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THE MYTH OF SCIENCE

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The Myth of Science

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CHANGES

by Jim Schofield

How does Reality develop?

It's certainly a fair question!

But, it will be answered very differently depending upon your accepted philosophic premises.

If you are a Materialist you will start with Matter!

If you are an Idealist you will start with Principles!

But, right away, you will have a problem - What is Energy? Clearly, Matter isn't always totally static: it moves. But, what moves it? Does an impulse come from outside of Matter - from outside of Reality, from a supernatural source?

And, exactly where does everything in Reality actually happen? Must we also have a Nothing (Totally Empty Space?) as well as Matter? And, is that Nothing merely a point, or is it infinite?

Are questions of Origin and Development reasonable, or is what exists eternal, and has always been, basically, the same?

Now, certain ideas are quite obviously rubbish!

A moment's consideration very quickly disposes of the more blatant suppositions.

Why?
It is because of CHANGE!

And, that is evident not only everywhere we look, but also in our thoughts!

And, it is in our thoughts that we find both Infinity, and even the impulse to act: so, this led to the idea of the Thinking of a Supreme Being, thinking up absolutely Everything!

That diametrically opposite idea to Materialism - Idealism, is centred upon Thought - as the Active Impulse, but exactly where is that happening? It isn't in my head or yours, and also for it to manipulate Reality, it somehow has to be both outwith our Reality, but capable of changing anything in our Reality.

You can certainly see where the idea of God came from! It is that Super Being, conceived in Man's own image in his Thought. But, millennia of the experience of Mankind does not gel with such a concept, so something entirely within Our concrete Reality just had to be the active Impulse.

So, it was next embodied in Pure disembodied Energy, which existed alongside a totally passive and inert Matter. Without this Energy, absolutely nothing would change in any way. So, it could only be in that situation. and only then, that anything could possibly be eternal.

Yet, the results of millennia of studies by Mankind, has "revealed" only a series of "discovered" eternal Natural Laws, which never vary, but somehow add together to produce real CHANGE

But, how does that work? How can fixed Laws produce some things that are wholly New? Something more complicated - Yes, that's definitely possible! But, such a mechanistic view can never cope with the *wholly* NEW. Clearly, what is produced must not only deliver "the complex", but also change-the-very-context that produced it: there must be Recursion!

Photograph by Michael C Coldwell

You can never step into the same river twice!

Indeed, “Everything must be affected (changed) by everything else!” The earlier assumptions, outlined above, must have been wrong-from-the-start: instead of the pluralist idea of eternal Natural Laws, we must, instead, have the holist alternative of constant or incessant CHANGE

Now, what does that mean?

It can only be that Materialism must involve both Matter-and-Energy - present together always - from the outset. Indeed, Energy is the mode of existence of Matter: Energy is Matter in Motion!

Now, this seems just as counter-intuitive as there being no-change-at-all: for, quite evidently, we are surrounded by a multitude of things, which are, quite clearly, both Static-and-Unchanging. But, that is an illusion, as conversely is also the sudden inexplicable major transformations that seem to occur as well.

The problem is that Man lives for altogether too short a time to observe great changes, while also living too slowly to see others. Indeed, our world appears to be dominated by what we term Stability - things remaining exactly as they are - seemingly forever.

But, that is never the case, for though constant the changes occur to different things, and at different rates; and the summations of multiple affecting factors are changing all the time, it is usually insufficiently to undermine their Stability overall.

Yet, at some inevitable point the multiple factors can tip the balance and precipitate a major transformation, which crucially also changes the context too.

At our rate of living, we are seeing only Stills within a much longer Movie - only occasionally observing the big changeovers, which we then call Emergences or Revolutions.

Indeed, when Man had no means of extending his view beyond what he could immanently experience, his conclusions had to be totally and erroneously determined by that very selective experience. To conceive of things beyond that very limited “now”, required means of delivering sequential and indisputable records of past situations. And, the first of these was in Writing, when accounts of past experiences gradually accumulated as History - to be passed on to later generations.

And, even more profoundly, via a study of the rocks beneath our feet, in Geology - there was a realisation of significant changes, upon a mammoth scale, and taking, often, millions of years to both happen, and then be left as consequent records-in-the-rocks.

In addition, Man’s viewing of the extremely small was vastly extended by the Microscope. While, his grasp of the colossally-large was significantly improved by the Telescope.

Many intrinsic developments within Mankind itself, also enabled a vast number of such extensions - pragmatically via Technology, and conceptually by Reasoning, and in understanding via Science.

Of Course, in spite of such extensions in the ideas and thinking of Mankind, what was achieved could not but be compromised: there was not, never has been, and will never be a direct route to Absolute Truth, and all gains, though they appeared to be such - never ever were! But, nevertheless, each concrete gain possessed a “Measure of Truth”: it was best described as Objective Content, for in appropriately maintained circumstances, it could deliver what was intended.

Yet, each and every achievement always contained the seeds of its own inevitable failure as the Domain of its application was attempted to be significantly extended.

Indeed, right at the beginning of these developments in Ancient Greece, these flaws were already apparent. Zeno of Elea in his famous Paradoxes, demonstrated such failures via the alternative concepts of Continuity and Descreteness, when considering Movement.

Indeed, many more such Dichotomous Pairs were discovered all over the place, but never rationally transcended. Instead, Mankind fell back upon his earliest discovery - Pragmatism, so -”If it works, it is right”, was used to by-pass such impasses.

Indeed, no real rational resolution, to Zeno’s revelations, was achieved over the next 2,300 years, until Friedrich Hegel, sought-out and used such Dichotomous Pairs to reveal the underlying problem, which turned out to

be in the premises used to logically arrive at such dead ends. Hegel realised, further, that the standard means of reasoning, namely Formal Logic, did not, and indeed could not, deal with Qualitative Change. He developed a means of dealing with changing situations via such Opposites, and transitions between them, which he termed Dialectics. But his objective of a Logic of Change wasn't achieved, and to this day is still absent in most Reasoning.

Yet, the possibility of a path to a resolution had been exposed.

The possible solution surely resided in Science. But, Hegel was an Idealist, and he could never achieve such an integration. His best follower, Karl Marx, however, did glimpse that path. It would involve a major switch from Idealism to Materialism, but would, necessarily, involve a major revolution in both Philosophy and in Science, the way forward was indeed possible.

Clearly, the only receptacle of past changes, that was available for study, had to be History, so that is where he started. For, only in Social Development were the necessary trajectories of Qualitative Change, available for study - in Social Revolutions. And, just such a transformation had recently taken place in France, and had been intensively studied and recorded in great detail by the brilliant French Historian - Michelet.

Marx's objective was Science, but, first, he had to be adequately equipped to do the job, so in History, his own expert field, he had to find the means. But, History's lessons turned out to be endless: Reality was NOT a static, conquerable area, but a constantly developing headlong-rush.

And, in addition, that study imposed unavoidable political imperatives upon Marx, and his new main emphasis became preparing for the next Revolution - the Overthrow of Capitalism.

Science would have to wait!

A scientific study of Capitalist Economics had to be the paramount task, and it took him the rest of his life. Indeed, the Fourth volume of his Das Kapital, was only published after his death.

CHANGES?
were still unanswered in many areas: and the key area of Science was still relatively untouched.

And, in addition, though Marx had wrested Dialectics from Hegel's idealistic grasp, he had still NOT formulated it comprehensively and overtly as a [philosophical method, nor had he addressed Abstraction in the new context, nor the actual Trajectory of what was now generally termed an Emergence (a Revolution). That would only be possible by a Marxist revolutionary living through, and acting in, such an event, and that would soon happen in the Russian Revolution.

The Current Myth of Science

What it is assumed to be, and what it actually is!

As a lifelong and highly-trained physicist and mathematician, and increasingly, as the years and experience accumulated, I also became a philosopher too. I have to rage at the Demise of Physics, and the promotion of Mathematics, in what is now, incorrectly, termed “Science”.

The truly great discipline, we called Science has been buried deep, and replaced by something considerably less, and limited terminally by its subordination to profitable-use-alone.

We could call it Technology, but that would be giving it far more credit than it deserves, but, it certainly is similar, and professes a similar stance, to that discipline, which has produced all the technical achievements, if not the understanding of the people of today.

But, only as long as it was the junior partner to Science, was it able to play its clearly wider, beneficial role, beyond mere use. And, now that it has become “Science”, and, in so doing, totally lost Real Science’s Explanatory purpose, its sole driving intention is exclusively to deliver ever more profitable implementations of past scientific discoveries, and current purely technological innovations. The always possible development of Explanatory Science into a Revolution in Philosophy has now been lost completely.

And, that is very serious indeed!

Science used to be an amalgam of :-
Pragmatism (If it works, it is right)
Idealism (The Rule of Abstract Law)
Materialism (Matter causes Everything)

but, in spite of these components being incompatible, Mankind cleverly switched pragmatically between them, to enable some real progress, though NEVER as a single coherent, consistent and comprehensive approach.

And, of course, the contradictions, inevitable from such an amalgam, were certain to precipitate crises, which became ever more un-transcend-able as each contributing stance delved ever deeper into Reality-as-is.

The usual get-around was always to divide Reality into different causally incompatible areas, initially as distinct specialisms and ultimately as different “sciences”. But, it was never a final solution! A situation had to arise, in which the contradictions could never be accommodated by the set of premises currently assembled.

An insurmountable Major Crisis would occur, and it happened in Physics in the latter part of the 19th century, with the demise of The Ether (the supposed Universal Substrate) and the discovery of The Quantum (what appeared to be descrete gobbets of Pure disembodied Energy).

The then state of Explanatory Physics couldn’t cope, but though similar crises had happened before, and had been resolved by further theoretical developments, this time the split with the experimentalists and technologists, within Physics, appeared permanent, and these groups abandoned Physical Explanation completely, and replaced the old amalgam - in the area of Theory, with a new one - embodied in The Copenhagen Interpretation of Quantum Theory, which involved only:-

Idealism (Equations)
Pragmatism (Successful implementations)

It was forcibly driven by ever more intensive competition, on a global scale within the Capitalist Market place, and by the anti-Capitalist threat of the Russian Revolution, and finally by the discovery of the possibility of Atomic Energy, and indeed, Atomic Bombs! There was deemed to be "no time" for increased understanding, what was needed were "winning innovations" before the opposition managed to get them!

The nature and practice of Physics was "turned upside down", as the demands of Physical Explanation were jettisoned, and the Mathematics involved in prediction was unleashed to involve forms without any physical explanatory aspect whatsoever.

The most way-out forms could be employed "as long as they worked", and so-called Physics Theory became solely mathematical.

Not only did the Equation "Rule OK!", but it was also the source of any further "theoretical developments", which could only be found within the available formulae now replacing Reality.

"Experiments" still occurred, but no longer as sources of new entities, processes and relations, for now they were considered solely as the only means of confirming the new purely formal "theories"!

Now, of course, this transformation could not have been either immediate, or straight-forward.

A great collection of historical processes and methods had to be dumped too, and the originators, Niels Bohr and Werner Heisenberg, just had t go totally outside the intellectual range of their colleagues to justify their "Revolution", and they chose to do it with "Philosophy"!

Now, the inverted commas around the word Philosophy are justified, because to call what they imported, as a part of a coherent and consistent philosophical position, was in fact nonsense: it wasn't meant to explain the changes, but, merely, to "justify them".

And, it was easy, for as physicists they had, along with all their colleagues and generations of past physicists, been using mathematical frigs, for centuries - "because they worked", so the necessary retention of Pragmatism, enabled them to re-use the same sorts of tricks, but this time "stolen from Philosophy", and, as previously, with the maths frigs, used totally pragmatically to patch-over their difficulties.

But, they also had to construct a mock-philosophic-barrier around their theories to "keep their colleagues from straying too far from the straight-and-narrow of Copenhagen".

Heisenberg built his section of the "wall" entitled "Physics and Philosophy", while Murray Gell Man's "The Quark and the Jaguar" shored up the other side, where Biology took over. Needless to say no barrier was necessary on the Mathematics side, indeed Physics was becoming a new specialism within the broad formal church that is Pure Mathematics.

Mathematical Physicists

Doing what they believe to be Physics, but isn't!

From literally Newton's time onwards, data was collected from experimental set-ups, with a view to uncovering underlying Eternal Physical Laws of Nature, which had caused the currently-studied phenomenon.

But, though it was certainly the easiest, when the things studied were celestial objects, and hence relatively simply driven by a single law (that of Gravity?), the assumed reference frame was not only arbitrary, but for explaining motion outside of the earth, it was also misleadingly wrong!

The "one-still-thing" in the Universe was assumed to be what we were standing upon - The Earth, so that was taken as our Reference Frame, and that assumption proved to ultimately be totally mistaken, and a more reliable, yet still limited, choice was to take the Sun, as our reference point.

Now, though profuse measurements were taken over a period of at least 2,000 years, attempts to relate the data via a mathematical set of equations, was, for the planets at least, which indeed would relate to a local overall Reference Point, would still turn out to be a mess!

A complex system of orbits and epicycles (superimposed upon their supposed orbits "around-the-Earth", were repeatedly devised, so that they ever-more-closely matched the increasingly accurate data, but, nevertheless, real progress was incredibly slow, and of course, always a totally-pragmatic-fabrication, if produced by a Natural Law. The data was always king, and the difficult, resulting Ptolemaic System describing it, was extremely complex.

Indeed, rather than formulae, the data was built into special brass-machines which, via a system of cogged discs and attached planetary positions, traced out the various movements, on turning a driving handle.

Indeed, it wasn't until Copernicus shifted the "relatively-still centre" to the position of the Sun, that the data began to make more sense, as circular or elliptical orbits of the various planets around a central Sun, that the problem was cracked and other investigators managed to turn orbits into Formal Equations, so that real progress was evident!

But, the Heavens were, inevitably, always a special and simple case, but nevertheless, it persuaded scientists that everything else in Reality would turn out to be simple too: and it certainly wasn't!

All the other trajectories of earthbound moving bodies were likely to have very much more complex paths due to multiple influences being involved, though if situations were chosen where the pull of the earth itself dominated, those effects could be largely ignored.

Indeed, in most cases, however, the conclusion, more often than not, was that a general and relatively-simple solution was impossible, and the only way to study any dynamic phenomena, was to effectively "hold-it-as-still-as-possible", with, ultimately, only one factor dominating-enough to be clearly-evident in the data collected from such an experiment.

Now, though they didn't realise it, at the time, that assumption involved a Principle - an underlying rule, which wasn't actually true, and that the process-so-implemented had merely changed-the-context so significantly, that it appeared to be true!

What this meant was that the data gathered was only true about the precise conditions arranged-for in the experiment, and, if it was to be successfully used as such, the context for such use had to exactly-replicate that produced for its extraction!

So, in the complexities of a completely-unfettered situation, the extracted law could NEVER be used successfully.

Now, this had profound effects upon Explanatory Theory, for in Reality-as-is the given law would be different in every-single-different context - it would be changed by the other laws acting simultaneously with it! [In other words Reality is NOT pluralistic but holistic]

Nevertheless, a much easier interpretation was to concretise the implicit assumption, and put-up as unassailable the Principle of Plurality, which said the exact opposite!

With this Principle, the extracted Law was assumed to be, in Reality-as-is, identical in-all-contexts (it was eternal), and, the differing results in different contexts, were merely due to different quantitative-summations of sets of all the eternal Natural Laws that were present! And, that simply wasn't true!

And if, it was the case, that these kinds of arrangements, and the assumption of this Principle, were universally employed, then the versions of each-and-every law considered to be involved were, every single one of them simplified versions of what actually was acting.

And, what happened next was even-more-damaging, theoretically! For, the extracted data was made-to-fit a Pure Mathematical Form, actually imported from Mathematics, via the solution of a set of simultaneous equations based upon that general form. For, these could be solved, via the insertion of sets of data from the experiment to produce several simultaneous equations. now only involving as-yet-unknown constants, so that these could be evaluated, and then inserted-back replacing the constants in the general form.

Now, let us be absolutely clear, using that idealised-form of the equation in the identical conditions to those from which it had been extracted would indeed work.

But, the equation was only valid in that context alone!

So, pragmatically or technologically it was eminently reliable and useable. Implementers of applications loved it: they knew exactly what to do! For, they were exactly-the-same kind of practitioners as those who had set up the original experiment - both groups were consummate pragmatists! But those scientists, who, in-addition, wanted to understand, what went on in totally unfettered Reality, would be woefully-misinformed: you couldn't just SUM all the individual laws as "eternal Natural Laws" acting simultaneously.

It was impossible!

Indeed, when they took Reality - exactly as it occurred, without any removals and constraints, their results just didn't match those given by a sequence of experiments separately-carried-out one-after-the-other, with each in its correct context, and using its tailor-made Law!

Attempts to develop explanations of what was going on were impossible!

Needless to say, the theoreticians also decided to both subscribe to the Principle of Plurality, and leave actual use increasingly to the technicians.

Remarkably, the theoreticians and the technologists, began to become different-though-co-operating disciplines.

The common bridge between them were indeed, the pluralistically-achieved Equations. But, major differences slowly increased, until the implementers became Engineers, while the theoreticians became Mathematicians (though, for a while they also required causal explanations, as an accompanying explanatory narrative, in addition to their equations).

Theory became more-and-more about manipulating equations, and massaging them to approach the causal explanations, but it was always a frig, and even in Mathematics, itself, had required many, and increasingly frequent, excursions well-beyond the Reality it was supposed to reflect.

Indeed, this theorist, in his work The Processes and Productions of Abstraction, had termed this extended realm Ideality - to make clear its actual nature, and its significant differences from Reality.

And, in the end this would become the-straw-that-broke-the-camel's-back, precipitating a totally unsolvable Crisis, when based upon those chosen premises.

The Crisis in Physics was only among the theorists!

The skilled experimentalists and application implementers didn't falter, they could carry on with their Idealist-Pragmatist Amalgam.

But, the theorists were ultimately totally undermined, and though a tiny number struggled to find a solution upon the old bases, they failed and are still failing today, and the theorists that carried-the-day, did it by abandoning Explanatory Physics entirely, and instead erecting a new alternative based upon Ideality, where extensions were both available and even infinite!

They had abandoned Materialism for Idealism!

This Physicist and Philosopher, Jim Schofield, has instead rejected the Principle of Plurality, for the alternative Principle of Holism, and agrees with the unanswered criticisms by Friedrich Hegel of Formal Logic, but applied in the same way as Karl Marx suggested, within Materialism, but, for the first time comprehensively to a Science - Physics!

The New Physics Theory

Holism vs. Copenhagen

There is a new approach to Theory in Physics.

It has some similarities to Classical Physics, but still differs inherently and substantially from it.

It is also the bitterest and most-penetrating, critical opponent of The Copenhagen Interpretation of Quantum Theory, which currently "rules-the-roost" in the Sub Atomic Realm of this fundamental and important science we call Physics.

Therefore, the new approach's main purpose is the total demolition of that Copenhagen Retreat. But, nevertheless, it could never, as is evident from the many sincere attempts to do so, be based solely upon the prior Classical Stance, for that too has long been similarly too compromised to ever be able to reach into the areas absolutely-essential to the completion of such a task.

And, the reasons for both sets of inadequacies, which also ultimately damn both Mathematics and Pure Formal Reasoning too, are entirely philosophical!

Now, there have been many physicists and mathematicians, who have written Books with titles such as Physics and Philosophy, or Life's Other Secret, but I cannot recommend a single one of them. For, having read most of them, it is clear that, from the outset, all are rejected, but not, surprisingly, for any over sophistication, but, on the contrary, for their inherent Pragmatism - "If it works, it is right!", and their congenital Idealism - their reliance upon Form-as-causal!

For, Pragmatism has been the indispensible cornerstone of Mankind's Thinking, ever since they emerged as a distinct species, and even prior to that, over millions f years for their hominid ancestors too.

Mankind finally successfully spread to every corner of the accessible World, long before any such disciplines as |Mathematics, the Sciences and Logical Reasoning had even been arrived at!

And, when they did arrive, they were all established ONLY within sets of narrow situations, which Mankind had previously-and-pragmatically discovered how to establish-and-control.
Indeed, in all thoae areas, the gains were particular, local-in-context and yet also often very unreliable.

Their validity was never confirmed by being part of a general and coherent understanding, but only by successful practice in particular narrowly-defined and rigidly-maintained situations.

But, a genuinely new aspect had ultimately been added: and it had come from the discovery of Mathematics!

The ancient Greeks had invented what later became known as Euclidian Geometry, which involved the simplification and even idealisation of geometrical concepts, such as Lines, Shapes and even precise positions, and had recast them into versions that enabled their further study to a much greater extent.
And, the same sorts of modifications also proved equally efficacious in Reasoning too, for aspects of the world, people and behaviours could be modified in a similar facilitating way.

So, this new Idealism was methodologically-coupled with the banker stance of Pragmatism, and, via such means, Mankind grew in specific capabilities, though only marginally in Understanding, what they could indeed now reliably achieve.

And, within a surprisingly short period, the Greek, Aristotle, also developed detailed observations and descriptions of things, and so Materialism was also added into the set of means they now had, to seek the nature of their Reality.

Now, these were NOT exactly conducive bedfellows, when it came to understanding things! Indeed, they were essentially contradictory explanatory stances. And, as Zeno of Elea quickly discovered, many forms of reasoning foundered when Dichotomous Pairs of concepts like Continuity and Descreteness both appeared equally applicable in certain reasoning, but most certainly were not!

Mankind's "understanding" was neither coherent, consistent nor comprehensive. It was a patchwork of sometimes-appropriate reasoning and techniques.

Indeed, at every impasse - precipitated by a flawed premise (as with Zeno's Paradoxes, but actually far broader), the solution was to pragmatically ignore the hole-in-the-reasoning, and carry on beyond it "in a "new area of study": such specialisms proliferated at an alarming rate, and the more untenable the transitions were, the more likely would they be to lead to naming "the area beyond" as a wholly new Subject, or even a New Science.

Classical Physics, as it grew in complexity, was full of such impasses, usually bridged-over by Pragmatic fixes.
But, with such an amalgam of Pragmatism, Idealism and Materialism, a final collapse was surely inevitable at some point!

And, it came in the over-arching discipline of Philosophy at the beginning of the 19th century with the idealist philosopher Friedrich Hegel!

Hegel bemoaned the inadequacies of Formal Logic, when it came to Qualitative Changes, and determined to devise what he termed a Science of Logic, which would include the means to deal with such things.

His method was to purposely seek-out Dichotomous Pairs of contradictions, which were always associated with rationally un-transcend-able impasses, and search-for their causes in mistaken or even omitted premises.

He not only revealed many of these, and their corrections within the flawed impasses, but began to generalise the nature of such quandaries in terms of diverse Resolutions-between-Opposites.

Instead of eternal relations he took the holist alternative that “Everything affects everything else”, so that not only was nothing eternal, but would inevitably change, and in some cases “flip into its exact opposite”!
He called his approach Dialectics.

The problem was endemic, and it became increasingly clear that the core of most of the problems lay in an early facilitating-assumption of Mankind which became known as The Principle of Plurality.

The problem was that, in most natural situations, many simultaneous factors were acting together, making the clear definition of any one of them exceedingly difficult to achieve.

The “pragmatic” solution was obvious: situations had to be “held-still”, sufficiently, for a previously only-glimpsed factor, to be more clearly revealed.

Indeed, as Mankind found more and better ways of doing this, it became possible to very-clearly display one particular factor by removing or suppressing, in one way or another, all the others.

And, thereafter, via measurements, over a range of circumstances, the factor, now seen as a causal relation, could be extracted as a Natural Law of Reality. Indeed, it was assumed to be a fixed or eternal Law. And, the initial overall complex, many-factor situation, originally encountered, was seen as a mere summation, in various quantities of each of a set of these eternal Natural Laws.
THAT was The Principle of Plurality, and it isn’t true!

Indeed, at about the same time as Plurality was being assumed in Greece, its diametrical opposite - The Principle of Holism or “Everything affects everything else! was being established in India by The Buddha, which thereafter dominated in the East for many millennia!

Now, Holism was clearly closer to the Truth than Plurality, but never facilitated Ever-Extending-Control-and-Use, as in the West.

But finally, after Hegel, who was himself a holist, the inadequacies of Plurality started to be challenged. But, in spite of the Revolution initiated by a student of Hegel’s named Karl Marx, who realised that the answer was to transfer all of Hegel’s gains, wholesale, from Idealism (and about Thought alone) to Materialism (and about absolutely Everything), this new stance was not generally adopte!

Yet Marx was certainly not a physicist, and though he applied the new approach to History, Society and particularly to Economics, it was NEVER effectively and comprehensively applied to Physics.

Hence, though a possible solution was evident, it was never pursued in Physics, by the Marxists or anyone else!

So here’s the crux!!

The resolution of the Crisis in Physics, not to mention those everywhere else had to be by the establishment of an alternative Holist Approach, and this is what is finally underway!

Unconstrained & Recursive

Magnetic Fields I

There is a problem here that persists!

We know that a circulating current of a charged particle, such as with an electron in an orbit, delivers a magnetic field - perpendicular to the plane of that orbit, and along its axis. We also know that a continuing current of such electrons in a helically-wound coil of conducting wire, will deliver the same sort of magnetic field along the axis of that coil, which we term a solenoid.

And, if a soft iron core is inserted into the solenoid, we know that the resultant magnetic field will be enhanced considerably, by the alignment of the Iron (Fe) atoms' single electron outer orbits in the exact same direction. All this seems to infer that the magnetic effect is a always a product of a moving charge!

But, we also know that a moving electron encountering such a magnetic field is constantly deflected in its direction of motion, so that it will, whilever it remains in a constant field, perform a "circular" path.

But, this presents questions immediately - for the original direction of the electron will generally NOT be aligned in such an easy way to deal with direction of the applied magnetic field.

In our devices we obviously organise things so they behave exactly as we would want, so that the result will be easily predictable and useful.

But, we expect that the change in direction due to that field will definitely be perpendicular to its own prior possible direction, what path will the electron take, involving both its own original direction and that imposed by the field?

The electrical engineers' Left Hand and Right Hand Rules guide their various applications, in carefully organised and maintained conditions, but what of more generally, when the charged particle already possesses a prior speed-and-direction. The simplest case will be a helix with a the deflections being perpendicular to the original direction of the electron AND the causing field.

Now in the famous Cloud Chambers and stacks of photographic emulsions initially-used, the speeds of detected particles were constantly reduced by the detecting medium, so the paths had a spiral distortion as their speeds declined. So a variety of more complex paths were unavoidably involved.

So let us tackle the general problem (initially without such a confusing medium).

It would seem likely that if the moving charged particle were in a given constant field, had its own intrinsic speed divided into two components - one perpendicular to the applied field, and the other in whichever speed an direction were necessary to deliver that original speed-and-direction of the particle.

It is supposed that the former component will be that which interacts with the field to deliver a helical result, but that will be combined with the other unaffected component to deliver a kind of skewed helical path.

But here's the rub!

Wont the spiralling electron, caused to behave in that way by an applied magnetic field NOW assert its own-caused magnetic field too? And, wont it, of necessity bee a Varying Field in both direction and strength?

It is beginning to sound like a possible recursive situation of causes-and-effects.

NOTE: Indeed, similar in this Recursiveness, at least, to Yves Couder's "Walker" Experiments, which involved ONLY a medium and various applied and interacting oscillations. Indeed, the remarkable creation of his "Walker" entities - entirely due to recursive interactions, which actually produced persisting entities with their own properties.

Now, returning to Magnetism, we have TWO scenarios:-

1. Two combined directions imposed upon a charged particle deliver a Field in a given direction.

2. A Field in a given direction and a direction of motion of a charged Particle deliver a superimposed extra direction of motion upon that particle.

But surely, underlying BOTH is the phenomenon where a single moving charged particle entirely alone delivers a directed field.

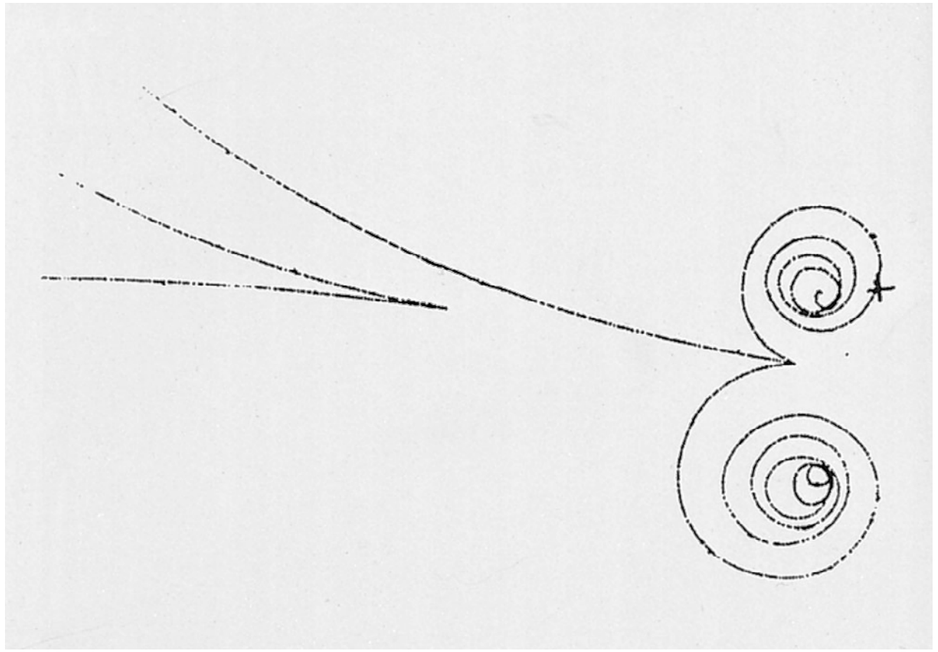
It is not the specially arranged-for circumstances which transform this into our two scenarios?

And clearly it is the addition of Recursion, with results having effects upon their own causes, that begin to compound what is happening beyond the usual linear one-way Causality!

NOTE: I am also impelled to also relate the investigations into oscillating chemical reactions in liquids, where two substances react to deliver two quite different ones, which as a certain threshold is reached react-back to produce the original components.

Why is this considered worthy of inclusion?

It is because with contrasting colours for the chemicals involved, it was possible to discern the Reaction Front as describing a Toroidal Scroll as its usual form. I think you'll agree that recursive situation was extremely revealing!



Unconstrained & Recursive

Magnetic Fields II

(in a Universal Substrate)

The fact of the absolute necessity for motion of the charged particle to be involved, in order for Magnetism to occur, could imply that such a feature is actually a property of a currently undetectable Universal Substrate, but which is, nevertheless, both effectible-by and affecting-of any larger particles passing through it.

We have already theoretically considered such a possibility with regard to the supposed Neutritron component of such a Substrate, and by doing so, managed to remove every-single-one of the anomalies evident in the ill-famed Double Slit Experiments, as well as also explaining the Propagation of Electromagnetic Energy through supposedly "Empty Space, and even both Pair Productions and Pair Annihilations.

While, within atoms, the orbiting electrons were seen as carving dissociated pathways through a Substrate Neutritron-Paving, ultimately causing vortices of those thus dissociated Paving-units, and explaining quantized orbits entirely physically, via the harmonically-related speeds of both orbits and vortex spins, to settle upon balanced interchanges of energy at specific orbital radii.

NOTE: Now, as that is a major subject and has been published elsewhere already, we will not repeat it in detail here. But, as the forms of the Magneton Substrate Units have a similar internal structure to that of the Neutritrons, analogies will be inevitable!

So, these earlier theoretical gains will doubtless recur in considering the motion of charged particles affecting the magneton units of the Substrate too, initially, at least, in very similar ways - that is by such a motion tending to dissociate structures within the substrate, and by imparting further energy into the dissociated Units to cause somewhat-similar "Bow-waves" and "Wakes", as in the previously studied case.

But, the Paving of the Neutritrons, and the Field of the Magnetons are very different. Though also composed of mutually-orbiting pairs of charged particles, the Magnetons' components are of different sizes and hence deliver an uncancelled Magnetic Dipole Moment in both kinds of Magnetons, which cause them to cease their previously totally random movements, and instead actively form shells surrounding any charged particle they encounter, thus delivering, thereby, an Inverse Square Law Field.

But though this is clearly possible around stationary charged particles, it is obviously very different around a Moving Charged Particle.

Now, in order to address the current problem we have to be aware of exactly how Magnetons deliver electrostatic fields on the one hand, but very different magnetic fields on the other.

As already mentioned the Magnetons form concentric shells around a stationary charged particle, but behave very differently when subtending magnetic fields, where they link up like tiny magnets in "Magnetic Lines of Force".

In a pre-existing field, such as one emanating from a bar magnet, they just latch onto the aligned atoms in the magnet to continue the same linear form outside that body.

So here, we have to show how the motion of the charged-particle not only carries its own field along with it, but also interacts with what it is passing through to decompose part of its electric field and by gathering the then free Magnetons into lines of force (like "Bow waves"), to also subtend a magnetic effect "sideways"!

Now, why and how should this be possible?
Well, when in concentric shells around a charged particle, the magnetons though they link up between shells with their un-cancelled magnetic dipole ends, but they cannot make whole linked lines between the succeeding shells, as there are different numbers of units in each successive shell.

But, on dissociation, a possible consequence is the alternative linking into lines, as short sections are already likely to be linked in that way.

So, how can we now characterise a charged Particle moving through the Universal Substrate?

Elsewhere, considering the significant differences in size between the various component units of that Substrate, as well as their differing properties, it became clearly evident that you could deal functionally with the various different interactions, by treating the various Substrate Levels separately, and, in particular, involving the Magnetons, which are comparable in size to a Hydrogen atom, and alone exclusively-deliver both Electric and Magnetic fields.

Other Substrate particles will be affected by the passage of a charged -particle, but they, in turn, could not significantly affect the electrical and magnetic properties involved.

We will, therefore, be able to ignore them during a study of these features, only requiring the effects-upon and effects-from Magnetons only.

We have to be clear what an undisturbed Substrate is like: below everything else are the tiny Neutritrons (usually in a very easily dissociated Paving), but occurring on a much small scale than the very much bigger Magnetons, which are usually freely moving about randomly (like a gas). The disturbing energetic passage by a charged particle will certainly temporarily dissociate the Neutritron Paving, but its relatively tiny units will soon re-associate once the particle has passed by.

The charged particle will be moving with its associated Electrostatic Field of Magneton shells, but will be hitting free-moving Magnetons in its path, so a partial dissociation of the Field due to impacts will release some Magnetons, which, with others from the free-moving population, will form continuous lines, like a "Bow Wave" laterally on all sides, while constantly repairing its dissociated field from the same source.

NOTE: Remember Magnetons are both 2000 times bigger than Neutritrons and Gravitons AND have electromagnetic effects many millions of times bigger than any other forces, (like Gravity) which may also be involved. Also, the bottommost Substrate Level of the Neutritron Paving is the primary Propagation Level, an in spite of small and temporary local dissociations, will always provide that facility, except when the effects are colossal, as when propagation passes very close to a star for example.

Now, having dealt with the passage of a charged Particle through a relatively undisturbed Universal Substrate, we may well now have sufficient consequences to address more complicated situations, such as when that charged Particle is caught in an incessantly repeated path as when in an orbit!

See Special Issue 52 - The Nanocosm - for more on these ideas.

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