardt (of Berkeley, California) with his idea of a multi-layered substrate, which he used to explain Gravity as a “push force” – implemented solely by impacts of the substrate particles along with relative sheltering regions caused by larger substrate aggregations.

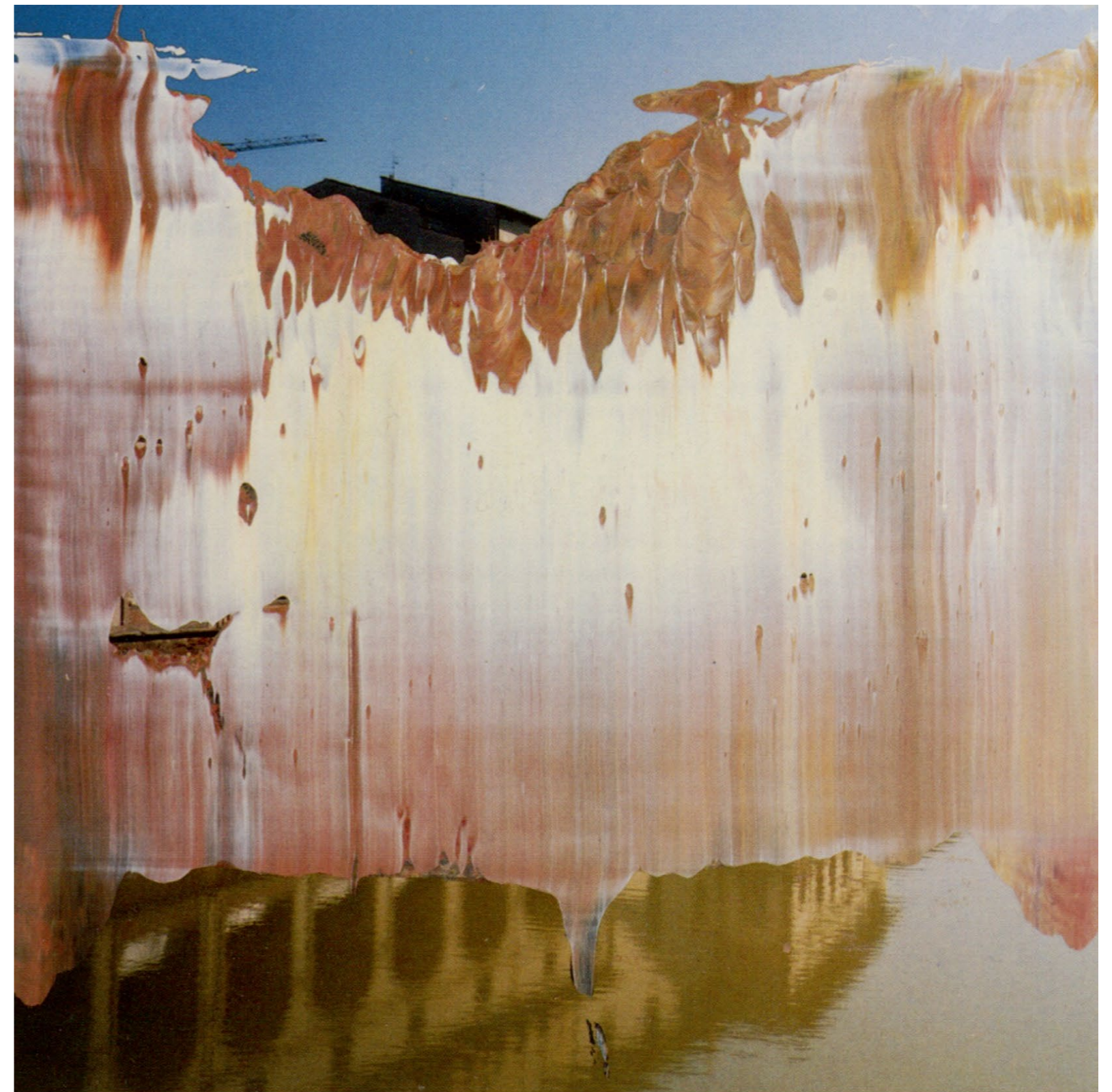
Recently my colleague Dr. Peter Mothersole told me about Wallace Thornhill (from Melbourne, Australia), whose ideas, in some areas are very close to my own, though in others, very different.

Clearly, we all have the same motive force, we are sure that Copenhagen Interpretation is idealist nonsense, so the opponents of that stance are involved in searching for a physical, explanatory way of dealing with the avalanche of crucial anomalies that inexorably followed the discovery of the Quantum.

So, it is my intention to study these potential colleagues, for their various solutions.

Now, it isn't at all likely that anyone has yet alighted upon a comprehensive and consistent set of answers, but as James Clerk Maxwell proved with his famous analogistic model of The Ether, partial models are quite valid steps forward.

I am personally convinced that a complete revolution in approach, methods and theories is required, which will involve a root and branch transformation of the assumed premises of Theoretical Physics, AND, crucially the consistent philosophic basis must be Non-Pluralist, Non-Idealist, and Non-Pragmatist!



Indeed, a long period of philosophical studies has led me to pursue the Holist stance of scientists like Darwin, Wallace and Miller.

If I differ with a potential ally, I will not be surprised. For my own current contributions, though productive, DO NOT cover several extremely crucial areas, such as fields. Also, we are not part of an extensive and burgeoning community of co-workers: so we are to a major extent

isolated, and our own training, not to mention the beliefs of the majority of physicists are locked into the Copenhagen approach.

In order to transcend the multiple impasses, fixed into the current consensus position, we will have to break entirely new ground. And, of course, it has been done in the past.



Charles Darwin's Origin of Species was sat upon by him for over 20 years, because he knew that his methods did not conform to the consensus alternative. While Stanley Miller's Experiment in looking for evidence for the Origin of Life, though it did manage to produce amino acids – crucial components in living matter, was taken to be a dead end, as no one, not even Miller, knew how to take things further. Amazingly, the generally-agreed approaches and assumptions if other scientists were incapable of seeing how such gains could be built upon.

Even very recently, the French physicist Yves Couder, with his brilliant series of "Walker" Experiments, in spite of re-writing experimental methods completely, and working in a holistic, additive way (which I have termed "Constructivist Experimentation", and by so doing, managed to achieve quantized orbits at the macro level, without any quanta involved at all. He has had his achievements dishonestly claimed by Copenhagenist scientists, rather the giving credit to a completely unique holist approach.

All three were, and are, threatened with drowning in an ocean of conservative and pluralistic views.

But, sadly and very importantly, it isn't just Copenhagen that stands in the way of transcending the impasses now emerging on all sides.

Indeed, since the very inception of observation and explanation of Reality historically, Science has been imbued with at least three completely contradictory stances!

From the Hunter/Gatherer period of Mankind's development there was the concept of Pragmatism, and in spite of other very different approaches, the old reliable stance of, "If it works, it is right", has remained as strong as ever.

And then, from Euclidian Geometry via Formal Logic and the Principle of Plurality, this became increasingly established as the only basis for Evidence and Cause.

Finally, and via Equations, there was, ushered in, the Idealist conception of Reality - that it is due entirely to being driven by eternal Natural Laws. But of course, no matter how apt, Abstractions cannot drive Concrete Reality!

From the first, Greek mathematicians and "Natural Scientists", along with the central tenet of Plurality, dominated Science, and even true Experimental Science, when it began to become important in the Renaissance, did not change that assumption!

To make the essential breakthrough, ALL these contradictory stances just had to be addressed at the same time.

For, they all coexist in current Science due to the long-standing Principle of Pragmatism, to allow it – namely, "If it works it is right, And if it doesn't work, switch to one that does!"

With such a catch-all view, you allow them all to remain and be used when they seem to work!!"

NOTE: It is, of course the major tenet of Post Modernism, which prefers to "keep everything" rather than attempt a distortingly incorrect "consistency"! But, in a small way, the prodigious, yet more fruitful, task has now begun!

Quite apart from the necessarily purely scientific investigations, this theorist has also turned to the significant gains of the philosopher GWF Hegel, and his equally remarkable student, Karl Marx, to primarily criticise current scientific assumptions, and substitute a better (more real) philosophical base, via new premises.

It amounts to a truly holist approach (like Darwin and Miller) but, hopefully systemified into a coherent, consistent and comprehensive system.

I had, of course, to commence in my own area of professional qualifications: being a physicist, I decided to make an assault upon the ill-famed Double Slit Experiments.

Now, I must admit that my focussed approach was at that time by no means clear, but, by the time I had removed ALL the anomalies of Copenhagen Interpretation of those experiments, I was clearly on my way!

Immediately, the gains of that successful work reflected revealingly upon several other Key Areas such as The Propagation of Electromagnetic Energy through so-called Empty Space, and even the strange phenomena of Pair Productions and Pair Annihilations

These definitely constituted a start, but the real problem just had to be FIELDS!

Let us proceed!

Now, many of the major opponents of that, currently consensus position – The Copenhagen Interpretation of Quantum Theory, are what might, with justice, be called “classicists”, for they desire a return to the pre-Copenhagen approach. But, the thing they regret most, in the consensus approach, is the total abandonment of physical Explanation, and the reliance solely upon the purely Formal Equations of the Copenhagen stance. And also, and for very good reasons, they abhor the mathematical/idealist tenor of the whole of that stance. But, they also refused to recognise the contradictions inherent in the classical approach. But, they did depend, greatly, upon Explanation, which was significantly different philosophically. To dump the main jewel of the old amalgam, for a pure, abstract and bloodless formalism, was, to them, the major crime! They demanded to know “Why?” – literally everywhere, whereas the Copenhagenist could answer that question NOWHERE - “Obeys this equation” is certainly NOT and explanation: at best it is only a description.

There is also another stance appearing among these radical opponents to the current “wisdom”, which is much less frequent, and these, who follow their opposing stance, for purely philosophical reasons, are the Marxists! Now, this might cause the other “radicals” to be discontented, but that, though understandable, would be unfortunate.

For, after the debacle of Lysenko, which was deemed by those who couldn't possibly know, to be closer to Marxist/Materialist approach than Darwin's writings, caused the credit to that discipline to justifiably wane, and many scientists, who did know the necessary Science, correctly interpreted the supposedly “Marxist” view as “the tail wagging the dog!”

But, of course, that position had never been Marxist, but a crude and wrongly simplified version of it. It was a debased form reflecting the deterioration of the “state-approved” version of Marxism in the Soviet Union in the 1920s and 1930s, under the Stalinist beauracy. Neither Marx nor Engels would have supported such rubbish, and neither would Lenin. The transformation in so-called “Theory” was due to the transformation of the Soviet regime under Stalin, and the seeming loss of true

Dialectical Materialism, for something much easier to assert! And, it is surely up to today's Marxists to redress the balance and address the problems, not only correctly, but in a better way than any other standpoint could possibly achieve.

I have been in the Marxist Movement for well over 50 years, and, in spite of joining the Communist Party, I had to tackle Marx's work literally alone, when it came to his philosophic stance and method.

You will notice that I rarely quote Marx, or any of the other great contributors: it is my job as a Marxist, to contribute daily to the Marxist position, and particularly in my professional areas of Physics and Mathematics, but, uniquely, with a philosophical basis for developments in all the sciences.

And, after a long gestation period, new Marxist contributions are now being made, at least by this theorist! But, others are beginning to get involved, if only slowly.

Let us also see why the Non-Marxists' (among the modern-day critics), in their return to classicism may be misguided.

From its inception in Ancient Greece the Mathematical and Scientific approach had, as already mentioned, three conflicting components. So, let us look at them once more and see what pitfalls would be unavoidable in such an amalgam.

First, and foremost, was the prevailing stance of Pragmatism, which was, with justice, well entrenched. It is the epitome of a purely knowledge-based system, delivering from successful experience, via suck-it-and-see methods: it wasn't meant to and certainly didn't explain anything, but all sorts of dubious speculation could be attached to it! Yet, it had allowed Mankind to spread across the whole of the Earth, even though their means of life at the time was still as a very unimpressive predator, though hunter-gatherer is the most apt description.

But, what was brand new were the methods used in finding some way of accurately describing Nature, which via observation, took rough forms from evidence all around them, and both simplified and idealised them into recurring forms. And, it was these idealised Forms that were seen as the key extractions, and investigated

in preference to all other available features. Immediately, this was different to the still dominant pragmatic stance, for it seemed as if the Perfect Forms were seen as the partly-hidden causes of what was being studied.

It was a dramatic attempt to understand as well as describe. But it didn't actually do that: it was in fact a more sophisticated and succinct form of description! Indeed, this idealistic approach was carried over into a new general philosophical stance by Plato. And, even included in the first “observational science” by Aristotle. Yet, it turned out to require another couple of millennia, before the crucial Experimental Science was added, and sufficient data collected to look for “natural causative relations”.

But, such are never clearly evident in Reality-as-is, and the new scientists took a leaf (or two) out of the mathematicians now very numerous and mature offerings, and physically took to perfecting the circumstances of an investigation, so that a particular pattern that was involved was made as clear as possible.

From then onwards, all experimental situations were farmed to display such targets as clearly as possible. And, when this was achieved, each relation was extracted as a required causing essence!

This wasn't yet what became known as Science, for it did not involve any real explanations. But, it was extremely convenient that the available Forms, from the mathematicians gathered over the preseding millennia already possessed many perfectly useable types in their collections, so the obvious next step was to fit a general perfect form to the particular data taken from the experiment.

Yes, clearly that data was certainly NOT generally true: change the situation somewhat, and you would get contradictory information. The data was solely true of the particular farmed situation.

This last step deeply embedded Idealism into the general scientific method. But, what was achieved was NOT the relation as it occurred in totally unfettered Reality.

Let us be crystal clear Mankind had found a way of extracting idealised forms from extensively (and appropriately) farmed situations, and the fitting up of them by use of the data collected.

Was this actually delivering a general truth? The answer would need to be “Yes”, otherwise, there was still a major problem outstanding, namely, “How do we get the real world (unfarmed) data and its relations?”

To cement these necessary assumptions, the scientists involved devised, or maybe only appropriated, The Principle of Plurality, which may have been around before, but now, at the stage of a rapid increase in experimental science, and the consequent demands of Analysis, it became absolutely essential.

Let us see why!

The principle of Plurality assumed that the observed and measured nature of Reality was wholly determined by multiple, eternal Natural Laws, which simply added together, in various mixes to produce all phenomena. And, in doing this, no such Law was in any way changed!

This was a crucial premise, for, if true, the laws found by the current farming methods, would be exactly the same as those acting in totally unfettered Reality – in Reality-as-is!

But, if it wasn't true, then the extracted laws from farmed experimental set-ups, would always be different, depending upon the circumstances, in which they were acting. Indeed, the extracted Laws could only hold in exactly the same conditions from which they had been extracted.

And, guess what? That turned out to be exactly the case! What things were being found were never eternal Natural Laws, but relations, that though very similar, were different in different contexts.

Now, unsurprisingly, Plurality was universally adopted by scientists: it became an unstated, but always assumed premise of Experimental Science.

Yet, it isn't true! So why was it so vital to assume it unconditionally?

The reasons are not difficult to understand. The replication of circumstances for use was not difficult, so users could depend upon it, as long as those conditions were rigidly maintained.



The alternative to Plurality is the Principle of Holism, which insists upon the exact opposite, indeed, "Everything affects everything else". And, clearly, this would make Plurality wrong!

ASIDE: These two premises had arisen, almost simultaneously, around 500 BC, originally with Plurality in the Greek civilisation, and Holism in India, developed substantially by The Buddha.

Now, interestingly neither a pluralist stance nor Mathematics were any good at explaining "Why" things behaved as they did. They could describe "What" was involved and, "How" it appeared in suitably conducive circumstances, but the statement, "Obeys this relation!", is NOT a real explanation.

Now, the still dominant Pragmatism, ensured that the pluralist route would be the "right one", for in appropriate circumstances, they, together, allowed both reliable prediction and successful use. Also, in what became extensions to individual results, the found "Natural Eternal Laws", became easily incorporated components in more complex or extended areas.

Yet Holism, on the other hand was significantly better when it came to trying to understand phenomena, so, suprisingly, it too continued to survive, when someone asked the question, "Why?": it could relate general relations acting simultaneously and come up with a reasonable narrative and believable conclusions.

So, the "Tool Bag" of the scientists involved an amalgam of approaches: one based upon Pragmatism, another based upon Pluralist version of Materialism, a third based upon Idealist Mathematics, and a separate "explanatory narrative" based upon Holism!

So, in requiring a return to "classical" methods the majority of these opponents of Copenhagen were suggesting that prior amalgam of Materialism, Idealism and Pragmetism, flavoured with a dash of Holism, but also a very large slice of Plurality, as the means to overcome the iniquities of the Copengagen Interpretation of Quantum Theory.

But, that was the identical stance to that taken by Einstein against Bohr and Heisenberg at the 1927 Solvay Conference. And, he lost the argument because his alternatives were inadequate too, but were certainly

not what was the preference of the majority of physicists at that time. Sadly, many groups of scientists with the same anti-Copenhagen objective, have been trying that same supposed antidote, and have so far always failed to bring it off.

That isn't to say, of course, that many of their criticisms are not valid, they certainly are. But, the post-modernist mixed bag of stances just wont do!

The problem is about Theory, and, particularly, in Science, for you cannot build a comprehensive, coherent and consistent standpoint, with opposing elements fused together by the validation of Pragmatism!

I personally, have been seeking allies in this task for many years, and being a Marxist, I looked to my comrades for help and support.

Sadly, I was always disappointed.

They were deeply involved in what they saw as Real Marxism, and the real fight was seen as being against dissenters to that aim, who they termed Revisionists (who certainly existed, as they do now, in much of academia).

My former comrades were not so rude to me, but did suggest that I ought to be doing something more useful in the Class Struggle.

They were wrong, I'm afraid!

The most vital weapon of all in that struggle is, and has been since Marx, *Theory!*

Winning in the battle against Copenhagen would not only win a sizeable measure of support in the academic community, and that can only be good, but also was, and had been since Lenin, the crucial next step in the Development of Marxism as an all-inclusive philosophical standpoint, and the required weapon in the political struggle too. To win Science to our banner was indeed possible, but not yet.

Marxism, itself, had to finally cast off the shackles of Stalinism in Theory, and begin to ally with the best scientists in the most productive and profound ways! I was originally recruited by academics in my University, when a student, and was interested initially by Marx's standpoint and contributions, but finally won over by

Lenin's Materialism and Empirio Criticism - a polemic against the Science of Henri Poincare and Ernst Mach.

But, it was then, and should be now, today's Marxists that will recruit the forces to succeed.

With no support coming from professed Marxists, I finally turned to the internet and sought anyone with similar ideas, and most of them came from surprising areas of Science: the majority were Engineers.

Now, these scientists are used to making "ideal laws" work by adjustments to given sets of circumstances, to make them deliver what the law suggested should be the case.

And experience, in Modern Physics, proves conclusively that without these engineers, NO "confirmations" of new theories would ever be demonstrated. Indeed, returning to those who bade them to undertake such tasks, literally always resulted in the theorists inventing some new speculative factor, and mathematical dexterity to make things fit!

So, perhaps unsurprisingly, the best of these Engineers were at the heart of most alternatives to Copenhagen.

BUT, and it is a big BUT, their dominant stance is certainly Pragmatism, and that can never be up to the task at hand - for that will have to be primarily Philosophical and Theoretical.

Of my closest contacts, all are engineers. And you can see why! The worship of Ideal Forms as the drivers of concrete Reality, has never washed with engineers. And, even the totally exclusive preoccupation with mathematical theorems and Proofs, seems to them to be about something else. And the reasons are evident! They spend their time struggling with Real World difficulties to try to make the high-flown theories actually work.

The "other-World" speculations of the theorists, both physical and mathematical, are seen as practical objectives rather than the truth: they have to provide a tailor-made artificial context to deliver the only situation in which those theories will work!

Interestingly, though, these engineers have, themselves, developed their own mathematical "frigs" - determined solely by their own pragmatic stance, to help them

deliver. Ironically though, these were typical "tools" for engineers, many have been drawn into theoretical Mathematics, and treated in the same abstract way as the rest of that discipline.

NOTE: The writer of this paper is also a mathematician, so can validly make these criticisms, I feel.

But, in spite of a genuine rejection of the current consensus in Physics, we have to ask if the oppositionists can replace it with something better? The answer has to be "partly"!

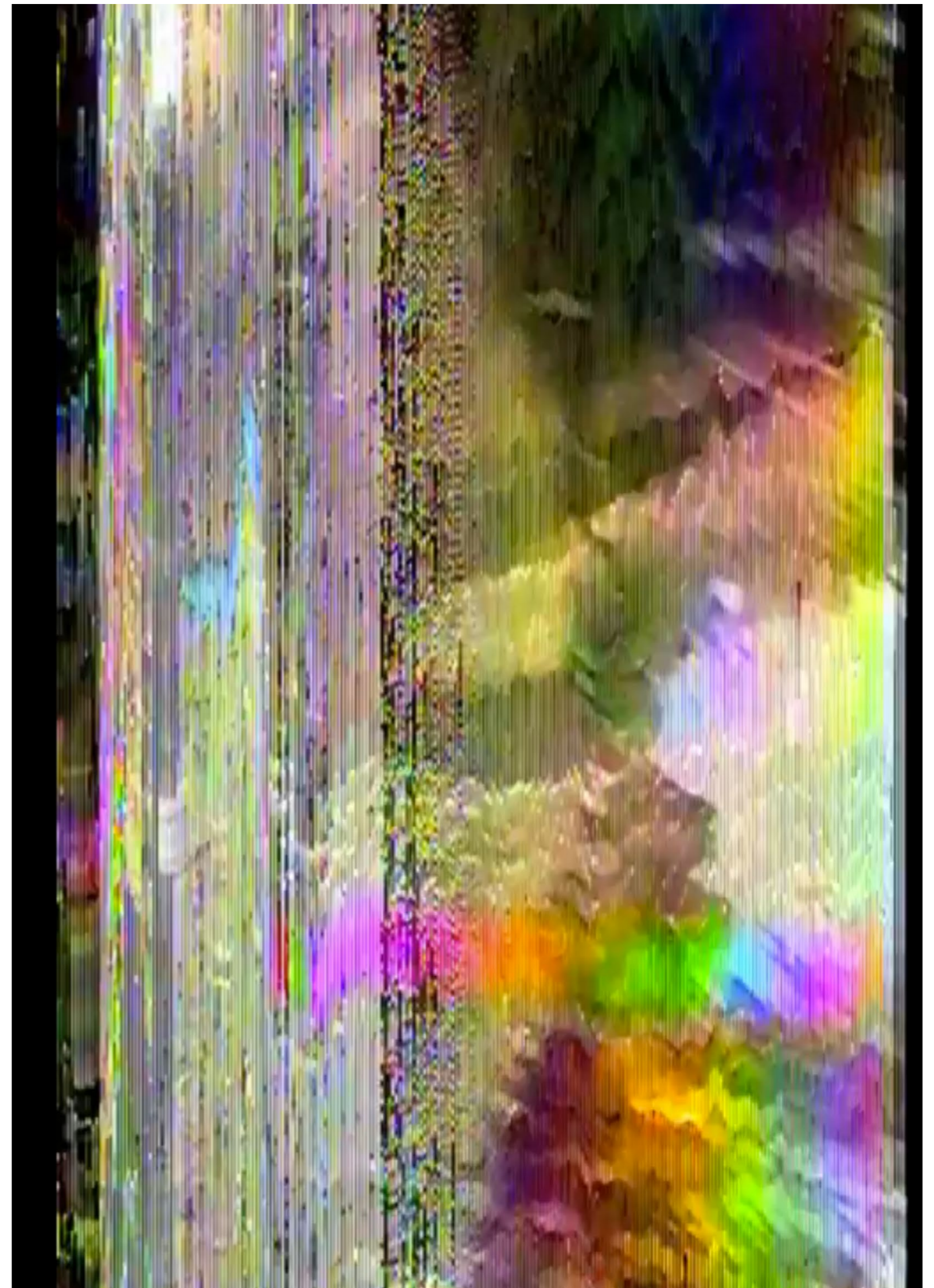
For these specialists work at both ends of the scientific process - in observation and experiment as well as delivering the context and actuality for production.

So, they can be relied upon to deliver a constant stream of new data, as fodder for the theoreticians. Indeed, without the technicians, the rest of the monolith would collapse even now. What is generally called Science is almost always Technology!

Now, there is an alternative approach in Science, which is primarily philosophical - and that means no mere post-modernist mish-mash of contradictory premises. There must be a sound, coherent, consistent and comprehensive, monist view that can also successively transcend the inevitable series of impasses of the old amalgam, plus the new idealist theories also, and even the mistakes, flaws and omissions that will also, and unavoidably, occur within the new stance and its theories. But, it must be both consistently materialist and philosophically holist!

Now, the philosophical wherewithal to develop a sound holistic method of investigating concrete Reality, actually exists, and is now 200 years old. It was developed by the brilliant idealist Philosopher, Friedrich Hegel, and came out of his extended and serious research into Thinking about Thought!

He became increasingly aware via his historical studies in this area, that human thinking was never able to alight directly upon the fabled, and sought-for, Absolute Truth, and considered it to be his job to establish both why this was the case, and what precisely allowed the inevitably consequent impasses to be overcome. He noticed that throughout Mankind's known history, each step forward in Thinking, after an exciting and productive honeymoon period of significant advances, inevitably



ground to a halt! An impasse emerged presumably from the very same breakthrough ideas that had also caused the involved progress. To solve such a quandary was so unimaginable, that almost nobody could do it. The impasse didn't seem to have a rational solution. And also, our hard-won premises had to be sacrosanct... But, that was most certainly incorrect!

Hegel was able to show that what had been achieved was not Absolute Truth, but a position with more Objective Content (parts or aspects of the Truth), which though in the short term led to some important gains, would, and always, finally hit the buffers, in the form of generating Dichotomous Pairs of totally contradictory concepts.

Indeed, when such contradictions emerged, it was always the signal that the previous underlying premises were no longer sufficient, and as they stood would never transcend the impasse.

These impasses occurred, time and again, but were only very rarely transcended. The usual "solution" was to "keep both", and switch between them on the basis of which would deliver a useful outcome, in a given context.

Attempts to derive one from the other, also always failed. But, Hegel was able to determine exactly what had to be undertaken to transcend such an impasse.

The common premises, for both arms of the dichotomy, had to be revealed, and rigorously criticised. No simple rejection would do, for the effective use of one or the other arm proved that they contained something of Reality. The solution had to keep that while dissolving the contradiction rationally. Clearly Hegel's objective was to correct the flaws in Formal Logic: he wanted to make it always work!

Without such a method, Mankind would perpetually "bypass" such dichotomies with a purely pragmatic switch approach", and hence would leave innumerable lines of reasoning prematurely terminated, or, at least rationally punctured. Human Thinking got more and more like a bush, with innumerable dead-end twigs. A veritable thicket, full of rationally terminal contradictions was the result.

NOTE: An "expert" is someone with a comprehensive knowledge of the bush, and who knows where to go, pragmatically, for a useable result!

And, Hegel finally began to make such transcendencies in his chosen areas. He would use the Dichotomous Pairs to identify their common premises, then criticise and change those premises until the dichotomy was dissolved. The method was termed Dialectics!

And yet, the achievement still had another vital step to be taken. As Hegel formulated it, it was solely about Human Thinking, but his student Karl Marx also realised that it was crucially also about how we thought about concrete Reality. He transformed the method by bringing the whole of Hegel's great contribution, wholesale into a Materialist standpoint!

With this move, the wherewithall for a significantly superior stance was available across the board in ALL human disciplines and areas of study. And, also crucially, in the very nature of natural development itself. Not only in how we thought about it, but in how it actually happened! It wasn't just a breakthrough in reasoning, but a discovery of the true nature of reality too!

Now, this reveals my approach for demolishing Copenhagen! I, of course, agree with my "return-to-classicism" colleagues on the necessity to condemn the idealist/mathematical current stance, and the essential return to materialist explanation of phenomena. So, many of their admirable arguments are mine too.

But, am not just a physicist, for most of my adult life I have been a serious philosopher too, and in the line of development of Hegel and Marx, so I am also and necessarily directed towards a trenchant criticism of Plurality, which is still believed in even among most of my anti-Copenhagen colleagues. But my chosen alternative engenders a stance uncommon in Science, and that is Holism – indeed in the construction of a holistic explanatory approach as primary! And, crucially I am also against Pragmatism – "If it works, it is right!".

Now, these two positions were an intrinsic part of the classical scientific stance, and even facilitate many explanations, but because of pluralistic consequences in Analysis and Reductionism, the impasses are not transcended.

Most obviously, scientific experimental practice, and its interpretation is imbued with these incorrect stances. And, I know, that if they too are not superseded, Copenhagen will NOT be vanquished.

It was Einstein and later Bohm's chink in their alternative position: they depended too much upon crucial premises, which were a significant part and even cause of our present day difficulties!

In addition, commencing from my chosen (in my opinion superior stance), of commencing from the gains of both Hegel and Marx, I must seek out and reveal Dichotomous Pairs, and unearth their causes in mistaken premises, and then develop sounder alternatives to those, so the the contradictory impasses are transcended. A tall order, but without that crucial remit NO solution will be found!

Now, premises can only be seen intellectually, so abstractions and concepts must be involved.

Important note: There is still a fly in the ointment. Hegel and many who followed him consider Dialectics as purely an intellectual method – an improvement in reasoning only. Yet the switch to Materialism also changed that idea. The premises to be criticised and replaced were not just ideas, but actually reflect existing entities too. The method could be extended to include physical entities which may have been omitted or wrongly defined.

In Science, the most crucial premise can be the Ground, or Context, within which the various phenomena occur.

I alighted upon the dumping of the prior attempt at defining a universal substrate, The Ether, as the key turning-point in Modern Physics. So, I commenced with an attempt to re-establish a very different universal substrate – because it now had to do a great deal more than was asked of its previous instantiation!

Primarily, it had, of course, to be undetectable, and capable of propagating Electromagnetic energy over vast distances, BUT, for the present, at least, it MUST be composed ONLY of particles that we already know about!

I commenced by attempting to devise an undetectable single particle, entirely out of known and stable sub particles. Evidence from both Pair Productions and Pair Annihilations seemed to suggest that a particle composed of an electron and a positron was worthy of study.

Clearly, picking such diametrically opposite components seemed foolhardy, for such a suggestion always elicited

the response – "They will annihilate one another on contact, how could they co-exist in a single, stable particle!". But, what if they didn't ever touch: what if they mutually orbited one another?

With this relationship, a joint particle of these two, would indeed have NO overall Charge, NO Magnetic Effects, and NO matter effects either as one component was ordinary matter, while the other was antimatter!

Yet, such a particle could internally carry electromagnetic energy in the same way as the aton – via the promotion of its internal orbit!

And, remarkably, such a joint particle had been fleetingly observed in the High Energy Tevatron at Fermilab, and named as a positronium! BUT, the researchers using that accelerator found the positronium to be unstable!

Now, even my proposed version would be unstable in that environment, but what about in the supposed to be totally Empty Space? I assumed it would be stable in such and other conducive circumstances, so I renamed a stable version the neutritron

The question was, "How could such neutral particles form any kind of substrate? They have No inter unit attraction!"

Well, further theoretical research has revealed that such a statement as the above is not entirely true! I found that though totally neutral with respect to one another at quite small separations, their neutrality also allowed very extreme proximities to occur, and THERE the situation became very different indeed. In extremely close proximity these particles would indeed suffer electromagnetic interactions – via individual sub particles from different neutritrons getting very close indeed to one another.

What actually occurred was no constant electrical force, but one varying swiftly between attraction and repulsion. It occurred as long as the particles remained extremely close. Outside a certain penumbra the particles would have no effect upon one another, but within that tiny region, they would be alternately attracted and repelled in a sinusoidal fashion: they would oscillate in-place!

Interestingly, I analysed exactly what the ongoing effects would be within this penumbra, and they were identical



with the form of James Clerk Maxwell's Electromagnetic Equations, which, by the way, he predicated upon his conception of the nature of a universal substrate, then termed The Ether. Oh, and those same equations are still used everywhere to this day, in spite of the complete demise of the concept of the Ether.

Maxwell's result was of two sinusoidal oscillations, one electrical and the other magnetic, were exactly what I was able to establish as happening in the penumbras around neutritrons.

Now, taking these, admittedly theoretical, gains into our discussion about how such entities, could, somehow, form a "connected" substrate - it would, now, suddenly, become possible, but it would be formed in a different way to solids, liquids and gases. For, no constant forces would be involved, and no permanent electrical bands would be happening. Once within the penumbra around an individual neutritron, another identical particle, would be likely to oscillate under varying attractive and repulsive effects - thus producing a new kind of extended association. I decided to term it a Paving, because of the gaps between all units in the structure.

Now, the first remarkable property of such a Paving is that its units could hold-or-release quanta of energy, via the promotion and demotion of their internal orbits. Therefore, propagation could be possible in such a substrate via bucket-brigade transfers from unit-to-unit, using quanta, (as happens with atoms), and, in such a means, the Speed of Light would become the inter-unit transfer speed. That was, most certainly, a significant addition to the effects made possible by such a substrate!

And, of course, it also explained how disturbances, perhaps caused by a moving charged particle, could be propagated.

The Double Slit Experiments using these suggestions is moved away from the inventions of the Copenhagen stance, into addressing Wave/Particle Duality appearances, as explicable, in purely physical terms, involving the particle-as-cause, along with the waves propagated-via-a-Paving.

Significantly, with this alternative, ALL the anomalies of the of the prior theory were clearly removed by this new theory. Yes! All of them!

Even the almost magical vanishing of wave-like patterns when measurements were attempted in Double Slit Experiments were simply and physically explained!

Clearly, whether this new theory is totally correct or not, these ideas are certainly worth pursuing! They certainly have more Objective Content!

NOTE: Remember, James Clerk Maxwell's model of The Ether, involving as yet undetected vortices and "electrical particles" managed to produce his still essential Electromagnetic Equations. Even though no evidence whatsoever of Maxwell's assumption were ever achieved his model MUST have had enough Objective Content within it to actually deliver valid equations. So, with similar confidence, and for the same sort of reasons, we should proceed with the proposed Neutritron Paving as far as we can productively take it.

And, with Hegel's remarkable method as basis, we will naturally expect that at some point, the efficacy of our current premises, will themselves also run out of steam. It will, as usual, be indicated by the emergence of Dichotomous Pairs of concepts, and the imperative requirement to make significant changes to our then current premises, to allow the transcendence of such contradictions.

Clearly, this powerful method militates against the all-backs-to-the-wall desperate defending of previous gains, that seems to be the ever resorted to stance in Modern Sub Atomic Physics, and replaces such ego-centric criteria with an openness to new and better ideas, and regular checks on rarely revealed premises! It also allows speculative models (as with Maxwell's version of The Ether), as long as they have more Objective Content than those that they replace!

Indeed, the next impasse is already upon us. For, in spite of the significant gains made possible by the concept of a Neutritron Paving, it has already failed to explain Fields: It, as defined thus far, can in no way, deliver active force-delivering Fields of any kind.

So, our definition of a universal substrate cannot be taken as sufficient: there has to be other possible "components" around in a more complex substrate that can deliver such things, Clearly, the neutritron, being neutral in all respects, is not going to be able to do it: it will need a particle (or more likely particles) that can deliver what is

required. Our first move must be to extend the premises, with respect to components of the Universal Substrate! But, they too would have to be undetectable (as was the neutrutron) YET allow the presence of a source for forces to be generated. Initially, such particles seemed impossible.

How could there be active, forcing particles that also cannot be detected? Somehow, they have to be as similarly masked as the Neutrutron, but carrying the wherewithall to deliver a punch.

The current solution is to have two mirror-image gas-like particles in constant random movement. And, these will carry detectable properties in individual particles, yet be totally maskable by the mirror image, second type of particle. These two, occurring in equal numbers, would then give NO overall charge, or magnetic effect, or even detectable matter effects.

These have been devised (initially in the work of Mohan Tambe, and later by this theorist), but still require a great deal of further work to deliver a fully comprehensive theory.

Nevertheless, the fact that they are free-moving and have the required properties, allow them to gather around, say, a charged particle in aligned sequences outwards from a first shell surrounding the causing particle.

Now, for the biggy!

To complete the rout, we must explain exactly why the Copenhagen formulae actually deliver the exact overall results, which we observe, but clearly, completely without any Wave/Particle Duality, Superposition, Quantum Entanglement and the rest!

Also, the quantisation of electron orbits within all atoms, as well as those involved in Yves Couder's Walker Experiments must be fully described and explained.

All these are, indeed, underway, and most are getting towards a full and successful non-Copenhagen definition.





The Dynamics of the Universal Substrate as a Consequence of a Holistic Philosophical Stance

After a series of successes concerning this theorist's suggestions for an undetectable, but absolutely-crucial Universal Substrate, problems, as was expected, began to emerge.

As recounted elsewhere, many of these began to be addressed-and-indeed-resolved, but one, in particular, seemed to be totally intractable!

It concerned the different kinds of energy that could be imparted to the units of such a Substrate, and how they could, possibly, convert one-into-another.

The problem, as ever, concerned the Propagation of Electromagnetic Energy, which has to be in finite quanta, each one involving a single Frequency only. The problem appeared to be solved, when this theorist's devised units, of a suggested Substrate, were given a similar form to that of the atom. For, the proposed Substrate Units were suggested as a mutually orbiting pair of particles of exactly the same size, but directly opposite charges. The theoretical unit on which to investigate possibilities, was decided to be the neutritron, consisting of a mutually orbiting pair of one electron and one positron.

With such a unit, the same possibilities, in both amount-and-nature of any stored Electromagnetic Energy would be possible in exactly the same way as in the atom.

Energy would be stored via the promotion of a single, shared internal-orbit to a higher energy level, and that could only be of certain finite amounts, which inferred a particular frequency for the energy involved.

The classical idea of an oscillating-wave, of such energy, could directly-relate to an orbiting at a fixed radius in both cases.

So where's the problem?

Well, though many aspects of a comprehensive theory are already in place, there is one crucial assumption - such as that when other, non-quantised energy, such as Kinetic, is inevitably involved - for it may affect any involved quantised energy and vice-versa.

Now, any direct conversions cause intractable problems, as the two types of energy do not seem directly mutually-convertible, one to the other, yet key parts of the current state of the Theory require some concrete interaction.

On pondering the problems over an extended period, various important extensions and improvements were arrived at, but the basic problem still remained.

However, one particular aspect of the orbital forms could perhaps be changed by non-quantised energy sources, but only in very special circumstances, and a very limited way.

To devise an answer, it will be necessary to relate one important later addition to the Theory of a Universal Substrate. This involved the inter-relations between the neutritron units proposed for that Substrate. As these units are entirely neutral, in every possible way, inter-relations seemed impossible: and in many circumstances that would certainly be the case!

However, one circumstance proved to be different! If two neutritron units were extremely close together, the internal, charged components within each unit could, indeed, momentarily affect one another between-units. The positive sub-unit within one could be repelled by the positive sub-unit in the other. And, in the same way, when the across-unit effects were of differently-charged sub-units, they would be momentarily attracted!

It soon became clear that if two such Substrate Units got with a certain very small distance of one another, each would suffer an oscillating attraction-repulsion cycle, due to the movements of the sub-units within their

shared orbits, and this would continue as long as the neutritrons remained within one of the small spherical regions surrounding each and every one of them. Then, as long as the units were not externally disturbed, they would remain within this situation. So, in relatively quiescent circumstances, all the local units would settle into such oscillating relations with all other, closely-proximate neutritrons.

This was termed a Paving of the Substrate particles. It was NOT a strongly-coupled system, by any means: indeed quite minor external energy could easily dissociate such weak connections, but in the absence of such larger disturbances, the Substrate would stay connected as a Paving of oscillating Units.

Now, this also confirmed how such Substrate Units could provide a means of propagation of Electromagnetic Energy. A unit in such a Paving carrying a quantum of energy in its internal orbit, could, in the approaching part of its constant oscillation cycle, pass-over its carried energy, bucket-brigade fashion, to its closest-neighbour unit, and any quite minor accompanying-physical-impulse too, would also deliver a particular-direction that otherwise could move the quantum in any direction whatsoever!

Now, having suggested the above minor non-quantised effect, yet another presented itself!

It is to do with the planes of the orbits, within the Substrate's neutritron units, which could be in any orientation whatsoever.

NOTE: It will be just like the electron orbits in the atoms in an iron bar, which are normally orientated in many different directions, but can be re-orientated to be mostly aligned in the same direction, turning the bar into a Bar Magnet.

So, the possibility of re-aligning the orientations of the orbits within a Paving of a Universal Substrate, due entirely to external, non-quantised disturbances seems similarly worthy of investigation.

The possible consequences might well be both dramatic and far-reaching. For example, though it is easy to explain interference-patterns of waves in a theoretical classic, elastic medium such as the historical Ether, it is not so easy in a Universal Substrate composed of

individual particles carrying only discrete quanta of electromagnetic energy.

So, let us look more closely at a Paving, composed here for simplicity of only neutritron substrate elements.

What we are going to attempt to do is turn purely Kinetic Energy - passed on from a causing moving particle, actually directly affecting whole substrate units, and passed on physically (like on a Newton's Cradle) in the very same direction as the original cause.

The question then arises as to what effect those applied motions might have upon the inner carrying orbits, if any?

Now, earlier we talked about the imposition of a direction upon bucket-brigade delivered e.m. energy, and a similar idea can be employed here too, as the passing on of this external energy, will unavoidably increase the affected Substrate unit's local-oscillations, and could also cause the internal orbits to align in the same direction!

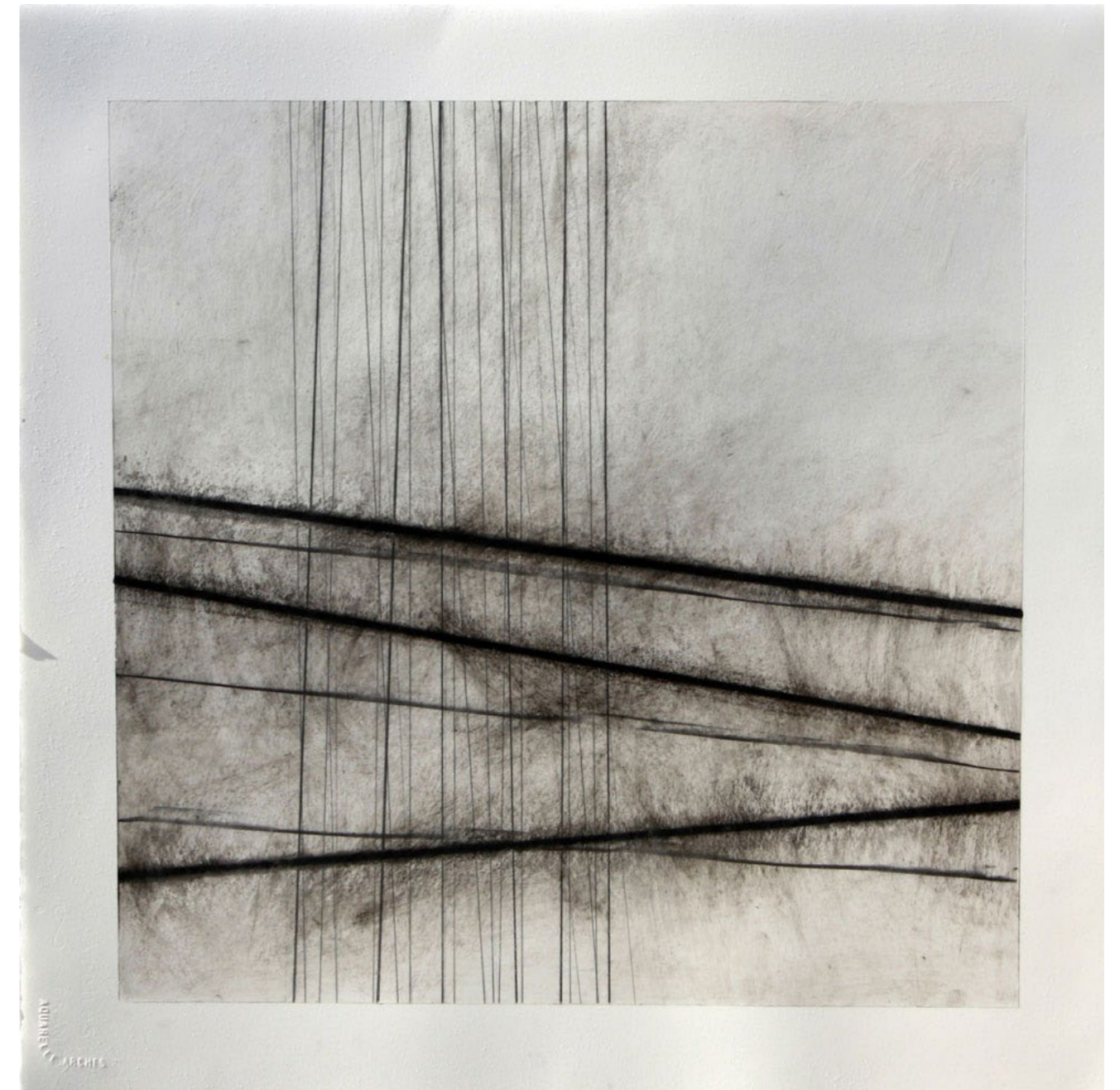
If such did occur, when the disturbances finally reached the Slits in the Double Slit Experiment, they would carry on through both slits, and with diffraction at the slits' edges, cause a spreading out of the disturbances into fan-outs, which would definitely cross one another.

Then, in some lines of substrate units emanating from a slit, the aligned internal orbits may well also come together again, while in other lines they will be more like a random mix.

The inference is that aligned lines may deflect the following (causing) particle to one side or the other, while the randomly mixed lines will leave the particle pretty-well unaffected.

What is arising in this research is a holistic mix of very different effects, all possible within the same situations, involving significant changes in both generated-structures and consequent-phenomena.

For example, a particularly energetic passage of a particle through the Universal Substrate's usual Paving Form, will, locally, along that particle's path, dissociate the Paving back into individual, unconnected particles, which picking up translational energy from the moving interloper, can be turned into vortices, and even maintained-as-such, permanently, if in orbiting





situations - as constant returns of the causing particle can regularly exchange energy with its self-caused vortices.

Indeed, this has been developed into a non Copenhagen explanation of quantised orbits.

Premises, Premises, Premises

Now, it has to be made clear that such mixed explanations, as are used in this paper, are not mere speculative try-outs.

They arise directly from a Holist Philosophical stance - very different indeed from the Pluralist Philosophic stance of almost all scientists.

Instead of the Principle of Plurality premise, which sees Reality as constructed entirely out of Pure Forms - simple enough to always be reflected correctly in Formal Equations, that are then merely added-together in various mixes-and-proportions to deliver absolutely Everything.

Such a stance has determined the usual consensus Experimental Method entirely, and justifies its "farming" of natural situations to facilitate their study. For, if that Principle is correct, such major and maintained changes to a situation "will not" in any way change the individual laws that are involved.

But, the alternative Holist stance rejects such ideas: everything, a lot-or-a-little, affects and changes everything else.

The pluralist experimental method transforms what is being studied, separately, into a collection of changed, and fixed, Formal Laws. We do not, and indeed cannot, get an accurate explanation of anything - only a collection of arranged-for snapshots - giving changed-and-simplified versions of any causing contributions.

Notice that in the holistic theories, such as those suggested here, NO permanent stability is assumed in a phenomenon. It is open to significant changes in forms, phases and modes due to natural-physical developments, even within what we think of as settled situations.

So, for the holist, dynamic situations are not delivered by mathematical equations of motion, but by a sequence of consequent developments, as what is happening inevitably changes its own context, and hence what is possible thereafter.

The pluralist approach was NOT a total fiction, however, but nevertheless delivers only a simplified and idealised set of distorted snapshots of the dynamics, which can, in appropriately farmed situations deliver predicted outcomes.

Directional Fields and Forces

Action-at-a-distance Explained?

The theory developed by this theoretical physicist concerning Magnetron particles in a physically-present Universal Substrate, involves a crucially important feature, which now demands further elaboration.

The magneton-A (mN) and magneton-B (mS) particles, are effectively mirror-images of one another in both their contents and their properties. But, though they were both individually wholly charge-neutral, nevertheless, because of the differences in size between their component sub-units, each of the two magnetons possesses an opposite and still-active, magnetic dipole effect, which always involves a single, precisely-defined direction, due to the orientation of the determining plane of the internal-orbit involved, of which that direction was the axis of that internal orbit.

The directions of neither electrostatic, nor any gravitational, effects could ever be so accurately and physically defined, with the usual theories!

We could, in those prior theories, only define those directions involved, in both Electrical and Gravitational fields, in terms of the relative positions of both the particular field's Source and its affected Object.

But, to be able to define this direction, would require, and hence infer, a precise-and-simultaneous "knowledge" of both of these vital positions - in other words, one has to know where the other one is, precisely, to effect its subsequent caused-movement in terms of that precise, connecting-direction.

But, how could this really be known? The ill-famed Action-at-a-Distance anomaly once more raises its problematic head!

Of course, we, therefore, naturally devised the idea of a physically-existing, and, therefore, material Field, surrounding every affecting-object. But, within what is such a Field established, and what would have to be

the properties involved to deliver the required influence, AND for it to be in its precise necessary direction?

Historically, Mankind HAD to invent the idea of a totally space-filling substrate-or-medium to both support and deliver the means for such extended effects. BUT, "How could the correct directions be involved throughout such a field?"

Clearly, the Substrate had to be material too, though undetectable, as no-one has ever detected one! And, it would require properties of its own to deliver all its necessary functions.

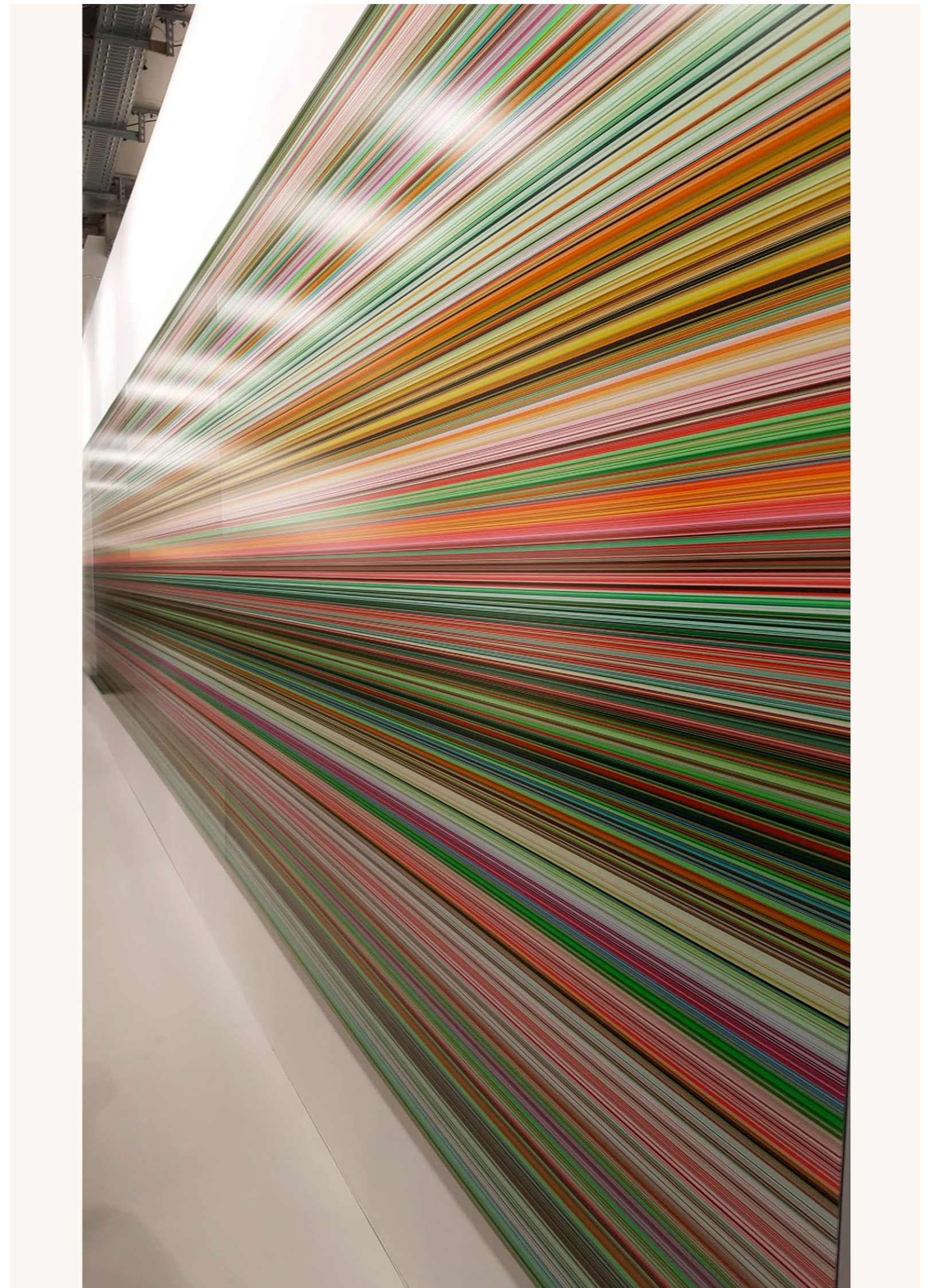
So, is there a property which could be imposed throughout such a field, which had to involve precise-directions, essential for the required actions? For these would have to be directed precisely to the supposed sources of such fields, at every single position throughout that field?

With this theoretician's research on magnetons, an answer has finally been delivered. It is "Yes!"

A magneton, with its magnetic dipole, gives just such a precise direction!

And, as an initial magneton, immediately adjacent to the source, will always align its magnetic dipole to point to that source, and, thereafter, itself-in-turn would cause the next magneton to align with it, that is in the very same direction, this would happen repeatedly until, a completely singly-aligned-line of its field-components will be delivered all the way to any affected object's position.

In fact, all around the source there will be such an aligned field pointing inwards-to-the-"source" from all affected positions. And, this would not only deliver the appropriate directions to every single point in that field, but also the means to act upon that object.



The directions throughout such fields will have been built up from the source outwards imposing the “direction to the source” on each and every field unit.

So, with this explanation, a usually undetectable population of randomly-moving and randomly-orientated magnetons, gradually settle into series of concentric shells around the source, composed of all these directionally aligned field-units.

Now, as there will be more units in each succeeding shell, due to its increasing radius, so the alignment will be delivered, but the amount of effect will be shared between more units as we move away from the source, in a consequent inverse square determination.

So, it must also be the case that there will be energy (presumably drawn from elsewhere in the Substrate) within these field-units, but also in proportion to the shared influence in each unit of the line passed outwards via each succeeding shell.

Clearly, if that unit's energy is used in affecting an interloping object, then the field, thereafter, will have to have its used-up energy replenished from elsewhere in that Substrate.

For, absolutely nothing is extracted from the supposedly-causing Source: it remains exactly the same. And, similarly, absolutely nothing is extracted from the supposedly-affected object: it too remains exactly the same.

All the active effects of a field, therefore, can be due ONLY to that field. It alone supplies both the direction and the energy to affect an interloper.

This theory removes Action-at-a-Distance, and replaces it with an actually-existing Field within an actually-existing Universal Substrate, composed of appropriate units.

And, perhaps the most surprising feature of this Theory is that a supposedly Electric Field, can only be, in fact, a Magnetic Field, which gives exactly the same effects as the previously assumed Electric Field.

The clearly evident relationship between Electricity and Magnetism, should, perhaps, be seen as merely two views of the very same and intrinsically-linked phenomena, which we initially treated as separate, and

only later revealed their close and clearly natural relations - not least as are clear from the integrating Maxwell Electromagnetic Equations, and the whole technology that has been developed involving both together in both natural and productive technologies.

But, what has made this possible is not only the premise of a Universal Substrate, but also its composition, not only of undetectable neutritrons, but also of equal numbers of mirror image magnetons, usually in constant random motion to make them also undetectable, but which can, in the presence of a charged particle, align themselves, statically, around that charge thus subtending a Field. Clearly, these units (the magnetons) must be capable of the properties suggested here, but also capable of both communicating and holding energy in a given pattern determined by the causing charge, but NOT supplied by it.

As with the corresponding theory based upon the neutritron, all the magneton components of the Substrate must also have internal orbits - similar to the atom, and in a similar way capable of being promoted and demoted. Such units, in a Universal Substrate, must therefore be capable of acting as both a Sink and a Source of energy, the distribution of which will be normally equally shared, but reorganised by influencing sources - like charged particles.

Of course the above theory is, possibly, only about Electromagnetic Fields, and to deliver it, the composition of the Universal Substrate had to include Magnetons as well as Neutritrons, and yet remain undetectable when sought without interactions.

It seems to suggest that even this composition is still incomplete, and another category of Substrate particles, namely Gravitons, will have to be theoretically devised to deliver the actual Gravitational field as well.

Let us use the same principles, as delivered neutritrons and gravitons, to get the undetectable component(s) to allow this.

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