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THE SYSTEMS THEORY OF EVERYTHING

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JIM SCHOFIELD



The Systems Theory of Everything II

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Introducing Jim Schofield’s

Systems Theory

Mick Schofield

This series of issues attempts to set out the first definitive account of Jim Schofield’s new Systems Approach to Science. The various papers collected here, and over the next few editions of this journal, explore the proposed theory and explain why it is such a radical departure from the current universally applied scientific method.

While working on the recent YouTube video “Taking Shape: Denis Noble and the Systems Level Approach” (2022), it arose in discussion between myself and Jim, whether or not “system” was even the right word to use for these ideas. Schofield’s revised view of natural systems is certainly not the usual one. They are not “systematic”, mechanistic or carefully structured in any way. They don’t follow universal laws and rules. They are dynamic, contingent and emergent, containing contention and contradiction. They can be hidden, vastly complex, and sometimes seemingly chaotic from our human vantage point. Many are stable and extremely long-lasting, and are routinely misinterpreted by scientists as eternal and fundamental laws of nature. Schofield’s view of systems is Holist and Materialist, arguing that the holistic understanding of how natural systems evolve and maintain themselves, is vital if we are to really appreciate how things come to be, and why they are the way they are.

There have been systems theories before. However, the scientific study of systems has historically been hamstrung by pervasive reductionism and the formalisation of entities, laws and causality. In Sociology, for example, Systems Theory was actually a conservative approach to the subject that saw society as bascially functional and explicable via person-to-person interactions.

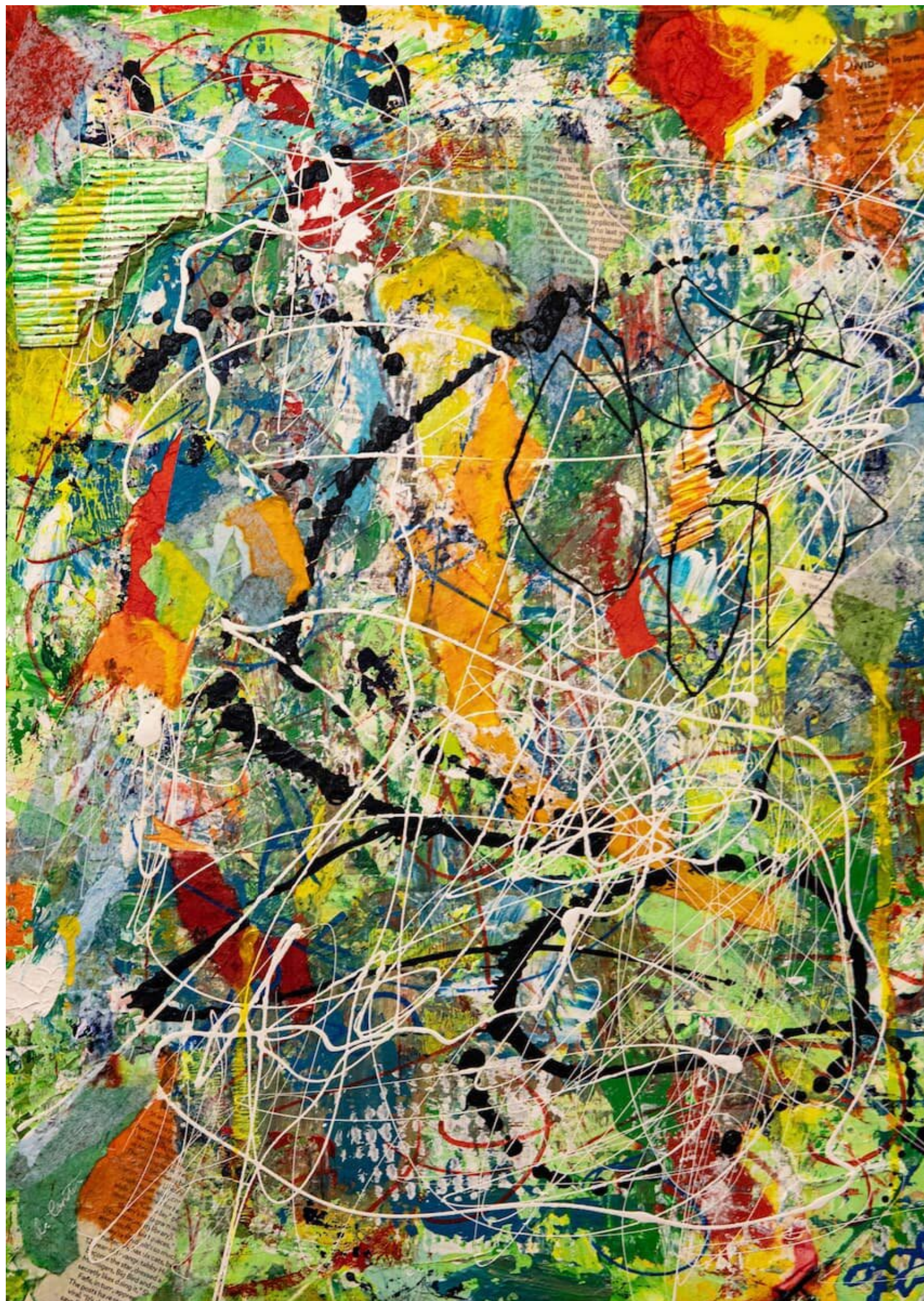
This approach was dogged by a rigid and ordered way of seeing things and was largely rejected by Marxist sociologists in the 1970s, which favoured examining conflict, change and contradiction, as the key driving forces underpinning social conditions. Similarly in systems engineering, machine logic, computer modelling and mathematics, systems are widely used but still conceived of as the complex but predictable interactions of fundamentally reducible elements and rules. This demonstrates the importance of epistemology, politics and a critique of the scientific method, in moving the study of systems forward - beyond the usual approaches, and towards one that embraces the vital roles played by interconnection, contention and hidden top-down effects.

Missing from many approaches to systems is the role that different Levels of Reality play in its composition and evolution, with causality often happening at a much higher systems level than the ones scientists currently seek data in for clues.

The Philosophy of Science must look to other disciplines for ways of dealing with such phenomena, from art to politics, from Buddhist Holism to Dialectical Materialism, the basic ingredients for a new Systems Approach already exist. But first we must look at how the usual scientific methods fail to appreciate the role dynamic natural systems play in everything that we try to study and understand.

The series of papers continues with a closer look at Buddha, Marx, Hegel and Zeno for clues on how to develop Systems Theory.





Real Messy Development

Top-Down or Bottom-Up?

Jim Schofield

The first few essays in this series revealed a new and significant feature of Development within Reality-as-is, which is not yet appreciated by the majority of Scientists or Philosophers. This vital oversight is primarily a result of the of the still-widespread dominance of the Pluralist Stance, but also because of the greatly varying tempos of almost all Real Development: AND, of course, the complex mutual determinations involved across Levels.

We shouldn't see this so much as a terrible mistake, but rather, and more accurately, it should be described as an unavoidable trajectory of halting, yet necessary, steps-forward - towards the actual Overall Processes involved in Nature, via a series of understandable approximations. For while these were never absolutely correct, they did always contain something of the Real Truth (what I call Objective Content), and were each-and-every-one-of-them, rightly considered to be Actual Triumphs, as-and-when they were first revealed!

But nevertheless, the thinkers involved always assumed that they were the superior species, and must be naturally-endowed with sufficient profound thinking and insight, that would, in the end, reveal a coherent, logical and elegant System behind everything, which would be capable of explaining the whole Universe - including their own evident superiority within it! But, it also included a major error, in what was sought by these "Developers of Understanding"

The error was that they alone must have always been the intended Agents of All Change!

And, of course, it was also considered to be clear, that not all of Humanity were so well-endowed as they were, so

that within the Human population there would be both the Leaders and the Led: so that even locally, that same situation was tuned to selecting-out those who should direct Things, while others could only serve!

Such ideology has long dominated Mankind's versions of Social Organisation, and have always tended to reinforce those ideas of ability and the necessary consequent allocations of both means and power. Social forces and unacknowledged aspects of the dominant ideology coloured Science too, as these, in the main, could not but influence their ideas of superiority in more General Ideas: so the search was largely for a Top-Down natural System, in how things normally work.

Now, such a prejudice might be considered sustainable within politics, but it was also the Privileged Class that supplied the investigators - but they found that they got much further with a Bottom-Up causality, and so there was conflict even within that Ruling Class. Yet, both views were, nevertheless, somewhat mistaken, and, within serious Science, the Bottom-Up stance certainly predominated!

Yet, in fact, both Top-Down and Bottom-Up were alone Wholly Incapable of explaining the appearance of the Wholly New, and even Charles Darwin felt he could not publish his Origin of Species for a full 25 years - knowing it would be rejected by the established social order. And, he was right: the whole idea of Emergent Evolution ran counter to the usual Religion-based narratives of History, and even Development (if there was any acknowledgment of Development at all!). And, the two alternatives of A God-given direction (Top-Down) constantly vied with the more Mechanistic Explanations (Bottom-Up) -

neither of which could actually explain the Emergence of new Species or any other Natural Entity.

Indeed, the two opposing stances of Plurality and Holism were both initially postulated, well over two and a half millennia ago, and yet were never picked as the winner or ever integrated into some sort of joint basis for explaining Reality-as-is. Yet, Plurality is entirely based upon the Rationality of Mathematics, which allows only Fixed Laws to be used, and only survives by discounting the possibility of varying or Developing Laws, which most certainly are the case within Reality-as-is - so, clearly, Plurality can only persist in time-limited and spatially restricted situations where Natural Development is simply not allowed to happen!

Clearly Holism fits better with the idea of Natural Evolution, but such broad brush-strokes fail to offer satisfactory explanations for Causality. Predictions in this context seem impossible, so you can see why investigations are usually restricted to situations that have happened before: for though Holism does encompass all real possibilities, it just cannot predict the nature of the Wholly New - only that it can and will happen at some point, but never what it will be! While Plurality offers nothing in cases of Real Development, and the Holist Approach is broadly correct, it is constantly extending into New Territory, so, only delivers retrospectively.

Science functions by the fact that Plurality works just fine in permanently actively-restrained environments - and Human Beings have become extraordinarily technologically adept when it comes to creating and maintaining such artificial worlds - but if we really want to Understand how Reality works and Evolves, we have to try and somehow employ Holism scientifically. When explaining natural phenomena ONLY Holism will be able to deliver the correct means: but will require something Wholly New - whereas Plurality will never even deliver the likelihood of the New! All Theory MUST be Holistic, but fulfilled only after The New occurs!

It is therefore obvious why Plurality works well in controlled & restricted environments. It is clearly absolutely Essential in Production, where the outcome is not only known beforehand, but must also be guaranteed to be correct!

Whereas in developing Theory Holism must be used, and the revealed outcome directly linked to the particular context which delivered it! But, there will always be Contexts that have never previously been investigated: and much of what Science does is to reveal what actually occurs - yet the usual mistake is to give that result the status of a universal property of what Substances were involved: and that is NEVER true - it is only a property of that-particular-situation.

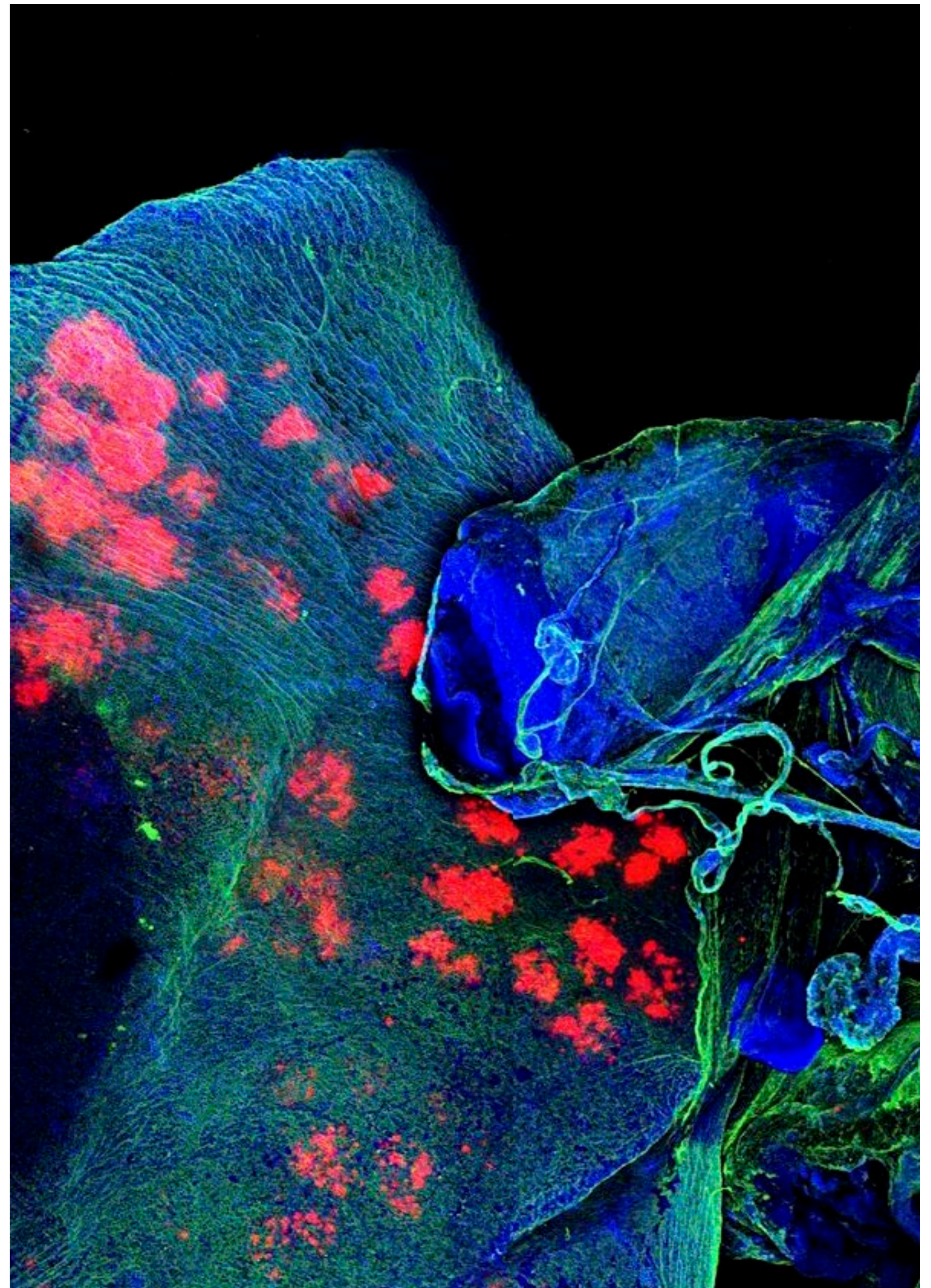
The mistake is compounded by considering that it is a property of a single occurring component in the operation. It certainly isn't! It is the product of that situation alone. Now, you can imagine the mistakes made when situations, with the very same components, Flip Over in development into a New Mode! The Pluralist conception will give the same result as before. But this time it will be wrong. Now the Holistic Approach will not only deliver a different result, but, will also change the game completely, and the other changes involved MUST be addressed too.

The New Level of Holistic Law Development must itself be developed. For what has happened is no longer due to relations between the properties of known Substances (as is the case in Plurality, with its maintained Fixities) - within Holism it is about the relationships between Whole Situations - Emerging as The Systems Level, and requiring a very different type of Law.

The usual type of Law extracted from Experiments is, of course, always a permanently-maintained and hence Pluralist situation, so, being about Substances that did not change in their actual Qualitative nature, could be legitimately described and governed by Fixed Relations, in all the elements involved.

So, they would correctly relate those Qualitatively-unchanging Substances, reacting with one-another, and hence could be represented by things like Atoms and Molecules, delivering others of the same kind, as legitimate combinations. The usual Equations involving the agreed Symbolic forms of everything involved, were, therefore, accurate enough to effectively "stand-in for" what actually happens physically.

But, in fact, it was NOT a full representation of what happens! For, the actual Real Environment, in which these processes actually take place, are by no means so simple.





Indeed, the actual situation would be a very large and complex melee of multiple units of the right substances involved, along with some totally-unrelated others: all covering multiple examples simultaneously, all of which would be at different stages mostly of the identified process. It might seem impossible that the usually-informing Formal Equations could fit with such a seemingly chaotic situation: But, they DID as a valid *Metaphor* for just the Chemistry involved between individual units - made possible ONLY by the very restricted set of these, and the maintained Context!

But certainly, even so, other things are happening here, which are totally absent from the Equations which supposedly reflect (or even drive!) the Reality - we see these things only in The Systems Effects!

Now, elsewhere in this series of papers, I have already begun to both investigate-and-describe some of these undoubtedly-existing Effects, which most certainly change some of what is going on: and occasionally also deliver significant changes.

The most important of these is due to the multiplicity of processes, and caused by that Complexity and Variabilities present in that melee: the most important being the naturally occurring CHAINS and even CYCLES of the many processes involved! For, these are NOT, in any way, reflected in the Chemical Formulae used. For, they only deal with a subset of what is happening, which is why they drastically limit what can be extracted from them, naturally delivering only a Simplified Pluralist version of what is actually happening.

Indeed, for the very first time, the gaps in Pluralist Theory, unavoidably always “plugged” with purely mathematical facts from experiments - and wholly without any Explanation - (the Positivist Problem), can now finally be properly addressed with explanations from The Systems Level! BUT NOTICE that these occupy a Different Level of Reality entirely from the usual explanations based upon Chemical Properties of Substances - they happen at a Level of relations between Systems!

And having realised this correction, we must become increasingly aware of the many other Causal Levels above these and ultimately into the Cosmos.

NOTE:

The whole Electric Universe Alternative to Pluralist Physics was created merely by substituting Electromagnetics as an alternative Bottommost Basis for Absolutely Everything - whereas, the problem is mainly related to Different Levels of Causality within Reality-as-is, coming into prominence at the various different Scales of Reality! And, of course, as with The Systems Level, Wholly New features will undoubtedly become evident at every Newly-Addressed Level.

Interestingly, the Bottom-Up/Top-Down Problem is explained as soon as these Levels are addressed, because Bottom-Up constructs Higher Level Systems that can and will, react-back upon their creating Level, using Different Higher Level Effects - that only exist at that higher Level - so until that is realised by us, they seem to come from Nowhere! So, when gradually addressing what we can, and from the Bottom-Up, we must never forget the Emergence of Life (including absolutely everything from Viruses and Bacteria, via Plants and Animals, to Mankind - and that very late development of Intelligence! All that arose here on Planet Earth, within an all-encompassing History that dwarfs these later Emergences!

And, the Natural Ascent of these Levels was, and is, always *Adaptive*: it finds its own way to survive, in spite of Natural Calamities, which are actually part of that process, rather than a threat to it.

Reality-as-becoming

The Two-Way Street of Real Full Causality

When attempting to understand Reality, it is essential that two very different Approaches are both considered, and related to one another - for BOTH turn out to be absolutely vital:

The first is the well established attempt to explain **Reality-as-is**

directly from what produces it: while the second approach, seeks to explain **Reality-as-becoming**

in terms of its History of Development! For, these two deliver different, and sometimes often Contending or Opposing, and even Existentially-Threatening features, as well as, importantly, Wholly New Creations, which can, at times, lead to changes that are inexplicable when studies are limited to just the usual Bottom-Up Approach.

For, a series of these New Creations actually begin to build a wholly New Level (of a Self-Defining Organisation) - though initially never seen as such, but only as mere extensions to the usual Bottom-Up kinds of “explanations”. Whereas, in fact, they not only DO indeed, begin to contribute to a Wholly New Level, but often, with those clearly opposing features, that survive, only, if they are negatively-balanced along with other basic elements acting from the Level below!

Indeed, given sufficient time, these newly-produced features actually unavoidably begin to form into a Coherent Self-Supporting and Separate Level, composed of such wholly New elements, though, generally, always prevented from producing any major changes there, by

just such similar balancing opposition available, once again, from below.

Indeed, there is always a potential-contention produced in such Creations as they presage something Wholly New, which makes them different from the rest of the contents of that prior Level, and hence possibly challenging what is usually naturally-produced there. So, initially, the New Element cannot do much at all, until it is, somehow, positively-supported by other similar Creations, gradually building a coherent self-supporting Level!

So, though, as usual, countered in the sane way as before, these New productions will ultimately produce something like a Joint New Effect, while all its individual components are still somewhat negated!

When enough wholly new elements have finally been created, they will usually produce sufficient wholly new joint elements, though as usual all, fairly quickly, brought back into line by the standard negations from below.

The result overall is, of course, an **Actively-Maintained Stability**, with only momentary promises of something different being possible!

The System is NOT allowed to establish those potentialities... YET!

But, this same set of Events is then replicated again for Level-after-Level, and within each, there are multiple promises of innovation. But, always with an active Stability maintained!





THEN, at some crucial point, perhaps triggered by an unusually large Event, an innovation breaks free from its restraints. A single innovation becomes established: but the rest of the balanced Pairs remain, and, consequently the Active Overall Balance is still maintained.

NOTE:

When such things occurred in the past, there was no-one in a position to confirm all this, as those actual significant changes occurred! But, there is now, and these Development Flips must still be happening: so, the possibilities can be looked for and found - thus confirming the Historical as well as future occurrences too!

This should be a priority for Systems Research and for Scientific endeavour in general.

Now, in spite of such individual flips - literally happening all the time - the Overall Stability can be maintained for truly vast periods of time: BUT with increasingly shaky maintenance of that Overall Stability! So, there will be occasions when multiple sequences of such flips, take place within a single Level, and even (though rarely) can happen in a House-of-Cards type of Overall Collapse - we can term this a Revolution!

Now, these Revolutions can even occur, yet affecting very different Sequences of Levels! We are aware of Social Revolutions with the conscious intent of committed Revolutionaries, but these are a relatively recent phenomenon - such Events have also occurred naturally over vast periods of time with no conscious intent.

Indeed, just looking at Human Development, there were such Revolutions enabling the transition from Savagery (Hunter / Gatherers) to Barbarism (Farming and Animal Husbandry), and thereafter with increasing Consciousness to Slavery, Feudalism and Capitalism - but with the last of these requiring a war-like overturn of Feudal Monarchies! Only with the later Communist Revolutions would they have been led by consciously Revolutionary Parties, and even then we can argue that some form of Revolution would have happened anyway, as a natural feature of the collapse of the prior Economic System.

Long before these Social Manifestations, there have been innumerable Natural Revolutions of the type described above - and they still do - but now magnified

tremendously by the sins of Capitalist Economic imperatives, which are contributing to an ever-nearer Wholesale Collapse upon many different Levels, with forever-mounting and Disastrous Consequences.

This means we need to address Systems Theory with some real urgency, yet, we must still strive to understand Real Development in general, to hope to address Development upon ALL LEVELS! Anything less will NOT equip us to deal with Reality-as-becoming upon simultaneous multiple Levels, and also at all times!

This work also turned out to be vital for my own career, as I became first a Teacher in Schools, then a Lecturer in Further Education, and finally, as various grades of Lecturer in Higher Education, finally ending up as a Professor in a prestigious College of London University. For, while my specialism was supposed to be Physics, my focus changed considerably, finding that I disagreed with the way Physics was being taught, I switched, first to Mathematics and then to Computing, conducting research in this latter field for most of the rest of my career. There is a great deal wrong with the way that Science is both taught and thereafter used. And, even upon the above position on the True Nature of Reality, which was my main concern: as well as the above conceptions upon the Levels involved, which has long been at the heart of all of my work, and has led to a major criticism of how "so-called" Scientific Experiments are both actually conducted and regarded! Because, the usual methods are always a very restricted, and, thereby, giving a significantly-changed version of Reality, that is both exclusively studied and used both in Education and in General Production too.

Reality-as-is is far too variable, and hence unreliable, to be used successfully in either context. For, many aspects are constantly liable-to-change, making reliable understanding and consequent effective *use* impossible! So, Experiments were always necessarily-and-purposely drastically limited in Content, and rigidly kept that way, with only very limited tightly-controlled variabilities thereafter allowed! It did, indeed, deliver reliable results, governed by Fixed Laws: which meant that only with the exact-same-conditions and variations, could such Laws be both extracted, and then used, in reliable Production. But, that was only achievable in just those conditions along with those same controlled changes! They were, however, never Reality-as-is, but instead just an Artificially Fixed Reality only! So, neither Reality-as-is,

nor Reality-as-becoming were ever delivered as such. All that was studied-and-used was only a very small subset of all the possible behaviours - therefore missing-out vast areas of actual real occurrences that could, and indeed did, happen.

Real Reality was neither studied nor delivered by such means!

ASIDE:

I was watching a discussion supposedly between leading Academics from Higher Education in the USA, considering Science and Buddhism, within what they saw as Reality! But, nowhere did any of them address the crucial issues that I have outlined in this and the other papers in this series.

And, most of all, they did NOT even attempt to address the important Historical Diversion, happening some two and a half millennia ago, between Greek Plurality - as finally fully defined in the Greek Intellectual Revolution of that time - and the Buddha's Holism! And their Topic was supposedly Reality?

The whole Discussion was actually about the Current State and Role of the USA, in today's world! That approach primarily coloured everything that was said: and purposely omitted all the important points that were indeed vitally relevant in such a debate! Indeed, absolutely NOTHING was said about such crucial contributions made such by the Buddha, as those in the Loka Sutta, wherein a strategy to begin to address the difficulties of an all-embracing Holism was brilliantly devised and explained by him. For, it remarkably echoed the present-day Quantum techniques in dealing with the as yet not understood elements of Reality, by developing techniques to choose the most *likely* outcomes in such situations, BUT, based upon his sound Holist Approach - whereas, the Quantum Physicists endowed Randomness as intrinsic to Reality itself!

ADDENDUM:

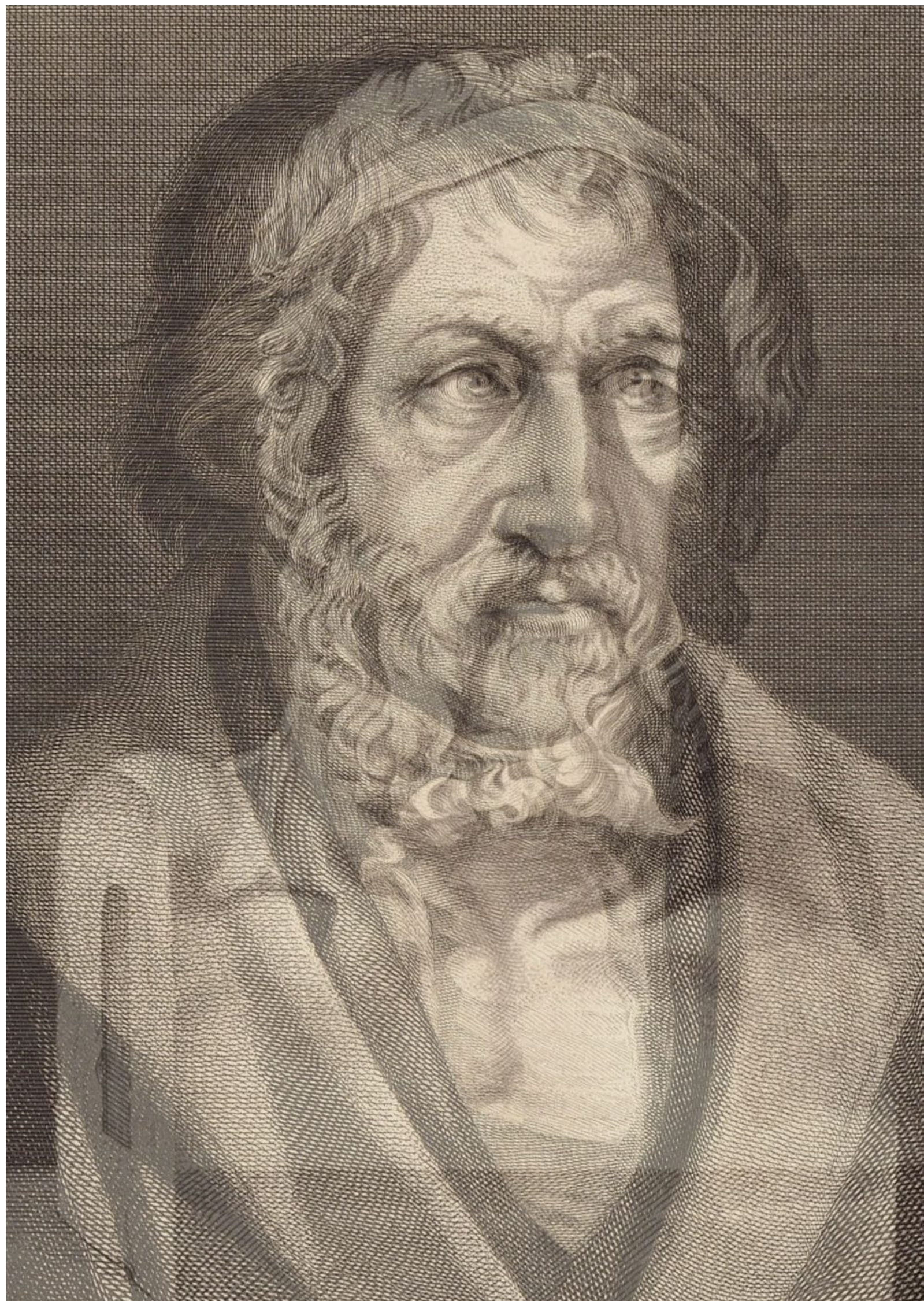
A word must be said about the main protagonists in this debate.

The Physicist was Sean Carroll, who sadly knew nothing about the severe restrictions imposed upon present day Physics by the limitations of the Fixed Reality that is always the source of all involved experiments and Theory, and which always therefore makes Mathematics with exactly the same restrictions to supposedly deliver the "Essence of the Subject"!

The Buddhist was A. B. Wallace, who dealt with the all-embracing nature of Holism by retreating into a kind of "Mysticism of Consciousness" as his solution, but NEVER addressed how this could be applied to the study of Reality - how it works and how it evolved. So though the supposed subject of this Discussion is important: it was NEVER actually addressed!

It rarely, if ever, is.





Beyond Zeno and Hegel:

The Profound Significance of Contention

Around two centuries ago, the German Idealist philosopher G.W.F. Hegel, finally decided to take up the anomalies identified, millennia before, by the Ancient Greek, Zeno of Elea, in his book, *Paradoxes*.

Though ignored by everyone for a vast period of time, the contradictions he highlighted were, indeed, entirely valid criticisms of our fixed logical approaches to studying dynamics in Reality - the then fairly recently established Pluralist Rationality, that has dominated our Thinking ever since!

Hegel was certainly an out-and-out Idealist, and sought all his answers to problems within Modes-of-Thought themselves, rather than studying Concretely-Existing Reality. So, his solutions would never be in seeking the sources of these worrying anomalies within the Nature of Reality itself. They simply had to be in how we *Thought* about them!

So, while his Dialectics were indeed a very useful step forwards, they did NOT position the problem where it actually lay! As he could ONLY deal with Human Thinking, as such, he placed the blame on how Mankind traditionally handled Opposites. And, to compound the felony, he only considered *Diametrical* Opposites, which, if both were present, could, indeed, completely-cancel-out. It was seen as a problem of Logic and not of Reality itself.

But, I'm afraid he was wrong! For contradiction was indeed to do with Reality: and, part of the more general problem of Contention-in-Reality! And, this occurred literally Everywhere: and had different and more subtle effects, that could ONLY be comprehensively addressed

by Studying all the Complexities of Reality!

The problem was, however, tackled by one of Hegel's most famous philosophical followers - Karl Marx! For, his main area of study was initially the Ancient Cultures of Greece and Rome, and his subsequent major difficulty was explaining Social Revolutions, in terms of the Causing Crises occurring in Societies. So, to throw more necessary light upon the problem, he extrapolated his studies both further into the Past, and forward towards the Present: and he discovered many such Social Revolutions, BUT always involving a Major Collapse of a current System, always thereafter replaced by something better, not only transcending the various Crises, BUT, in addition, creating Wholly New Systems, which clearly had a much better potential for Future Developments!

BUT absolutely none delivered the "Ideal Solutions"; what he had revealed was The Way that all such Developments occurred within Reality-as-is! All Real Qualitative Changes, it seemed, were NEVER incrementally achieved: each and every such Mode was, previously only a temporary solution! To achieve Real Development always needs a Major Re-organisation of the Currently-Existing Solution: and, it always occurs via a Positive Avalanche of Many sequentially-occurring Crises - inevitably leading to an unavoidable Overall Collapse!

This is always inevitable, as absolutely all General Situations possess many different Processes (and even Established Systems of Such Processes), some of which, will undoubtedly *Contend* with one another: and as they develop, could and indeed do, Contend even more!

All Real Development is always governed by mounting contentions, until they come together in an inevitable comprehensive System Collapse, and this alone can enable something of a necessary Fresh Start, precipitating an Emergence or a Revolution!

However, this certainly isn't an unavoidable result, but, it is the only way that The Wholly New - Emerging as Persisting Systems - can ever get established.

Of course, individual early Single Crises can also signal the possibility of a coming Tumult: so, in the example of Social Revolution, those defending their established privileges will make mostly symbolic "concessions", primarily, to try and delay or even prevent the old System collapsing. But, as they will never countenance a comprehensive application of this approach, they only push individual Crises back to ultimately ALL finally Happen At Once!

To successfully steer the right course through such a Tumult: there has to be a disciplined Organisation - with the necessary Understanding of the Dialectics of Development, to carry the Revolution through to success! And, of course, that Wisdom will have to have been honed in an active precipitating of the Necessary Revolution, by revealing the insincerity of the concessions.

But, nevertheless, it is never possible to actually predict, what Revolution will bring, for Dialectics cannot predict the Detailed Nature of the Wholly New!

In addition, every such Revolution will still be surrounded, on all sides, by many areas, as yet uninvolved - for Development is absolutely always, in addition, unavoidably UNEVEN!

Clearly, the most important process involved in such Development is Contention, (or at least some kind of Oppositional forces): acting in the usually considered situation, to be the most important - that is, for the supportive, or additive processes, will never Presage The New - they will, instead, only contribute simply-more-of-the-same! Nothing Wholly New will ever occur!

Whereas, the addition of any Contending Elements will not only negate what they encounter, but will also have the chance of producing something different: they could lead to significant innovation, and set Development

onto Wholly Different Sequences and Results!

Now Hegel had exclusively concentrated upon Diametrically Opposite Elements, which were the most dramatic. For, he had them exact opposites of exactly equal size - therefore Totally-Cancelling. Other possibilities are more likely. As they varied in size one or the other would dominate. By far the commonest occurrence would have them contending (in some way, though never fully cancelling out): and these cases would flip the dominances, as the lesser exceeded the larger, and vice-versa.

These sorts of contentions have been transferred into Computer Programming via the "If / Then" Clause: and, by so doing, totally removed such Events from any Causal Explanation (or logical contradiction), converting them, instead, into the inclusion of a pure description, and thus abandoning Real Explanation completely!

NOTE:

Now, quite apart from "Opposite" referring to a purely-quantitative-relations between equal amounts of opposite sign, so they would result in a Zero Combined Effect - there are many more clearly-qualitative kinds of Contention, which must also be considered as to their various effects, when occurring together in the same place-and-time. And, they all can have significant effects, particularly at The Systems Level!

But, to even be aware of these unavoidably important aspects of Contention, we have to absolutely correctly address what actually happens in the Real World - in what I insist upon calling Reality-as-is!

For, the standard way of dealing with the underlying Causalities involved in a given situation, is to extract ONLY the considered-to-be-relevant Entitiess-and-their-Properties (revealed in greatly restricted-and-controlled Pluralist Experiments to supposedly essentially represent what actually happens. But that is WRONG! For, the restrictions of all Pluralist Experiments are very different indeed, to Reality-as-is: for THAT always contains many separate simultaneous instances of a given reaction - all at very different moments within the formulateable process that we wrongly suppose encapsilates the natural one. For the process is, in fact, absolutely always embedded within multi-process CHAINS or even CYCLES of other intimately-related, and absolutely unavaoidable and essential other Process-Steps, in a very much





more complicated and necessary Sequence. As well as many other similarly-mutually-related Systems - yet, apparently, having absolutely NOTHING to do with our identified-as-relevant set! Indeed, in Reality-as-is many things are happening simultaneously AND they all affect one another in various ways. Amounting to all kinds of what we term as Systems Effects.

Now, these various CHAINS and CYCLES of processes are important, for it matters just how many there are - because the more there are doing the same thing, the stronger will be the Overall Effect: and any changes in such numbers, can, very obviously, affect what actually happens - especially in competition with any other simultaneous yet-unrelated Sets of Processes. And these too are regularly affected by Systems Effects (especially if Contention, or even Opposites are involved!

By far the most significant of these is when such Processes involve equal amounts of Diametric Opposites - for they can totally-terminate the particular CHAIN or CYCLE that they are involved in, so that single contribution is entirely eliminated, and over a period of time, its contribution could be regularly first diminished, then continuing until it disappears from the affected sets! That is, of course, a very well-hidden Systems Effect, when contributions in such circumstances are varying slowly!

And, imagine how this would appear when occurring within larger CYCLES (for if ever the outcome of a step in a CHAIN, or Series of Processes, matches perfectly the input requirement of the very first step in the CHAIN, and can, thereby, turn it into a repeating CYCLE) So, many of these will be occurring simultaneously: and with all of them being at different stages in their CYCLES, which, then, will cause the Overall Effects, by varying over time, as each one will be terminating as such, and Cancelling occurs - so the contribution of that CYCLE, could gradually diminish, and if the equality of Opposites varied, it could indeed, surprisingly, pick up again! [You can even conceive of a Cycling Effect, occurring for entirely Systems Reasons]

Now, if the involved Contention is NOT about Diametrical Opposites, but instead merely generally contending properties, maybe only encouraging or disuading certain effects, then related, but would clearly be involving very different changes, which will definitely be present. And these could have effects in many different simultaneous processes, and, thereby, cause different

kinds of Systems Effects, so, delivering an overt messy range of situations - some of which could deliver other very different Systems Effects!

One analogy could be, if different colours of Light are the products to be added, they could consequently deliver:-

- 1: A resultant third colour
- 2: White Light
- 3: No Light (due to a frequency well beyond the visible range

Now, this is NOT a treatise based upon a completed intense Research into this important topic! It is, on the contrary a philosophical excursion investigating the possibilities of this approach. So, criticisms of any of these purely theoretical efforts suggested, only as a means of dismissing the Whole Approach is, in my opinion, illegitimate! For the clear Failure of the Usual Pluralist Approach, which currently dominates The Sciences is by now irrefutable!

But I must confess - despite their vital importance - as an old, blind philosopher, such essential investigations are now beyond me - but I can still think! It must be for others to undertake the crucial experimental work that will really reveal these Natural Systems Effects where they occur - BUT, definitely NEVER in the usual Pluralist Manner.

This work definitely requires a wholly NEW kind of Research, Theory and Experimentation : indeed, something of the type which was already urgently necessary, to overcome the impasse which terminated work into Stanley Miller's Experiment into the Origin of Life on Earth.

The Buddha and Quantum Theory

The oft-stated links between Buddhism and Quantum Mechanics are complete pseudoscience of the worst kind - however something strange does link these distinctly Holist and Pluralist worldviews, and I don't just mean rampant Idealism!

A Necessary Holistic Introduction...

This very basic re-introduction of the founding principles of Systems Theory is considered essential here if we are to make some basic philosophic points, AND further explain the current dominant mistake underlying the cornerstone of Current Physics - namely Quantum Theory!

In the struggle to establish a match between Human Thinking and Reality-as-is, there could not but be many Triumphs as well as Wrong Turnings, some of which were established and have persisted for millennia. And, until this Aspect of Development arrived at a certain critical position, upon what was happening, the developments would be optimum, yet wholly mechanistic, and would never rise to explain the Emergence of The Wholly New!

It could not of course, be otherwise, as Mankind was evolved from the same stock as all other Natural Features, which finally got to delivering Life itself!

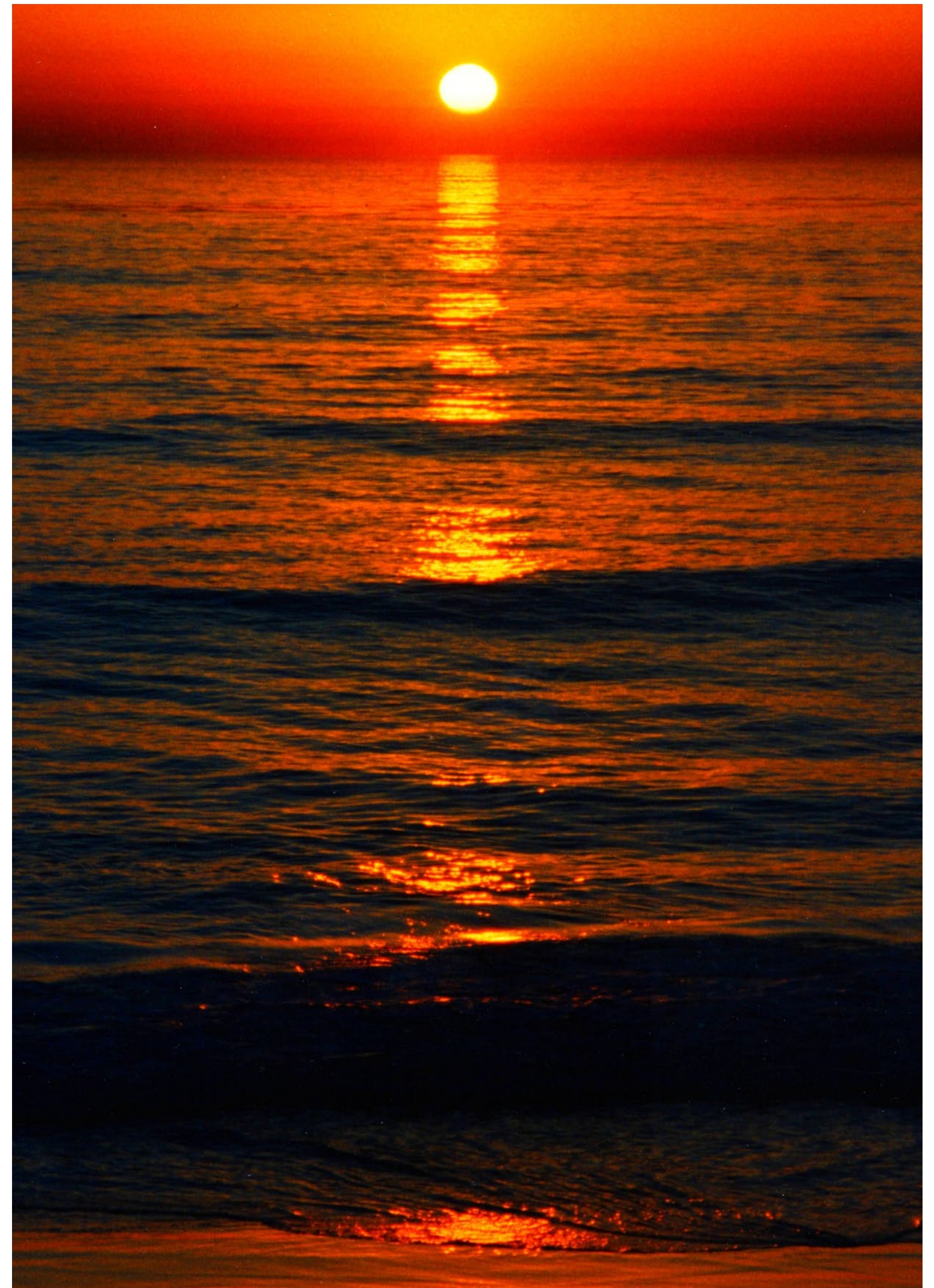
Perhaps surprisingly, what prodigious Developments then took place within all subsequent Lifeforms, were only made possible by a single pair of developmental innovations, based solely upon the heat and light from Earth's Star, The Sun - which along with the Earth's early-acquired Spin, its Tilt upon its Axis, and its Yearly Orbit around that Sole Source of literally Everything Developing thereafter! For, these imposed various Continuing Cycles upon its experienced conditions, for millions of years! While the vast majority of points upon that Planet's surface experienced Day and Night, due to its Spin!

And, its cycling Annual Seasons, as a result of both that Tilt and yearly journeys orbiting the Sun. Multiple Cycles of experienced-conditions were Ever Present! And, these also delivered dramatically changing condition including those that made Water Freeze-into-Ice, or alternatively Evaporate into Atmospheric Water Vapour, only to then Fall-as-Rain or even Snow as conditions varied. And, variation in how warm the Sun made various parts of the Earth's surface and its local Gaseous Atmospheres, caused consequent Global currents in Liquid Seas, and directed Winds in the Earth's Atmosphere.

Our planet was, even when relatively stable, still undergoing Constant Cyclic Changes! It was, and is, a vast dynamic and Holist System.

And, of course, the various cycling conditions took various substances through different modes of existence: the most significant being Water, which was carried aloft as Water Vapour, and moved to other areas by the Winds: only to then encounter much colder conditions, which made it fall as Rain. And, it did frequently fall upon Higher Ground, and there gradually come together into Streams and then Rivers, to flow, occasionally as a Raging Torrent, carrying small solid particles within it, to be deposited elsewhere in calmer interludes, to create new extensive flat areas. And, even remnant violent subterranean-interludes, still active underground from the Earth's original Formation, could produce Earthquakes and Volcanoes, or even vast, long-term movements of the tectonic plates of the Planet's Crust, crashing in slow-but-powerful-motion into more stable Plates to produce enormous Mountain Chains. And, upon Large Continents of Land, ever bigger Rivers driven by gravity carved their way to the lowest-lying areas, producing vast oceans.

Now other Planets, in less conducive conditions, were outside of the most active ranges of Change and settled into more uniform, and relatively less transformative





results. The Earth was singularly well-endowed for relatively constant Change, so, instead, fitted into Constantly Affecting Cycles all over the planet. And, some of these Cycles also, and crucially, caused Cycles of Chemical Reactions, and even wholly incidental “competitions” between alternatively possible reactions, effectively mechanistically selecting for some rather than for others!

The Stage was gradually becoming set, upon our Planet, for a Wholly New Kind of Development, that has turned out to have vastly more potential than anywhere else known, and even greatly transcended the incessant changes so far achieved on Earth!

And that Wholly New Form was LIFE.

An endless task lies in uniting the considerable steps unavoidably involved in the full range of possible processes taking things changing from Non-Living Chemical Interactions all the way to that Revolutionary Emergence, and then its consequent Overall Dominance of the much more powerful and Extensively Adaptable Life Processes, in current continuing Developments. What really Caused all of this will probably never be known.

Here instead, we are to tackle the key questions posed in the title of this Paper, relating the stance of The Buddha, and the current modern Quantum Theorists within Physics.

The seemingly unrelated Introduction to this paper, was in fact absolutely necessary in order to tackle these seemingly unrelated positions, for, it is precisely the bases outlined there, that enable a solution to this question to be addressed...

For, when the detailed understanding of particular natural processes seem to be beyond the usual types of theoretical solution, no old-fashioned distinctly-causal solutions appeared to be achievable: but, instead, a range of *possible* solutions, with different *Probabilities* for each, could possibly be obtained, by simply gathering sufficient measured-results, and using these instead of Theory, by knowing sufficient sets of obtained results to, instead of any comprehensible Theory, deliver all possible results, along with their Probabilities of being the solution this time! This is the formal basis for all Quantum work.

And surprisingly, this same Approach was also used by The Buddha, when attempting to give advice upon what to path to use, when only past diverse results were all that was available! For he, being a true Holist, knew that absolutely all the many factors involved would have to be worked through to get to a single solution: and without all that information, the best he could do - from only having various results - would be to get a range of possible solutions and with given known probabilities, suggest the overall best choice (that with the largest Probability!)

And that is precisely what Quantum Physicists do, in indeterminist areas where they don't know, nor are able to find, or even already have, what various factors interact, but in the same way as above could indeed use resulting probabilities of a range of possible solutions and give them.

The interesting conclusion by this modern Holist, is that this is exactly why such probabilistic ranges of solutions are all that is currently available. My Holist and Materialist stance puts the situation down to the current impossibility of knowing everything required! Indeterminacy is a pragmatic trick and not an essence.

In contrast, the Quantum Theorist explanation is that Reality, at its very base, is naturally *Random*, and so no other strategy will ever replace these approximate solutions: they are intrinsically a reflection of Reality as it really is!

Clearly, just as The Buddha didn't know about all the factors that were involved in his Holist case, the very same simply must be true of the example from modern Physics. But, by assuming Natural Randomness in Reality, the modern Physicists assumed that Causality was NOT merely unknown, but actually non-existent, so NO attempt to reveal causal factors was attempted - or ever will be by contemporary scientists.

And despite some claims to the contrary, their reasoning was Pluralist and certainly NEVER Holist!

A Comprehensive Holist Approach

How can we effectively deal with Levels?

The question posed above is fundamental to our burgeoning Systems Theory.

Generally, as other extra Levels of Reality are slowly and successively revealed, we are forced to consider wholly new features and relations at every New Level, in addition to what we previously believed to be completely sufficient, when analysing Reality formally.

And though relations definitely exist between all the Levels involved - they cannot explain absolutely everything effectively: generally a New Subject of Study is created with each Level we reveal - all of them with their own characteristic relations entirely between features existing ONLY at this New Level!

For example, with the Level we call LIFE, the new required subject is termed Biology.

And, as investigations extended to ever New Levels, there emerged a whole series of New Subjects - ALL having their own unique collection of relations. And all of these generated the same pair of contradictory practices!

The first involved attempts to derive these new features from the prior existing Level: while others were clearly NOT so deriveable! Indeed, the priority then became to exclusively seek explanations solely within their containing Level. And this contributed to an emphasis upon these more locally derived Explanations: there was a strong emphasis upon the dominating Independence of such Levels - they became increasingly isolated of any underlying Level! And this was amplified by the proliferation of “wholly within Level” explanations.

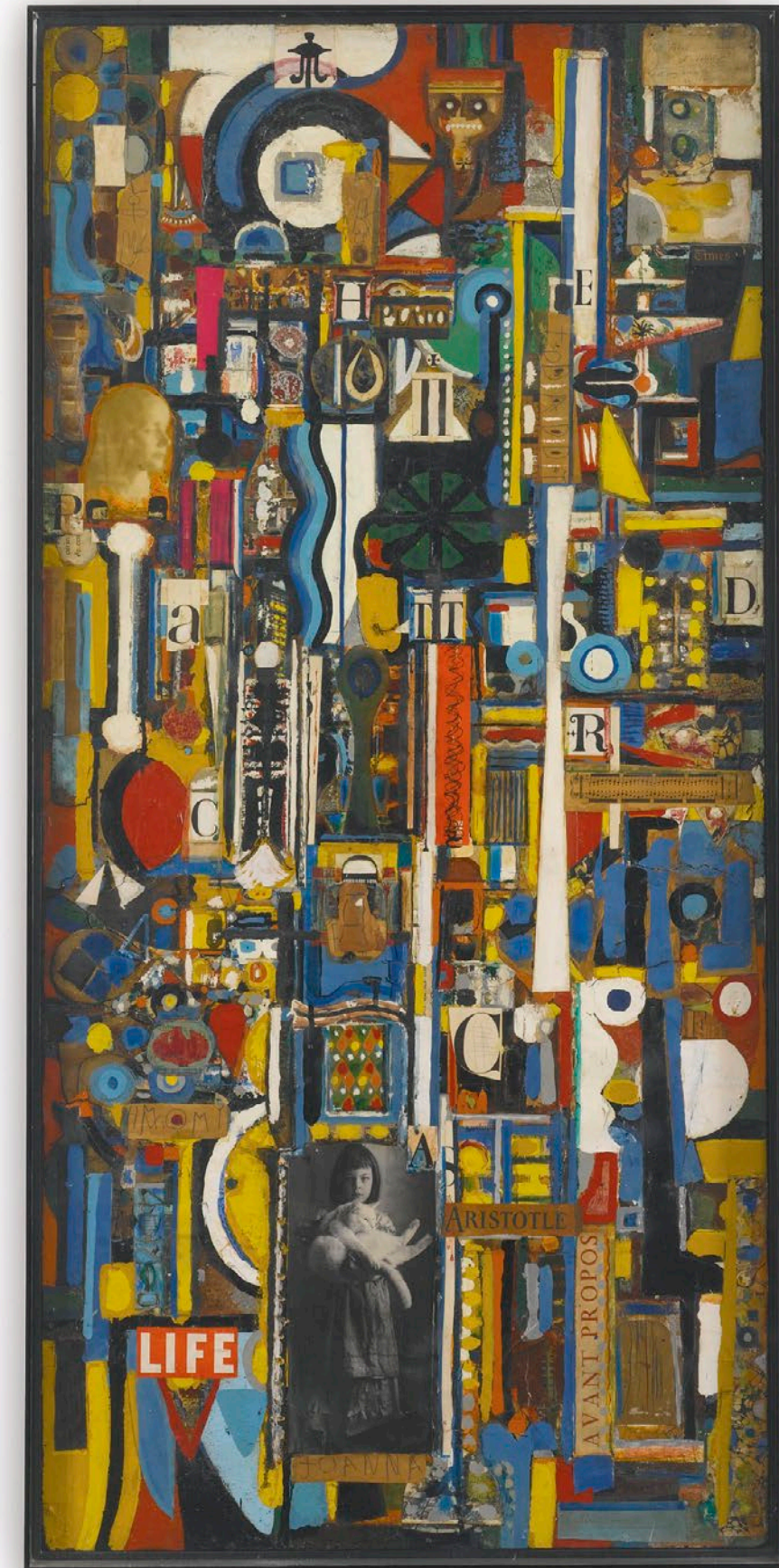
There was an increasing belief that the most Basic Features were explained elsewhere, but all the rest were fully available, entirely within the said Level! The subjects grew greatly - as largely independent scientific disciplines. But, that didn't stop each Subject generating its own New Subjects within it, AND with the same sort of growing independence.

The original hope for everything to be delivered by a single straight-through collection of Scientific Explanations was largely abandoned! To make things worse, some revealed features appeared which could neither be explained from below OR even within the Level discipline itself.

In this paradigm, any sort of coherent narrative across disciplines is impossible, let alone a Theory of Everything!

So, while the problem seemed intractable, I found myself very well situated to tackle these sorts of questions, because of my diverse interests and my history of successful interdisciplinary research across a surprisingly wide range of subjects, in which I became professionally involved initially as a science teacher (including Biology), then university lecturer in mathematics and computing, and then a computer services researcher, using computers to support research in many other disciplines. I also seriously pursued a wide range of interests outside my professional career, as a political activist and as a practicing artist, primarily in sculpture, though my original degree was in Physics.

The highlight of my career as a Computer Programming Specialist was in delivering bespoke software solutions for researchers in everything from Engineering to Dance,





even winning National Awards and plaudits for the tools I developed.

Since retirement, I have spent 16 years writing academic papers laying out both the Philosophy and the Theory underlying over 35 successful years of interdisciplinary research. This really seemed to be the key. If we were to effectively deal with Levels, and crucially those Systems that worked across various Levels of Reality, bridging the gaps between their respective disciplines would be the only way.

In this very year (2022), along with my son, Dr. Mick Schofield, who is an artist and lecturer in Media Theory at Leeds University, we presented an initial important discussion, upon the SHAPE Blog, concerning all the Philosophical Questions unavoidably involved in the content associated with delivering *meaning*, across the substantial range of disciplines we address. Now, for me this has been literally a lifelong task, as I fundamentally disagreed with my lecturers when I first arrived at University to study Physics. For instead of, as I had expected, a meaningful resolution of the anomalies clearly evident in current Theory, the exact opposite actually occurred, as they, instead, fully embraced those anomalies as The Essential Truth, and thereby replaced all rational Explanatory Theory with merely the established Techniques and Descriptions, which called a complete halt to any intelligible Theory, in my view, and, alternatively, grounded those anomalies, uncritically, as somehow being due to the “Real Nature of Reality itself”!

But to me that had to be wrong: and, somehow, I had to reveal just why such a clearly debilitating mistake had become inevitable, within the Established Thinking of Mankind! Clearly, as an undergraduate, I could not but be wholly incapable of finding a solution to such a massive problem. So many years later, I finally embarked upon the truly intimidating task of criticising the almost universally established stance-and-method, and looking instead for a unifying alternative approach, that had for so long, been totally excluded. It certainly hasn't been an easy journey!

For, the very same reasons for causing that halt, had, in its day, been seen as a veritable Revolutionary Achievement, which had occurred centuries ago in the 5th century BC, with simultaneous, but also mutually exclusive alternative “solutions”, arising in completely different Continents - The Ancient Greeks in Europe, with their

famed Intellectual Revolution and wholly Pluralist Stance, AND that of the Buddha, in Asia, with his alternative fully Holist Philosophy. Now, both of these philosophical approaches were considered to be game-changing Innovations when they were first discovered. BUT Mankind, though composed of truly remarkable organisms, were most certainly not yet equipped to effectively deal with either of these approaches to Reality. For, the kind of developments required were Wholly New, and did not exist yet within Mankind's Thinking, to enable them to correctly interpret what they meant for Understanding Reality!

They were only able, within certain individuals, to make these steps - BUT certainly could go NO FURTHER! As, Thinking was still a very new ability, in the grand scheme of things, and using it with that wholly New Stance was as yet unknown: we saw its capabilities ONLY in terms that had been used and established before: Mankind did not yet have the wherewithal to use them widely or effectively. They initially only provided a tiny Keyhole-View, and that was wholly insufficient to then launch Wholly New Thinking! Indeed, as always, the real limitations of their current means of use had to take them only to untranscendable impasses, to urgently demand something entirely new: and that would not yet be available - along with new possibilities - for a long time, from their original State and Knowledge.

Now, the Buddha's key Impasse actually happened very early, but the necessary means to transcend it certainly didn't. But, for the Pluralists of the West, even the necessary impasses were not clearly evident for millennia, though, also, the rigid control of Contexts did make a limited form of Straight-Jacketed-Progress very possible, in what became universally known as Technology!

For, their basis had always been in the Artisans and Skilled Craftsmen, indeed of all the practical Makers-of-Things - whereas the background of the Buddha, and “The Thinking Class” in the West, excluded all such knowledge, which was solely in the hands of “uneducated” labourers.

Now, interestingly, these experiences, when they did appear for the Pluralists, exactly echoed how they had appeared to the Buddhists, millennia earlier! Both impasses took thinkers to a final wholly Untranscendable Set of several alternative solutions, to a given problem - with a solution only happening when consciously-

addressing possible developments with several different solutions, each with its own Probability, for each of the series of different possible values. And nothing further seemed to be obtainable! Now what were the characteristics of these types of result? In both cases, there was always a single frequently occurring value, then others with declining Probabilities, ending with fairly rare cases: and that would be all that was delivered.

But, these didn't vary, given the same conditions: obviously some causal set-up always produced the same set of results, without revealing in any way, what had caused each, and which would be appropriate here. No further information seemed to be available! And, if there were any, they were clearly NOT known about by the experimenters: it had to be something currently NOT available to them at that stage, and within the imposed conditions of the investigation.

For, as mentioned earlier, there was a well-established Pragmatic set of imposed conditions, which had long produced closed and limited Systems, in which the same actions could be relied upon to always behave in the same way! From the outset, in all the processes devised and used by Artisans, Strictly Pluralist situations alone were always guaranteed.

Now, such a drastic limitation was based upon an intuitive belief, that as the SAME conditions were always thereby produced, they simply must be based upon delivering the conditions that correctly isolated the Key Features. So when, very much later, the involved properties were associated to particular Atoms and Molecules, the obvious next step, was to locate all active forces within those Properties, that were associated with these microscopic entities!

SO, *Equations* relating these units were also supposed to be valid in the same ways in the achievable standard Pluralist Experiments too!

But this isn't altogether true. Indeed, it is ONLY true in artificially produced, totally homogeneous mixes devoid of all other active substances.

To put it simply, entities are always separated from their Natural Systems in order for us to study them.

We therefore routinely ignore ALL Systems Effects: both those associated with Multiple Instances of the Required

Process, and those produced by "Stray" or otherwise Different Interlopers.

Indeed, experimenters always Repeat the experiments, several times, and then average the results, to minimise such "unwanted" Effects!

BUT both types of Systems Effects still occur, and some will NOT be removed by such methods. The Basic Assumptions of the Pluralist Approach are crucially flawed, and undetectable by the usual practices: some EFFECTS just have to be added-in, on the basis of Pure descriptions alone, without any acknowledged Cause!

Now, I have dealt with one consequence of this before, when considering the famed "If / Then Clause" in Computer Programming and Simulation, which most certainly brings in a merely described feature of Reality, entirely without any Causal Explanation, but there are others of a similar nature, but NONE which compose the Classic Systems Effects. So, I will re-iterate the major errors involved, and the reasons why they can-and-do deliver major Effects, which are NEVER systematically addressed.

It is basically due to multiple instances of the very-same-reaction occurring simultaneously in both Process Chains and Process Cycles, which are never exactly Synchronised with one another, so can be subject to Premature Terminations before they complete the full Set or Cycle.

Interestingly, there is a version of the "If / Then Clause", which causes just such Premature Cessations: it is when simultaneous versions produce Diametrically Opposite Effects in equal amounts, which causes both to cancel-each-other-out - producing absolutely NO outcomes, and therefore terminating both sequences completely. They simply vanish, thereby truncating their parent sequences! We see this kind of Systems feature in my Theory of the Double Slit and its subsequent extension in Substrate Theory.

Now scientists of all types were fully committed to both the Practice and the Theories of their Science. But they were also increasingly aware of the two very different kinds of Law, which determined what they studied, and nevertheless treated them both as equally valid, even if Absolutely NO Causes seemed to be available for some of them!

So the French Physicist, Henri Poincare, and the German Physicist Ernst Mach, got together to make this universally-held position overtly affirmed as correct, and they called their new unified version Empirio Criticism (though it had long been merely an implicit agreement which the critics of it termed as Positivism). They were sure that at some stage this would be confirmed theoretically, once it was openly agreed to be the case!

But, it never was - and with the Emergence of Systems Theory, a very different set of ideas began to undermine the usual seemingly steadfast beliefs, with regard to not only Positivism, but also to Empirio Criticism too! New *Systems* Causes, very different from the old procedural Causalities, began to be recognised.

There were Causes behind the previously inexplicable features that the Positivists had wanted accepted uncritically: but they were NOT of the same solely Bottom-Up nature! Indeed, rather than merely adding to a strictly One-Way Causality, the New Systems Features introduced, in addition, the possibility of Contention: and this turned out to be Positively Revolutionary, in that The Wholly New could sometimes arise, as a resolution of such Systems Contentions!

Instead of an Ever-Upwards idea of Development - the Evolution of all things became a struggle between New and Old elements, and a Selectivity, in which only the best Systems became firmly established (but only after sometimes long periods of instability). And some Developments involving Consciousness-and-Intention, could and did, distort to more basic imperatives within that contention.

But a general breakthrough in the associated Philosophy turned out to be strongly opposed by Conservative elements in Scientific Theory: and a new Opposing set of ideas was introduced to counter this tendency. And we see this in Quantum Theory!

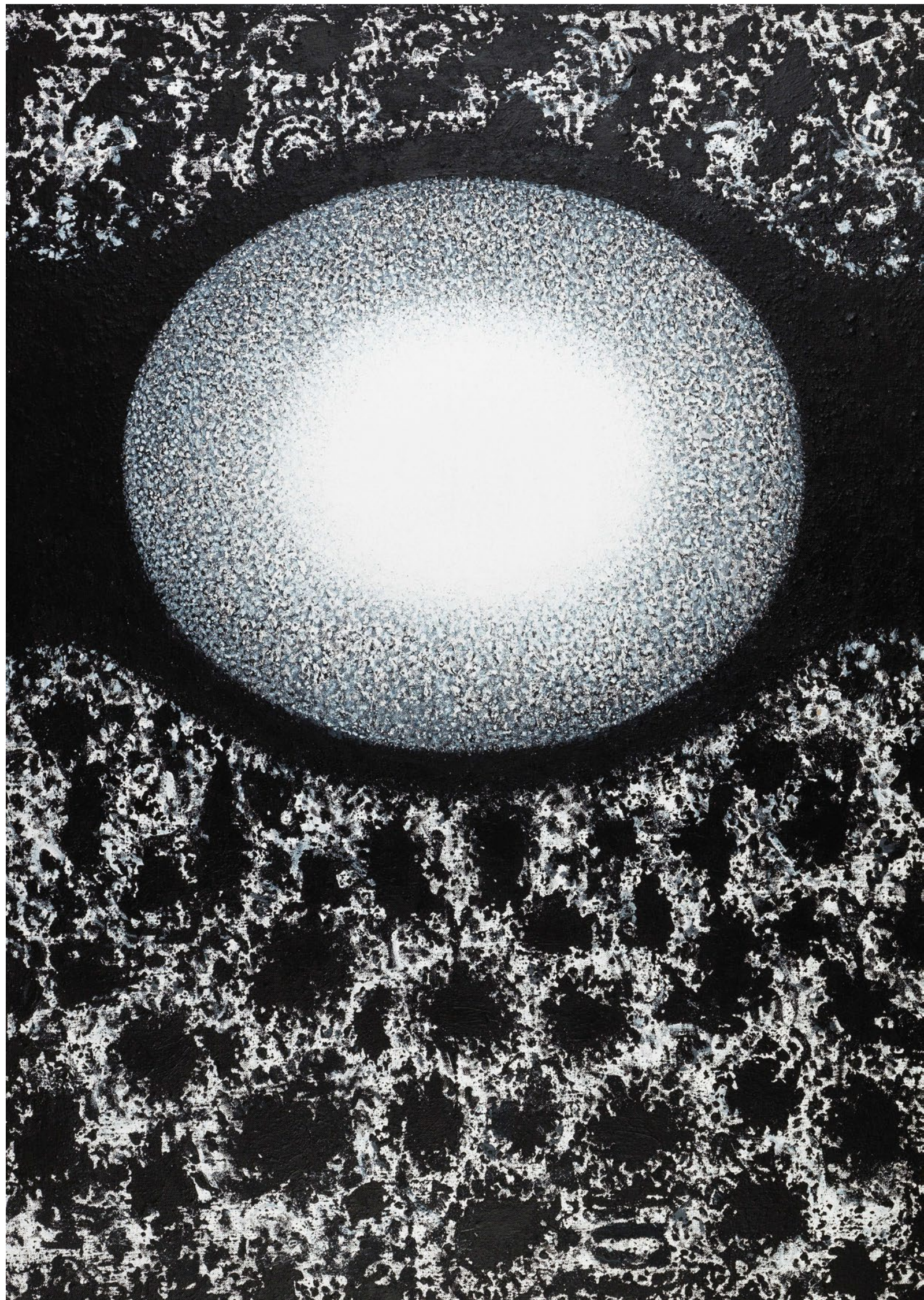
So, let us expose the Key Resonances between this Problem, and the very similar one encountered by The Buddha, over two and a half millenia ago! It was-and-once-again-is the multiplicity of solutions in a given situation, which, in both cases, seemed to be inexplicable: yet both were certainly correct - so, what was happening? Clearly the various different solutions have different causes, that are unknown, AND not from the usual sources: so, like Systems Theory they were still

not being investigated.

We are always looking in the wrong places.

Indeed, they were dissuaded from looking in the right places, because on first emergences, as single instances, they are always Wholly Negative, and are strongly opposed by well-entrenched existing Systems of Phenomena.

Indeed, it will not yet be possible, to deliver any positive features until the New Possibilities have become organised and offer real and evident different and useful, and maybe better alternatives.



Systems Contentions

What are the roles of interlopers and insurgents?

The comparatively recent Emergence of The Systems Approach appears, in addition to its role in expanding the possibilities within its Development: to strongly, suggests that, on many occasions, it is absolutely vital in delivering various eliminating innovations, that mainly act constructively, when acting, in the exactly opposite directions too! For, though they initially seem to be a total nuisance, they often ultimately also deliver more promising alternatives: they can, therefore, be the Actual Engines of Development!

Now, these later revelations and conclusions are NEVER immediately obvious: for, as Wholly New features they always take time, and also struggle to become established at first. Initially, this is because they, most certainly, encounter stiff opposition from currently well-established System factors, which for a considerable period seem to be more appropriate, and therefore are justly winning, by keeping the interlopers small and periferal, but also by having considerably more conducive features already available within them, while the New Challengers are still attempting to Emerge themselves. All the main Participants are also helping to dissuade rival others, such as any following newly-emerged ones from adding to their complement-and-influence out in the Existing World.

At first glance, it therefore appears that the later interlopers are mere negative spoilers, and indeed, some will certainly prove to be just that.

But, in fact, such struggles constitute an effective Selection Process, to successively improve and even develop the overall situation.

Ultimately, the less well-endowed Systems will, in time, be eliminated: while the retained stock will improve and develop further!

But, in fact, the Overall System is NOT merely a Single Coherent Level, as it appears to be from the above description! Indeed, with the full extent of possibly-arrived-at conditions, a truly vast range of different possibilities could be produced, but most are, currently at least, impossible! Existing conditions select only a small subset to successfully endure, as most will find nothing conducive to both its initial production and consequent survival.

So, only the most easily achievable, and their very limited set of possibilities, usually dominate! And, this implies that for anything New to appear, it must come in from Elsewhere, so interpreters look for such interlopers entirely from without a given System or Level, to try and explain innovation.

But, the answers will, in the main, come from what is already there, but, encountering a rare but possible event that can and does deliver "the impossible" - which could be immediately eliminated, OR could perhaps, have a chance of introducing The Wholly New - but only once the prior System is replaced or otherwise transcended.

For some Emergent features can and do get a measure of Independence from the General Milieu, and greatly extend the power of the New over all the Levels of the Old! On Earth the greatest example of this was the Emergence of Life: and within Life itself, the Emergence of Mankind, and thereafter the Emergence of Thinking!

Now, clearly, this set of conceptions is a product of Thinking itself, carried out by Mankind: so it has been unavoidably restricted by the only residence wherein these developments were indeed possible: not only because that was their sole location, but also because that profoundly limited the developers Reach and Control.

For, literally ALL Scientific Gains were only possible by applying strictly maintained controls in all investigations, to attempt to reveal the nature of Available Reality; and from outside Planet Earth, that was vanishingly small. And, outside of our Solar System, it was NIL!

We may see things out there in the void, but we have absolutely NO control and cannot do Anything but Observe.

So, our problem is remarkably restricting, when looking at the requirement of Emerging New Features, which can NEVER be predicted fully, before they actually appear! And, even when they do Emerge, their true potential will NEVER be immediately evident. Indeed, we will always unavoidably misinterpret what they actually consist of, particularly when comparing their initially undeveloped state, with the many already well-established and much further extensively-developed "Rival Systems", already well-entrenched and clearly dominating.

But, when developing normally, and entirely occurring under their own implicit, natural roles, the produced final outcomes are always those that delivered fully-sustainable situations, despite the clear contentions from their own generated innovations!

For, those, that turn out to have less to offer, would naturally be out-competed-by those that clearly deliver more in comparison. But, as Emergences are-and-were always happening upon many individual scales, there would always be competition occurring between different elements, all attempting to succeed: so the resulting melee, even when most of those competing elements were still surviving, nevertheless always seemed to achieve a kind of Balancing Stability, which succeeded in maintaining things, as they were, in what I call an Actively-Maintained Stability.

Yet NO contentions were ever actually fully resolved by this: indeed, all were effectively maintained in the System, within a whole mixed collection of multiple Active Balances! So, a kind of non-evolving Stability

was achieved, which gave the appearance of being a "permanent" state: but, of course, it wasn't, for none of the contending elements were actually ever eliminated!

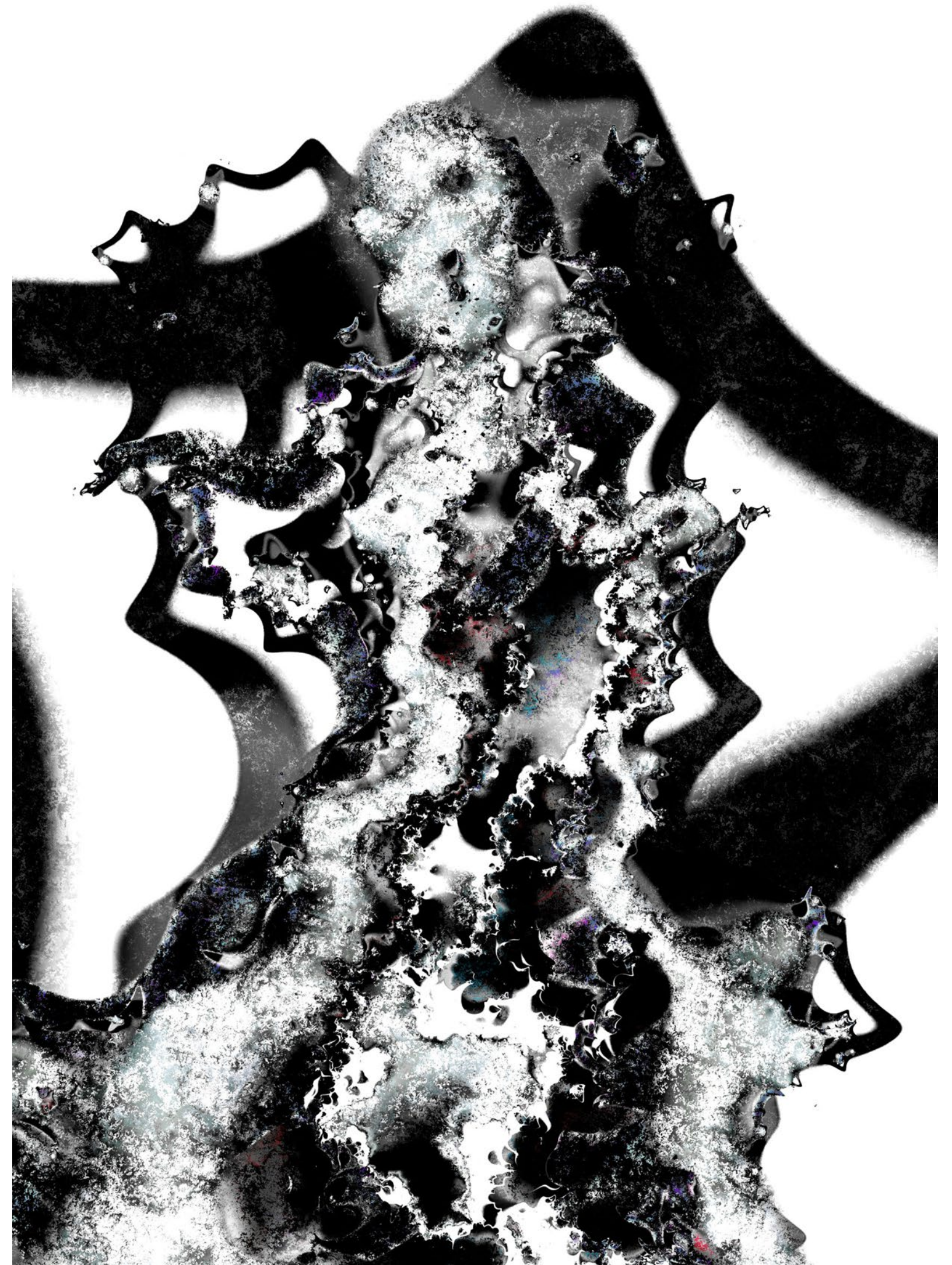
The Real Changes were only finally possible, when such a System reached an unavoidable breaking-point, occurring when several contentions simultaneously approached very-close to a possible resolution, and a whole series of undermining events occurring close together, precipitated a veritable Avalanche of Collapses - immediately enabling many terminations, and very rapid Changes in the persisting Systems.

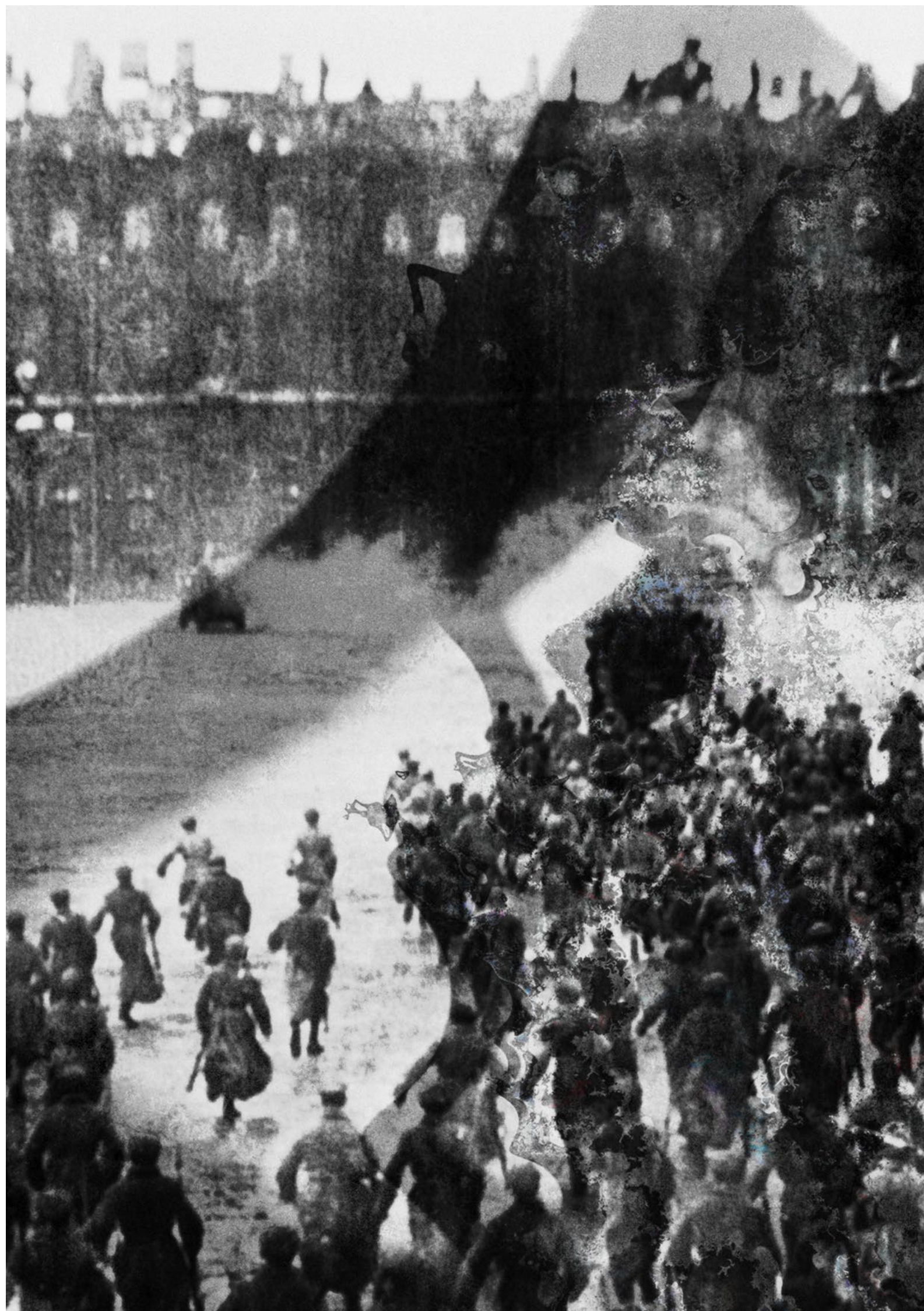
We can call this type of wide systemic Emergence a Revolution, whatever Level of Reality it occurs at!

And, in addition to a plethora of consequent eliminations, all sorts of wholly new Emergences, and their consequent contentions - with mutually-appearing balances, that began contributing to establishing the *Next* Actively Balanced Stability, in a wholly new environment: that is, until the next transforming Revolution occurs. But, which here, it must be emphasized, will not have the Revolutions as described here, so far, which have been entirely Natural Ones, and that are NOT the usually meant *Social* Revolutions, though close relatives to these, that will now greatly differ, because of the crucially New Role of New Levels - of Mankind and of Thinking, that significantly alter both the Revolutions and Stabilities, AND the nature of a whole development of these Revolutions, which unavoidably include a Wholly New Type of possible outcome, with completely devastating consequences!

The 20th century radically altered the reactions of Mankind to the threat of, and reactions towards, Social Revolution, due to the developments in Politics and Economics, and particularly that of the various Social Classes involved, in response primarily to the wholly New Stance of Marxism.

For, Karl Marx's Dialectical Materialist Stance, was developed by Socialist Political Philosophers into a thorough-going analysis of Social Revolutionary Dynamics - into a very different and more profound guide to Effective Action! And, in spite of the usual total domination of all politics by privileged sections of the Populations, enough of the Dedicated Socialists further developed Marx's alternative, to begin to reveal the truly transforming agents of Social Change, and redirect





policies to precipitate Different Crises AND deliver effective policies! BUT, we must be absolutely clear that the New Politics did NOT offer an ideal world with prior fully defined advantages. They were real Dialectical Materialists, and knew that the successful results could NEVER be fully known in advance!

Emergent Realities can, as always, never be Predicted, and hence Promised by anyone: they can only be revealed-in-action, so that it is definitely the Participants' Methods, Organisations and Revealed Results, that would be increasingly trusted! And, of course, chasing "Celebrities", to deliver things on the People's behalf would never do that! Only increasing power clearly accessible-into the People's own hands, would ever stand a chance.

The first Revolution, of February 1917, deposed The Czar, and established a kind of Parliamentary Democracy, embodied in the elections of Members of Parliament to a Constituent Assembly, BUT as with all such forms, they were quickly dominated by the Educated Classes of Russia - AND all such forms are NEVER available to answer to their electors, except at Rare General Elections. What the People needed, and indeed proceeded to set-up for themselves, were the much smaller Soviets - possibly set-up in Factories and villages with Instant Recall of any representatives, who were not carrying out what they had been mandated to do. The Central Body for all of these was to be The All-Russia Congress of Soviets, also to be convened in Petrograd (The Capital), as a more democratic Rival to the Constituent Assembly. The People and the Bolsheviks only trusted the Congress of Soviets! But, in a vast and undeveloped Country like Russia, peopled mostly by impoverished Peasant Farmers, it took some time for the People to trust the Bolsheviks.

For example, in July 1917, the soldiers in Kronstadt (led (I believe) by the Bolshevik Raskolnikov, were already fully behind the Bolsheviks, and they marched, armed to the teeth, to the Bolshevik Headquarters in Petrograd, and demanded to be led by Lenin to arrest The Provisional Government in the Winter Palace. But the Bolsheviks knew that it was still too early, and wouldn't succeed: so the consensus was for sending them back to Kronstadt - but surprisingly Lenin disagreed. He argued that, when the time came, it would be these soldiers who would indeed arrest the Provisional Government, so though it would fail now, "We must do as they ask". And Trotsky, who had the prestige, for he been a leading

Revolutionary for twenty years, so he should lead them. Reluctantly the rest of the Bolsheviks agreed!

But, as Lenin knew it would, the enterprise failed, and Trotsky was jailed. Lenin had to escape to Finland, in disguise!

That was in July, but by October, things had changed greatly, and Kornilov, the senior Army leader at the Front, decided things were getting out of hand in Petrograd, and he withdrew vast numbers of soldiers from the front and directed them, by all possible means, to advance upon Petrograd to "Solve the problem, once and for all!"

But literally none of them got there, for the Bolsheviks had prepared for this, as the Railways were entirely staffed by Workers, they did everything they could to stop and delay the troop trains. And, when stopped, they were boarded by Bolshevik soldiers from the Capital, aided remarkably by the railway Workers, to persuade them which side they should be on. It worked, and Kornilov's Coup never even got underway!

And this was the time the Kronstadters again marched on the Winter Palace, and this time they succeeded. And, immediately following a boycott of the Congress of Soviets by those supporting the Constituent Assembly, Lenin strode to the rostrum and declared - "We will now construct the Socialist Order!"

A successful Revolution was finally underway!

Systems-based Marxism

Hinting at a New Philosophy for both Science and Politics

There will be many who vigorously reject how the last essay in this important series ended, with Lenin standing on the rostrum of the All Russia Congress of Soviets, declaring “We shall now construct The Socialist Order!” I’m sure this radical and polemical tone will put many off what I have to say about Science.

Lenin has always been a divisive figure, but he had long understood the real universal significance of Dialectical Materialism - the most remarkable and indeed revolutionary contribution of Karl Marx. For, though Marx had never taken the crucial step of congenitally extending his profound philosophical contributions into The Sciences, Lenin, did indeed know better!

For, very much earlier in the 20th century than the Russian Revolution, Lenin had himself, via his own brilliant book *Materialism and Empirio Criticism*, taken on the crucial task of debunking the contributions of Henri Poincare and Ernst Mach, the physicists who had insisted in their own version of Positivism, in which all the aspects of Physics which relied solely upon empirical evidence alone, with NO associated attempts at Explanation, should be given the Exact Same Weight and Status as the very different Causally Explained Laws, which always included full associated Explanations!

And, it was this undoubted major retreat, that finally “opened the door” to both Relativity and Quantum Theory, which were clearly “legitimised” if the claims of the positivists, were right!

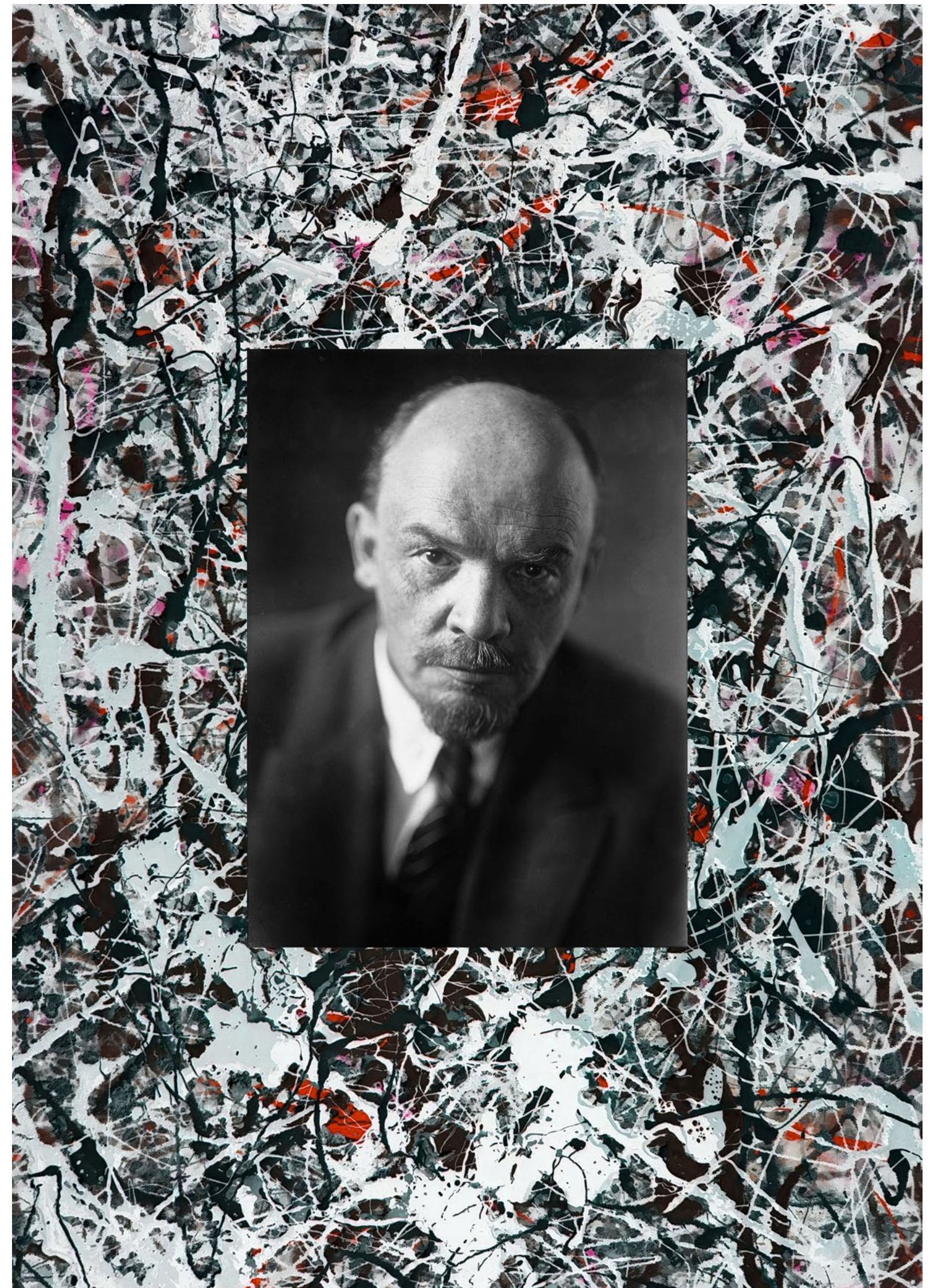
When I arrived at University as a first year Physics student in 1958, I was immediately totally aghast, at literally everything my Physics Lecturers “taught”, who

never made any attempt to Explain Anything: they merely gave empirical evidence and coupled it with the New clearly Positivist Stance, along with sophisticated Mathematics, which to them was wholly sufficient. But it wasn’t enough for me!

At school I had always been branded “the gifted mathematician”, who could “do it all” in that discipline. I had obtained 4 different “A” Levels in Mathematics, along with 3 others at the same Level. I had always found Mathematics very easy, and I was similarly successful in all of my subsequent three years of Mathematics at University! BUT, I had chosen *Physics* as my main subject there - because, it alone had always attempted to Explain Reality! I had eagerly looked forward to the much higher standard of Explanation that I thought I would get at University: but it turned out to be abysmal.

I endeavoured to get explanations, but the lecturers were never available - there were, after all, almost 100 students in my year, so such individual attention was NEVER available. We did, however, have access to post graduate Demonstrators, but they just dismissed my questions with “Is the Mathematics too difficult for you?”. And, at my insistence that it wasn’t that I couldn’t “do the math”, so, could they show me the required Explanations for why the Mathematics worked: they soon got angry, and, of course, always had the support of the other students present!

So, I took to long periods in the excellent University Library, but there was nothing available in the Physics Section that could give me answers. So I switched to Philosophy instead, and there I very quickly found Lenin’s aforementioned book on Physics.





I thought I had found the answer, but nobody on my Physics course wanted to know! So, I joined the Communist Party to try and find out more about Lenin's work. But even there, I never found a single person who would even discuss it with me. So, I continued to seek more answers in Marxist literature, but Lenin's Book was all I found there!

And all the other self-proclaimed Marxist tendencies were no better. Politics and Science, it seemed, were mutually incompatible (or taken together, appeared to be beyond any single consistent understanding).

But clearly, in the way that such Marxists seemed to argue, they always insisted that they were being "very scientific!" Clearly, what was being called "scientific" in their "Reasoning" was definitely something else! It appeared to involve only the Mathematical Rationality of the Greeks, along with most modern scientists, that is, of course, not-at-all Holistic, but definitely merely Pluralistic, involving exclusively Fixed Laws, due to the artificially imposed restrictions upon ALL of their studied Situations.

Literally all such "reasoning" was erroneous, as Marx's criticisms of most reasoning tried hard to dispel - but, with Marx himself being an Historian and Philosopher, he did not comprehensively identify and codemn the still-remaining Plurality, as such, so he too was unaware of the still involved and numerous False Bases still used almost universally in most Consequent Reasoning.

Lenin's crucial lesson, in his valuable book, was NOT yet integrated, as it should have been by then, into an appropriately revised Modern Dialectical Materialism.

He had been on his own in genuinely developing Marx's work. It was, therefore, no surprise, on many subsequent key occasions, that Lenin, wholly alone, managed to correctly interpret dynamic situations, as were regularly proved correct by subsequent actual developments! Just telling everyone Newly Discerned Truths is never enough: they have, also, to realise why they usually got things wrong! Lenin, himself, always had his finger upon the true pulse of the Developing Revolution, and within the White Heat of constant, incipient Change, he was effectively forced to insist upon his arrived at analyses - there was no time for Education Classes!

But Lenin was no dictator: his credentials were always being confirmed by Events. While, far inferior leaders, like Stalin, also insisted upon their required conclusions! They seemed on the face of it to be like Lenin's style of conclusions, but, in fact, they never ever were! And, with Lenin's tragic and premature death, the most valuable link to the most developed Marxism was lost!

In a long career in Revolutionary Politics, I rapidly achieved leadership positions, but was never, at that time, really educated into appreciating Lenin's Developments in Marxism: so, I too suffered from the usual inadequacies. Indeed, only in retirement did I have the time to study Lenin's methods properly. And, without the vital revelations of Modern Systems Theory I would not have cracked it yet!

For, so-called Science still was wholly restricted to the Bottom-Up Approach, which was supposed to reductively explain All Causality - but instead it was only by what happened at the Atomic and Molecular Level (initially only dealt with in Chemistry, but, thereafter, presumed to determine everything in all other Higher Levels too), and nothing created above that Level was considered to be Causally important, at all. But, that was obviously wholly incorrect, and many Levels both above and below the one in question are always causally-active - though involving Bottom-Up Causalities, actually only occurring within the Levels, BUT then delivering consequent Top-Down Causalities which were active Between the Levels!

And, such an Approach necessarily omitted all the significant Changes occurring in transforming Development, which are, therefore, NEVER predictable in advance of them actually happening (a vital aspect of all Bottom-Up Causality): for they alone deliver the Wholly New - such as Life, Man, Thinking and even Social Revolutions.

As they didn't even exist before: they are clearly created for the very first time, along with and within the Wholly New Development!

You can see the difficulty here for Holistic Politicians - for they can never promise beforehand, all the anticipated and fought-for Revolutionary Gains! What they actually deliver, are always solely the consequences of the effective creative actions, which more than anything else equips Mankind to make the future, even though all they can

say is that it will be better than the the System before.

Now, all the teaching I encountered in all of my own Education, as well as in every single post I obtained, as an educator myself, whether in Schools, Colleges or Universities, had everything generally still clinging to the established Pluralist Stance, in all the scientific subjects I had to teach.

And, of course, no developmental conceptions were even possible: for that stance could never actually explain any Real Qualitative Change! So, there was no such thing as the Emergence of the Wholly New; all Laws were necessarily Fixed, and, to ensure this, all experiments had to be severely restricted and rigidly controlled, so that the Laws - thereby revealed - would conform to the unavoidably involved agenda!

The Real Laws of Reality-as-is were never addressed, during six decades spent in Science Education!

Now, let us be crystal clear in this assessment, Plurality works very well for many things, which is why it is rarely if ever questioned - it works perfectly for Technology and seamlessly for Production, because we can rigidly control all of the Systems involved.

BUT, surely the crucial purpose of Science is not to merely make things but to Understand the Natural World, Understand the many Systems we don't or can't control, and to Understand Real World Causality. With Plurality that was impossible to ever achieve!

So, a Theoretical Explanation of exactly WHY things happened as they did could never be revealed by the usual scientific methods! And, of course, there were consequences for this dominant Philosophical Stance throughout the other major areas of Study too, such as History, Philosophy and, of course, Politics.

For, everything undoubtedly evolves, and the dynamics of all their changes are unobtainable with the usual Pluralist prejudices severely distorting All Real Qualitative Development!

And we need to Understand how Natural Systems evolve now, more than ever. We need to Understand how and why they fail... by far and away the most devastating avalanches of so-called Natural Crises, are now, all over the place, due increasingly to the many decisions that

are attempts to solve other problems we don't really understand, but actually only accelerate the speed of Natural Threats that, instead of being under our control, are now swooping headlong towards unstoppable disaster.

The most obvious of these problems is Climate Change - which is already very close to terminally undermining many of the Actively Balanced Systems of importantly maintained and life-preserving Stabilities, on which the Level of Human Civilization relies.

While, elsewhere the urgent push for ever higher profits, in order to allay possible economic collapse, is also simultaneously undermining the need for the better safety measures needed to deal with Climate Change's many damaging affects - such as flooding and pollution.

Attempts to balance the economic system without a working Systems Theory causes unforeseen problems at all different Social Levels. For example, over-zealous cuts in safety-measures within Maternity Hospitals in Shropshire, led to delays in essential Caesarian Sections in problem Births, and the avoidable deaths of several babies.

And, of course, let us not forget the Covid Pandemic - which was very badly handled by pro Capitalist Governments the world over, and which inevitably led to thousands of deaths of old and infirm people! But you see, doing what was right for the majority of People was no good for Profits and an Economic System reliant on perpetual growth - so that largely determined Government policies including a rush to return to maximal profit making - much too soon. And the effect upon the Care Systems for the old, infirm and disabled not only made it widely inadequate, but also drove many of the very best carers to despair, and an increasing number of exits from that profession, into less upsetting and exploitative alternatives.

This is just one example of the many labour shortages caused by criminal mismanagement of the economic system during this period.

Sadly modern Marxists have no answers to any of these problems either. It is vital that we now take a Holistic and Materialist Systems Approach to both Science and Politics, before it is too late, and these life support systems collapse for good.





Equations

Why they lead us to nothing...

As a life-long Teacher, Lecturer and Researcher in Mathematics, Physics and Computer Programming, you would naturally expect me to greatly extol all the profound virtues of Mathematical Equations within all my many committed and professional endeavours. But, perhaps suprisingly, I am no longer such a product of my education and former achievements, as you might expect!

And, that is because all of these constitute only constituent parts of an over-arching Super Discipline, which has increasingly superceded them all - and, in fact, demands the most severe criticism of all such Sub-Disciplines, from a far more all-embracing and profoundly powerful Basis - and that is, of course, the Discipline known as Philosophy.

For Absolutely Nothing that Mankind has invented and then developed, could possibly alight immediately upon the Real Truths of Reality-as-is. Indeed, every single attempt was unavoidably, and at least, initially, both partly mistaken, and then thereafter, misleadingly amd unavoidably developed in esoteric directions, to a truly major degree, and thereafter ONLY useful in very limited areas. In fact, it has taken even further changes over literally many thousands of years, to get to where we are now: and all of these are still woefully inadequate - and seriously-so, that unless Significant Corrective Developments are now rapidly instituted, Mankind will precipitate a whole consequent phalanx of calamities, which they will most certainly be totally unable to counter.

And the main reason for such an overwhelming set of results, is that not all these changes are, in any way, clearly

delivered by the current Forms of these Disciplines: as they nowhere include The Holistic Systems Interactions, which undoubtedly also have major unacknowledged and potentially very damaging effects.

Let us, therefore, restart once again, from the very beginning, including these Systems Effects, to see how different they could make the consequent results.

Now, it should be emphasized that Reality-as-is, is both naturally multifarious, and composed of multiple different Levels (usually acting at very different scales) - so Mankind would discern the most obvious and immediately available Levels first, amd consider that to be the complete situation - so there was no alternative to a simplified initial analysis!

The Basic View had to be the universally accepted conception of Totally Empty Space, which both makers and experimenters believed they recieve as the initial Basis for all constructions and scientific Experiments. Then do their activities, “hopefully”, by reducing the actual Content to a very small number of significant, yet solely-affecting components. They then changed only these agents to deliver the effects that they require to explain the subsequent productions: but these assumptions were, in fact insufficient to deliver what they were seeking.

Indeed their assumption of *Emptiness* was completely mistaken, AND their various components were not all that was involved in the changes. It may seem to be so, within very limited ranges, but once they are exceeded the results can no longer be accurately predicted! But, of course, carefully imposed limitations upon the circumstances would effectively eliminate these features.

But, the results achieved within those curtailed ranges are assumed to deliver a Law, which will “always be true”, AND it will contribute, exactly-as-is in All Possible circumstances delivered by just those controls! Yet how do they formulate the required Law?

They assume that they are solely due to the fixed properties of the exact set of Atoms or Molecules actually involved, as individually active at the Bottommost Level, in each single reaction, but replicated enormously, throughout the available materials: so the determining *Equation*, even though restricted to single active elements - is flawlessly replicated throughout, and therefore performs exactly as prescribed each time, which is considered entirely adequate in producing the same changes everywhere.

We are assumed to need only what is defined at that Bottommost Level, in each and every single set involving only those fundamental entities! Yet, within any extracted relations, only single, or very small multiples of units are ever involved! But, clearly, that simplification will NOT always be true in Reality-as-is: or for all normal experiments involving appreciable quantities of the components involved.

And, the components to be involved will NOT be lined-up in order to be simultaneously included everywhere at the same time and rate. They will, instead, be randomly distributed, and find their appropriate places at different rates - especially if there is any random-clumping of the entities involved! The required components do NOT prepare themselves into ordered queues, but have to be found by chance: and any fast-acting interlopers from elsewhere could get a decided advantage, and certainly complicate the situation over time.

So, for this to work, at the simplest level, there is assumed to be *Nothing* outside of the very simplified version of the Situation and the Equation, determining the expected Outcome - exactly the same isolation as Mankind always ensures in their factories of production.

And, of course, though aimed-for in the investigative Experiment, it will never be exactly the case. And in Reality-at-large (outside of our constructed Experiments and Technologies), these “considered aberrations” will most certainly be legion.

The artificial situation of the Experiment can never replicate what happens in Reality-as-is! Indeed, the more one considers these processes in Reality-as-is, the more affecting difficulties arise to undermine our Experimental Method of determining The Actually-Performing Laws. For Reality-as-is presents a very different environment to the Tailored Ideals of all Man-devised Experiments.

Indeed, that world is packed with many different components, and, literally all of them are involved, at some stage, in a multi-element CHAIN of interactions - involved in not only one, but several inputs at each stage, and consequently producing an Output - linking it to the next, different reaction in the CHAIN.

Now, it WILL ALWAYS be such CHAINS, that are encountered at THE stage which actually produces, finally, exactly what our own studied reaction requires. So instead of the CHAIN carrying on to completion, it has been prematurely terminated by our wandering-and-interrupting reaction - stealing its link to its next stage in the CHAIN.

Not much like our Idealised Assumption is it?

Now, apart from these CHAINS, there are also actual Repeating CYCLES of multiple dependent reactions, involving similar linkages as within the CHAINS, but here having a seemingly-final Outcome, which, in fact, turns out to be absolutely-identical to the Sequence’s own originally required Input. So, that it can directly link-up with its own beginning process, to produce a constantly Repeating and Recursive CYCLE instead!

And, these can also be encountered in a similar way, when still in mid-stream, enabling it to gobble-it-up - actually terminate it, when what was supposed to be linked to the immediately latter part of that CHAIN. Also, in addition, and in a very similar way, incomplete remnants of CYCLES can also result, if a necessary link within that CYCLE is instead used elsewhere, as in our above-studied reaction, further complicating the natural Context, with its fragmentary results.

I think my point is well-made now: Idealised Experimental Set-Ups will rarely, if never, occur as such in a wholly unorchestrated Reality-as-is.

Now clearly, though individual entities will react with one another, as described at the lowest Level by Atom

and Molecule-based Equations, that will NOT be the overall-defining kind of process exclusively at work.

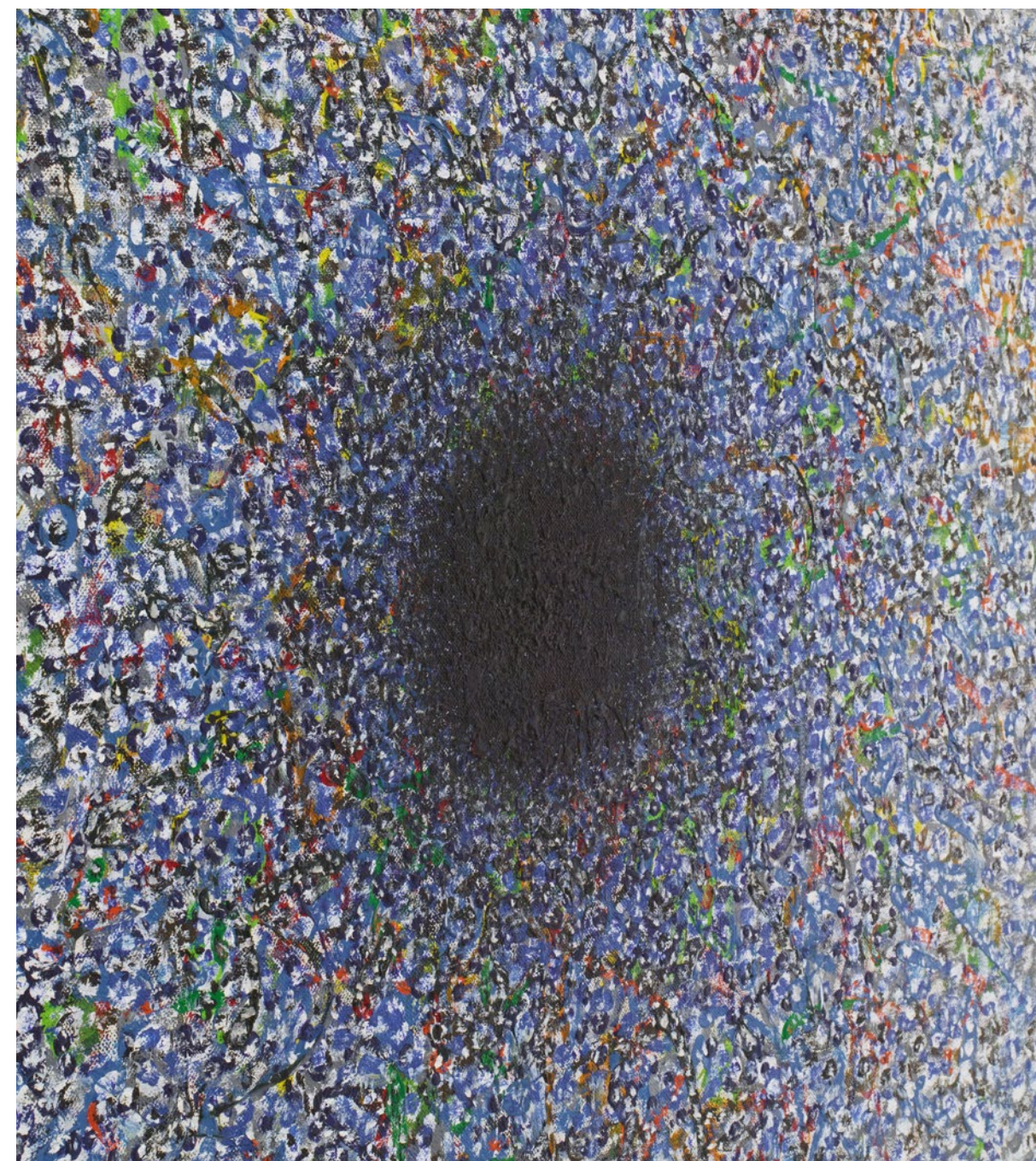
And what persists best in a given environment will increasingly dominate: AND thereafter form a basis for further developments.

The Whole Purpose of Equations was NOT to *Explain Reality*, but to define artificial conditions that we could control easily understand, and in which successful Production could take place!

In fact, millennia of efforts by pragmatic Artisans to MAKE useable things, originally defined our whole approach to Reality.

We didn’t want to explain or understand anything - we just wanted it to WORK!

So, to still be constrained by such purely pragmatic-Productive routines, surely manacles Mankind to Production, rather than an increasing understanding of the Universe-as-is!



Entering the Multi-Level Cosmos

First steps in a Systems Approach

It is increasingly clear that The Universe has many many Levels!

But, the question has to be “How did they initially occur, and what indeed were the mechanisms for their propagation?”

Mankind, appearing very late upon this scene, were the first organism, so far as we know, to address this question. And being surrounded upon Planet Earth, with millions of years of Living Evolution, alongside many other forms of prior-existing Life, it was obvious that much more local and pressing problems were far more urgent to us as a species, and those would have to be addressed first!

For Mankind, had to try and explain themselves first: and even their evident superiority over all other living forms, so clearly evident Everywhere! Even that, of course, was not only a mammoth task: but would also badly misguide them in allotting the organising Causes, or even the initial Cause!

For Early Man had NO History at all to help him in this vast task: and even worse, absolutely NO language to define and then consider such a problem! At that time, we were almost as badly-off as all the other animals, completely preoccupied with basic survival as the only meaningful task. So, the first questions were, necessarily, far more prosaic. And, these necessary priorities would predominate Mankind's concerns for vast aeons of time.

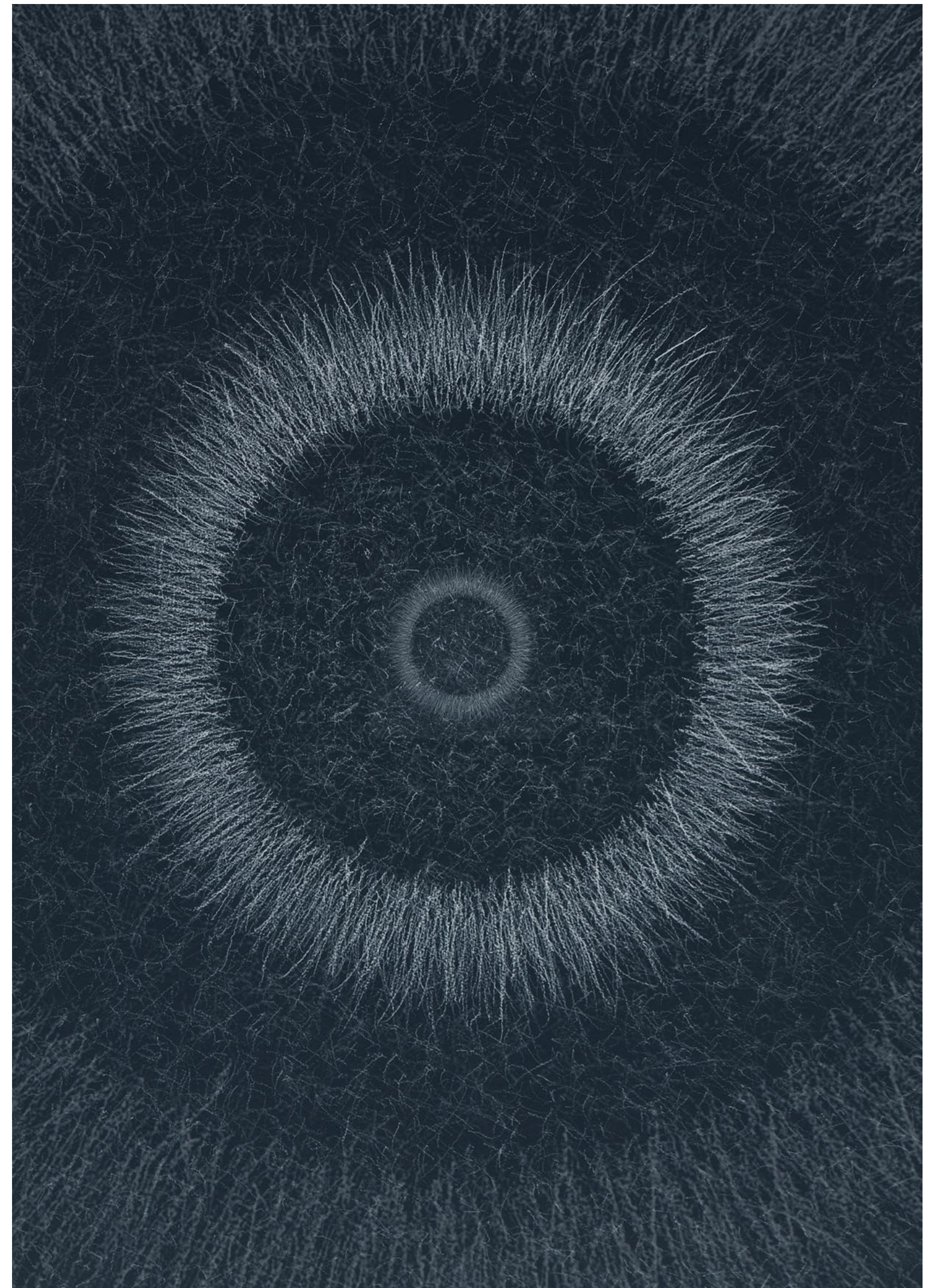
And Thinking itself, had to have a means of Articulating Ideas - otherwise descriptive and explanatory thoughts could never rise above immediate needs and opportunities.

To explain anything and thereby extract meaning, via a hierarchy of consequent thoughts, had to involve an advanced Language. And, even when such Languages began to be developed, Origins were NOT the first priorities for communication. Yet, with Mankind's increasingly evident intelligence and capability, the Prime Creator of the Universe could only be seen as some kind of Super-Human Being!

Millennia elapsed wherein the definition of this Man-like GOD was increasingly developed. Indeed, in Man's own self-image, The Creator had to be like themselves, active agents and transformers with defined intentions: NO natural physical processes were ever considered in that role - a clear indication that actual developments (and all these were definitely, at least initially, of that nature), demonstrating that such developments are often in the wrong directions. They are never sufficiently well-directed, AND such aberrations are only ultimately redirected by the Emergence of direct contradictions!

And even that never immediately leads to an alternative approach, but, most likely, just the establishment of a new and separate category of Thinking, which within its limits, will then be developable.

And in the gaps between those areas, Quantitative relations, linking them, gave a new kind of Empirical Law, as distinct from the initial extracted Causal Laws. So, even when primitive handicrafts led to early Science, there arose a series of “Rules-of-Thumb”, which involved Causal Laws, along with purely Quantitative Rules, that slowly built up over many millennia, Indeed a Stone Age was followed by a Copper and then an Iron Age, as Mankind brought his learned mastery of Fire to bear in



revolutionary ways!

But, believe it or not, it was finally re-deployed in the 20th century - this dichotomy was maintained exactly as such, and even with the Positivists, given totally equivalent status in the framework of Empirio Criticism, and with this redefinition, enabled the general inclusion of such evident Quantitative Relations, as Valid Laws, which led us to Quantum Physics and Relativity!

And by these moves the supposed Science of Physics was lowered to a mere Technology at its Explanatory Base.

Science no longer really explains anything, instead it merely describes things, as sufficiently as it needs to, for them, thereafter, to be effectively used.

Now, this is an understandable bias, if the determining purpose for a Science is primarily Production. The more important job for Science, could and should have been, its Power to Explain *Why* things behave as they do: and for me that was always its major purpose! And that was my motivation for specialising in it in the first place, as well as being the stance of literally all my teachers at school - and my own approach to Education for many decades thereafter.

So, let us consider the mistaken assumptions embodied in all of Physics by the Positivists! They took the known properties of the individual Atoms, that had been determined in tightly constrained experiments, and further believed, that they alone, had otherwise unaffectionately determined all subsequent overall properties, when legions of these units are simultaneously both present and involved.

So, Equations, relating the interactions of ONLY the most basic units, or tiny multiples thereof, stated that these alone fully-delivered all that actually happened in the Universe.

But, that certainly isn't true!

For, there are in addition, the Systems Effects that we have been examining - caused by interactions between whole and partial sequences of simultaneous processes - NOT necessarily in synch with one another. For, as soon as whole series of consequent processes are involved, their current set or even incomplete states, can significantly affect the simplified individual processes considered by

the currently dominant set of theorists. The minimal unit Equations are NOT sufficient!

Now, everyone involved knows this: so, they necessarily severely restrict experiments to the very simplest set of components possible, in order to arrive at a Pristine Component Law. And, they then repeat the same kinds of restrictions to every other Contributing Law that will consecutively or simultaneously apply. But, therefore, every step will require its own unique restrictions: and they will be different for each and every step!

Now, you can do this easily in the Manufacturing Production that Science Experiments largely echo - but NOT in Reality-as-is! For, if you do, you will get varying results, for they will affect one another within larger Systems, as distinct from property-only determined ways.

The Origins of the usually-used Equations were always the Rules-of-Thumb, of the discovering craftsmen, who knew they would only get the same results each time, if they so consistently restricted all operations. But, such a method can never explain processes in wholly unrestricted Reality-as-is!

The assumption by the Physics Theorists, is that the restricted experimental investigations are merely to expose, in Pristine Form, each contributing Law, unmasked by all the others! AND, that once known, they are merely added-back-together, individually-unaffected to give the combined effect, as a Simple Sum of all the effects present!

The reason this isn't true, is that they are NEVER synchronised, nor are they when acting together, wholly independent of one another! To assume that, and merely believe that the average of multiple results will give that simple Sum, is surely incorrect! For multiple processes are all taking place simultaneously in a rich mix. And, there are always sub-processes involved too, which can occasionally complete the initial part of one, with the latter part of another - particularly if common ingredients occur in Different Processes, and the overall processes involved are of different durations.

A whole range of Systems Effects deliver varying results! The Basic Principle of adding idealised single unit Equations, to represent Real World complex processes is a very distorting simplification.

Varied work by this theorist in Theoretical Physics (such as Substrate Theory) and the research of prestigious Biologists, such as Denis Noble of Oxford University, have already developed clear indications of vital and unavoidable Systems Effects at vastly different Levels of Reality, and have demonstrated their occurrences there without any doubt!

Exactly what reliable means is required to replace the now universally-used Equations in both Physics and Cosmology, will only be approached by a major change in both Methods and Theory, to integrate those Systems Effects into how we Understand all the Levels of the Universe that we attempt to approach.

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