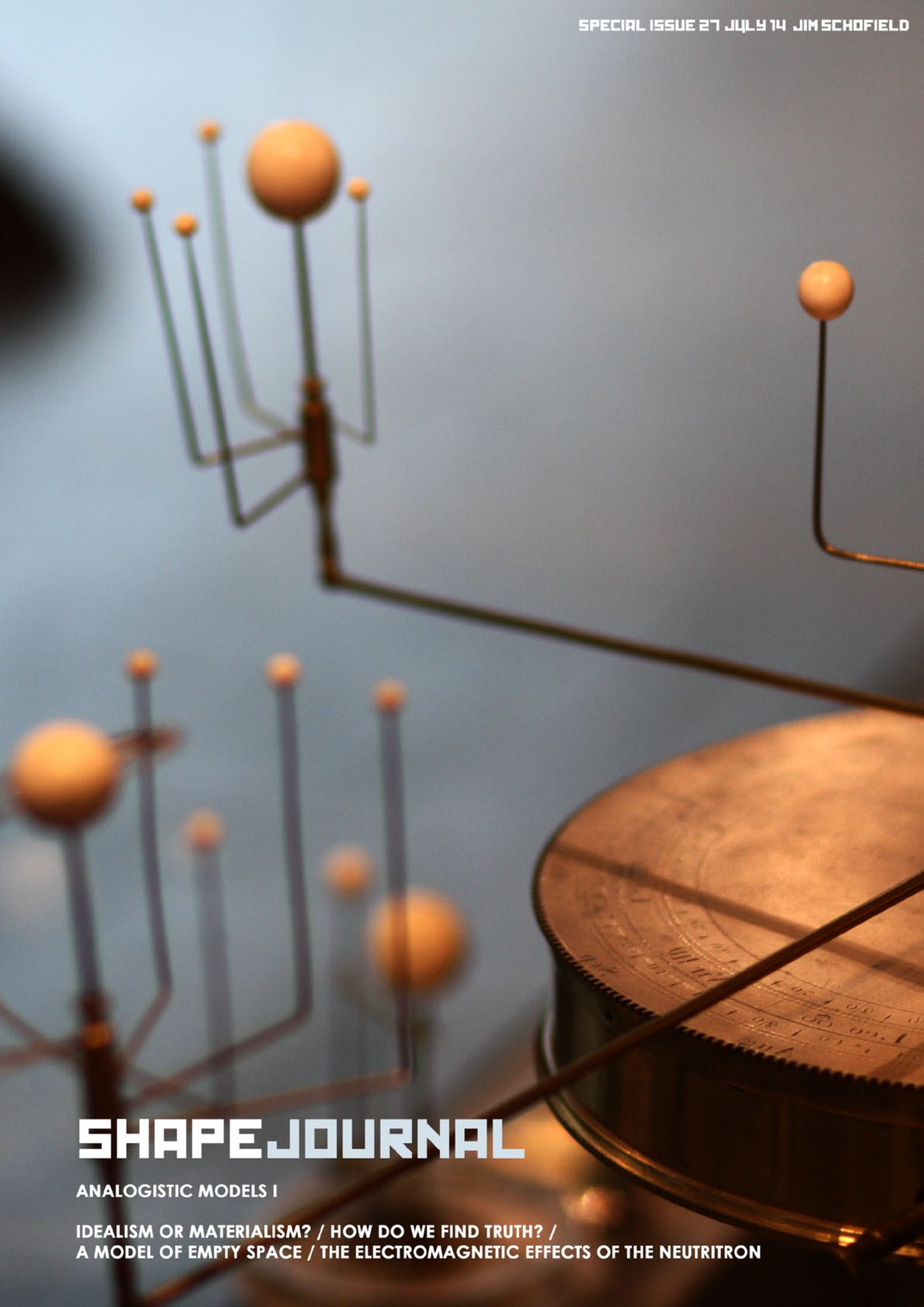
SPECIAL ISSUE 27 JULY 14 JIM SCHOFIELD



SHAPEJOURNAL

ANALOGISTIC MODELS I

IDEALISM OR MATERIALISM? / HOW DO WE FIND TRUTH? /
A MODEL OF EMPTY SPACE / THE ELECTROMAGNETIC EFFECTS OF THE NEUTRITRON

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Special Issue 27

Analogistic Models I

Editorial: An Important Breakthrough in Theoretical Science?

Welcome to the 27th Special Issue of the **SHAPE Journal**.

For those who have attempted to follow (with understandable puzzlement) the extended search for a new standpoint and method for Science based upon Holism, rather than Plurality, they may be pleased (or merely relieved) to read this new collection of papers on Analogistic Modelling.

Though such an alternative has been partially grasped for some time now, it was Margaret Morrison's article in *Physics World* on "Fictional Models" that focussed the effort to formulate this absolutely essential change in Science, concerned with Modelling and Truth. It wasn't that Morrison "saw the light", but rather delivered her variations upon the same universally accepted premises, and this made it absolutely clear that the usual fragments of criticism were simply not up to the now urgent task, and this theorist had to "pull up his socks" or "bite the bullet", or whatever is the apt description for a root and branch critique, coupled with a thoroughly thought-through alternative.

It would clearly be a major undertaking, but various successes over the past decade or so are now surely sufficient to begin the construction of new premises and assumptions to replace those that have both taken us this far, and have now, finally, led us damagingly astray. After a series of regular publications over the last five years and a whole spectrum of contributions by others, the long (seemingly interminable) gestation period had to be brought to the conclusion of an actual Birth!

The collection is simply called **Analogistic Models**, and will be initially published as a series of three Special Issues of the SHAPE Journal.

The contents will be:-

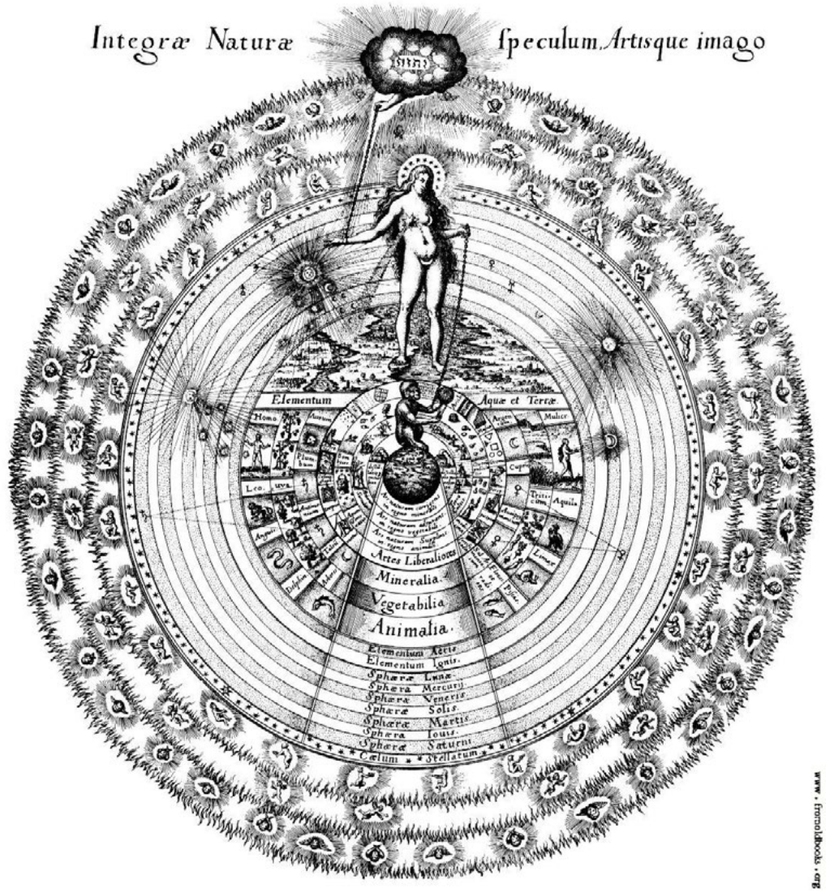
Analogistic Models I
Introduction
Idealism or Materialism?
How Do We Find Truth?
A Model of Empty Space
The Electromagnetic Effects of the Neutritron

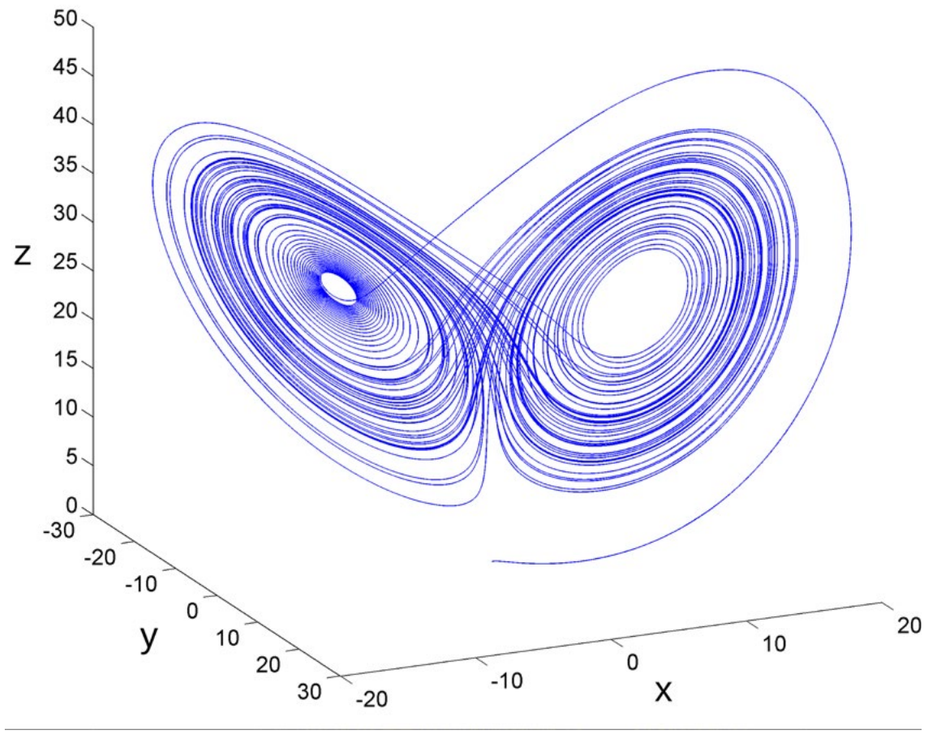
Analogistic Models II
Introduction
The Bases for Plurality & Holism
Mutually Orbiting Particles & the Methodology of Holistic Science
A Critique of Margaret Morrison's "Fictional Models"

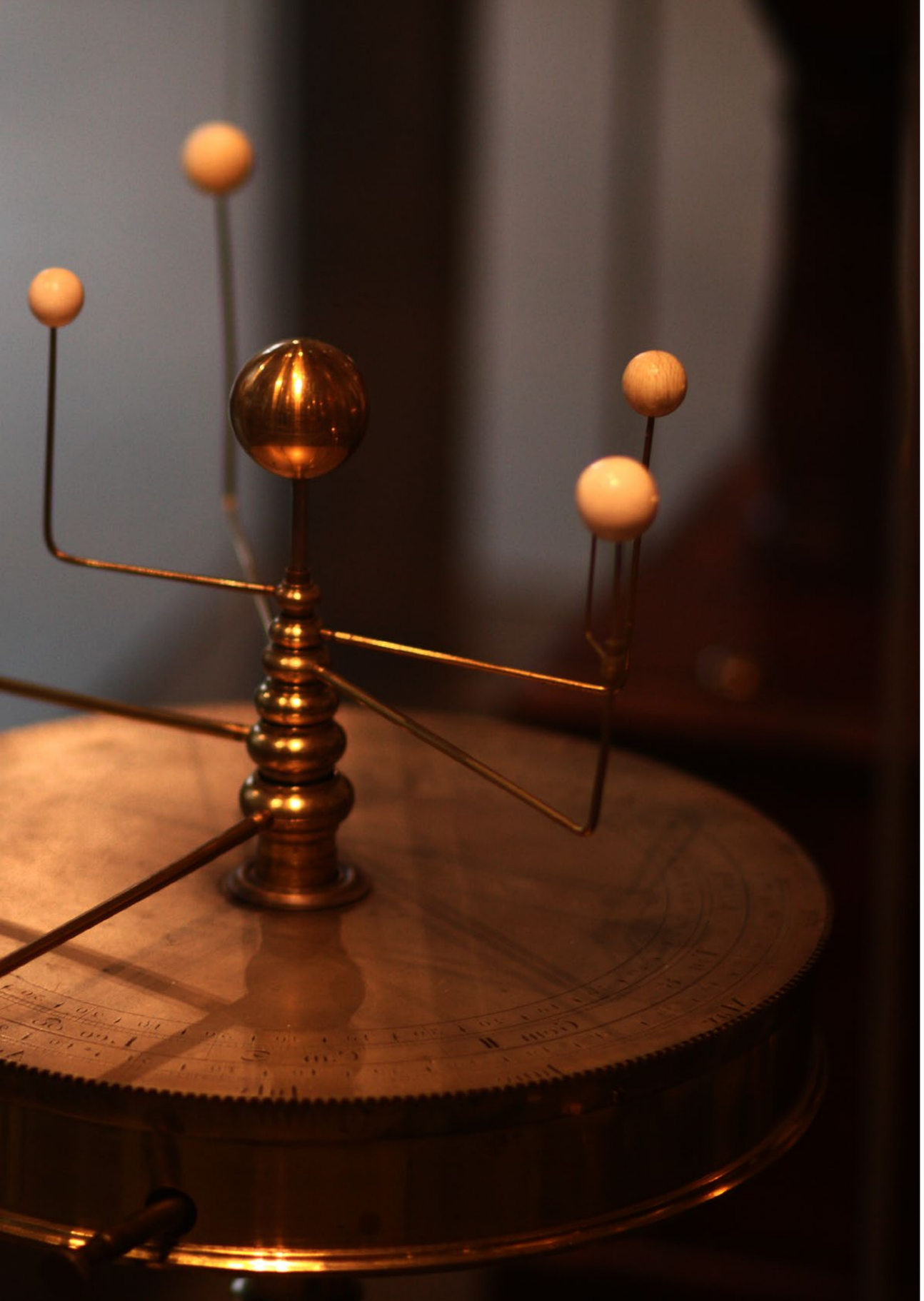
Analogistic Models III
The Crucial Crossroads
Models and Truth
Why Analogistic Models contain Significant Content!
Hierarchical Levels of Stability and their Inevitable Dissolutions

Now, these contributions are current research, so they both enlarge and deepen day-by-day, and hence these are by no means final and definitive descriptions. More is most certainly in the offing!

Jim Schofield July 2014







Analogistic Models I
Introduction

This set of papers, though collectively entitled Analogistic Models, could not be limited solely to a consideration of these important achievements in Mankind's perpetual attempts to understand its World. For, these original papers are all based upon a veritable revolution in Thinking that has been taking place over the last period, predominantly as a reaction to the major retreat initiated by the victory of those who subscribed to the Copenhagen Interpretation of Quantum Theory at the Solvay Conference in 1927. It is only now, some 87 years later, that the fight back is finally coming to some sort of fruition.

To make any sense of the "new" look at Analogistic Models, we must consider the assumptions and premises on which Science has been based for literally millennia, and how, from a long period of continuing to subscribe to the same pair of totally contradictory standpoints, this compromise has finally run out of steam and ground things to a halt, and this has demanded a major overhaul of the foundations of this crucial aspect of our approaches to Science.

Many attempts were made in that long period since Solvay, but the critics were unable to find an alternative, primarily because they, perhaps surprisingly, also subscribed to the very same basic and underlying conceptions. It didn't seem to be resolvable until several scientists finally began to construct a viable, and superior alternative. And that came, not from Physics, - the supposed basis of all the sciences, but, perhaps surprisingly, from what were always assumed to be developments of Physics – namely Biology and Psychology.

Even so, most practising experimentalists and theorists, particularly concerned with the Sub Atomic Area of studies in Physics, still refuse to accept the new standpoint, so a thoroughgoing establishment of the new position is unavoidable, if the necessary changes are to be instituted throughout that important area of Science. Let us, therefore, show what was wrong and what must be done to overcome the barriers to future developments.

Though we traditionally endow the ancient Greeks with the start of the scientific process, it was actually begun almost simultaneously in India too, with a very different standpoint to that which became the norm in Europe. While the Europeans subscribed to the Principle of Plurality, the Buddha and his followers took an opposite view of Reality, which we now call Holism.

Now these two, as they are usually conceived of, are in fact incompatible, yet nobody was able to resolve the situation, and one way or the other both standpoints persisted, yet were only applied, each in its own ideal circumstances: they were never integrated into a single approach, which retained the best gains of each.

In spite of the Paradoxes revealed by Zeno, which showed that the two ideas of Continuity and Descreteness were in total contradiction to one another, first thinkers, and later scientists too, refused to accept Zeno's revelations of unavoidable contradictions, and learned to use each whenever it produced seemingly correct and useable results. Mankind learned to simultaneously rely, alternatively, on incompatible premises.

And, in spite of the Plurality/Holism contention these continued to be used. And in Science, Plurality was taken as essential in the developing of effective scientific practice and theorising.

Two major, but unavoidable, phases in making sense of Reality were simultaneously employed, leading on the one hand to Religion, and on the other to Science. And, this contradictory situation continued for the next 2,500 years. Even Newton subscribed to both!

It wasn't until Hegel's revolutionary contributions in his Thinking about Thought (as he termed Philosophy), and the first steps in a totally new Logic of Change, which he termed Dialectics, that a resolution, or at least a means of transcending contradictions, was deemed to be possible.

So, this small collection has had to include something of the essential background to make clear why current developments could finally address this longstanding impasse.

Idealism or Materialism?
Is this the Final Dichotomy?

What are the fundamental bases for the two primary philosophical standpoints that seem to be the only possible alternatives – namely Idealism and Materialism?

For these clearly constitute a classical Dichotomous Pair: they are mutually-exclusive opposites, each of which can effectively deal with their own host of legitimate areas of concern.

For, Idealism sees the source of absolutely everything in Reality within the Mind, while Materialism posits the source solely within Matter. How did these two conceptions arise, and why does the logic of their derivations drive them to two, opposite and un-integrate-able poles?

Idealism is interesting because it recognises that only constructs of the Human Mind – Thought produce our ideas of Reality, and therefore, perhaps surprisingly, idealists do not ask for a material source for these conceptions: for, they are, it seems, unavailable to the Mind. It can only deal in its own content – Thoughts. It therefore asserts, that without Thinking Man – Homo Sapiens, there could be no philosophy, or even the concept that everything in Reality is somehow all-of-a-piece – made of the same stuff, and possessing a self-consistent nature, and its own self-movement, to encompass everything that there is.

Of course, the multiplicity of human beings is a problem! For each sentient human being would be the place where such questions are asked and answered, giving a version of Reality for each and every single individual! Unless, of course, there is a God – a thinking, all-powerful being, outside of Reality, who conceived of and, indeed, created it according to some all-embracing plan, and hence endowed everything that could possibly occur within it with a coherent nature – and hence discernable, in the same way, by all sentient beings of a sufficient level of development.

Without such a God, Idealism becomes dissociated into the conception of a multitude of different human beings, and its integration into a single, coherent whole becomes impossible. Unless, what is found individually in all thinking beings is the same, because what they discover is indeed, the same for all, independent of their conceptions of it.

Yet, even then, that would make Reality-as-conceived-of, some sort of product of Mankind, probably socially-produced as consonant across them all, due to language and a great deal of communication between them.

Even that could still allow an idealist standpoint. Yet, nevertheless, it would still be a figment of an agreeing set of human beings.

The Buddhist philosophy sees it as a unity anyway, and the human mind as the only means to plumb its nature and necessity.

That standpoint is unashamedly Homocentric, and sees its purpose as tuning individual human beings into to the Unity of Reality, by standing against all man-made conceptions as not only misleading, but also the source of all human suffering too.

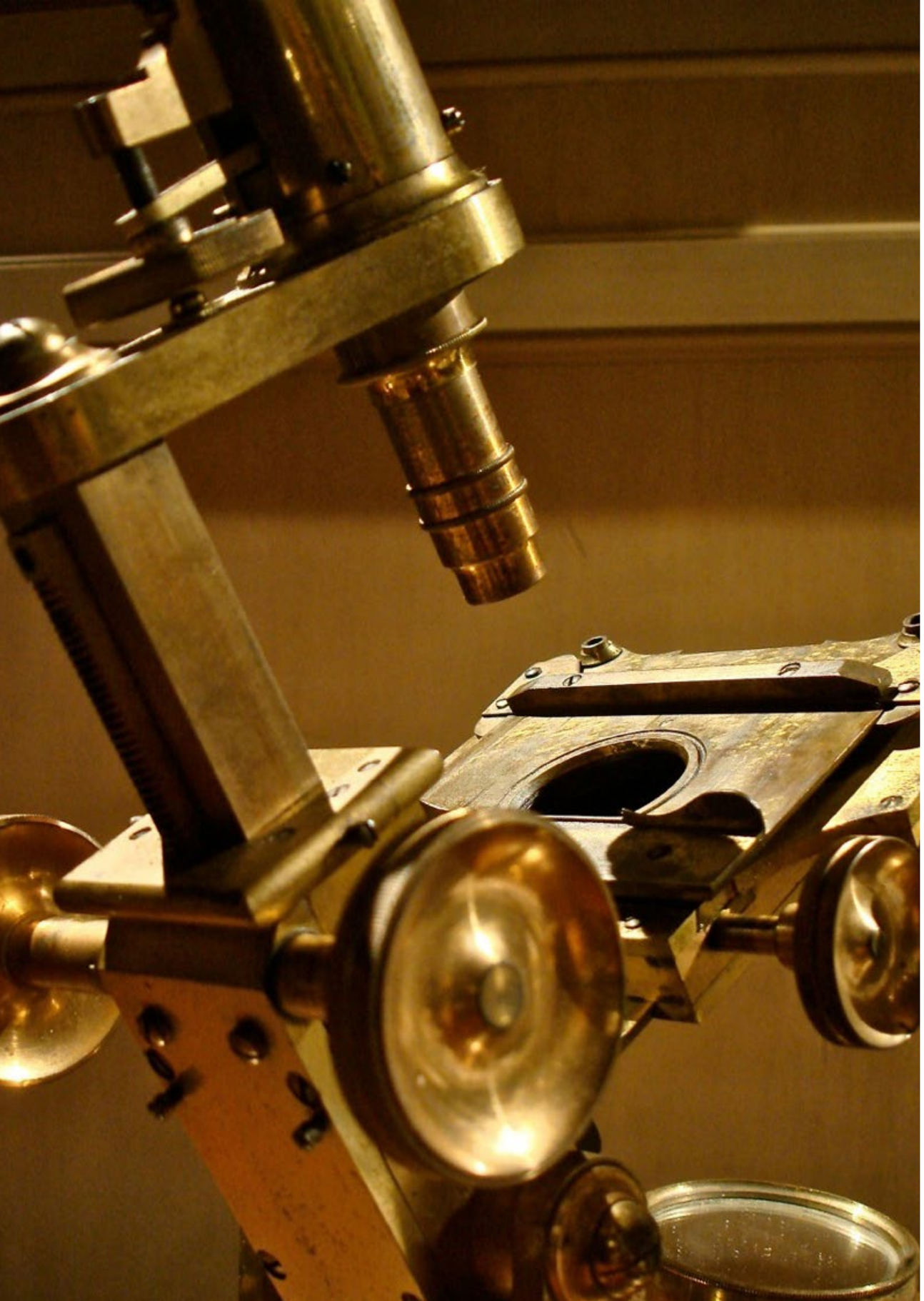
Interestingly, the Buddhists are certain that human beings are entirely open to experience Reality, and will naturally arrive at the same consciousness of what Reality is, because both their own implements of thinking, and Reality too, are both of entirely the same nature.

NOTE: Even the materialists would find this hard to disagree with. For, in that version, all minds are part of Reality, and indeed, the most developed parts of it, and are made from the very same components. No wonder, with such an “ideal” implement of appraisal, they would arrive at the same results.

Yet, the materialists cannot do with the primacy of Mind, whether singular or generalised. It seems to such philosophers that the material nature of Reality preceded the very first minds, and even Life itself! To attempt to understand the Nature and Development of Reality, some means of studying it, in terms of its evident long tern content – Matter, must be tackled, for otherwise what we would be studying is Human Consciousness, and NOT what ultimately produces that, and, of course, everything else.

And, such a standpoint has long been the basis for Science and Technology, and has not only transformed our understanding, but, indeed, the existent World itself too!

The methodology of the best scientists has been the motive force for these developments, but the road has not been easy, and has always been littered with “rocks and pits”. We do not alight, directly, upon Absolute Truth – ever, but instead achieve a series of approximations, and even distortions of the real situations we attempt to model.



Materialism, as originally conceived of, was never sufficient to the task. So, philosophy, ever since, has continued to include both standpoints, though the way they are usually seen does indeed make them a Dichotomous Pair – that is mutually exclusive opposites.

Now, such dichotomies in Thought were realised by the Idealist German philosopher Frederick Hegel, who, in thinking about Change and Development, realised that progress would always be not only limited by our mistaken assumptions, but actually brought to a complete halt with – guess what? – an unavoidable Dichotomous Pair of conceptions. He realised that to continue to progress, such dichotomies had to be adequately dealt with, via a successful critical look at our assumptions, and, somehow, be transcended.

The resolution has to be the demolishing of our prior conceptions and their replacement by wholly new, and better, ideas. His model for the production of such an Event was clearly evident in all creative Human Thinking, generally resolved with the sudden realisation of a transcending Idea, which delivered what was required.

So he defined and explained his method of precipitating such an event by hammering at the clear Dichotomy, until the resolution presented itself. He called the method Dialectics, and with it he began to make the most significant gains in Philosophy for millennia. His method was always to identify the Dichotomous Pairs, and then attempt to precipitate an Emergence, in which the old bankers were replaced by more accurate and integrating alternatives, using which the impasse could be completely transcended, and real progress ensured.

Now, of course, Hegel was dealing entirely with Thought, but his disciple Karl Marx became the first philosopher to transfer Hegel's brilliant gains, wholesale, into the opposite Materialist standpoint, though perhaps he didn't realise that he was actually using Hegel's own methods to transcend the Idealism/Materialism Dichotomy! The perennial arguments as to which was the correct standpoint was no longer necessary, Marx has transcended the impasse by using Hegel's idealist methods addressed to a World that was seen from a materialist viewpoint.

Clearly, the idealists had been right in one vital area: the only way of addressing the material World, was indeed via the Human Mind, and in spite of the certain primacy of Matter, which is undeniable, the access to the Material Truth could only be moved towards by Human Thinking. This was the necessary transcendence of the Dichotomy!

Yet, to merely realise this would not be sufficient, and even more important, the methodology of Dialectics would not come to fruition, until it was wedded indissolubly to the methods of Science, and in so doing, transform both!

And this has been borne out, ever since, for Science was not brought into the new methodology. It was, and still is, a long way from a dialectical materialist discipline. Since its inception, it has been wedded to certain untouchable premises, by far the most important being Plurality, which, because it defines Reality as being produced by separate and eternal Natural Laws, and hence legitimises Analysis and Causal Reductionism, has always been Banker Number One, and has given rise to a methodology designed to identify, and then extract what are deemed to be the determining factors, that together "sum" to produce all phenomena that occur in all circumstances.

Now, this assumption is the opposite of Holism, which denies such independence of the constituent factors, and therefore insists that "Everything affects everything else", so that NO eternal and Reality-determining laws exist except in very particular circumstances, which scientists have to ensure that they set up and maintain throughout any investigative experiments.

And, scientists have indeed become experts at achieving such conditions and thus extracting what seem to be eternal Laws, but which are actually the nature of given factors in arranged for and maintained stable conditions. Thus what are deemed to be eternal Natural Laws are in fact idealisations of what are naturally variable constituents. The many different instances, in which these naturally occur in totally unfettered Reality, are never found, but the constant versions in stable Domains are found instead, and mistakenly taken for Eternal Laws.

Clearly, Science has been faced with yet another Dichotomous Pair, this time consisting of Plurality and Holism. And, because of this Science has, once again, kept both, and used them where they fit – Holism in the explanation of phenomena and Plurality in quantitative measurements and the construction of relations, usually both abstracted and idealised into Equations, BUT most certainly never applicable outside of the conditions in which they were extracted.

What, you may ask, is the proof of this? Well, it is increasingly clear in Sub Atomic Physics, where multiple anomalies and contradictions abound, and the classically imperative to explain phenomena has been entirely abandoned.

Science has found its inevitable Impasse, and will not progress any further until the current Dichotomy has been transcended.

How Do We Find Truth?

Clearly, on reading Margaret Morrison's account of how James Clerk Maxwell arrived at his famous equations of electromagnetic waves, it became evident that what is still required in my version of a space-filling substrate, is that it must also involve a physical description of the nature of that conceived-of Paving of Space.

For, in an inspection of Maxwell's description of the contents of his substrate, it is clear that his description cannot be sustained in any way today. We have to ask, "Why then did it deliver, so brilliantly, effective and useful equations, not to mention crucial physical conclusions about Electromagnetism, which do indeed stand to this day?"

For, his model, no matter how contrived and seemingly mistaken, must have sufficient "objective content" to deliver these things so well in spite of its inaccuracies. For, Maxwell must have realised important physical determinations, which, though his embodiment of them was in a "fictional" model, were, nevertheless, included therein, and made those aspects of truth shine through his construct!

So, though such modelling is no easy task, it was also such for Maxwell, for though he had grasped an essential content, he originally just could not produce a model which delivered these things. But, he was a very good scientist, and knew how to construct models – defined by profound realisations. He used real entities and properties, along with steadfast principles of model-building, which enabled him to "build-in" his realised content, even though his "carrier" was a construct!

The achievement exposes exactly what Mankind has to do to make any progress at all in attempting to explain the World. Man is neither adequately equipped, nor knowledgeable enough, to deliver Absolute Truth. He must use what he already has, which is never sufficient. But, if, with an inherent logic of its own, he can build an invented yet coherent analogue, of things he does know about, then he has, indeed, carried things forward.

Now, as they say, "The proof of the pudding, is in the eating!", so any such model can only be validated by going beyond its included representations of what is already known, and also generate further relevant features, which, thereafter, prove to be existent. The "true" model must contain more Objective Content than that which it replaces.

We must get away from the mathematical myth of dealing in the Absolutely True, for it is impossible in real Science. Clearly, this vital aspect of human thinking has to be understood, for it seems impossible to be effective: yet it is the only way that Mankind can "pull itself up by its own bootlaces".

To even begin to understand, the scientists have to reject the standpoint of the mathematicians and mathematical physicists, who insist that the equations that they extract are absolutely true of concrete Reality. For they are most certainly not! They are idealised abstractions of extractions from a purposely "farmed" situation, which inevitably results in a wholly abstract relation – and as such is indeed a Truth, but NOT of concrete Reality. It is only a truth in a derived World of Pure Form alone, which the committed practitioners call Mathematics, but which NEVER exists as such in the Real World, as it naturally is.

Now, because it is derived from Reality, it will carry over real relations, but in a concretely impossible form – entirely devoid of any concrete components at all. Such extracted Laws would indeed be Real World Truths, but for one major and damning error. These laws do not, and indeed cannot, cause concrete Reality – ever! They are, of course, produced from concrete results, but always in complex, multi-factor situations, and indeed it is the combined AND mutually modifying effects of all the present factors that deliver the real situation in concrete Reality.

Yet, even that description doesn't deliver the actual situations, for we are inured over many millennia, with assuming two basic assumptions – ONE: that these individual factors are constant, and TWO: that they can each and every one be separated out to reveal each one in its own pristine form.

These ideas are based upon the Principle of Plurality. And that principle is incorrect! And, not only that, the alternative principle, that of Holism, makes both those assumptions totally wrong! For the factors extracted are NOT prior: they are made by the containing context – and they do not constitute a "sum", but a "product"! For, they are not constant and certainly not eternal, their form, at any time, will depend upon the Current Context, and, even that is recursive!

"Which comes first, the chicken or the egg?"

We are so used to pluralistic thinking that we cannot stomach the alternative. We believe that we can always analyse down, layer below layer, to the supposed primary causes. Well, you certainly cannot do that if Reality is not merely bottom-up, and it certainly isn't!

The principle of Recursion turns out to be vital, as causes produce results, which in turn modify the causes.

Now, though this logically seems to produce infinite regress, in Reality it certainly doesn't!

Such systems, of multiple, mutually modifying "factors", do indeed define each other by their effects, but also can, overall, settle into a stable result, with a self-maintaining balance of all these effects, at least for a time! Reality can find such Stability - which seems to promise a pluralist World.

"Ah", I hear you say, "So, we can continue as we do now?", you might then insist, "Our plurality is correct!"

Well, it is a reasonable and indeed fruitful tactic, I will admit. BUT it can never predict its own inevitable demise, nor can it ever explain what will replace it when it does finally fail. The tactic will only be useful within Stability - either natural or man-made. The actual development of Reality is wholly excluded from that way of seeing things - for it can never include its inevitable transformations into something else. The whole of Qualitative Change is excluded.

So, can we actually proceed, if our basic assumptions include this much error? How can we really explain Reality, if our methods are so hamstrung, and cannot ever address qualitative change?

We do it by taking partial (or even sometimes distorted) truths, and constructing them into a "fictional (or more correctly, a constructed) model, which we very carefully ensure displays these crucial extractions, but also can deliver more than any previous model can, and therefore takes things further, and can be confirmed by seeing if these extras are also correct.

This construction of analogues is crucial, and Mankind is particularly good at it.

For, we take what we can extract – I call it Objective Content, and we try to make a model, which not only displays that Content, but also enables us to use the construction to demonstrate more correct features than we put into it. And, these extra features can be tested via further experiments. We call this analogistic model methodology Science.

But, of course, this is much easier said than done! The crucial thing about Science, in spite of the limitations of its determining pluralist principle, is that it does deliver Objective Content, though always partial and mistaken in the way that it is interpreted. But, we have a scientific and technological methodology that allows us to predict and produce, even though it is only in well-separated-out patches of Stability. So, we shouldn't abandon it!

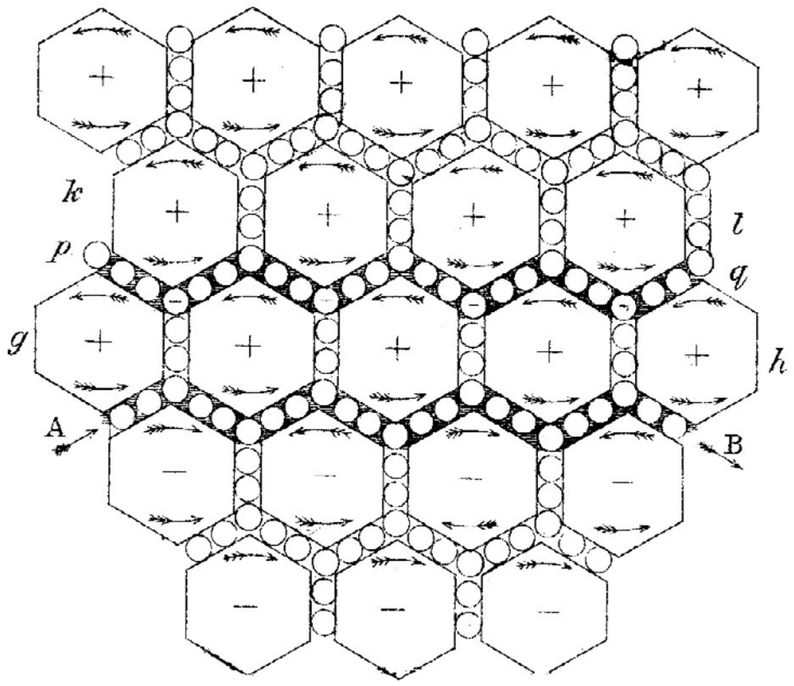
But, on the other hand, we must learn to use it properly, and stop letting the formal tail wag the real dog!

The crucial thing is to address precisely those areas where Plurality is wrong – the interludes of significant Qualitative Change that we call Emergent Events. And, by this means begin to understand Development. The task is not an easy one! It was realised and indeed pursued by Frederick Hegel – the German Idealist philosopher, some 200 years ago. And, was thereafter significantly improved when Marx turned Hegel on his head, or rather on his feet, to transport Hegel's Dialectics, wholesale, into a completely materialist standpoint. But, it involves studying in detail precisely those areas that scientists avoid like the plague. And, it involves the pursuing of Dichotomous Ideas until the underlying and mistaken assumptions are revealed and replaced.

Such a methodology has none of the complacency of Mathematics: it doesn't deal only in Ideality and its "Absolute Truth", but in Reality, and in our temporary achievements in always trying to understand it.

A Model of Empty Space

What can we say about James Clerk Maxwell's diagram of his model of a medium filling Empty Space shown here? Though clearly Maxwell conceived of a 3D medium – The Ether, his diagram represented it as a simplified 2D form, but it was sufficient for him to derive the formulae involved.



NB: A detailed explanation of how Maxwell interpreted this model is contained in Margaret Morrison's paper on "Fictitious Models" in *Physics World.*

This model has stationary elements – his vortices (marked with + or -), which can be both affected by, and indeed affect, the other elements – so-called electrical particles (appearing as small circles). Now, making his vortices hexagonal is perhaps a formalism for them being locked into a kind of substrate, for such elements cannot move about freely, being a classical tessellated form. But, alone, these cannot deliver what he needs from his prior knowledge of electromagnetic phenomena. So, he brings in his electrical particles, which can indeed move, but in this arrangement clearly channelled by the structure of the vortices. He also requires rotations of both his elements, along with possible translational movements of his electrical particles.

Yet, such conceptions are never purely arbitrary! He knows something of the nature of the sort of things he is dealing with in the real World, and his concoction is, therefore, his attempt to encapsulate at least some of the required characteristics of his affect able and affecting substrate. It constitutes an intelligent and well-informed speculation, using all he can, to, at least, get some sort of handle on the real phenomena that he knows about in real Space.

His model is his version of the then agreed medium filling all of Space – the renowned **Ether**, and we must never forget what he managed to derive from this invention – his truly fabulous equations and conceptions of Electromagnetic Waves.

NOTE: Immediately, such successes might be considered as proof that Maxwell's model was correct, but that isn't how it goes, and certainly wasn't the case here. What it proves is that his Model displays some important features of the Reality it represents, but via a viable Analogy!

Yet, you can't allow yourself to get too involved with his chosen elements, as if, for example, they were real entities, or we will really get ourselves into a mess.

For they do NOT exist as such! What does happen, however, is that there is something in so-called Empty Space, which does something similar. We must not mistake the idealised fake trees for the real, implied forest.

Now, though Maxwell was constructing his model 150 years ago, and long before the discovery of Quantum and Sub Atomic Physics, yet he was part of a golden era in Science.

My favourite books are by people like Helmholtz (with his *Sensations of Tone*), who could scientifically study anything. And, if you compare Maxwell's model of the Ether with the models devised by those of the current consensus in Sub Atomic Physics and Cosmology at the present time, they are like chalk and cheese. For today all attempts at analogistic modelling have been abandoned, and all that are considered as legitimate today are purely formal representations as embodied in equations. The models of the Victorian scientists were materialist, intelligent and analogistically appropriate, and enabled real progress to be made. The modern models are, in total contrast, idealist, formalist and suggesting no sort of analogy at all, and hence not in the same league at all!

So, in studying Maxwell's Model we must attempt to maintain what Objective Content he managed to include in it, as well as attempt to improve it (or even replace it) with a model, which can address new scientific discoveries too.

And, for this theoretician (Jim Schofield) there can be no better place, than alongside Maxwell's effort, to consider his own model for "a Paving to fill Empty Space", which he originally devised to answer the anomalies exposed by the dramatic series of Double Slit Experiments in the last century.

NOTE: Let me admit from the outset that this model's suggested contents may be as far from Reality as were those in Maxwell's Model. But I would nevertheless hope that they, as did his, encapsulate important properties of this necessary substrate, even if the vehicles devised to deliver them, turn out to be mere constructed analogues.

The task seemed to be to find an undetectable particle, which could hold quanta of electromagnetic energy, and deliver them across space as an electromagnetic wave-like propagation.

It seemed impossible until the opposites beloved of Sub Atomic Physics were addressed via the methods of Hegel. His discovered ubiquitous Dichotomous Pairs, which always signalled a failure of assumptions, and constituted two mutually-contradicting principles or concepts, which, nevertheless, were essential (in the appropriate places) to deal with Reality.

Philosophically, Hegel had been thinking of Zeno's Descreteness and Continuity pair, but such impasses are legion, and are normally merely by-passed by pragmatically using each where it worked. Hegel knew that this was always a fix, and insisted that such impasses had to be transcended, if any real progress were to be made. Something more profound, that delivered both, was necessary!

Now, Hegel was an idealist, and was narrowly only considering Human Thought, but his main disciple, Karl Marx, had realised the profound general significance of this kind of Dialectical Reasoning, and even more important, its general significance in the whole material World. He transferred Hegel's Dialectics wholesale to a materialist standpoint, so Hegel's brilliant discoveries were now about concrete Reality, as well as how we think!

Now, sadly, the followers of Marx were too (though vitally) involved in Social Systems, to also be full-time scientists, so the essential development of this approach in Science did not occur. Yet, it is, even to this day, supremely important. Human understanding has been grievously impeded by the philosophical stance of scientists for several hundred years.

In spite of remarkable exceptions like Charles Darwin and Alfred Russell Wallace, Stanley Miller and V. Gordon Childe, the vast majority of scientists were, and still are, uncomfortable with transforming Qualitative Change, and continued to deliberately limit their investigations to Stability – either natural or constructed. And, indeed, literally all scientific experiments require the establishment of stable Domains, deliberately filtered and constructed to reveal constant access to particular relations, so that they can be extracted and abstracted into mathematical equations.

So, this theorist has had to spend a vast amount of time and effort attempting to define what was necessary to tackle the ubiquitous problems that were forever emerging due to uncorrected errors in basic principles and assumptions, and hence proliferating innumerable Dichotomous Pairs – the daddy of them all being, of course, Wave/Particle Duality! The scientists, hamstrung by their incorrect assumptions, were simply unable to solve the problem. Their philosophy was wholly inadequate to the task!

So, literally alone in this milieu, this theorist had to start somewhere, and the famed Double Slit dilemmas selected themselves as the obvious place to begin. For it was there more than anywhere else that what seemed to be a totally unchanged situation flipped from one mode to its incompatible opposite. To torpedo Wave/Particle Duality the anomalies of the Double Slit Experiments had to be satisfactorily explained.

The question was, "Could we explain both Wave phenomena and Particle Behaviours with the same model?"

My definition of an undetectable substrate seemed to be the place to start – NOT, it must be emphasized, a mere rehash of Maxwell's Ether Medium, but instead a 3D Paving of Empty Space composed entirely of undetectable particles, which were, nevertheless, capable of dealing with electromagnetic energy in Quanta!

Now, how could such a Paving occur?

Let us first tackle the nature of the particles, which would make up such a Paving. If we took a pair of sub particles – one of ordinary matter and another of antimatter, they are assumed to mutually annihilate if they closely encountered one another. But, what if they were of opposite electrical charge, and orbited one another in a mutual orbit? I can see no obvious reason why this should not be possible! I therefore decided to try the idea out with an electron and a positron.

It seemed feasible that with appropriate circumstances they might end the encounter by mutually orbiting one another! And crucially, they not only would, as a pair, be invisible, but could also hold extra electromagnetic energy, by the mere promotion of their mutual orbits, just as occurred in the atom. The idea seemed to have (Maxwell-like) legs, so I persevered.

Of course, nobody agreed, until a trusted colleague drew my attention to the *positronium*, which fitted my theoretically-derived particle exactly, and had been discovered in the Tevatron at Fermilab. BUT, my colleague also pointed out that it could only exist for the briefest sliver of time, before dissociating into an electron and a positron! It delivered thereby a version of the famed Pair Production. Now, the inferences from the Tevatron event were that such an unstable particle could never be the key unit in a universe-wide, stable paving. Yet, the fact that this particle seemed to be inferred by both the phenomena of Pair Production, and presumably, also Pair Annihilation, when the joint particle was produced, only spurred me on.

For two good reasons, I was not put off. First, the Tevatron is a high-energy environment, and even my version of the joint particle would dissociate in those conditions. And, its behaviour in low energy situations, such as Empty Space, was unlikely to be evident, for the particle would be invisible. Indeed, Science already suggests such an entity, but composed only of a quantum of pure disembodied energy – the Photon. And, we have no difficulty accepting that! So, I not only decided to assume stability in Empty Space for my particle, but also considered that when it was carrying a quantum of extra energy it actually WAS the fabled Photon, but that it could also exist without such a load, when it would be an Empty Photon.

Now, the second reason, for carrying on, was that theoretically this consistent entity (like Maxwell's vortices and electrical particles) seemed to display all the right sort of properties. At the very least, it might be developable into an analogisitc model for the filling of Empty Space, and even replace Maxwell's version.

So, this particle and its role in a universal Paving was employed in attempting to explain the Double Slit anomalies. – and it succeeded!

So, let us first define the two schemes for dealing with the usually considered as totally empty space. We will have to consider what they could do, and what they couldn't do, and, of course, their crucial similarities in certain areas.
Maxwell's Model: As already mentioned, his model includes some important general features, which he chose to enable him to implement what he was certain to be there in some form in the Real World. As far as I am concerned, the most important of these is the inter-relationships between two factors acting as either causes or consequences, and overall playing both roles in a recursive way. Such features differ significantly from the Principle of Plurality, and are much closer to that of Holism.

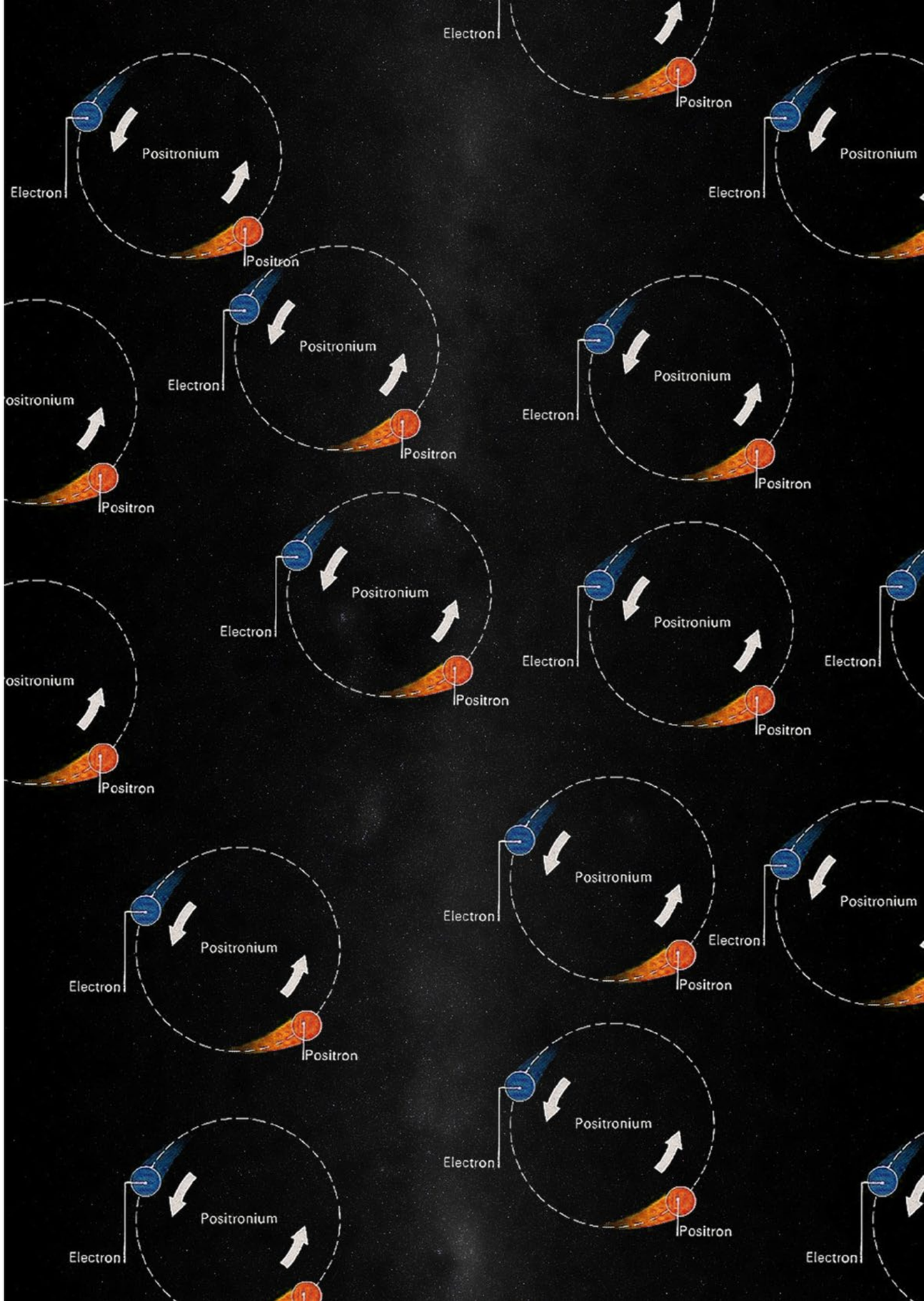
The next significant inclusion is that of circular motions, which in my present day researches have proved to also be essential. And, of course, as soon as Recursion is included you get both opposite effects, and, the establishment of forms of Stability.

Now, Maxwell is very eclectic, not because he is ill-disciplined, but for the very opposite reason – if he cannot produce what evidence shows him is definitely present in Reality, he will add features that bring them in. Frankly, unless you have already cracked a situation, you have no choice, but to attempt to tailor your models in this way.

There is an area in Maxwell's Medium of Empty Space (or in the fabled Ether) that rankles quite a bit. It is his currents! He had no choice but to make them achieved by what appear to be moving electrons, and this seems inconceivable to me, but with only distortable vortices (whatever they are conceived of as being composed of), the necessary movement in the propagation of electromagnetic energy seems to be embodied in his electrons.

Now, rather than taking the model further, it appears to me to be essential, at this point, to compare Maxwell's ideas with my own alternative model, which is a Paving of Space, composed of **Neutritron** particles (or alternatively named as positroniums or even Empty Photons), these being a mutually orbiting pair of one electron and one positron.

For effectively, these map onto Maxwell's vortices: as orbiting is involved, and the lack of any translational movement in their role in propagation.



But, crucially, no added moving elements are included to play the role of Maxwell's electrons. Instead, the neutritrons DO BOTH things.

NOTE: One thing from Philosophy, that appears to be crucial, is that any such Medium or Paving, is effectively a self-correcting system. It CANNOT be permanently changed in any way by the functions it performs. After the passage of some electromagnetic disturbance, the substrate must automatically return to a stable state. However, it is composed, it must be self correcting and self maintaining, and this is attempted to be implemented by BOTH of these models.

Promotion of the mutual orbits' extra electromagnetic energy can be passed on bucket-brigade fashion, from neutritron to neutritron, this delivering electromagnetic energy in quanta, yet, as I have demonstrated, also displaying features of Wave Effects – as shown in the Theory of the Double Slits as published in its own SHAPE Special Issue. In addition, with this model, the Speed of Light merely becomes the speed of transfer from one particle in the Paving to the next.

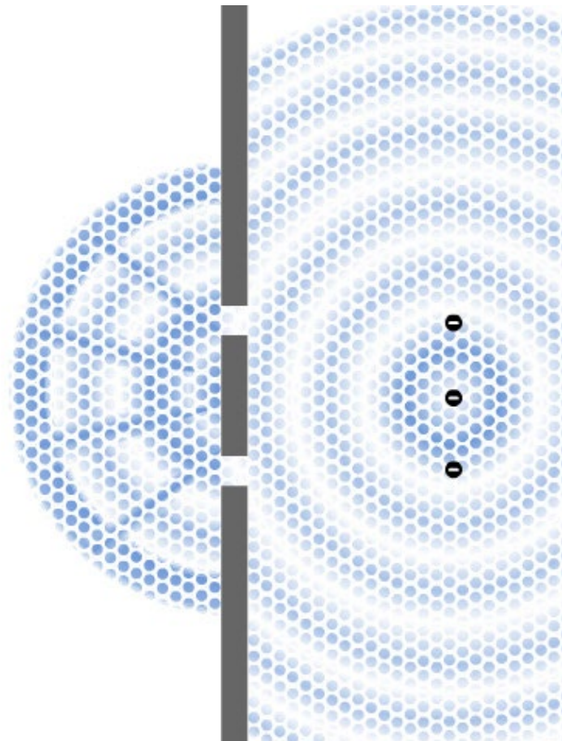
Many consequences of this model (as with Maxwell's) have been developed, which are revolutionary for Cosmology, and consequent theories of Totally Internal Reflection of propagating electromagnetic energy at the boundaries of the Universe, plus many, mirror-like virtual effects have been demonstrated.

For, with this model, radiation is impossible outside of the Universe (the boundaries being defined by the outermost limits of the Paving of Empty Space). For, with this model no the Paving is essential for propagation to occur!

Also, of course, any other concretely existing Universes would be entirely invisible, while our conception of our own Universe will be dramatically extended by the effects of totally Internal Reflections at the boundaries. Indeed, the same light emitting objects could be seen simultaneously from different directions by a single observer, and what would be seen would be of different times in the history of that source, due to the different paths traversed.

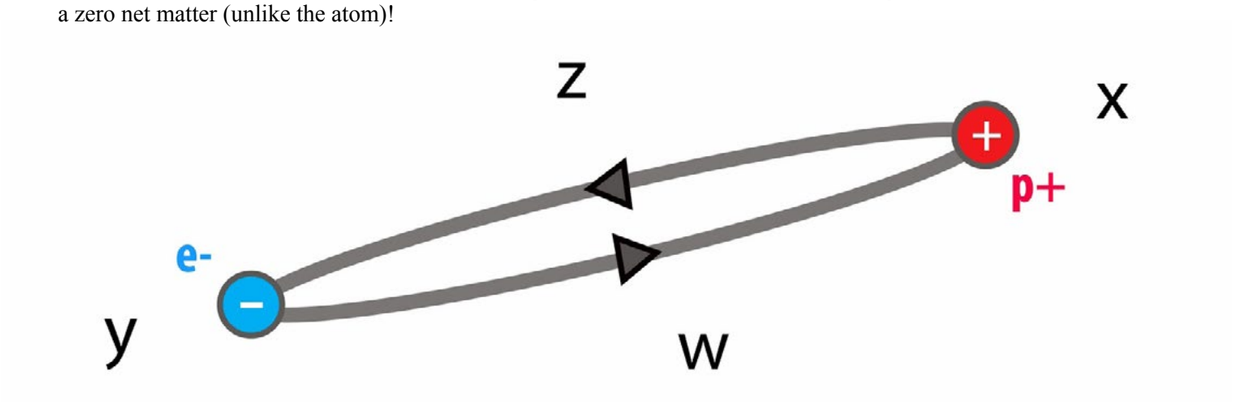
Clearly, the new model "has legs", at least as acceptable as Maxwell's model, and hence worth a great deal of further study.

NOTE: I am fascinated by Maxwell's model, for it echoes my own paving in surprising ways. His vortices, though relatively stationary, are not totally adjacent to one another, but instead involve articulating intermediaries. My model required similar solutions to make it deliver. And, finally, both models highlight the analogistic modelling we are forced to use in situations as yet unexplained, while often managing to do so with far-from-actual constructs.

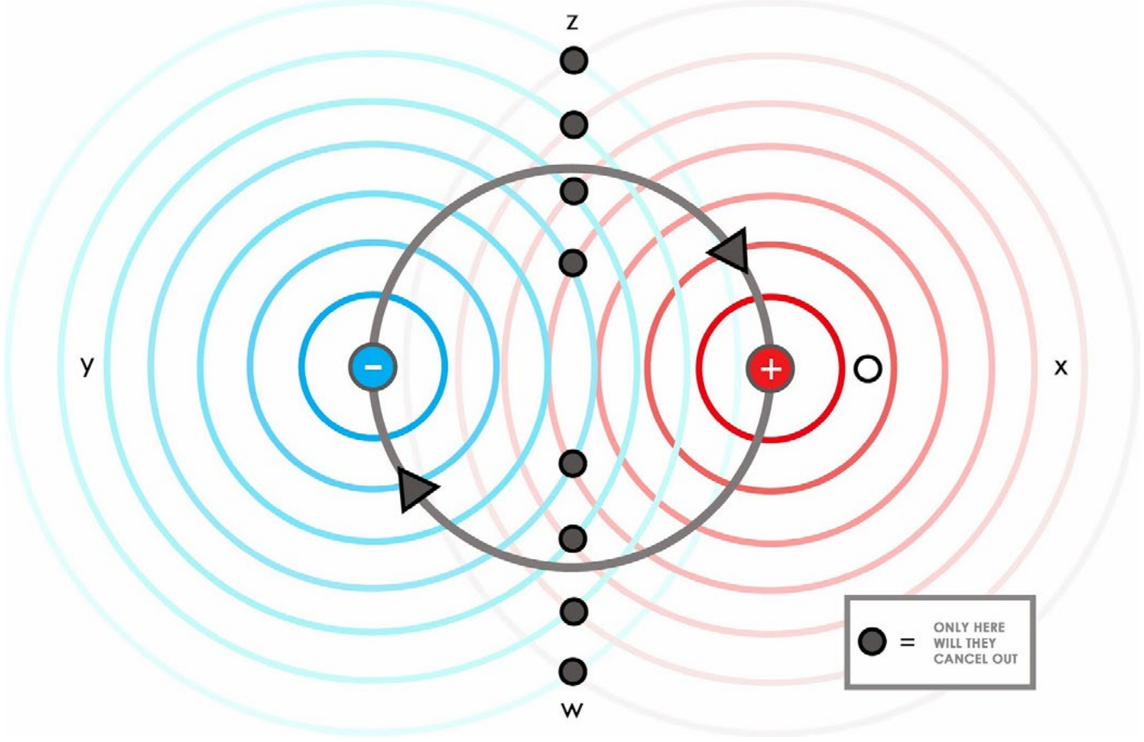


The Electromagnetic Effects of the Neutritron

If this is the form of the neutritron, then even though overall it will have a zero net charge (like the atom), and also have a zero net matter (unlike the atom)!



But, that will certainly NOT be the case in close proximity to the joint particle – that is locally! So clearly in any interactions with other entities, which are physically positioned, so as to definitely be in such close proximity, these will certainly be determined by very local conditions indeed! Let us therefore consider this image, which superimposes the fields of the two component particles upon their mutual orbit and the surrounding area, as viewed from a position perpendicular to the plane of that orbit.



Clearly, when seen in this way, very close to the joint particle, hardly anywhere is neutral, on either electrical or magnetic criteria. The intended colours for the two fields will, ultimately, in the final version, be RED for the positive electrostatic field, and BLUE for the negative field. In both the strength of the field will be evident from the depth of colour.

We will then clearly see strong electrostatic fields in the close vicinity of each of the sub particles.

And, as these fields overlap, they will neutralise.

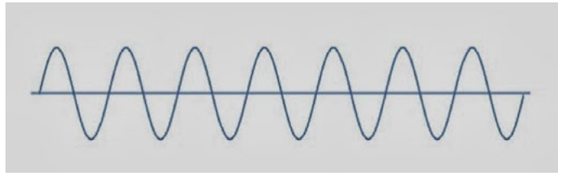
Now the decreasing strength of the fields are indicated by the increasing paleness of the colours involved. And where the two fields cancel out completely (particularly in the line between the particles) the zero positions are shown as black dots.

In addition, of course, such a diagram can only present a snapshot instant of a continually changing situation, for as they orbit all fields will be changing continually in all static positions, so that overall there will be NO residual field effects over time – they will average out to zero.

Now, it is extremely revealing to consider the effect upon a static single point (depicted here using the black circle near x). For, due to its shown position it will of course be subject to a strong positive field. But now we have to follow the changes in the field at this point, as the two sub particles move round as they orbit one another.

Let us assume that the rotation is taking place in an anticlockwise direction, so that the orbiting particles approach new positions at z and w. Clearly the positive charge upon our stationary position near x will decline until it reaches ZERO, where the two fields exactly cancel out. Then, as the rotation continues until the moving particles reach y and x, the effect on our position will have risen to a maximum negative value.

Clearly, over a complete cycle this point will suffer a classical complete cycle of oscillation of the field, over time, resulting in the following pattern.



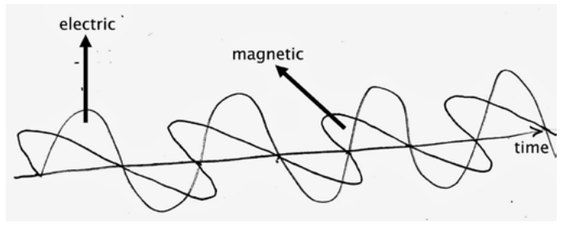
Now, of course, we still have to consider the unavoidable magnetic effects of the moving charges, which are essential to Maxwell's formal representation of a disembodied electromagnetic radiation. So, could these necessary components occur too?

Considering our very simple diagram, we have a problem! For, both a single electron and a single positron orbiting together will again cancel their magnetic effects overall.

But, once more concentrating our attention, as with the electrostatics, on the effects during a single cycle of rotation at x, it becomes clear that there will be a magnetic fields, at a maximum at the beginning, which will decline first to ZERO then rise to a maximum in the opposite direction after half a cycle. The N and S magnetic effects will also be reversed, via a midpoint where thery exactly cancel out.

It is becoming clear that the magnetic effects at x will also oscillate, as did the electrostatic effects, but at right angles to the plane of the orbit.

Now, if all this is true, we can see why Maxwell's purely formal encapsulation of electromagnetic radiation did indeed fit the bill in many circumstances. But rather than the overall effect, it would be in contrast be delivering oscillation effects at local levels. (See the full electrostatic and magnetic trace below).



Now, let us consider the alternatives physically!

Theory One: Electromagnetic radiation is a purely disembodied-yet-energetic oscillation of nothing, which which can hold and propagate energy over otherwise entirely Empty Space!

Theory Two: There is NO disembodied E-M radiation, but there is a joint particle with these E-M properties, which can propagate them either by movement of the receptacle particle, or by passing it on bucket-brigade fashion across a universe-wide undetectable paving of these units.

Now, of course, put like that the choice is surely "no contest", but the failure to find any such paving, or even explain how such a vast structure could ever have come into existence always condemned such a suggestion as untenable.

Clearly, such a theory demands many as yet unrevealed things about Reality, whereas the other merely attributes all the necessary properties to Empty Space itself – that is to Nothing!

Now, though the new alternative does, in fact, work out nicely for propagation, that is certainly NOT the case with a single electron orbit within an atom. For the reversal of the magnetic component in the delivered propagation within its cycle of oscillation, seems to be impossible to generate directly via such an origin in the atom!

But, this might not be such a problem, if a prior-existing paving unit, with mutually orbiting particles of opposite charge receive merely a gobbet of energy at a given frequency. For the already existing, receiving structure would determine how than energy was internally distributed. Thereafter, both to other such units in propagation and finally given up to something else, the required full Maxwell form would be the quantum being dealt with, NOT as a wave in a medium, but as a pair of mutually orbiting particles with a receptacle-per-quantum.

So, it is merely energy at a given frequency transferred from the promoted electron orbit in the atoms to a paving propagation elsewhere.