



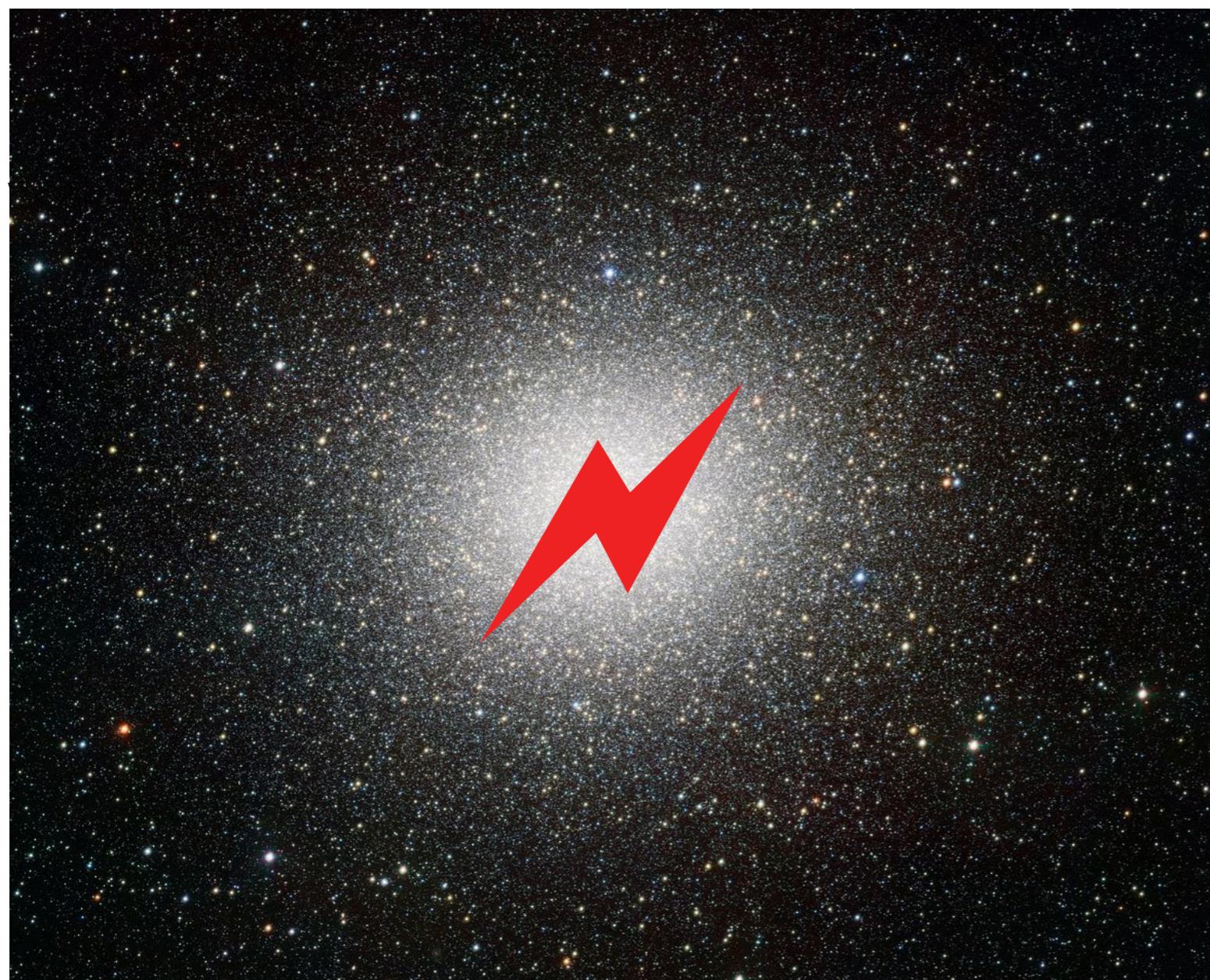
ISSUE 72 FEB 21 JIM SCHOFIELD

SHAPE JOURNAL

IS THE UNIVERSE ELECTRIC?

THE EXTREMES OF THE ELECTRIC UNIVERSE & CURRENT COSMOLOGY AS SEEN FROM THE ALTERNATIVE HOLISTIC CRITIQUE
OF THEM BOTH / THE POSITIVE CONTRIBUTIONS OF THE ELECTRIC UNIVERSE GROUP & HOW TO BUILD THE NEW HOLISTIC STANCE

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Is the Universe Electric?

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What is the Electric Universe?

by

Mick Schofield

Welcome to Issue 72 of the SHAPE Journal. This edition examines the controversial Electric Universe group of physicists and their ideas, comparing them to the consensus position in Cosmology, and attempting to reveal *both* of their inadequacies, regarding a shared basis in Pluralist thinking.

If we were to judge Electric Universe solely by their representation in the mainstream media and in popular science writing, we would quickly discard their contribution entirely, as pseudo-scientific conspiracy theories, lacking in any evidence or even brand it a dubious cult.

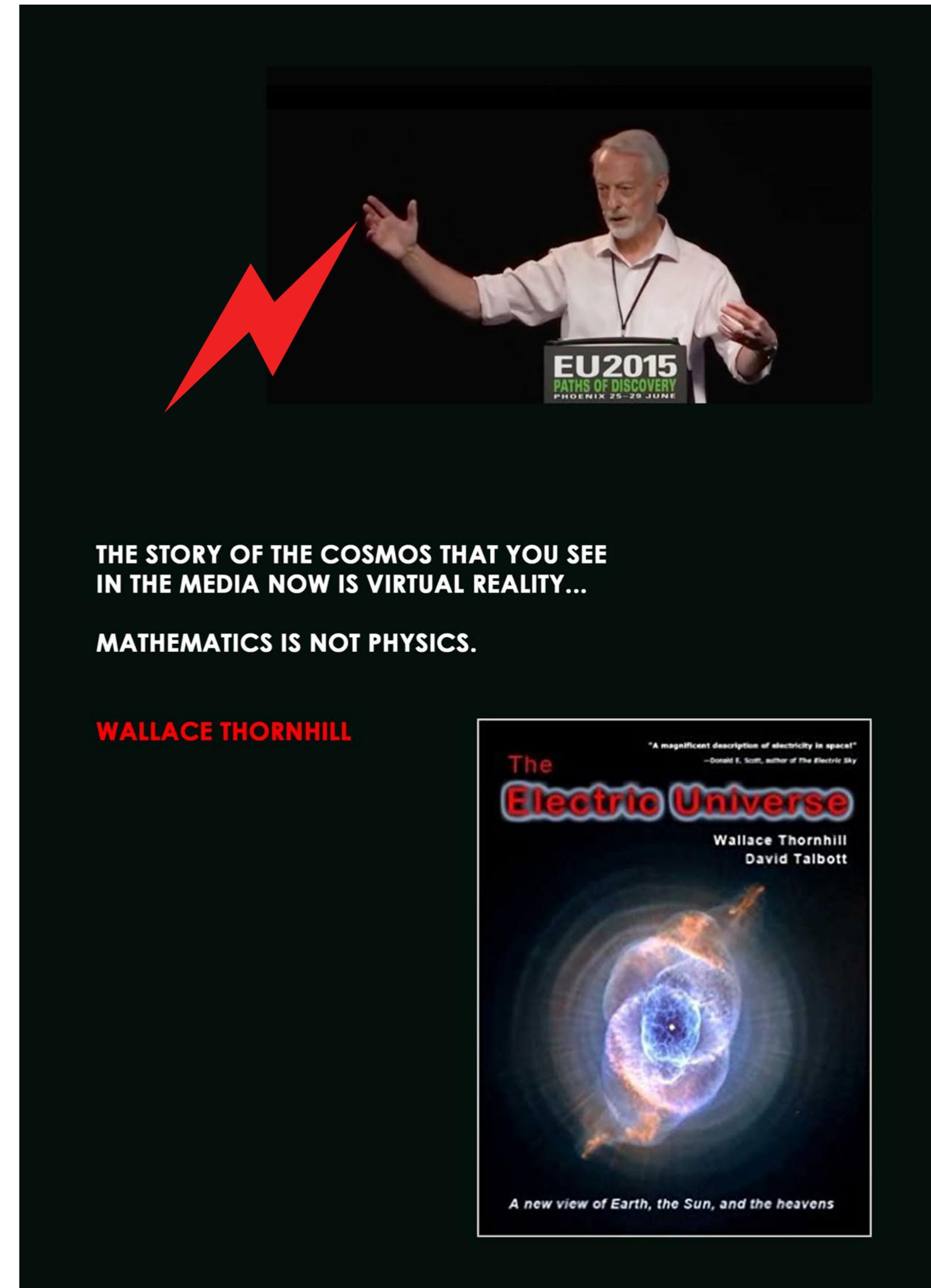
Have a little read of [this article](#) from Vice magazine for a flavour of the discourse in question. Electric Universe adherents are called *believers*, rather than investigators, in the writing, and the substance of their ideas is written-off as total crackpottery.

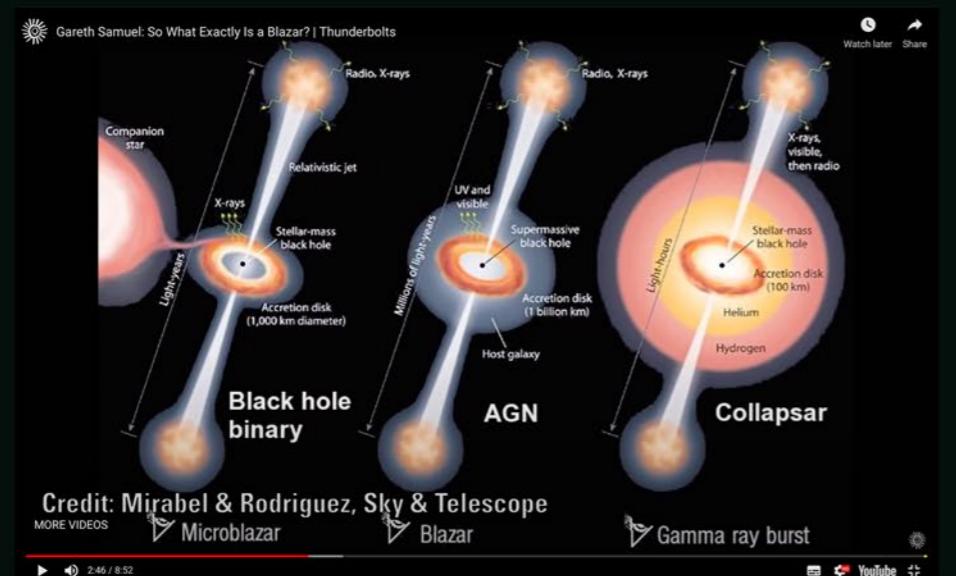
SHAPE Journal takes a more nuanced position to these matters. There are certainly major problems with much of what falls under the Electric Universe banner - but the project seems to be a surprisingly broad church - and one that welcomes many outsider scientists and non-conformist thinkers in Physics, that actually have something worthwhile to say. Some of the research undertaken by people affiliated or associated with the Electric Universe, is actually rather good indeed - but doesn't seem to benefit in terms of credibility, from their link with EU.

The Electric Universe was established by Wallace Thornhill in 1994, and now has a fervent worldwide following and annual conference. In 2007, Thornhill published a book with David Talbott under the same name, and this became something of a bible for the movement, alongside the film they made, Thunderbolts of the Gods. The guiding principle, is that electricity is the most important force in the Universe and Plasma is the dominant form of matter.

Jim Schofield first became aware of Thornhill on YouTube, during the early stages of his research into Substrate Theory, as Thornhill also seemed to insinuate the presence of some hidden substrate - a sort of reformulated *Aether* theory being necessary to explain the propagation of Electromagnetic radiation across the Universe. He also seemed to reject the mathematical reductionism in Physics that Schofield was pushing against in his own research. Unfortunately, Thornhill went no further down this road - and it quickly became apparent that the leader of this movement had no coherent integrated basis for these ideas, no over-arching theory at all in fact - and that he and his closest followers were worryingly prone to fishy mythological references and conjecture, relying on rhetoric rather than evidence to support their arguments.

Despite all of the gaps, the absence of evidence for many of their ideas and lack of quality control on the research that falls under the EU umbrella, there is some interesting stuff to be found there - Gareth Samuel's "See the Pattern" videos being one such example.





Plasma research and Plasma Cosmology theories seem to be the source of the best contributions the extended Electric Universe family has to offer. Work on plasma filaments, the Structured Atomic Model and various hints at some electrical medium pervading space, all have potential with variable ideas being postulated.

Both Plasma Cosmology and Jim Schofield's Substrate Universe, attempt somewhat similar things - re-explaining physical phenomena in space, using only known particles of matter (Leptons) in various different arrangements and states, linking up the Universe in various ways, allowing the propagation of EM radiation and the construction of vast electrical and magnetic fields, if not gravitational ones too. Both offer materialist solutions without recourse to the mathematical idealism we see in the mainstream - spooky action at a distance, Quantum Entanglement or Uncertainty, for example.

It certainly seems possible that these nascent sciences could end up supporting one another, or even combining, to construct a new view of the physical Universe grounded solidly in material reality, and its observable electromagnetic properties.

For this reason, and others, Jim Schofield has given the Electric Universe gang a little more time than most theoretical physicists would, with particular interest in the front line of Plasma research.

Digging deeper reveals other important connections. For Schofield, Eric Lerner's research into Plasma and Fusion Reaction, is some of most exciting happening today - certainly pointing towards a much more holistic way of conducting Physics research, and scientific experiments, more broadly.

Although not directly associated with Electric Universe, in the video below we see Lerner talking with Gareth Samuel about Fusion Energy, Plasma and Cosmology. The unacknowledged role that Plasma plays in the Universe is of key concern to both Lerner and the wider Electric Universe crowd, who see plasma filaments as vital to linking up their electrical stars and galaxies.

Whether or not all these ideas have much merit, Lerner has certainly shown both the importance of Plasma in understanding the Universe, and that much of the received wisdom in Cosmology is not settled at all - the Electric nature of the Universe is still open to question.



The Extremes of the Electric Universe & Current Cosmology

As seen from the alternative Holistic Critique of them both

by

Jim Schofield

Having allocated many years of philosophic study to the debilitating assumptions of the universally adhered-to *Pluralist* philosophical stance, currently dominating literally all science (and even our basic rationality), I have increasingly encountered the commonest supposed alternative position in Current Science, by an energetic and competent group of critics, who call their suggested alternative solution, The Electric Universe (or EU). As someone who sees fundamental problems with both consensus Physics and Cosmology, it is interesting to see an alternative approach to these studies developing, even if I have problems with that too.

Now, it is extremely interesting to reveal exactly where this contending stance comes from, and yet still, remarkably, shares exactly-the-same (basically wrong) assumption, with what its dedicated participants see, as the diametric opposite to their own position.

Indeed, it actually reflects an extremely ancient Dichotomy persisting through all those millennia, since it first arose in Ancient Greek philosophy, between the long-established standpoint of the prior Pragmatists (EU?), and the new Mathematics-based, Pluralist Rationality of the Philosophers, Mathematicians and Scientists that arose out of that great Intellectual Revolution, in the 5th century BC (consensus Cosmology).

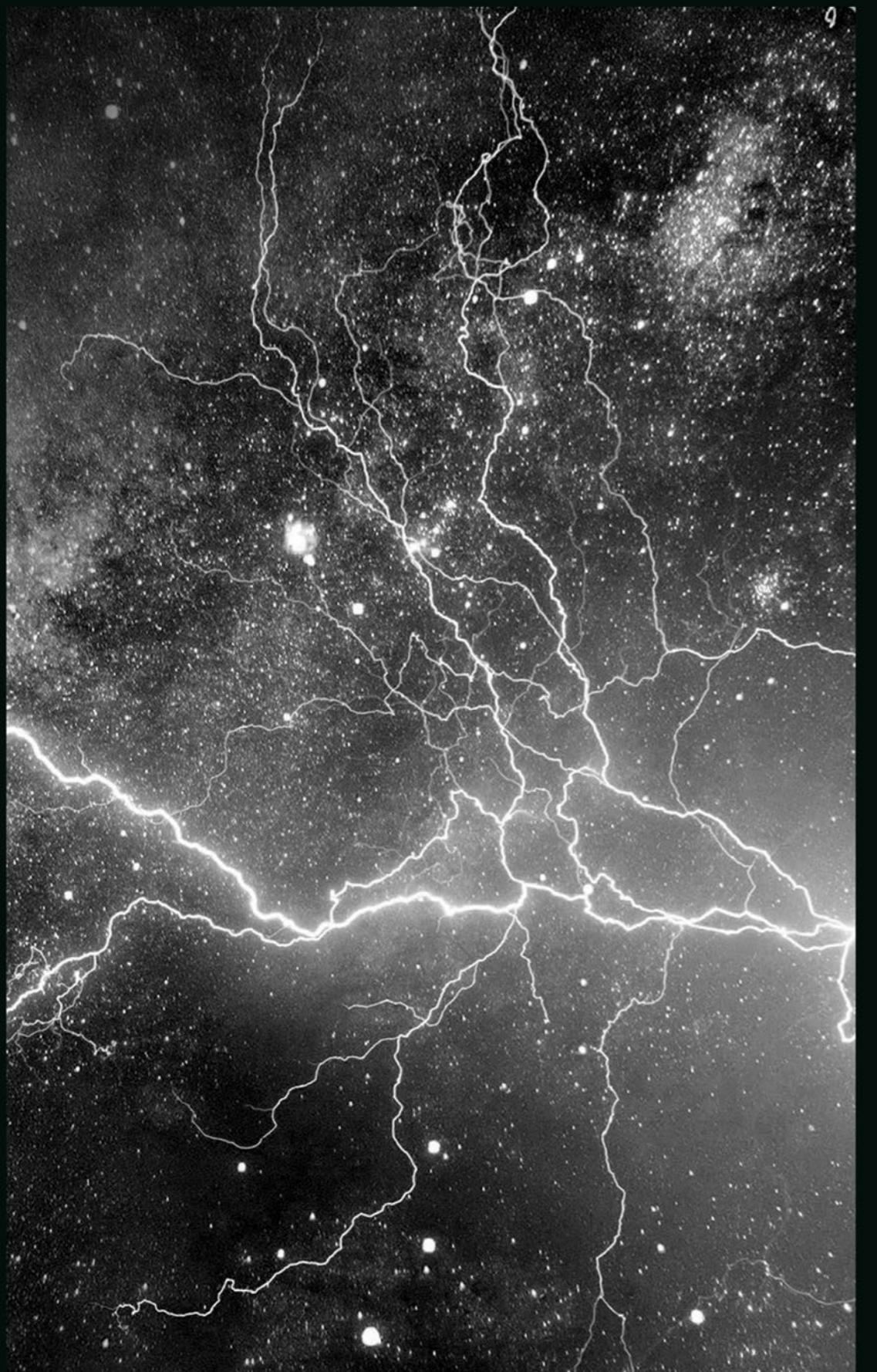
For, the Pragmatism of the prior stance for “getting things done”, was firmly based upon experience and, primarily, the tenet “If it works, it is Right”, as against the

new strict Rationality extracted from the philosophical-and-mathematical use of Reasoning of a novel-and-powerful, though entirely Pluralist type!

For, though the pragmatist stance was based upon millennia of successfully *making* things, and solving problems by doing (actually an intelligent version of “Suck-it-and-See”!), it never managed to explain “Why” those methods worked, and hence never allowed truly General “Laws” to be extracted and used, with wider understanding, elsewhere. In direct contrast, the New Rationality (developed initially in Mathematics) did deliver, what seemed to be, such Universal Laws, as long as the exact same physical conditions were maintained, or in exactly similar areas of computation.

Indeed, such a rigid limitation upon legitimate circumstances assured that the requirements of the Principle of Plurality had been regularly and accurately fulfilled: so the Laws which were only true in those conditions, had been achieved-and-maintained, so that they NEVER constituted elements of any General Science, but instead, could only be a very limited version, properly termed a particular and entirely Pluralist Science! Interestingly, such limited Forms delivered no problems in achieving any desired Productions - so they were fine, for the Pragmatists of that time, and for many years thereafter. And that included the Engineers, Technicians and Experimenters involved - though totally-and-unavoidably misleading in fully Explanatory Theories, required by Scientists, who also found them essential





in developing what they believed to be "Theory", and, thereby, "validly extending their Science" by what they assumed to be Sound Reasoning, as well as Experiments!

But, though both sides developed apace over the centuries, their increasing differences forced them ever further apart, in spite of the Experiments required by the Scientists being impossible without the involvement of highly competent Technicians, and the adoption of the Scientists' equations to facilitate that involvement.

Indeed, both sides became increasingly-committed Pluralists, but the Scientists rested primarily upon Mathematical Rationality as the overarching truth, while the Technicians primarily depended upon their old pragmatism for confirmation - "If it works, it is right!"

For a very long time this alliance sufficed, but as the Scientists - wedded to Plurality via Mathematically arrived-at Formulae, were wandering ever deeper into Ideality, in order to seek-and-perhaps-find "applicable Forms", this detour, then precipitated what was seen by them as a "veritable revolution" - necessarily involving the abandonment of their increasingly-confusing theories, by ever-larger numbers of Scientific Technicians and Engineers, who, under the auspices of collectives like the Electric Universe, began to develop "Theories" of their own!

But, after millennia of pragmatism determining their route to truth, they were largely incompetant at arriving at Rationally Developed Explanatory Theories, so they instead, followed the tenet of "See the Pattern", which arrived at Descriptive Patterns rather than Explanatory Theories, and so were still bereft of any meaningful Explanation.

They were Descriptions of Reality rather than Explanations. But unlike consensus Physics Theory, they did NOT embrace Mathematical Rationality as a Generally Applicable Basis for extending their ideas!

Now, in spite of this, still significantly wrong turning, it didn't stop some of them replacing many of the major mistakes of Pluralist Scientists, in both Sub Atomic Physics and Cosmology, by turning their backs on the usual Universal Physical Consensus, for the exciting ideas of Plasma Physics - starting with a wholesale rejection of Big Bang Theory and Modern Cosmology - based as it was upon Quantum Theory Mathematics &

High Energy Accelerators - for a very different approach both there, and in Nuclear Fusion Physics, especially in Electricity Generation, via Fusion.

The tempos of what they termed delivered "Understanding" made it clear that having "Found the Pattern", they considered that situations were fully explained, but as to why those patterns were naturally adopted within Reality-as-is, it was still wholly unexplained.

These new pragmatic theorists certainly didn't worship Mathematical Rationality as the be-all and end-all, so they avoided the speculations involved in trusting the means that led things deep into Ideality!

These scientists were, after all, primarily successfully-delivering effective Technicians and Engineers - this was their original lineage anyway. Both the virtues and the inadequacies of that stance, are very clearly shown in Gareth Samuel's "See the Pattern" series of Youtube Videos, which, though of value, are clearly very much "too short and sweet"!

Significant Basic Principles are indeed evident, but, as usual, only by extracting situations from out of their inevitably multi-factor actual circumstances: so that we see only a single factor extraction, rather than the fully complex and mutually interacting and qualitatively modifying situations. We see Dominances within such situations, as if they are the only ones involved! And, this is seen as wholly legitimate, from the universally-adopted Pluralist Standpoint, as only that view throws away all qualitatively-changing interactions, by assuming that individual factors merely sum-within-reality, and do NOT modify one another at all.

But, of course, such a stance effectively eliminates all truly Qualitative Change, and hence cannot understand the Development of Reality, and certainly the Evolution of situations into the Entirely New! How things change and come to be, is never really addressed, even retrospectively (when such is possible), and most certainly never even guessed-at predictively, before the Changes actually occur. Such are impossible with NO evident Causes!

Indeed, the whole complex Discipline of handling such real innovative developments, is totally unknowable from the Pluralist Stance adopted by both mainstream Cosmologists and the EU crowd.

And as The Buddha began to address things holistically, at the very same time as the Greek Intellectual Revolution was happening in Europe, his version of the Dynamics of Qualitative Changes was never wedded, indissolubly, with either General Rationality or any of the Sciences.

For these two sides, as embodied in both Western Plurality and Oriental Holism, required a sufficient level of sophistication, within both sides, to enable the initiation of a True Dialectical Rationality of such a Developing Reality to occur.

And, for most of Mankind's History, the unavoidable insufficiency of both sides, was such as to totally prevent them from embarking upon the crucial task of understanding the qualitative relations involved.

So that, even as these began to be addressed - at first, tentatively, by the idealist philosopher, GWF Hegel, and, thereafter, a great deal more systematically, by the materialist philosopher and historian Karl Marx: the switch to applying what was becoming increasingly clear within the latter's treatment of History and Capitalist Economics, was, nevertheless, still too much to ask when addressing The Sciences.

Indeed, though some features, such as the Roles of Opposites turned out to be true, and over the whole vast Range of Possibilities - constituting a greatly-extended Hierarchy of different Levels within Reality - causing an *inaccessibility* of Causalities (and their different tempos) between those many Levels, which made real progress initially impossible - as the dominating Exclusions demanded by that initial wholly-Pluralist, Mathematical Rationality, that made inter-Level causalities wholly inaccessible, and even the Disciplines, limited to that same lowest Level, were only addressable separately in a host of separate-and-different Disciplines.

Indeed, in spite of Marx's profound materialist treatment of Social Revolutionary Processes, the translation of this approach to similar developments in the Sciences, did not emerge fully until the present decade, well over a century after Marx's death.

And, in addition, the Holistic Principle of multiple, simultaneously-mutually-acting-on-and-affecting-of one another, was still not conceived-of Dynamically, and inevitably causing Qualitative Changes, but at best, were still only considered in-sum, without in any way

addressing the Detailed Trajectory changing the qualities of the actual contributions.

Postscript:

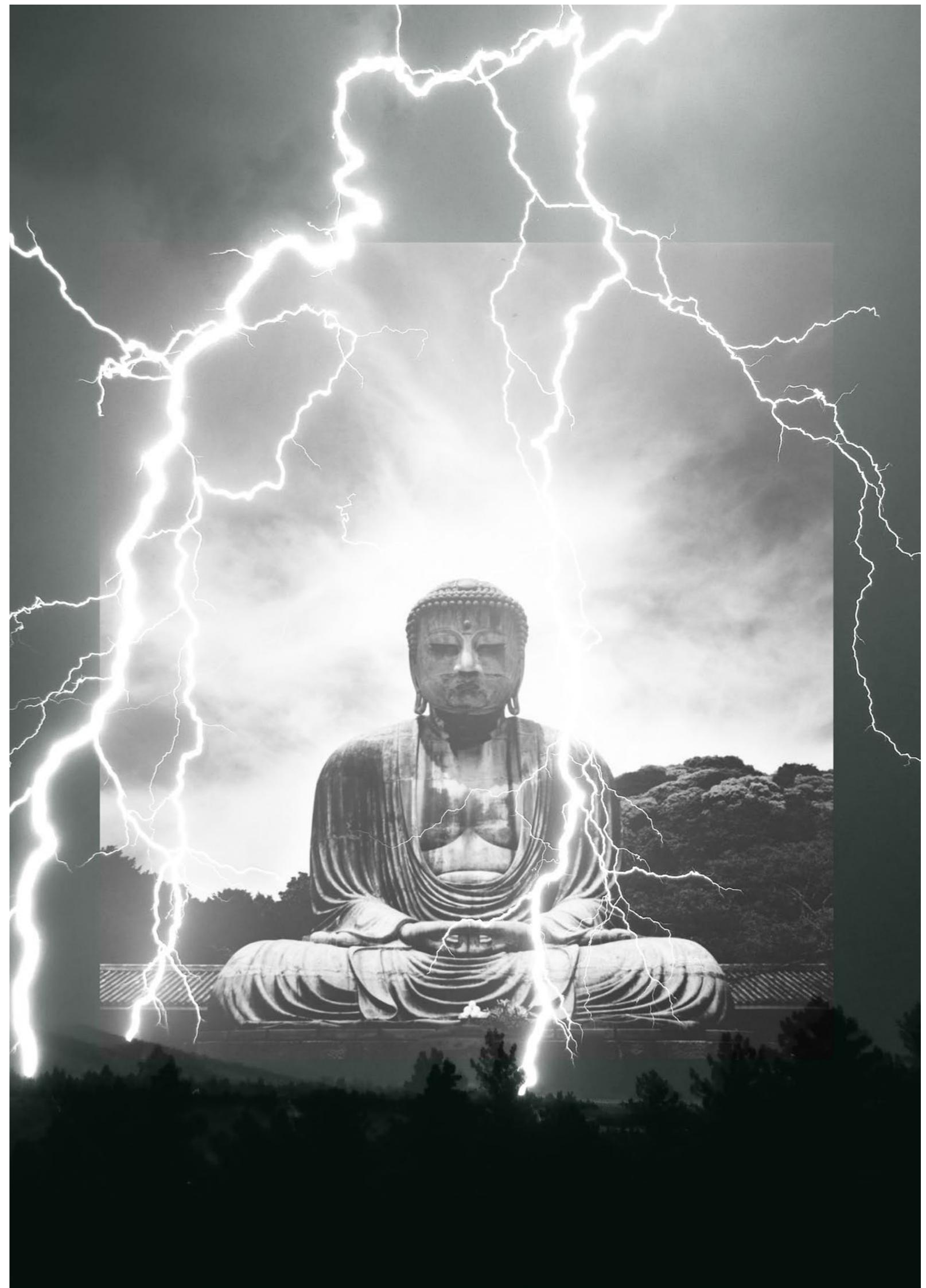
Though still at a very early stage of development, some of the crucial Dynamics of Qualitative Changes within Reality, have begun to be addressed by this author, and the new potential natures of these Outcomes revealed. And, the processes involved (as you will, no doubt, have guessed) are absolutely never the Fixed Pluralist Laws, of the usual type of experiments, but, instead, actual ranges of the caused joint-effects arising, not only due to their multiple contributing amounts, but also in their consequent varying effects, happening upon both one-another: but also delivering qualitatively-diverse outcomes, with different ranges within each of the possible resulting dominances, including even total cancellations of diametrically-opposite contributions, as well as extensive ranges of varying combined individual effects.

But, also crucially, instead of reactions being considered as Single-One-Off Events, or even as multiple repeats of exactly-the-same occurrences, one further Effect, of the Holist stance, is that when such processes are regularly-repeated in Continuing Cycles, there will be different changes, upon each-and-every repeat - amounting, over time, to a changing of the process to Selectively-Effect both the content and outcomes over time. Indeed, such Effects will not be limited to individual Repeating Cycles, but also to sets of such Cycles all affecting one-another!

Though a full description of this theory isn't appropriate in a postscript here, it will, at the right time, be addressed in explaining the role of "Balanced Stabilities", occurring in long-lasting, but definitely always *Temporary Laws*!

So, repeating Cycles will behave very differently to the usual strictly-repeating, Pluralist conception, that we see in both of the Cosmologies addressed in this issue.

It is through a holistic materialist reappraisal of Physics that we can overcome the Idealism of the consensus in Cosmology, and the shaky pragmatism and lack of coherent theory, that currently holds back the Electric Universe investigators.





The Positive Contributions of the Electric Universe Group

& How to Build The New Holistic Stance

As I have spent all my adult life as either a Teacher or a Practicing Theorist - primarily across Mathematics, Physics and Philosophy - I should initially explain why my own rejection of the scientific consensus occurred! After obtaining my Degree in Physics, I abandoned that subject in total disgust, due to its clear rejection of Explanatory Theory as its crucial and primary purpose - instead concentrating upon a misleading and clearly mistaken switch, to an approach damagingly underpinned by the entirely pluralist Rationality that was transferred-wholesale from Mathematics, both as the sole means of its subsequent "theoretical" development, as well as its only supposedly "independent" validation.

The subject appeared to have become a hopeless endeavour, as a sound means of delivering any sort of General Understanding of our Physical Reality, and has not only demoted that crucially important subject into one aimed solely at a totally inadequate Belief System of mistaken ideas, yet, alone, completely-determining all considered-to-be-relevant concepts and Laws! But also, and even more damning, it had, worldwide, peopled all the Citidels of Knowledge and Understanding, with a tight defensive phalanx of the supporters of that position, purposely structured to maintain the status of its leading promoters, and defeating all the efforts of those who did NOT subscribe to that position, and even, thereafter, propagating their stance across all other contributing levels of Education too.

From my time as a pupil (in Grammar School), when a much healthier Explanatory Approach was still generally followed in Physics education, it had soon become clear that such a stance was being universally driven out, and the Mathematics-based alternative was replacing it entirely.

Now, if the reader is assuming that this particular critic was expressing his own Sour Grapes - based, supposedly, upon his own personal inadequacies with regard to Mathematics - they couldn't be more wrong! I was always top of my "A" Stream classes in Mathematics throughout my School Career, I loved the subject, and had taken 7 "A" and "S" Level Examinations - the majority of which were Maths-related! But, even by then, I had already abandoned my original conception of what Mathematics was - as something which could underpin all attempts of Understanding Reality, and I had instead, chosen Physics, as a far better bet for this - for defining what was needed generally, in literally All Effective Reasoning, to be, indeed, the best route to Profound Understanding of the Universe.

But, it took less than a single term at University, to clearly prove that the version of Physics being adopted at my chosen Institution, and was also totally dominant in that different and-mistaken path, so that the rest of my Degree Course would have to be merely *endured*, rather than being the Profound Revelation I had expected and hoped it to be!

Immediately, I ensconced myself in the University's superb Library, and commenced an on-going, regular search for an alternative stance to Modern Physics, as well as seeking a determination, as to exactly why things had got so badly wrong with the subject! And, on the first of these, I sought, in vain, for a very long time, finding literally nothing of real value. But, concerning the second objective, I discovered that the most recent "adopted wrong turning" had been taken many years earlier, by physicists Henri Poincaré and Ernst Mach, who, confronted with both many totally inadequate explanations for physical phenomena, along with, what appeared to be, very effective Mathematical Formulae, decided that an appropriate mixture of BOTH, was the only viable solution, in what they called Empirio Criticism.

There was, of course, also a long equally contributing History of Intellectual Developments, including, particularly, the achievements and mistakes of the Greek Intellectual Revolution in the 5th century BC, which, in most areas, have still not been resolved to this very day! Indeed, the Historical Trajectory, since the Empirio Criticists has been both to delve ever deeper into Sub Atomic Physics, AND ever more downhill theoretically, taken by the theorists involved. But these theoreticians were never wholly self sufficient. Historically, they had always, and continued to rely upon Pragmatic Technicians, to both make the theorists' required investigative Experiments, and their subsequent Productive Applications possible.

And, this class of practical investigators that we might collectively dub Engineers, had made all the practical achievements of Mankind possible, for many prior millennia. And, though the Engineers certainly used Mathematics, they always did so pragmatically, so they were never theorists in the rationally-developing-sense. But without them, absolutely NO working Investigative Experiments or Productions would ever occur! And, predictably, it wasn't always a happy team of collaborators in these processes - for literally ALL the Inventors within Society, setting up Productive Resources, were always the Technicians, and never the Theoreticians, who merely seemed to muse about the Truth.

We should correctly call that delivering process Technology - and it is certainly this, rather than Physics Theory which is the true success story.

Indeed, if ever I wanted anything doing, in all the Universities that I have worked at, I would always go to the various Engineering Departments, where there would be willing solvers of all constructive problems. I even switched my own secondary researches from Mathematical ones, first to Painting, and then Stone and Wood Sculpture, and finally Toy Making and Gardening.

My primary Academic Career switched too, from the Sciences and Mathematics, over to System Software Design and Implementation in Computing and Technology - a practical subject - wherein, I finally headed a Department in a London University College.

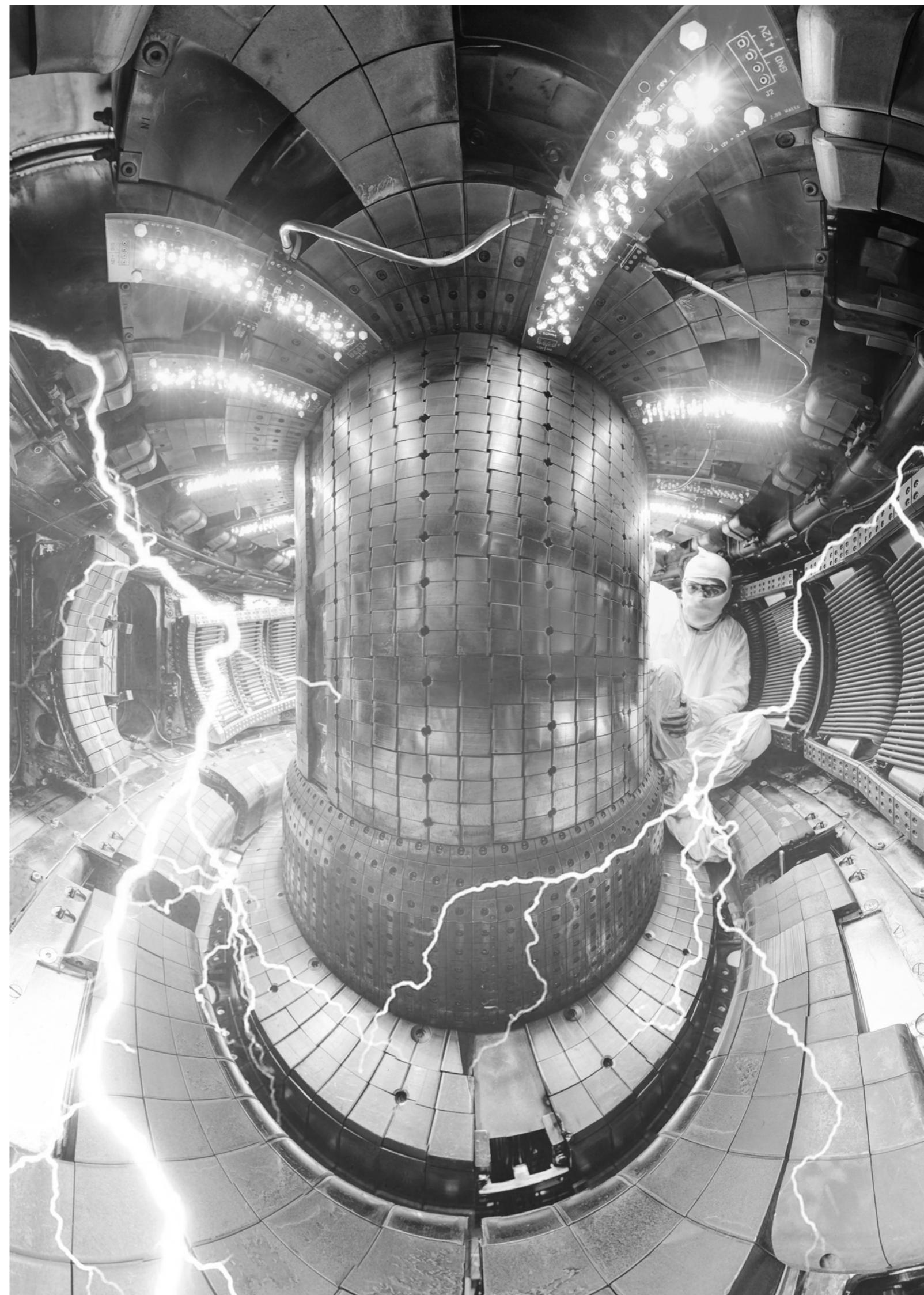
I noticed the Engineers, intrinsic to the usual Scientists' Research teams, soon became increasingly restive! They were always happier with Causality, than the products of Mathematical Rationality, so several of them began to proffer their own theoretical contributions - particularly in the area of Plasma Physics, both in Cosmology and in emerging Atmoic Fusion Research - into the Generation of Electricity!

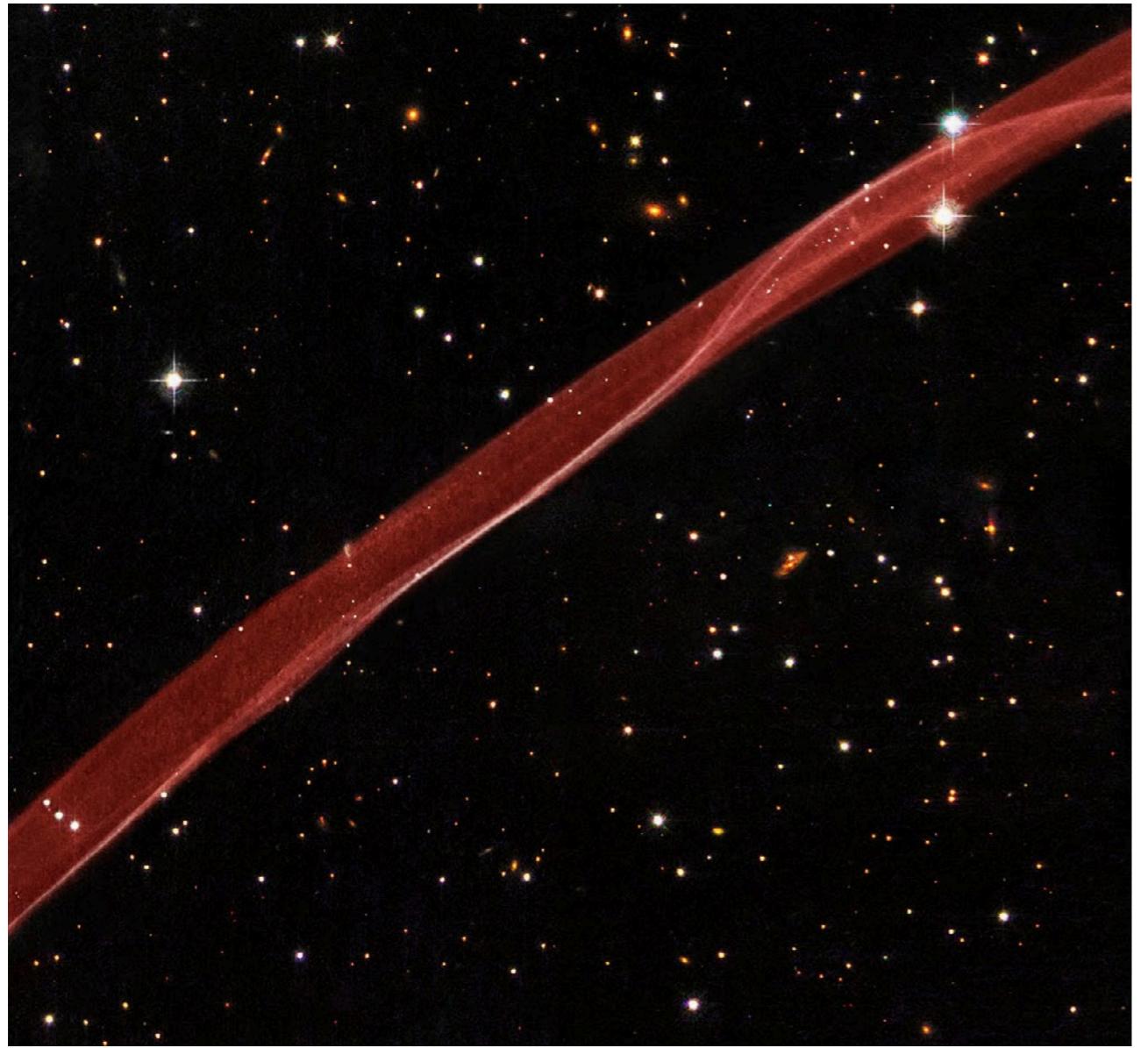
From these types of origins we see the beginnings of The Electric Universe Grouping!

They were, of course, either totally ignored, or actually vigorously-opposed by the Consensus in Modern Sub Atomic Physics: but, in spite of most of their contributions being necessarily separate, and hence NOT displaying any General Theoretical Coherence, they were increasingly competent at what they did, valid and original contributions were made in several important areas.

In the area of Nuclear Fusion, the contributions of researchers such as Eric Lerner and his Focus Fusion team, have taken a very different approach to Physics investigation, based upon both his Original Contributions in Plasma Cosmology, and his clearly non-pluralist method of riding from-one-instability to another, in order to achieve remarkable concentrations in his Plasma Streams, and achieved the Highest temperatures in the whole field of Fusion research.

The Pluralist scientists, on the other hand, (as is usual in Pluralist Science) attempt to first, achieve and then maintain, a Single Stability - as is used in most implementations of the favoured (and adequately-funded) Tokomak Fusion Reactors.





A Birkeland Current Plasma Stream in Space?

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The best of the Fusion attempts (Lerner's Team) move from mutually-attracting Plasma Streams, via the instability of "The Pinch Effect", to further instabilities resulting, first, in the Creation of a tightly-concentrated Plasmoid, and then via a final instability causing the production of Oppositely-Orientated Ion-and-Electron Jets, to ultimately directly deliver Electricity!

While in Cosmology, various Electric Universe Theorists are also researching complex Plasma Streams in Space (Birkeland Currents): and, in particular, the total abandonment of the Big Bang Origin, and supposed following Increasing Expansion of the Universe.

But, though these "Explanations" do deliver alternatives, they are, as yet, never attempts at producing any General Fully Coherent Theories, such as are supposedly preferred by the usual Mainstream Physics - using Mathematical Rationality as their means of inferring such a "validating coherence"!

Now, the usually-assumed route to what appears to be that validation, has settled upon Mathematics for the last two and a half thousand years, precisely because it actually does so, BUT ONLY within the restricted areas imposed upon Reality artificially by us, which do indeed confer such an apparently revealing nature upon what is thereby produced. But it isn't Reality-as-is!

It is, instead, a buttoned-down subset of Reality, which with its imposed restrictions, does, at least, seem universal. But it can't be! It is such a vastly curtailed-and-tidied version of what is actually found in nature - and this subset is certainly some part of Reality, but most definitely NOT All of Reality!

Reality is basically Holistic rather than Pluralistic: so that instead of being composed of Single Independent and Eternal Laws that merely Sum together (as in Plurality), it is in fact composed of multiple, simultaneous, contingent Laws, that actually affect and change one another over time (Holism)!

But, significantly they do not do this all of the time! Indeed, there are (sometimes vast) interludes wherein Reality locally appears to be "pluralist", within a maintained though temporary Stability. And Mankind, long ago, soon learned, pragmatically, how to achieve such Stability under tightly controlled circumstances, and over very limited areas and times.

Meanwhile, Reality-as-a-whole remained strongly Holistic, and only via that nature, was it able to Evolve Qualitatively at all!

For, within all the Pluralist Interludes, and artificially pluralist-and-restricted localities, ONLY Quantitative Change was possible! The Real Qualitatively Developing World is, of course, Reality-as-is. So it is there-and-there-alone that any Generally-applicable Rationality, and any consequent Coherent Understanding, must be somehow developed!

BUT, any hope for a Single-and-Permanent Rationality, also turned out to be fraught with other difficulties: for Reality soon revealed itself to involve a Multi-Level Hierarchical Structure, with not only a relative "apparent independence" of those multitudinous Levels, but also in direct contradiction to this, many relatively-rare, and also hidden Causalities, wherein Causes in one level produced wholly New, and hence completely before-the-event unpredictable, Creations, in the Level above.

Now, this completely-scuppered the usual classical type of effective predictions via Causality, within a Level, and Changed the Game completely, as attempts at prediction become impossible, both before the event, while also invisible after the event - because they were occurring at another Level entirely!

So, that the only light which could be brought to bear in this area, would only come from after-the-event inter-Level analyses, to hopefully yield Causal Explanations, but even then, merely to suggest general analogistic similarities, in similarly-related situations.

Now, if this sounds very confusing and difficult, you are right! What else would you expect the Universe to be?

Holistic science hasn't been developed because of this. For example, in attempting to trace the developments in Capitalist Economics using such methods, Karl Marx, himself, found that the whole Discipline was changing constantly, with NO easy predictions possible, and only the detailed study of already completed changes elsewhere, being the only source from which, by analogy, suggestions about likely possibilities for Wholly New Emergences, might be found.

Now, there will be some, who find these demands far too debilitating, but I feel that I must remind them of

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a Physicist who managed just such a feat - the great scottish scientist James Clerk Macwell, who, in the midst of his fantastic work on Electromagnetism, felt the imperative need for a more concrete and detailed definition of what was then called The Aether - as the Electromagnetic Medium which filled all space, enabling both the Propagation and Effective Field Properties of Electromagnetic Entities and Effects, throughout the Universe.

And, with little or no direct evidence, he decided to turn things completely around, by defining that medium, entirely in terms of what we already knew that it could, and, indeed, did do.

So, he certainly did something similar to what I have been attempting to define here, and commenced to devise an Analogistic Model of The Aether, in terms of analogous features (namely Vortices and flows of electrons) via evidence from elsewhere in Nature, but embodied in what this important Medium could be.

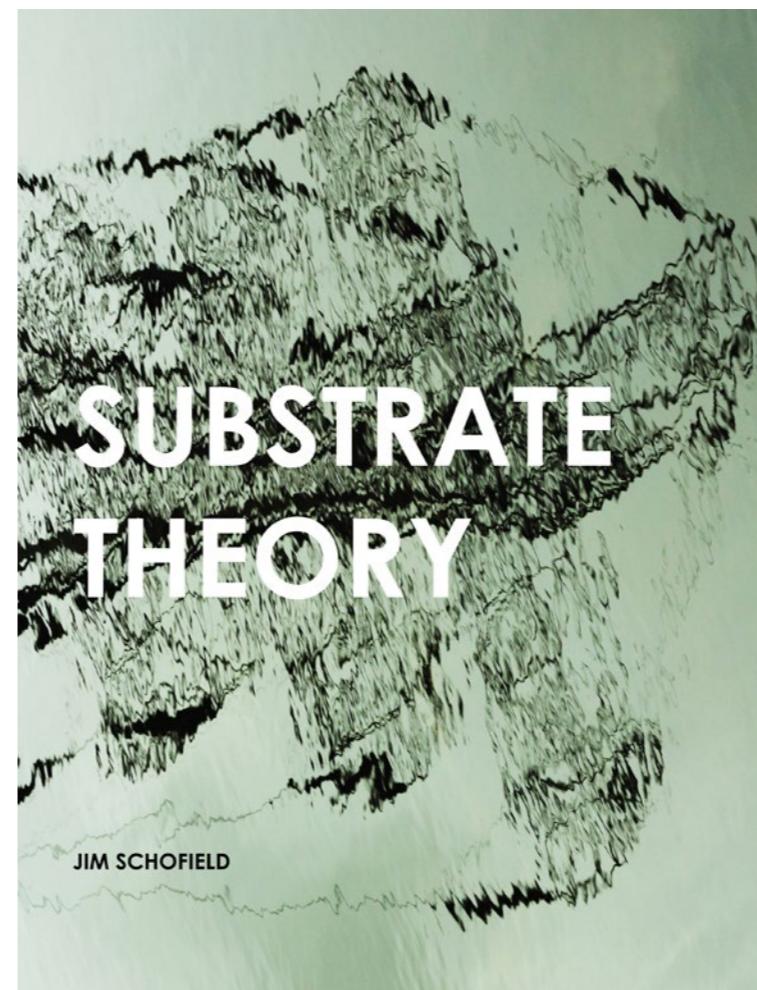
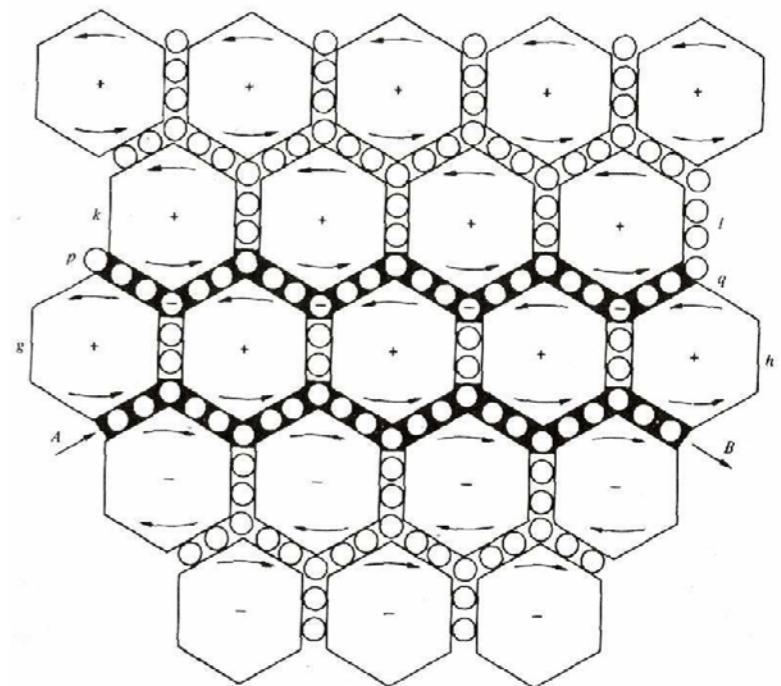
Now, though his definition did not become universally accepted, some of the formulaic derivations from it were indeed accepted worldwide, so clearly that Analogistic Methodology was sound, NOT, of course, as the final definition of what is really taking place, but at least as a likely deliverer, as with Maxwell's Medium, of some real objective content in this new and difficult Area.

This Researcher has been following this trajectory for some time now, particularly within his studies for a Universal Substrate - a medium permeating all space, like the Aether model - but at a new Super-Small Unit Level of those components (see Jim Schofield's *Substrate Theory*).

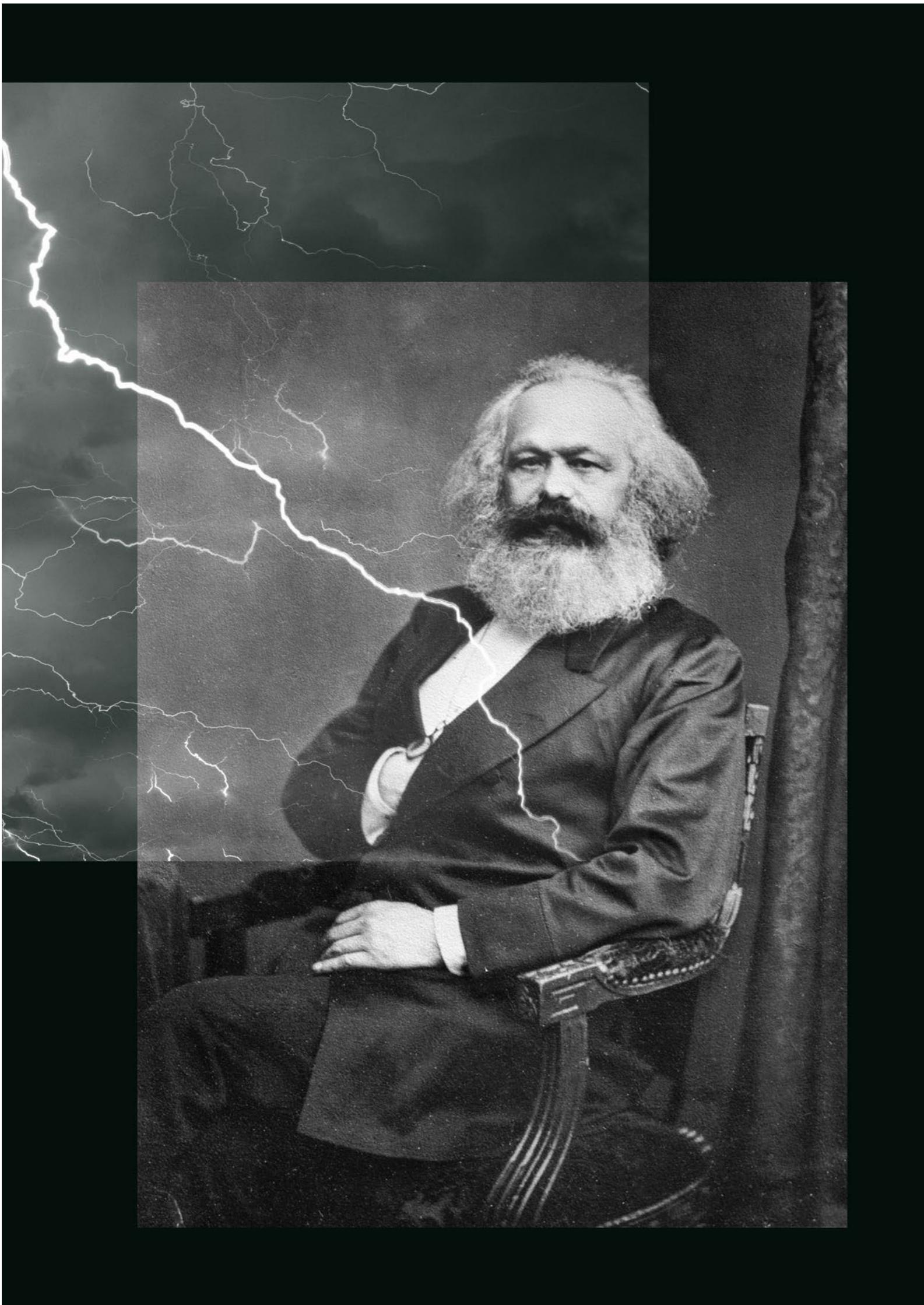
And, in addition to this parallel, Maxwell's vortices have certainly begun to throw analogistic light upon Cosmological Plasma Physics, in the new area of Spatial Phenomena in the now-emerging Holistic Science.

The Universe may not be electric, but there are certainly many points of convergence with Electric Universe ideas - however I wonder how many of its disciples would be willing to jump that alluring ship, and come and help with this difficult and entirely new Physics Theory?

James Clerk Maxwell's model of the Aether was an influence on both Substrate Theory and Electric Universe thinking...



Unlike the Electric Universe however, Substrate Theory suggests an entirely new model of Physics, cracking many of the subjects core problems, from The Double Slit experiments, to action at a distance, from pair production to why the speed of light is constant - all fully explained with a hierarchy of substrates just using elementary particles (Leptons)



Ascending the Holistic Hierarchies

Within All Real Evolutionary Developments within Reality

Having struggled with the initial problems of Developing Consciousness, while attempting to Understand Reality-as-it-now-is, and even with the very best that the current conceptions of Holism can now provide: it has still become increasingly clear that all those current conceptions simply MUST be radically improved, and indeed significantly updated, as they are now totally incapable of resolving the major issues which are only now presenting themselves constantly, and pushing our current inadequately-based conceptions into ever new-and-damaging Wrong Turnings, and consequently totally inadequate-and-misleading False Trails!

Perhaps, before going any further, I should both initially-and-clearly define my own current position, for even that stance is still NOT, at present, widely pursued, though it is very likely to be a major chosen path in the near future: and that being the case, it is therefore imperative that I must, if possible, effectively tackle the mounting number of present impasses, in this position (in addition to those dominating the current consensus).

For, if that isn't achieved very soon indeed, history has many times proved that Mankind can easily become locked into a vicious cycle of getting nowhere - for literally millennia - and, at this time, especially as the current situations, worldwide, already seem intent upon both imminent and future situations that are heading directly for the precipice!

I am a qualified physicist and able mathematician, who long ago rejected Mathematics as any kind of Generally Applicable Rationality for understanding Reality-as-is, and after initially naively relying upon current Physics for supplying such a Rationality, was soon deprived of that basis too, due to its energetic subservience throughout the subject to that same Mathematical Rationality.

And, as a dedicated seeker for a reliable alternative to the unavoidable Plurality of Mathematics, had instead embraced the New Holism, pursued first by idealist Hegel, and thereafter by materialist Marx, where I found what was clearly an alternative scientific approach, though in Marx's hands it was only ever extensively applied to understanding Capitalist Economics.

Nevertheless, that stance alone moved well-beyond the fixed laws of Plurality. For, being based in history and materialism, and using essentially time-based methods, had unavoidably enabled Marx's detailed treatment of the Trajectories of Qualitative Transformations that were occurring in society - within Social Revolutions - and, hence via its dynamical changes - at the next level up (within a containing *Hierarchy*) began to generally stretch Causality, right-across such boundaries, once considered-to-be totally unbridgeable. And doing so in both directions, to also, for the first time, show that Dialectically Varying Laws, extending between Hierarchical Levels, could indeed occur!

And, in addition, clearly displaying the most crucial and revealing feature of Holism - namely that kind of process, which, involving multiple, simultaneous Laws, thereby mutually-and-qualitatively affect one another, and this being wholly due to such Inter-Level relations and interacting processes.

For, as his prime and crucial example, Marx was able, via his Trajectory of a Revolution, to describe the full series of Phases involved, from a Long Term-but-Temporary Stability, via an increasing Series of Crises, to a Final Total Collapse of the Stability, in what looked like a terminating Total Chaos, which in fact generated a series of Constructive Crises - finally actually terminating in a New Temporary Stability. Indeed, a Revolution - composed of many transforming Emergences.

The pattern for how to analyse Qualitative changes had been established - but only as yet comprehensively applied in Social and Economic Development Processes! In all other areas of scientific investigation, the old Pluralistic Mathematical Rationality still ruled OK!

All real Laws-of-Change were still, wrongly, Fixed-and-Quantitative, while all Real Qualitative Changes were never included in any Rationally Co-ordinating System.

Indeed, it wasn't until the Holist Physicist Eric Lerner tackled Nuclear Fusion, in attempting Electrical Power Generation, that the series of Qualitative Changes that were involved in his task, were addressed Dialectically, as all the transitions within a Key Series of Temporary Stabilities, via Totally Transforming Changes - that were impossible to address within Pluralist Science, were properly carried out!

For Lerner, with a profound interest in the Plasma Physics which explained the Birkeland Currents occurring within so-called Empty-Space, began, in the Laboratory, (and on Earth), to trace the series of radical Qualitative Changes occurring in such a Plasma Flow of charged Particles, at ever increasing concentrations.

For, it seemed likely that the Fusion Processes in Stars, could have been triggered-off, initially, by such increasing concentrations!

But, his experiments showed that this progression was totally non-linear, so that each transition not only transformed his Plasma Flow, but also, required radical changes in the actual conditions in order to allow the necessary progressions to each of the necessary following changes to occur.

For those changes in Phase-and-Context were :-

'First, a Plasma Flow
followed by
"The Pinch Effect"
which then by
the Creation of a Plasmoid
and finally by
powerful Ion and Electron Jets

Now, Lerner's intention was to arrange for this natural sequence, and use the resulting Charged Particle Jets to deliver Electricity directly!

He has already achieved the sequence perfectly, but not yet at the required concentration to be viable for economic Electricity Generation.

But most of his rivals didn't start with his theoretical standpoint, and were instead sorely limited by their own Pluralist stance!

We desperately need a general understanding of dynamic change in reality - natural sequences and crises and the crucial role of hierarchies and levels in these processes. Literally everybody on Earth is involved in the Three-Way Crises of - Covid 19, the ongoing Economic Crisis and the Big Threat of Terminal Climate Change.

We are currently not equipped to cope with these complex Holistic Calamities, and find that in acting to help upon any one of these, just exacerbates the other two, and also precipitates other Crises to join them, thereby threatening a general Wholesale Collapse of the systems on which we rely!

The development of Holistic Science could not be more urgent.





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