



PHILOSOPHICAL MUSINGS II

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# Shape Journal

## Philosophical Musings II

### Special Issue 14

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A series of brief introductions to the content of this set of papers -  
Revolutionary Realisations Leading to the Concept of Emergence -  
The Precursors, Creation and Subsequent Evolution of the  
Concept of an Emergence

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## Introductions

### Philosophical Musings II

Welcome to the 14th Special Issue of the **SHAPE Journal**

This collection of papers follows on from those contained in Philosophical Musings I, and has a similar purpose. Neither was intended as a coherent and comprehensive establishment of an arrived at philosophical standpoint, but, on the contrary is intended to reveal the processes of philosophical investigations necessary to establish an alternative position to the current consensus.

Now, it is the long held position of this writer that it is in precisely this area that current-day Marxists, have crucially neglected the very discipline which gave Karl Marx and his colleagues the wherewithall to establish the most important developments in Human Thought for many centuries.

## Revolutionary Realisation Leading to The Concept of Emergence

We are so used to the usual scientific experimental method and its following procedures, that we never question the assumptions, and even the principles upon which it is based. And, perhaps surprisingly, we also almost never ponder upon our usual assumptions as to the Nature of Reality itself – indeed, its Philosophy, which must be our most important basis of all!

This small group of papers does indeed consider this precise area, and attempts to see how an unquestionably Holistic World is invariably addressed assuming the exact opposite conceptions – that are entirely pluralistic. It does not question the advances made by this universally

So it is hoped that these will lead those who are stimulated by these Muses, to themselves once again address the philosophical questions and develop what Marx established to equip political activists with the wherewithall to appropriately and effectively intervene.

For some of the productions of such methods by this author SHAPE Journal includes most of the most recent important efforts, in particular *The Theory of Emergences* 2010.

followed approach, but it certainly does condemn its crucial failures, which consistently arise in addressing Qualitative Changes and Development, and for which such an approach is entirely unsuited, and indeed significantly misleading.

The assumed objective has to be how our philosophy and methods need to be transformed to finally address such transcending changes – indeed, precisely those occurring in Emergences (the revolutionary transformations that alone deliver the entirely new, and thus are the real creative Events in a n evolving Reality.



## The Precursors, Creation and Subsequent Evolution of the Concept of an Emergence

The papers included in this collection are not all recent.

Some are now quite long in the tooth, while others have been produced in the last few days in a retrospective assessment of the methods that have long been employed without reservation, in entirety in appropriate areas of great importance.

But, hopefully, these offerings will lead to an appreciation of the realisation and development of the crucial idea of Emergence.

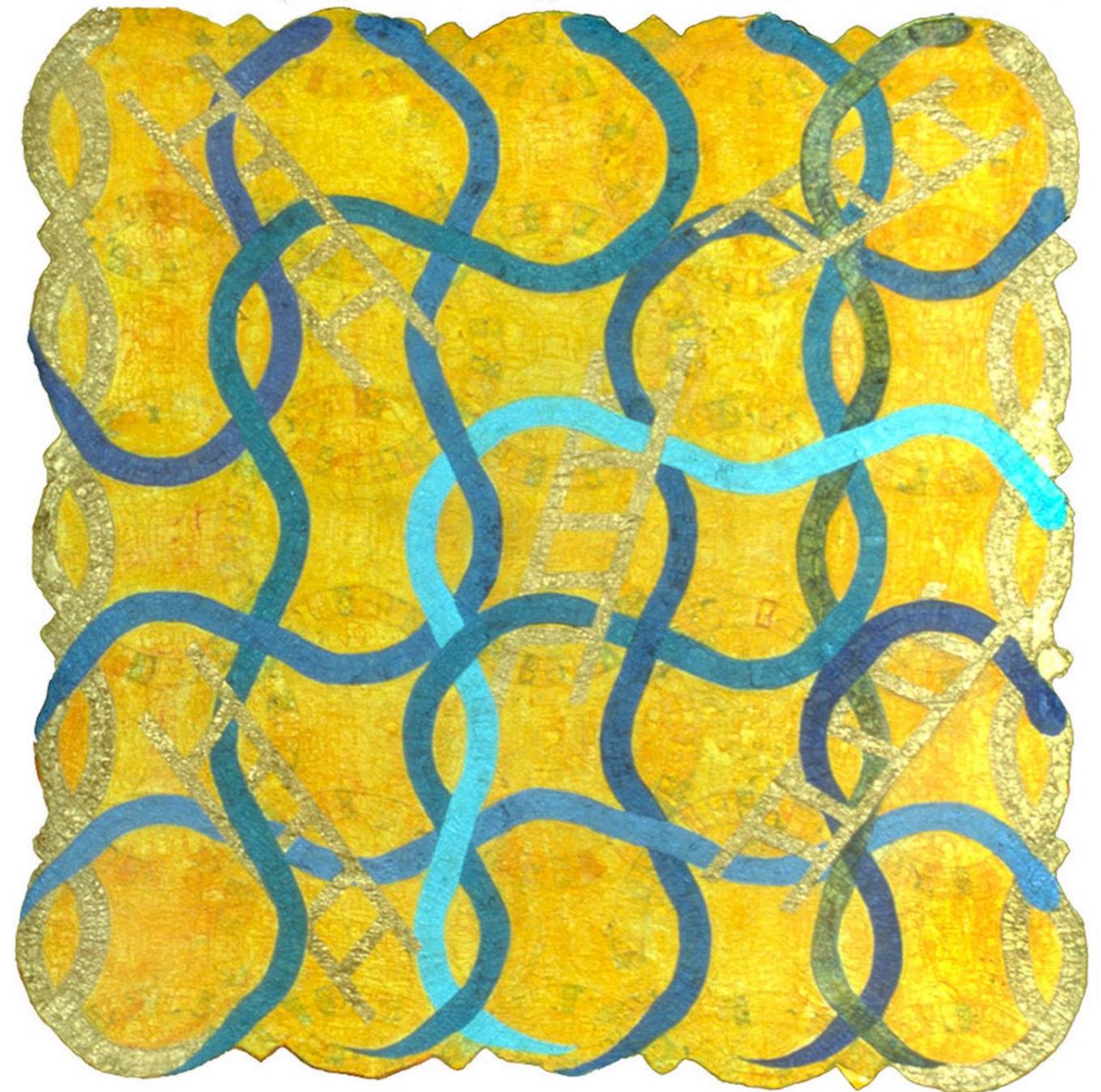
They were certainly never written as a coherent integrated sequence, but, on the contrary, address crucial questions at important moments in the development of the radical concept of Emergence – indeed the actual emerging of the ideas themselves.

For these ideas signpost both how the Theory of Emergences was initially realised, and the nature of its subsequent development and evolution.

But, the reader will not find questions in one paper answered by ideas in another., but will be regularly presented with “holes-to-fill”! He, or she, will, if they are so moved, have to make connections for themselves.

Delivering a full and final argument is most certainly not possible as yet, for much has still to be done, and indeed, a whole new approach to Science – termed *holistic*, is still as yet in an unfinished state. Clearly, the author expects and even welcomes contributions and indeed criticisms, as these are the only way this set of ideas can be brought to some sort of fruition.

Those stimulated by these philosophical considerations might be interested in the author’s *Theory of Emergences* (now rather old, but basically sound, if in need of updating, but which contains most of the key considerations in applying such ideas to all disciplines and their development.



## The Limits of Formalism

The subtle, yet vital, factors in the discussion on the Limits of Formalism, are undoubtedly those real and tailored modifications that we impose upon areas of Reality to simplify our required formulations.

For Mankind in general (but most especially the mathematicians) turn out to have an amazing propensity for matching up constructed formalisms to features of Reality – both the apparently real, and the careful manipulation, and indeed tailoring, of a situation to make it approach an analysable form.

But these formulations and Unfettered Reality are certainly NOT the same, of course. Neither does the “matched” formal relation drive the real situation as a kind of impelling Natural Law.

What is actually happening is the finding and using of formal resonances between the perfect Forms constructed in Ideality, with a particular concrete situation in Reality.

Such a remarkable skill can, of course, empower those who make such connections, and enable transfers of real values to be carried out between these resonating alternatives.

But the initial prohibitions made at the head of this section are nonetheless crucial.

Though Pure Form can be valuable and enable many things to come under our hands, we must never forget that we are tailoring what we have-and-know to something, which at some point will definitely transcend our once-adequate fabrications, and behave beyond the possibilities of our heretofore adequate formulations.

All such “formal solutions” will at some point fail-to-fit, and crises will occur, which we cannot (initially at least, and maybe permanently) deal with via our chosen formal analogues.

The modern rise of Mathematics has led to the most breathtaking revelations of formal extractions, which we can very easily (and wrongly) interpret as actual idealist causes of phenomena. But, they are never that!

As part of Reality ourselves, we cannot in a God-like way look down from a separated and wholly independent standpoint, and see everything involved in any observed phenomenon.

On the contrary, we can only things view from the inside, and hence our methods have to be such as to transfer what we study from the concrete into form-only patterns. And, by so doing, we position ourselves “above” and outside of that formal world.

We achieve a certain detachment and everything we manipulate is, in fact, only pure form. The advantages are clearly evident and (via such formulations) predictions are indeed possible.

The problem, as always, is when what we are concerned with in Reality, leaves the situation where our formal description and encapsulation into equations could be relied upon, into areas where they no longer pertain. We thus “paper” the World with a host of such formal, local patches, but can never, by the same means, join them up!

Our methodology is limited to this enormous collection of limited formal analogues, and cannot understand the traverse from one such patch to the next. These gaps are inexplicable to our current methods, and we can only “hop” from one formal square to the next.

*NOTE: Indeed the analogy with the game of Snakes and Ladders is even closer; because as we hop along, from square-to-square, we are bound to encounter a Snake and slide down to the bottom on unavoidable and regular occasions.*

Clearly, there are severe limitations to Formalism. It is the Science of Stability, and with careful and informed

“farming” of a given situation, our “cultivated plot” (or Domain) can be manipulated to deliver a situation where formal relations appear clearly, and can be used effectively as long as we remain steadfastly only on our prepared ground.

But, by doing so, we build a conception of the World that is invalid in two important ways.

First, we see the Real World as totally determined by our extracted perfect Forms, which become the Law, or the drivers of all Reality. We thus become idealists!

And second, we totally ignore Reality-in-development, and cannot deal with the dynamic transfers from one “Law” to the next.

We have not yet even begun to address the Science of Qualitative Change.

## Order and Chaos

Whenever a real rethink of any aspect of our methods is attempted, it invariably leads to telling questions about our basic assumptions and principles. For the necessary tying-down to basic concepts does indeed allow progress to be made. But these are always in fact simplifying constructs, and will always, in the end, require drastic revision. So basic ideas like Order and Chaos are always in question, and unavoidably change over time, as what we ask of them gets more and more demanding.

So, what is Order now?

We think we know, and get impatient with those who seem to question the most “elementary” and long-answered questions, when we are struggling with new and sophisticated problems of today. So though we can usually immediately categorise such an idea with its clear opposite - in this case Chaos, and though these, as a pair, settle the question - that solution is always “for now”.

Chaos is considered as the total absence of all Order: while Order is when things are connected together into higher systems.

Let us consider these seemingly incontestable definitions. With these views, Order becomes the joining together of minimal fragments, and their construction into higher, combined forms, presumably requiring built-in energy to maintain them as such. There is also an implicit assumption of Level involved. A continual sequence of such Levels seems obvious, where systems at one Level can become primitives at a higher Level. And of course such towering constructions can never be totally secure from dissociation.

A dissolution of such an Order, at a given Level, will inevitably return things to the immediately prior Level, and what was the structural energy of the system will be turned back into the “free energy” of the prior elements: we often term this as Heat, and it is usually associated with

the free movements of the fragments!

Now, with this conception, Order seems somewhat precarious, and it can be no surprise to discover that ubiquitous forces of dissociation reside everywhere – ever ready to return any unprotected vestige of Order back to a more primitive and disorganised state. It is this collection of processes, which are encapsulated in the Second Law of Thermodynamics – the Law of Inevitable Decay and Dissolution – or Rust never sleeps!

But it is a unique kind of law!

We don’t set up experiments to prove it, and take measurements to show exactly what factors are quantitatively driving the situation down.

It is a “Philosophical Kind of Law”. No quantitative equation reveals the actual processes. Why else was such a “quantity” as Entropy conceived of? The scientists felt that their law needed some “quantifiable substance” about which they could discuss (and agree?).

Yet, it is a kind of principle based upon dire experience. It is the perennial “fly-in-the-ointment! It is not the usual kind of law at all!

But, standing alone, it presents Reality as perpetually “standing on one leg” and bound to be constantly “falling over”!



It describes a descent back to Random Chaos, but seems to have no evident opposite – no law of inevitable construction or complication: when such things do occur they seem to be merely by Chance! It predicts inevitable decline, but there is nothing to suggest exactly how the very Order (to be dissociated) was originally associated: how it came to be!

Now, such a principle, all by itself, is clearly insufficient! For it to act, it must act upon existing Order, and that Order must have been constructed by some means. And we know that it exists!

But, we must honestly identify this law as entirely homocentric; indeed, it is an engineer’s law. The maker of Order in his eyes is Man, and he must constantly struggle to maintain his constructions against the ubiquitous and powerful demolishers of all and every vestige of Order.

Yet, surely such a limited definition must be entirely inadequate. We daily observe plants growing and building Order, and the same is clearly also true for animal Life too. On every hand we perceive the processes of construction. We even know that they required resources for just such constructive processes. They are the food of animals, and the necessary raw materials for photosynthesis in plants.

But why should they occur? If they are merely individual natural processes, surely they could never get anywhere. They would be dissociated at the most elementary of levels, as soon as they appeared, by the ubiquitous processes of dissociation, and nothing would accumulate at higher and higher Levels? Why doesn’t every single gain in Order get immediately turned back into Disorder (the supposed natural state)?

Clearly, exalting Disorder-making processes to the status of the Second Law is unacceptably one-sided? There must also be imperatives to Order, as well as imperatives to Disorder!

So, what are they, and why do they continue to succeed, Level upon Level from inanimate Matter all the way to Consciousness?

We have to imagine the occurrence of all kinds of processes within a supposed wholly natural state of total disorder, which actually, and perfectly naturally, construct! Why should these make Order, which persists? And why should the processes of construction ever outweigh those of dissolution? It is, indeed, a very good question!

And the answer is that processes can both compete for the same resources, and be mutually conducive to one another.

Processes can turn out to be mutually beneficial in the acquiring of their necessary resources and in the creation

of their consequent products. If the product of one process is the resource of another, then the receiving process will benefit by proximity to that process and will proliferate faster than others by the guarantee of what it requires.

But alone, such individual occurrences cannot achieve what we are attempting to solve – the continuing and increasing building of Order. That must be a higher process, which somehow co-ordinates many such positive processes.

It must occur when a set of mutually conducive processes come together, and indeed, stay together, involving Sequences and even Cycles, so that a sort of co-ordinated system can act in concert. For when this occurs they will certainly differentially proliferate compared with processes without such co-operation.

Indeed, truth be told, when all that existed was disorder, where would the Second Law type of dissolution find its resources to dissociate? The really totally random World could display NO evident Second Law. The ONLY law that could emerge would be our suggested Law of Mutually Conducive Order and its consequent structures. The only natural process then would only be “uphill”, for only these would be naturally beneficial and hence more likely to proliferate than others.

And it does not take much of an imbalance such as that to cause a major transformation. The natural processes in such conditions must have been towards increasing Order – defined initially NOT by any intention or even by what it produced, but merely by how it affected other processes, and they, in turn, affected it!

Now, are you on to the inevitable result? Yes, indeed, as Order grew, and processes, which fed on such things, and turned Order into Chaos, would finally begin to, themselves, proliferate too.

Our World could not do other than strengthen the two opposed alternatives – one towards mutually conducive Order, and the other towards increasing Disorder.

And what would be the inevitable result of these opposing imperatives?

It could only be an oscillation between a dominating, constructing Order and a dominating Dissociation of Order. But how would this oscillation present itself? What would be the natural amplitudes of the oscillation, and what would determine these amplitudes. It could be on so small a scale and so immediate, that it would look very like the old idea of Chaos, with every constructive move immediately dissociated by a counter move. Or, it could be a much slower oscillation, with long phases that (from within) looked like a permanent situation. It could even be asymmetric, with long periods of one extreme, separated by short interludes of its opposite!

But, we can consider these alternatives and dispense with some immediately.

We must consider the very different natures of the two imperatives. For while one is constantly adjusting, associating and building and hence involving many, many processes in mutual relationships. The other is more like a set of independent “wrecking crews”, each intent upon its own fix of energy.

Thus there will inevitably be an asymmetry! For while Order can be constantly adding new and contributory processes to an ever more complex mix. The overall success of the other has to be caused by accumulating weaknesses in its opposite, and the causing of avalanches of dissociation, to deliver a cataclysmic dismantling of all Order (at a given Level).

Thus the periods of Order termed Stability will be relatively long, while the major Dissociations will be cataclysmic and short, though we still have to describe, and explain why, these Phases get established, and even more important, why they end!

But, this isn't a purely logical exercise. It is about Reality, and we do know what would happen, because it has happened in the past many, many times, and at all Levels.

Perhaps the crucial area, is when we get catastrophes of dissolution that seemed to be certain to continue into Total Chaos, yet are surprisingly followed by revolutionary reconstruction, and both of these would majorly occur in rare Events termed Emergences.

These would be short episodes of both major destruction of Old Order, and accelerating construction of New Order, which would be resolved into the establishment of an entirely NEW Level of Reality, which would then persist, because it would be effectively self-maintaining! Following such an Event, there would be a long period of Stability, in which things would be more or less kept the same for a substantial period.

Now, this trajectory of Qualitative Change is not what would be dreamt up speculatively by merely observant intelligences. They would, as they must, merely import overt analogies from their everyday world, AND crucially, at their own Level. They would inevitably export the patterns from their own Level, where they would have most experience, into all other Levels, or from those much lower Levels wherein they have been able to discern much simpler patterns. And these would liberally never have such an asymmetrical nature.

In contrast, the demands of Symmetry, and other such “principles” would impel our thinkers to much more obvious simplifications, assumptions and indeed explanations too. And, of course, for millennia, that is exactly what

happened.

The “Science” of Aristotle, full of intelligent observation and indeed intelligent speculation, ruled the roost for a couple of millennia, before modern investigative, experimentalist Science began to reveal less ordered and less strictly logical forms of change. And even then, these short time period episodes of revolutionary change were rarely available for study.

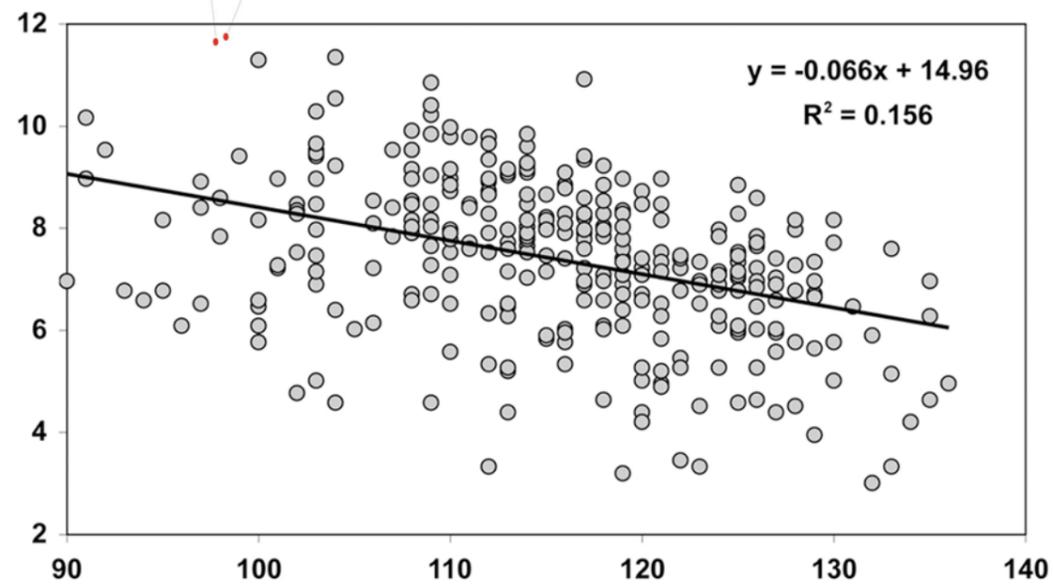
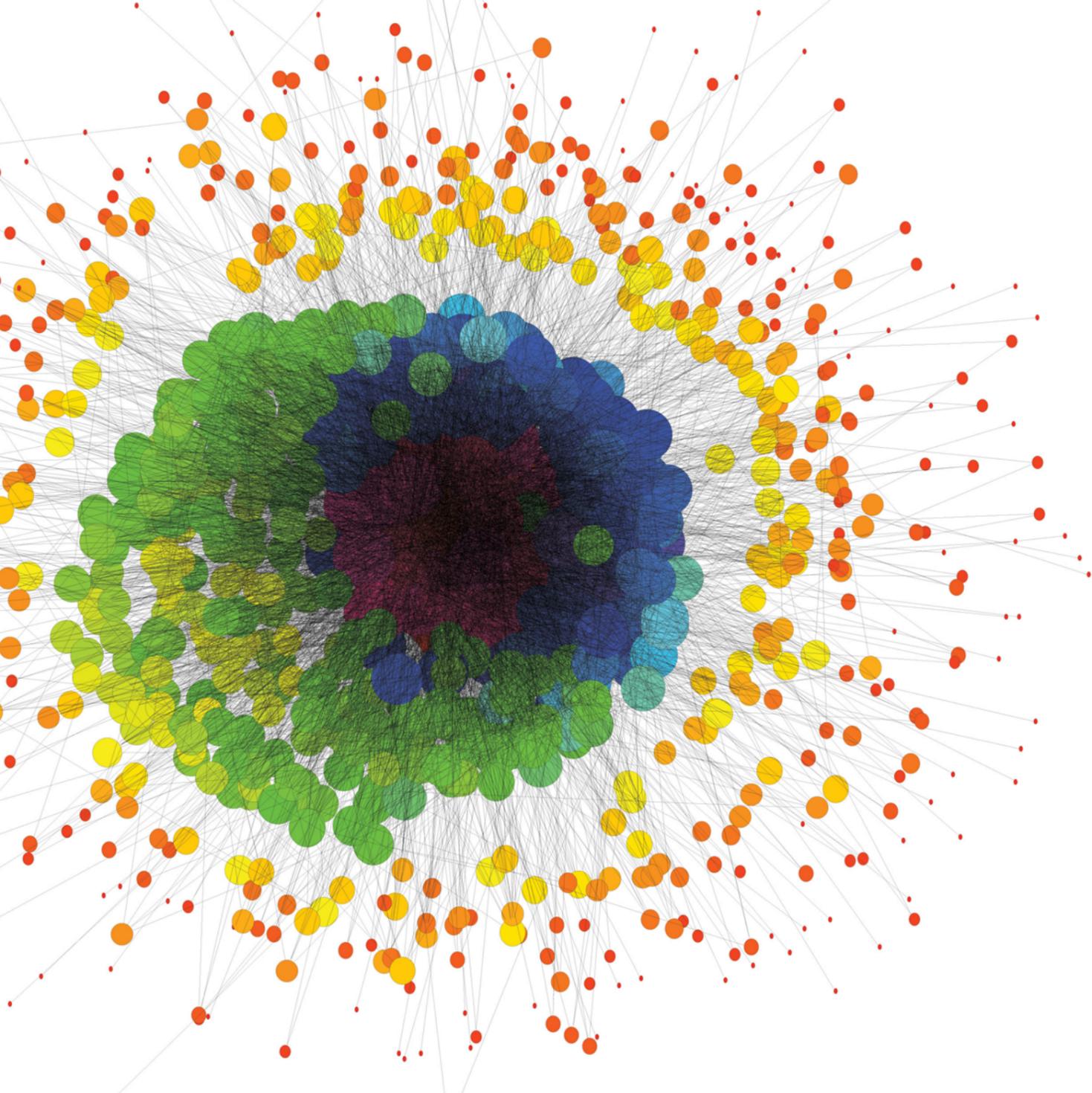
What had to dominate even the new Science must be (initially at least) the study of Stability. So, the interludes of dramatic change (only much later termed Revolutions or Emergences) were rarely addressed.

But the situation has changed significantly in the last century. The old assumptions, philosophy and consequent methodology of Science has begun to regularly hit unscalable barriers, and in the most fundamental areas, has come to a grinding halt!

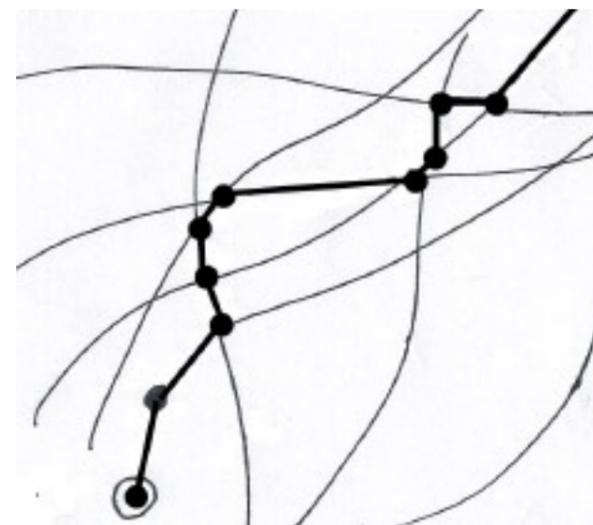
You could, with justice, claim that “Science as Explanation” has been largely shelved in very important areas, and replaced by mere Technology.

If the Man in the Street was to look closely at modern Sub-Atomic Physics, and attempt to understand what is now the consensus, he would if he is honest, be amazed! Instead of life-changing revelations, we have more and more incomprehensible speculative narratives accompanying purely pragmatic equations. This tells us only what we do not understand. It is only empowering in the pragmatic sense. It can predict and produce without understanding.





## If The Shoe Fits, Then Where It!



All other points, away from this LINE are said to be impossible under this law.

Now, if this assumption is sound, the use of the equation, for example in Predictions, can only be achieved by reading off appropriate positions from off this LINE, or an equivalent substitution of values into the equation). Now, such a use involves the insertion of a given value of one parameter, and the reading off of the other directly from the appropriate point upon this line, for the graph implicitly represents the relation of all possible cases producible by the equation.

But, what about when the law is acting over time? From being at a given point upon the line, can we deliver a possible succession of points as the process continues? The answer is that such changes, while the law remains the one determining things, will involve a continuous traverse along the line, in one direction or the other. A traverse is a sequence of adjacent steps along the line.

What do we achieve by the successful completion of scientific experiments that ultimately deliver effective and deterministic equations?

Clearly, such activities are always focussed upon several separately acquired sets of data, all achieved within the same carefully designed and rigidly constrained Domain, but even so these suffer an inevitable blurring due to only partly suppressed contrary contributions, around the primary and relatively “clean” form of our relation. For, that has been processed after it has been obtained, as it is immediately generalised into an algebraic form, and thereafter presumed to cover the wide range of situations, which appear to be delivered by the same “Form”.

Such traverses can only be along the line, from one legitimate point to the next, immediately adjacent to it.

Now, all of this occurs upon this doubly-abstracted situation of the graph.

Now, though we already seem to be motoring and can get on with using our extracted and abstracted equations, we still must ask the question, “What does the finally achieved equation actually mean?”

Yet we assume that what is happening is in the real world. Yet, the mathematical form and processes that we work with are no longer within the Real World: they occur within a parallel world of Pure Form alone, where only Mathematics dwells – the World we call Ideality! The processes of Domain construction, relation extraction and finally the transformation into a generalised equation, have successively moved what we have in our hands further and further away from the Concrete into the Abstract – into Pure Form alone!

To answer this important question, we are forced to make abundantly clear all our assumptions and arrangements involved in acquiring the crucial equation. And primarily, the most important assumption is that concerned with what we are actually attempting to analyse and understand.

Now, what changes this has actually involved, are not (all-except-one) negligible at all. Without quite significant changes occurring during these crucial processes, our sought for relations could not have been achieved. For a whole gamut of other simultaneous factors will have been as far as possible purged from the situation, as a Single Pure Form has been the required result.

It is best presented as being the result of sets of discrete measurements taken from a purposely and maximally constrained Real World situation, and then displayed as some sort of Graph. The advantage of such a display is that we can presume that all valid points allowable under the action of the given law will be there simultaneously displayed as points upon the one LINE of that graph. The whole range of allowable states, and thus all possible related sets of values, will appear only on this LINE.

And it is only because of all these changes that legitimate processes can only occur along the line and nowhere else.

But is all that true in totally unfettered Reality, or even in our carefully constrained Domain? The answer is a truly alarming, “No!” For in the Real World many simultaneous and different

factors are involved, and these can move the action away from those "legitimate points upon the line", and even with our constrained Domain, this perfect state is never achieved.

What happens then? Well, it doesn't stop our identified relation from still acting, does it? We must therefore be presented with a situation close, but not actually on, our ideal line. The continuing relation must tend to pull the situation back towards its line. The relation therefore acts even when the situation is not on its line, for the latter is what would happen if that pure relation were acting totally alone!

Now, we must think about this! Our original assumption can only approach to being true within our constructed and ideal Domain, where all other factors are either absent or negligible. But, it is now clear that many of these factors must still be acting, though reduced, simultaneously with others, and the actual trajectory from one actual state to the next will generally be off-line!

In other words, instead of the only possible process being from one valid point on the line to an immediately adjacent point on the line, we have something very different. Points off the line may be visited and they will certainly also influence what happens next! Along with the ideal relation, we also still have the contributions of actual off-line positions, which must also contribute.

*NOTE: Now, if we were to consider different initial real world starting points, we would move our line bodily about with each case. So if we consider our equation over time acting in its constructed Domain, it will no longer be a line, but a bunch of lines, close but separate, and each off-line point from one line, will situated us upon another of these lines, and this, when used, would (ideally of course) take us to a point upon it, but actually to another point off that line, but on another.*

Now, these are both profound considerations and can very easily confuse us. Why? It is because we can easily confuse TWO distinct processes.

First, the holistic, multiple, simultaneous action of many contributing factors, and second, the mathematical frig of Iterative Formulae. For these are certainly not the same!

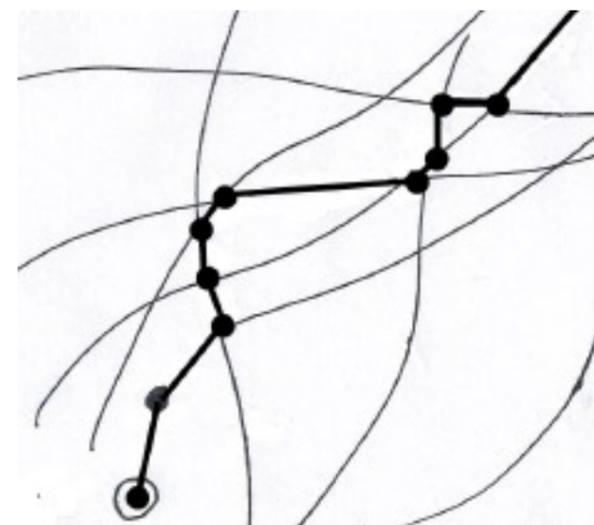
For the latter takes deterministic equations and manipulates them using purely formal rules to give sets of iterative forms, which can be used in a very peculiar way. Each can take one position and deliver the parameters of another. After using the whole set, we receive the full set of coordinates of an entirely new position. It is normally used to get ever closer to the solutions of difficult equations: it is a pragmatic frig, which works for purely formal geometrical reasons.

Now, an alternative use can certainly be very different. It is about Holism and multiple simultaneous and mutually affecting factors. But they both use formulae along with off-line points. In an interesting way these "iterative frigs" import a measure of proximate content into purely formal equations.

Now, as with all Mathematics, the very fact that formal content has been removed from the really existing situation can often help, but also, and inevitably, it can also lead us astray. And this is because the World is NOT as we always assume it to be – that is pluralistic! It is most definitely holistic, and results are not due to the addition of multiple factors, but to their mutual interpenetration and consequent transformation.

Now, in contrast to these ideas, a whole new branch of Mathematics has been developed termed Mathematical Chaos, which is assumed to be exactly what happens in Reality with Turbulence. But it isn't! The mathematicians, as always, believe that Natural Law, as extracted in Equations actually make Reality what it is, so in these cases too we are informed that Mathematical Chaos makes Turbulence happen. The World is turned upside down and both created and driven by pre-existing Pure Form alone! The materialistic World is re-interpreted as an Idealist World governed solely by formal laws.

Now, this is a rather large pill to swallow, so perhaps a little extra lubrication in the form of a series of explanatory diagrams might help >>



**The Real World Situation**

**In unfettered Reality multiple simultaneous factors with a resultant trajectory from a given start**

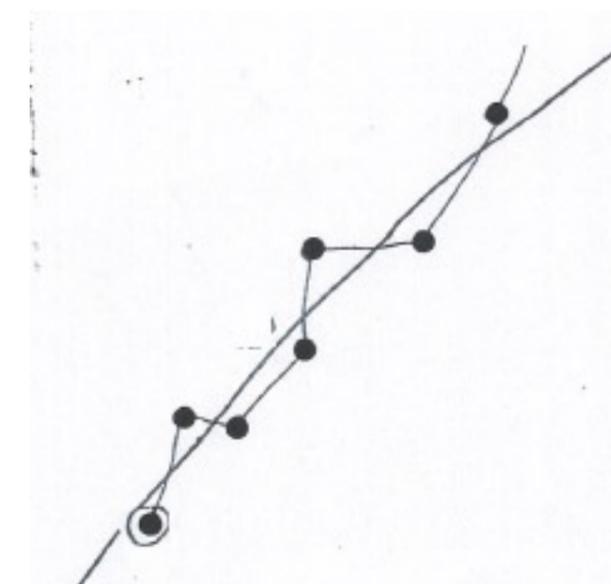
The first diagram attempts to show multiple, simultaneous factors as if each had been extracted by the usual pluralistic means, but were now plotted together on the same graph – a line for each contributing relation. Thus the resultant trajectory is NOT that due to a single law, but, on the contrary, of a "law" produced by the full interacting set.

The relation, extracted and abstracted from measurements in a constrained Domain, is thus neither the combined result, nor one of the contributions with a purified version of one of these that is dominating all the reduced others in that context.

Thus the single extracted and purified result is not the same either as that acting within unfettered Reality, or a single factor becoming dominant, and acting alone.

For though we can extract an overall Form from the simultaneous mix, it isn't a single line of "zero-width", but a significantly wide path extending the possible positions significantly, and which bring other factors in and out of prominence temporarily, while the overall mutual interpenetrations seem to deliver (and certainly after processing) a pure, narrow graphical line.

Now, as has been shown elsewhere, all this is vital when it comes to the real world features of "extracted laws" – not only when we are forced to dump one law and insert



**The Ideal World Line**

**An isolated Pure Form in a constrained Domain, with the interactive forms of the given Relation acting on very proximate off-line positions**

another, but very significantly indeed at an Emergence, when a whole entirely New Level of Reality comes into being – such as at the Origin of Life on Earth, for example. Then, as you might imagine, our usually used assumptions and methods totally collapse, and give NO bridging explanations. Only an alternative holist stance and methods will have any effective role.

**Addendum**

Let us consider an alternative Graph.

If we "do an Einstein" on all equations and add Time as an extra, purely self-moving parameter then we can (theoretically at least) look not only at a snapshot, now, of what our equation implies for all pairs of possible values of the usual parameters, but also physically include any variations occurring over time!

Our line as a 2D graph, becomes a surface, with the added parameter of time, into a 3D graph. If absolutely NO changes at all over time occurred, then the surface would be an unchanging extrusion of the line: it would be like pulling out the line in the "time direction", and thus generating a fixed surface.

In other words, if our equations were (as we usually assume) eternal, then there would be no point in the inclusion of time as a 3rd dimension: no new information would be

available to be displayed.

If, on the other hand, small variations were always occurring (as in the real world), then this surface would be roughly the same, but with an uneven surface. And, if it approached the situation we call Mathematical Chaos, it would get much more bumpy, and even tumultuous.

But, interestingly, the phenomenon of Mathematical Chaos could be preserved even if the formal picture was the sole generator of the surface.

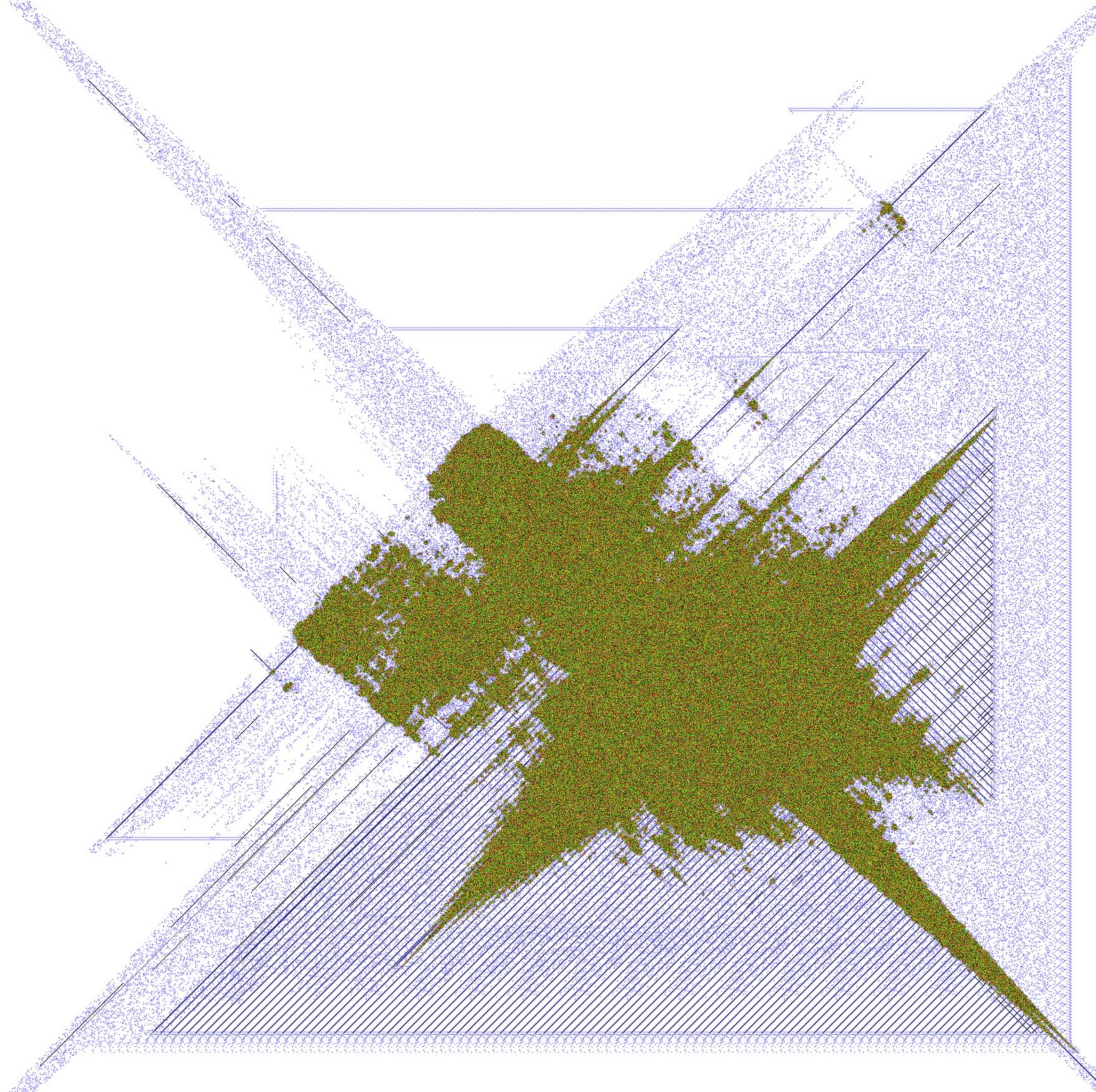
*NOTE: Though, in the usual "Chaos Experiments", the equations are re-arranged into iterative versions, which require at least a real world jumping-off point: it certainly then becomes a "mixed" source.*

Now any cataclysmic failure of a situation, such as is given when its equation bites the dust, would see the surface plummeting down to zero, or alternatively soaring away to infinity, a situation, which can still occur when totally plotted from equations, but also always, in the end, occurs when plotted from real world data.

Now, these are not mere speculations.

Both Chaos and equation failure can occur, and, of course, no equation is eternal in the real world, for though in Ideality the perfect Form-only World of the mathematicians, this is the case, for the aberrations of a graph of real world data, it is NOT the same as a graph constructed directly from a formula.

The Real World is concrete, whereas the Ideality version is a purified version of an exclusively formal part of what goes on in Reality.





## Approaching the Precipice

Recently, it has become clear that when things change over in Reality from where one law seems to reign supreme, to where a quite different law dominates, there is a region immediately prior to that switch, which, though still apparently within the aegis of the formerly acting law, has not yet flipped over to the new one, but is also clearly teetering-on-the-brink, and displaying near-to-the-precipice features of a nascent instability.

We call this phase Mathematical Chaos.

Now, the reason for this title is interesting, because in concrete Reality a seemingly closely related phenomenon occurs, which does indeed cross the boundary, but cannot yet settle into a new, and differently based, stability – indicated by a different dominant law.

This Physical Chaos is usually termed **Turbulence** and is neither the same as Mathematical Chaos nor of the usual conception of Chaos in which absolutely nothing is “in charge” at all. Confusing, isn’t it?

Now, there is guaranteed to be such confusion in this sort of area. So, let us attempt to clarify somewhat.

Mathematical Chaos can be generated using iterative versions derived directly from the prior deterministic equation that characterised the immediately prior situation. Now, it is usual to consider that this and Physical Chaos (Turbulence) are exactly the same thing. But that is certainly incorrect!

Research (by this author) has shown that the iterative formulae derived from the usual equations are used in a different way to explore “new territory”.

*NOTE: The usual method of investigating this “territory” is on a computer, and NOT in any of the usual experimental ways. And this delivers a perfect environment, where only the iterative derivations exist. Absolutely nothing else is present, and hence this can never be like the Physical Chaos of a natural turbulence. It exists in a purified realm, where we can investigate the given situation in perfect isolation, and, of course, purely formally! It therefore exists in Ideality and not Reality, and is very different to natural physical turbulence.*

Now, when normal deterministic equations are used, it is assumed that legitimate situations (that can be shown on a graph of the equation as-on-the-line), are the only situations possible. But, what happens when the points assumed are close-to, but not actually on, the line?

The modification of the deterministic equation into iterative forms can take such an off-line position and generate another position from it, which is also often off-the-line too!

In many pragmatic uses of such techniques, special convergent forms are purposely devised of the iterative formulae that bring the successive points closer and closer to the line at some target point, and these are the famous Numerical Methods, which can deliver quantitative solutions to difficult equations when algebraic methods are not available.

But, of course, these are very special cases developed, over many years, to the pinnacle of effectiveness.

When such forms are used without any such narrowly defined purpose, the points generated do not necessarily get ever closer to the line of the deterministic equation, from which they were devised.

And indeed, the exact opposite can happen, where the points get further and further away from the line, and even zoom off to infinity if persisted with. (These are, of course, termed Divergent Forms).

Now, things get interesting when the region between these two extremes is alighted upon. We call this area Mathematical Chaos!

In the work I did with Jagan Gomatam (the mathematician) on Van der Pol’s equation as a model of the beating of a Human Heart, by varying the constants in specially devised iterative formulae, it was possible to traverse the whole of the above-described range.

In one case, the form (when plotted on a graph) looked identical to the usual graph produced directly from the deterministic equation.

While moving away from that situation in one direction radically changed the plotted form, but it was still basically deterministic.

Moving the other way could, in extreme cases “blow-up” as mentioned above, but in-between, remarkable behaviours were possible, which define the area of Mathematical Chaos.

Now, of course, all of these cases as such are not actually in Reality at all, but entirely within the World of Pure Form alone, which we call Ideality.

In Reality, on the other hand, we would have the phenomena

of Natural Turbulence, and it is crucial that we do not equate Turbulence and Mathematical Chaos as the same thing.

They are certainly not that!

There is a widespread idealist (mathematician's) fallacy that Pure Form is what drives Reality, and that is not only incorrect, but totally idealist – for it delivers absolutely NO explanations of what determines those Forms.

Pattern is never a cause, but a consequence of real concrete properties and forces, and even as we handle it in Mathematics, it is a purified version of what we actually find in concrete Reality.

It is very rarely indeed that these forms exist as such in the Real World.

Turbulence is the key!

It would be stupid to say that turbulence is caused by Mathematical Chaos. It certainly isn't! Definite properties of fluids produce Turbulence, and as soon as scientists change their direction of study, and cease to look for physical causes, and instead seek the "causing equations", they are no longer scientists, but have switched their discipline and become technologists or even mathematicians

They are no longer studying Reality, but have instead switched to the study of Form alone and hence to Ideality.

So, let us review what we have discovered.

First, when we do most things with equations, we are definitely not dealing with Reality. We may be absolutely sure that such is the case, but as soon as we switch to dealing exclusively with the equation, we are certainly no longer in Reality, but have "seamlessly" switched to working entirely in Ideality – the World of Pure Form alone. It is a useful parallel World, for it is considerably easier to investigate, and being general and treating Form as primary – the same Pure Form can be used in multiple different situations, and as long as we have engineered those situations (Domains) to be as helpful as possible, our transfers from Ideality to (farmed) Reality will indeed work.

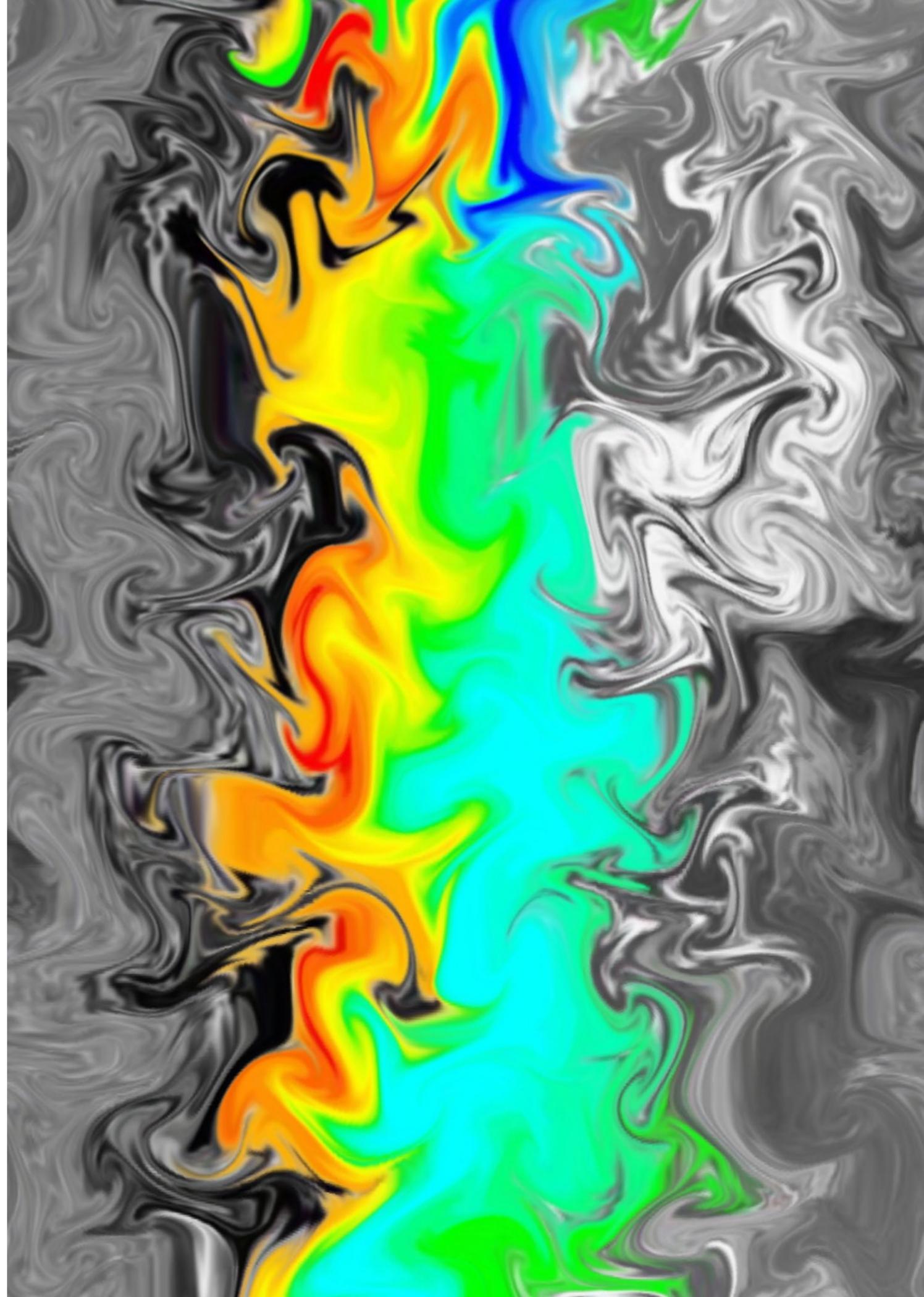
But also it can and will mislead, as in this crucial case of "Chaos".

In Reality, turbulence is the result of multiple simultaneous factors being pushed beyond a given dominance, into that real type of Chaos. Whereas, when limited to Ideality (and that is certainly the case on a computer using iterative formulae), then we have purposely excluded all holistic contributions and concentrated only upon one deterministic equation restructured into iterative forms.

Clearly, nothing else is taking over from the only forms involved – NO natural switch to other real and existing factors is possible for they are not present. Thus, what we are investigating is what we always investigate with equations: we are limited to the Pure Forms alone, and we explore the nether regions, where staying away from the narrow confines of the deterministic traverse of an equation into the near-but-not-on areas, we get Mathematical Chaos. And we will never transcend those limits.

Murray Gell Man and other experts who expect it to explain Emergence in these areas are mistaken. It will be yet another dead-end.

For Emergences are revolutionary Events, which both demolish a prior stability and create a wholly New Stability at a higher Level. Juggling with given forms at the limits of their effectiveness can never transcend that context. None of the factors necessary for the new Level are included in the forms used. That is their virtue within its appropriate stability, and conversely their inadequacy when crossing into a wholly new level.





## Emergent Resonances

Now, if I am correct, I have found two crucial areas that are surprisingly very closely linked yet no one would ever guess that they should be.

They are:-

1. The Copenhagen Interpretation of Quantum Theory
2. Mathematical Chaos as generated by iterative formulae

Now, even those who know both these areas intimately will, without doubt, look at such a claim and wonder, “What on earth is he on?”, for the inter-relationships are by no means immediately evident, but nevertheless they do indeed turn out to show some sort of profound connections.

Such relationships do not come from a common cause, but are to do with how holistic mixes of multiple mutually affecting factors actually play out in a similar way in very different circumstances.

We almost invariably assume Plurality as the natural order in all complex, multi-component situations, and therefore believe that we can, with some difficulty certainly, but always, divide up such situations into their set of isolatable component Parts. We can analyse them!

And this belief is based upon that aforementioned assumption of Plurality, which assumes that all contributing Parts in any Whole are indeed separable.

This means that with (perhaps) extensive controls on any given situation, it will always be possible to remove the effects of all other significant components, to leave a targeted one that we are seeking to make both clearly and continuously discernable, as well as entirely extractable for detailed study. And sometimes the “thing” that we think is our target component is indeed achievable in this way.

So, this has become our established methodology to use in attempting to reveal exactly what is going on in our original, unfettered and natural complex phenomenon.

Sadly, even when we are successful in such a task, we cannot use our many individually extracted components to reproduce the complex original situation from scratch.

All we can do is by replicating each of our specially organised Domains in turn, and one-at-a-time, for each context, we can apply the appropriate singly extracted laws within its producing Domain in a predictable way. And so, by a whole series of such productions each in its own very different Domain, we might be able to bend our extractions to some finally intended purpose.

We cannot throw all relevant resources into a single environment, and wait for it to produce what we desire. It will always fail – one hundred per cent. Unless, of course you are a holist scientist like Stanley Miller, in his famous Experiment with NO clear projected outcomes, which delivered extremely significant amino acids as an unexpected (and, of course, unanalysable) result!

And this pluralistic methodology is not only the basis for all engineering and production, but also for the very Science, which underpins them!

The whole methodology has to be overtly labelled as Pluralistic Science, and its evident shortcoming overtly and constantly admitted, for without such a standpoint, such methodology reacts back upon our own conceptions of the nature of Reality, and inevitably leads us astray.

But, in addition, choosing to use such an approach isn't always possible.

Frequently, we get a holistic mix, which, of itself, gives no clues as to its many contributing factors and we cannot (even by the usual pluralistic means) develop any intended outcomes or productions. For example, we have to kill a living organism to extract its individual contributing Parts in a pluralistic way. We will never in a Frankenstein-like manner be able to put them together to make a living organism.

But, we can sometimes assume an equality of opposing sub processes, and formulate how such a mix will behave overall.

It often involves the assumption of equal and opposite contributions, which, in one sense, “cancel out”, while in another sense can result in totalled or overall results.

The basic assumption here is usually also that the competing components are as diametrically opposing as they could possibly be, such that we term their resulting actions random.

This concept is so important, and often so hard to model, that we have to invent “ideal randomise-able components, such as dice or playing cards to investigate the properties associated with such situations. The principle, attempting to be approached, is one where every possibility is equally likely (as with a perfect die). For what mathematicians found was that, given such perfect, random elements, they could both conceptually and quantifiably model the

performance of fully random collections.

And indeed, it turned out that most of the early physical laws were of this nature – the earliest Gas Laws being the most apt example.

Now, even theories could be developed with such predictable behaviours, and in gambling in particular, which is supposed to be based upon the purely random – as in a throw of a number of dice. For then, all such probable behaviours could be worked out given appropriate measured, calculated or observable facts. This was a “no-go” area for pluralistic analysis, but it could, nevertheless, involve accurate predictions of a special sort.

Now, though it might seem to be the case, these two alternative methodologies do not cover all real world phenomena, because they both assume that the contributing elements don’t change!

In the case of a gas with identical molecules that may well approach being true, but it is not always, or even usually, the case in most circumstances.

Obviously, whenever the multiple factors involved are mutually affecting and actually change each other, then neither of these models will suffice!

And, these situations are made even more confusing by the natural tendency in such holistic mixes, for certain contributions to clearly dominate, and for a kind of stability to be the usual result. And whenever this situation pertains, we can use our pluralist methodology within tailor-made Domains.

But, such stability is never permanent, and as soon as it dissolves, we are left with a very different situation – invariably undevelopable or underivable from that prior “stability”.

Under such circumstances, we have to start again and find a new law, or set of laws, which can be extracted. So that is exactly what we do!

But, we never manage to reveal the actual Causal Process of Change – the changeover from one law to another. We can recognise that it has happened, and by identifying crucial indicator variables, and the thresholds at which the changeover becomes inevitable.

*NOTE: But we also excuse our quick switch, by proffering our own invented combined forms of both the before and after equations, and saying they were always present and a mere cumulative step-by-step set of changes automatically changed the dominance from one to the other.*

*Total rubbish! Such is yet another frig, and sidelines any further causal investigations. (It also suits the mathematicians very well indeed).*

We can thus know when to switch!

But the actual trajectory of the process of changeover is UNKNOWN (and seemingly unknowable) to us with our current methods.

Now, this kind of unaddressed Qualitative Change is precisely what I am concerned with, and find to be crucial in both Sub Atomic Quantum Physics and in Mathematical Chaos as approached by Iterative Methods.

Both areas do NOT fit the usual methods that we have developed and which we extensively, if not completely, depend upon, because the changeovers are never a simple switch: it is just that we simply and pragmatically make them so!

They are caused by processes as a sequence or series, which in a relatively short time period take the situation from one stability to the other, by a cataclysmic event and certainly NOT a smooth incrementalist process.

What is clearly essential is the trajectory of the series of phases of change involved, and that bears almost NO resonances with the usual static (stability confined) relations: it is both qualitative and dynamic and involves almost constant changes throughout the interlude!

And, of course, it makes investigation ever more difficult. It is so self-modifying that it can never be addressed by our usual methods. All the assumptions on what we base our methods are simply NOT applicable in the revolutionary episodes delivering the actual change over.

Indeed, research (by this author) has shown that such transformations not only involve dramatic dissolutions of the past stability, but always also deliver large-swing oscillations in quite opposite directions, and the absolute necessity of a Near-Chaos collapse, as the actual basis for the development of an entirely new resolution.

For the Event can be observed in certain special cases – in Society, for example, when Revolutions occur, but it is so counter-intuitive, as to be rejected as rubbish by most rational investigators. Indeed, the odd analogy does occasionally slip through in poetry and the Arts, with, for example, The Phoenix Arising from the Flames being the most well known. But it isn’t usually seriously addressed.

The point I am suggesting is that if we are to understand the switchover described above, we must address these episodes: we have to study Emergences!

Now, though these were occasionally recognised, no attempt to address them in detail occurred before the philosopher Hegel. And his recognised area, where these transforming processes happened frequently was in Human Thinking, and such “subjectivity” was rejected out-of-hand by the

growing band of scientists of his day. And remarkably, his most dedicated students – The Young Hegelians, totally broke with their mentor’s idealist standpoint, when they realised that the same phenomena occurred in Society as Revolutions.

“They turned Hegel upon his head, or rather on his feet!”- And the scientific study of these transforming episodes began.

Now, though this was a vital period in addressing the questions involved, the tasks were prodigious. Revolutions didn’t happen everyday, and in Human Thinking they could happen almost incessantly at times, and be totally unavailable to anyone outside of the individual actually experiencing them.

Other areas more amenable for study had to be found and addressed, and they proved very hard to find.

Nevertheless, there were areas where Qualitative Changes, of the type we are considering, were constantly happening in the sphere of Living Things, and even the slow developments of stars and planets were also gradually being exposed.

The general Study of Emergences, as these became known has commenced.

*NOTE: It was only in the last couple of years that this author finally published his Theory of Emergences (in SHAPE Journal 2010) and the determined extension of the ideas involved in “black hole” areas such as The Copenhagen Interpretation of Quantum Theory began.*

Many deeply puzzling areas that had totally resisted explanation for years, seeming to be in some way related to these studies, and this author had been puzzling over Mathematical Chaos via Iteration Formulae for (it seems) half his life.

Indeed, in this latter area, research into Van der Pol’s mathematical model of the beating heart, but using Iterative Methods had delivered remarkable resonances with both Fibrillations and Heart Attacks, which were NOT available via the strict determinist forms of the original Van der Pol equation, was a major problem. How could this be so?

Now, as this paper’s purpose is only to indicate where such emerging resonances occur, and hence is not the place for detailed descriptions of the areas involved, it is, of course, necessary to explain something of the content of that work. Otherwise it simply becomes a groundless assertion.

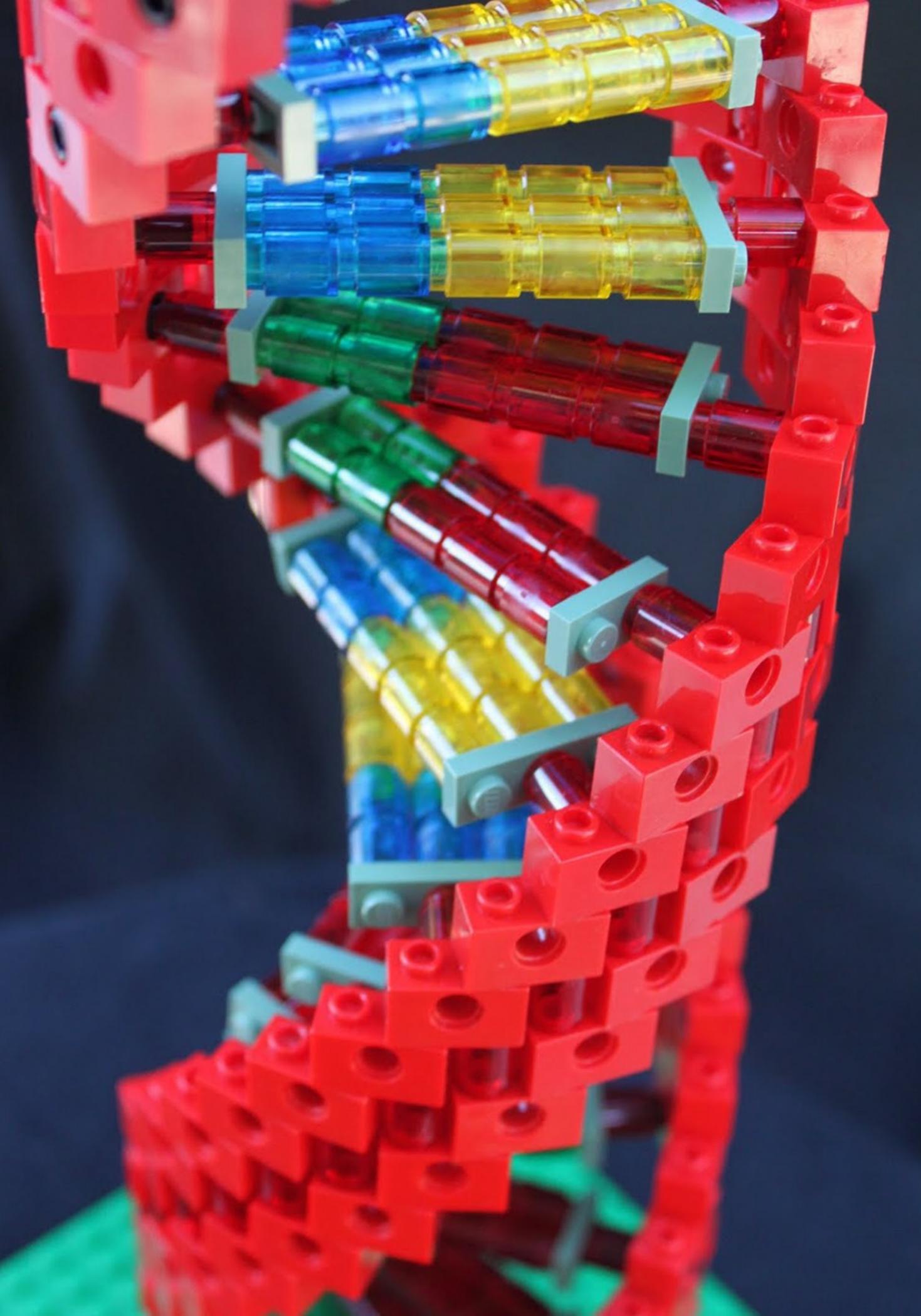
Both the Copenhagen standpoint in Sub Atomic Physics and the usual approaches to Mathematical Chaos, are grounded in the same standpoint. They both indicate that

it is Form that determines Content. And this means that the attainment of effective methods of getting the required answers sufficient to claim that a given area has been conquered.

Now this, surprising position is taken because the intuitive belief is that everything is the way that it is because it can do no other than obey Natural Laws. Crucially, discovered relations get transformed into essential driving forces, and “dead Matter” merely follows these natural laws – it can do no other.

In essence, Science – the search for concrete causes, is transformed into Mathematics – the search for Natural Laws.

Indeed, the resonances between Copenhagen and Mathematical Chaos are that all involved properties are put down to naturally existing Laws – Pure Form alone drives content, and this is totally encapsulated in Equations: all other “causes” are Metaphysics. So now you know!



## Creation in Emergence

My paper of 15th June this year, which I called “A Synthesis?” spelled out what must be the nub of the problem in understanding Emergence. This MUST be, “How do entirely new things get created?”

Now, I will not spend a great deal of time on the usual easy answer – that nothing is new, and the potential for every possibility was, and is, inherent or implicit in the Matter of the Universe from the very start (or even before?), because such a position tells us absolutely nothing.

“Things were not so much created as revealed”, we are informed. How profound(!)

Seemingly, the conclusion can only be that we should just sit around with folded arms, and everything will simply reveal itself in its own good time. A very “armchair” philosophy, don’t you think! No study, experiment or even theories are seen to be necessary. This sounds altogether too God-based for my liking, and hence useless.

So let us seriously address the position. Certain important clues have been unearthed by scientists, philosophers and even the author, so let us start with these.

What seem to be relevant are processes that precipitate Change, such as positive Feedback, and those that encourage stability, and even resistance to Change, such as the opposite - negative Feedback. Another much more recent discovery has been the counter-intuitive effects of levels of organisation, where higher levels, though generated by those below, nonetheless seem to control and even restrict the lower levels in important ways.

The main effect seems to be that certain possibilities after the change are much more severely restricted than those before. One would have thought that such a circumstance would act against significant change or development, but in fact the opposite is the case. These possibilities seem to be confined to a particular set, carrying the situation off in a specific direction rather than being simply open to circumstances and a wide range of future possibilities. We could describe this in another way, and say that the defining context had then been significantly changed by the new level. So, certain things that before the watershed seemed so unlikely as to be sensibly said to be impossible, are, after the upheaval, vastly more likely, and indeed perhaps it could be said they have actually become unavoidable. Thus very unlikely, and perhaps very fruitful paths have changed from being impossible to becoming highly likely.

But, what could possibly effect such a change? Probabilities are surely merely related to how many cases are equally possible. How could that number suddenly and drastically reduce? The answer must reside in the creation of an area or locality within which constraints have been created that limit possibilities to a much narrower range, excluding an extremely large number of others, and hence making the allowable cases a great deal more likely.

But, these changes can all so easily be cast into old patterns of thinking and never “open up” the situation to attempts to explain the creation of new things and radically transformed situations.

*NOTE: Perhaps an example may be appropriate here. During my education I was astonished to be told about the Second Law of Thermodynamics, which was said to indicate that all natural processes were towards dissolution: that all order naturally breaks up into chaos and disorder, and that this is, in the end, irreversible. I immediately piped up, “What about Life and Evolution?”, but my lecturer summarily dismissed my ignorant objections, by informing me that any move to order in one part of the Universe would be more than cancelled out by an even bigger increase in disorder elsewhere. What can you possibly do in the face of such put-downs? How could I articulate an objection to such an assertion of unfounded Belief?*

As always, in looking for answers in these areas, the touchstone MUST always be the Emergence of Life, and the powerful associated theoretical tools must include concepts such as Evolution. The latter needs no God, it is about self-moving Matter, and leads to the certainty of efficacious Natural Selection, at least in the vast majority of possible circumstances.

Somehow, we have got to show that development is unavoidable and even efficient, and, I’m afraid, that is no easy matter. The discovery of a principle of Evolution of Matter itself seems to hold out the widest possibilities - not just of living things, of course, but of the substance of Reality itself. And, if it turns out to be the case, why is this?

Let us look at the Evolution of Living Things and see if we can extract any appropriate principles for the wider sphere. After all Living things are Matter too!

The mechanisms of Selection involve both Variability and Success! Thereafter some crucial process in Reproduction has within it two sub process of great importance. The first is a Re-mix feature to change every single generation from the previous one, while the second involves unpredictable

Change. The former has been adequately explained many times by geneticists, so let us concentrate on the latter. But, this is the accidental DAMAGE to genetic material. Once again what we are to propose as the engine of development seems intuitively to be the exact opposite. Surely damage MUST be deleterious, disadvantageous, and even fatal? Well, yes, it is for the most part. The damage to genetic material is mostly very bad, but once again the exact sort of damage is unpredictable, and though the vast majority will have negative effects, it must be the case that some, no matter how rare, MUST turn out to be advantageous.

Now, as before the unlikely event can not only be supportable, but indeed could open up new possibilities that before seemed impossible, for something wholly new is involved. Random damage to genetic material, termed Mutations can, in very rare cases, lead to a new level of functionalities. But remember, to get the New, something Old had to be destroyed. Hence it could limit subsequent possibilities to new directions, in which wholly new features become possible.

We have to get used to this process. It is vital. Change is not subtractive ONLY, or even simply additive. It can, very rarely, be multiplicative. It can open up new vistas of possibility. In Selection then the role of mutations will mostly effect the next generation of offspring negatively, but sometimes, even though very rarely, a change can happen which turns out to be advantageous. The modified entity succeeds better than the rest of its generation, and the effect is to cause the better endowed individuals to survive and reproduce more efficiently. The gene pool of the species begins to change, and over long periods of time will come to be dominated by the “best endowed” genes. Do you believe it?

There exists current genetic research that PROVES that the world population (beyond Africa) of human beings are ALL descended from a single female who came from Africa.

Now these principles of competition, inheritance in reproduction and mutation changes in the reproductive material make the Evolution of Life possible.

The question must be, “Can we find analogies for these principles in inanimate Matter? Can we have competing processes, pattern extension, and even accidental damage that can cause similar parallel occurrences?”

*NOTE: I am forced to interject here that this was written in 2006, and an effective theory of the evolution of Matter was formulated some time later.*

Let us try to describe what these could be.

But, we must first define a fruitful context. The most stimulating sequence of development outside of Living Things that I am aware of is the Cosmology of star formation and development. Whether the following account is totally accurate doesn't actually matter at this point. What we are concerned with is whether inanimate matter can develop. To put it a more modern way – can the possibility space of matter grow? Can new possibilities come into being without outside intervention? Current astronomers certainly seem to think that the answer is, “Yes!”, to both these questions.

Let us briefly trace the currently agreed storyline of the life histories of stars.

*NOTE: I will not burden the reader with multiple references to the Hertzsprung-Russell Diagram and other technical matters, because such detail is not important in the points being made here. In addition, we must not allow current fantasies concerning Big Bangs and Black Holes to way-lay our thinking. Whether the whole Universe started, and will finish, in dimensionless dots is irrelevant (in addition to being total rubbish), so we must ignore such things, and instead trace out the more interesting part in between these assumed “cataclysms”, that puts the history as being the most revealing.)*

In this current story, certain facts from Physics and Astronomy have been marshalled into powerful and compelling trajectory of Star Evolution.

We (though not every body else it seems) start with dispersed Hydrogen in an extensive cloud. We will assume that the Law of Gravity was in existence then, and therefore that aggregation would slowly occur. After a considerable period of time, in a given locality, the Hydrogen atoms would slowly come together a form enormous bodies under gravity. These bodies would continue to shrink as nothing was there to stop the process, but the concentration would necessarily lead to more and more collisions, so that heat would be increasingly generated. The increased pressure and temperature following from this at the core of the body would (if the body were large enough) grow to the extent that Hydrogen fusion into Helium could be triggered. The consequent release of enormous amounts of energy by this fusion would lead to the usual chain reaction, as in the Hydrogen bomb) and a star would be born.

To cut a long story short, the aggregation would proceed and the mass of the star would grow, but ultimately the stores of Hydrogen in the star's core would be depleted sufficiently to terminate the fusion reactions. The star would collapse and continue the process of increasing the pressure and temperature still higher until Helium fusion was triggered and once again the star would be generating large amounts of energy.

Scientists have traced out a whole series of such fusion phases involving Carbon, Silicon, Iron and the rest, and it is their contention that ALL the elements in the Universe were created in such processes. We are in fact made of star-stuff! At some threshold situation ( associated I believe with the fusion of Iron) The star would catastrophically collapse then explode into a supernovae (which is how the elements come to be available for other purposes).

Thereafter, aggregations recur around many centres, but with a different set of available elements, and the resultant condensation allows multiple bodies to emerge at different distances from the centre of aggregation. In addition, the gathering in of diverse units with diverse directions and velocities, would inevitably turn these into angular momentum about the centre and cause a rotation of the bodies, supplying centripetal force to counteract the gravitational pull from the main mass of the system at the centre. Now, as distinct from the forementioned primitive accumulation, many of these bodies would not have sufficient mass, and certainly sufficient Hydrogen, so in the main these inferior bodies would not light up as stars but on the contrary form a new entity – a Planet. The much greater gravitational pull by the central bodies COULD very well steal enough Hydrogen from the surrounding area ( and planets) to enable it, t least, to light up into a star.

This pocket Cosmology (with all its crudities) is legitimate here because I am not putting forward a contribution to a comprehensive cosmological theory, but finding evolutionary strands within other people's widely accepted theories.

And even this poor account positively bristles with creative Emergence, don't you think?

# Creation!

Let us consider for a moment the ideas behind the construction and proposed use of the Large Hadron Collider (LHC).

The basic premise seems to be that very early in the processes within the supposed Big Bang Origin of our Universe, crucial constructive processes began, which ultimately built that Universe and absolutely everything within it.

Now, to even reveal with a measure of confidence what these were is certainly a very Big Ask!

You can see why that requirement occurs when today there is available ample and convincing evidence of the continuing development of Reality everywhere - and that evidence is not restricted only to the Evolution of Life.

From astronomical observations, it appears that the composition of the Heavens has also evolved, which can be inferred from the fact that the further into the distance we look, the further back in Time that we can see. And this, therefore, delivers evidence from vast tract of times over billions of years, from which significant developmental changes can be clearly extracted.

And perhaps the coup de grace of all this evidence was the fact that on one particular piece of that Universe (at least), Life, most definitely, emerged.

So, naturally we have no choice but to trace backwards via what developments we do know about, to some possible inferred Beginning!

But the trouble is that it is almost impossible to create anything out of a single primaeval component, such as Energy, which is the current universally agreed candidate. Something else simply must have been present, and in the usual ideas this extra was an already existing Set of Laws, which would deliver absolutely everything that could possibly thereafter appear.

But, all the evidence we do have puts Creation into the midst of extensive variety, along with the simultaneous occurrence of multiple and diverse processes.

So, the actual single Origin of Everything seems to be a contradiction in terms!

[It is best seen as being like generating all of Mathematics from the single number “1”]

Yet, the current consensus solution is to make the “only source” Energy and nothing else – that is energy without

any vehicle or carrier of any kind, in fact, pure, disembodied Energy, and to thereafter make absolutely everything out of this primaeval “clay”. But, clearly, that is totally impossible.

Like with the single number “1”, there is involved absolutely no activity with anything else, so how could the “new” ever occur?

*[Of course, the mathematicians would immediately insist that you could do it. For in the purely formal area of “Number Theory” adding “1”s together can produce different kinds of numbers, such as even and odd numbers, and the specials termed Primes. But clearly, that is a very narrow road and cannot even construct the whole of Mathematics, let alone concrete Reality]*

Where would be the activity with anything else in the usual conception of an energy-only beginning? How could anything new ever occur?

But, as the sub atomic physicists and cosmologists extrapolated further and further back along their observed and measured processes in Space, they could not avoid some sort of Starting Place along with a Starting Time at some 13.7 billion years ago.

Thus arose the conception of the Big Bang, and its alternative -“The Actual Expansion of Space itself”!

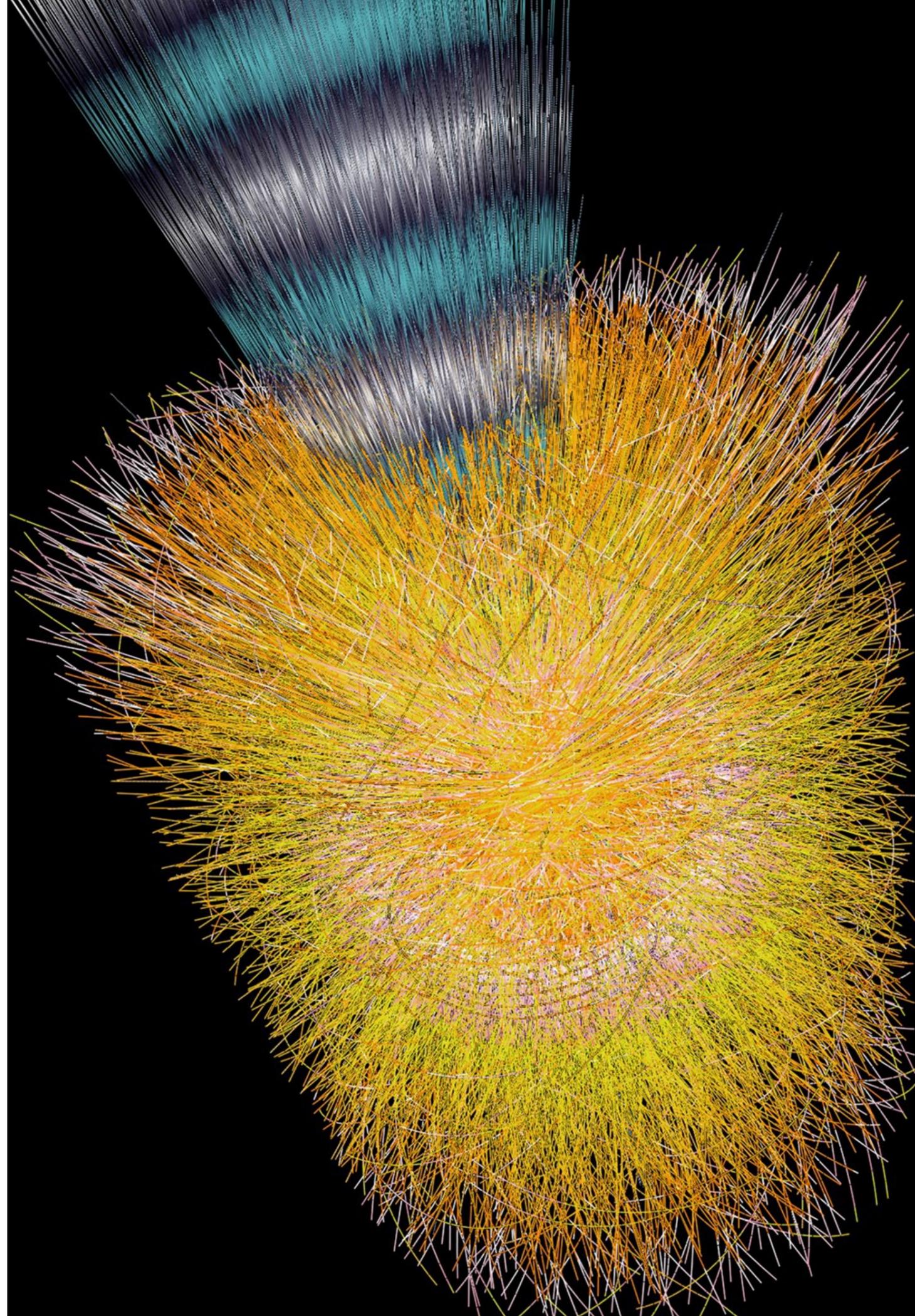
And, in all this speculation, the absolute principle of Plurality did not help!

The assumption that every Whole could always be analysed into its component and separable Parts (which had proved so useful in our own Macro World), meant that we forever searched every situation for its Parts, and thereafter the Parts, themselves, for their own contributing components – presumably all the way down to some absolute, elementary particles and their eternal Laws of interaction.

So, using the same conceptions and methodology, we naturally sought for the beginnings of our Universe in similar basic units and laws.

So, this was the context for the conceptions behind the Large Hadron Collider: we could, with this very powerful “bit of kit”, find out about these fundamental particles, by smashing them to pieces at colossal energies, to see what interesting debris we could produce.

So, what would we need to supply, to have a chance of



replicating such initial cosmic moments within this LHC? Well, the scientists involved had NO direct information of what those initial conditions were like then, but cosmological evidence seemed to extrapolate backwards to some kind of super-colossal explosion – a Big Bang, and hence the one banker component seemed to be Energy!

And from this supposed single primaevial source literally everything is presumed to have originated. But, the question still hangs there, “What can totally disembodied Energy actually do?”

Can it even exist as such?

*NOTE: There is a viewpoint that only conceives of Energy in association with Matter, while the einsteinian alternative has Matter as a concentrated form of Energy.*

Well, two things seem to present themselves. First, the evidence of nuclear Fission and Fusion seems to equate in some way Matter and Energy, as typified by Einstein’s equation  $E = MC^2$  that implies the possible conversion of one into the other.

And secondly, we can imagine Energy being added to Matter in order to accelerate it to colossal speeds, and once you have such built-in Energy, the most likely occurrences will surely be collisions between such very high-energy particles of Matter.

Hence, the LHC aims to smash elementary particles of Matter (protons) together at colossal speeds and study the results.

Now, it must be remembered that the revelations from such occurrences are expected to be the creation of wholly new things, so the NEW is expected to be observed within this mighty smasher.

Deliberate destruction on a mammoth scale is expected to produce amazing things.

But, there is a difficulty! This machine is, without doubt, the most engineered and organised device for purposely causing destruction ever constructed, but in a very narrow way. Very limited components are involved (one particular kind of particle plus Energy). So the inference is that this might be like the Beginning of Everything. Similar things may be expected to happen!

Except, that from a very different perspective of all creation, this device could not be more inappropriate. It may concentrate Energy into the smashing of basic particles, but such a scenario is the very opposite of what seems to be necessary for the creation of the wholly NEW!

For with this alternative idea, creation of the entirely new can only come out of a major mix of many diverse contributions, all acting simultaneously with very, very few constraints, if any at all! Indeed, the total lack of constraints seems to be an absolute essential, for it is always the complexes of constraints in any Stability that ensure its continuance. The norm is for these to be dominant, and only in a complete dissolution of a prior Stability, will the conditions be right for the new to emerge without constraint.

Now let us briefly reiterate this alternative conception, before we establish the evidence for it! This conception of any first appearance of the NEW has two essential conditions.

1. Absolutely NO constraints
2. Multiple, discrete, diverse & simultaneous processes

Now let us address the evidence for this alternative. It is based upon real creations that have indubitably occurred within Reality in the past, but much later in its history.

Indeed, the ideas come from attempts to explain The Origin of Life on Earth some 3 billion years ago. Now, to take evidence from this much later period may be condemned (with “some” justice), but that remarkable Event was just one case of a process that has happened many times in the history of Reality, and is still happening today. These totally revolutionary and creative Events are termed Emergences, and what IS certainly legitimate is to attempt to extract what such Events actually consist of. For certainly the Origin of Everything was a kind of Emergence. What else could it be?

The principle that seems to deliver new things is that in such unrestricted, complex mixes, where mutually conducive processes (previously, but no longer constrained) will proliferate at the expense of mutually contending processes, and will therefore move to increasing dominance, and will modify their own original context by its maximally absorbed resources, and its increasingly abundant products.

It will transform the ground into one where different things can happen, that were previously either impossible or negligible.

The dominances could impose a direction on what was initially almost totally random.

The possibility of the wholly NEW at a more elevated Level will become possible.

Now, we should compare these two scenarios, and judge which of them is the most likely to be true.

Will the simple, but colossally energetic produce the goods, or will it be the complex with absolutely NO constraints? And which alternative could drive Reality into Creative Development?

Instead of energy-fuelled destruction to produce significant debris, maybe we should be attempting a very different kind of holistic experiment – similar in concept to Miller’s Famous Experiment to investigate the Origin of Life, but here starting with simpler, but still diverse components, along with a similar absence of any overall and powerful constraining of what could occur.

I cannot think of any machine more constrained than the LHC. And with the colossal energies involved, the set up seems more like Armageddon than Creation. It seems clear that Reality could never build out of minimal elementary units, as is the pluralist assumption of the scientists at the LHC. Indeed. All physicists are essentially pluralists and constructivists, and their predictions in such areas are much closer to hope than determinations.

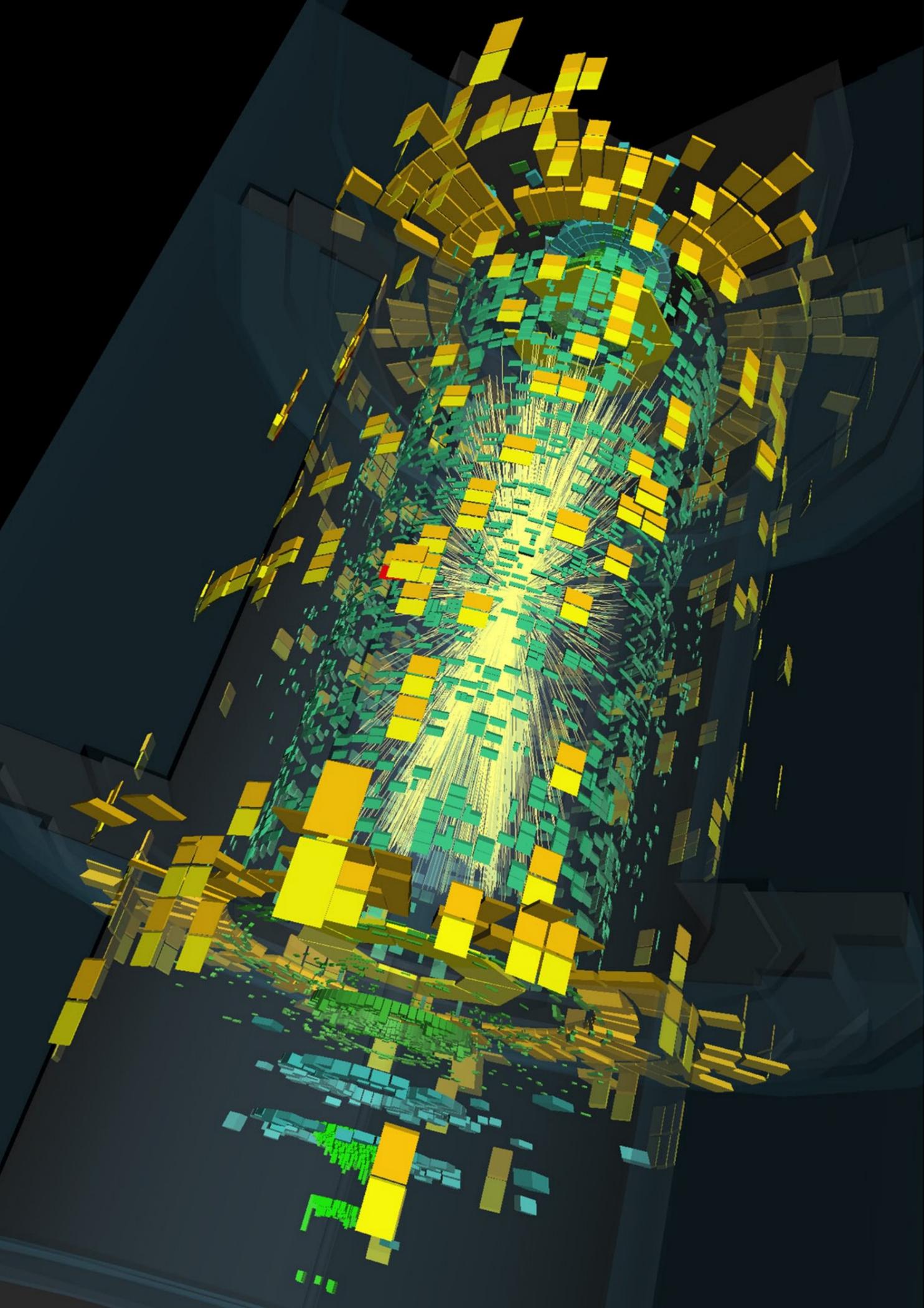
So, if the ideas presented here as an alternative to those which led to the Large Hadron Collider, are true (or at least better than those pluralist assumptions), then what would have to be present to allow any sort of development to occur from the outset?

It is almost impossible to see mere disembodied Energy as sufficient.

Indeed such a term becomes almost totally meaningless, without something for it to act upon, or be contained within. Clearly, development needs variety as an essential contribution. Without such diversity, there could be no changes at all. Why would they ever occur in those limited circumstances? Indeed those in favour of that Origin don’t even admit of any context. It is usually conceived of within a so-called Physical Singularity – a dimensionless dot!

So, the question gets changed into, “What are the minimal components necessary for any sort of consequent development to get started?”

*NOTE: In other researches by this author, it soon became clear that not only was diversity absolutely necessary, but also positive feedback, wherein the products from an involved process, also fed back into that process and caused a vast increase in it, to the clear detriment of other present processes. Avalanches of change made situations move into very different Phases, with very different possibilities, and clearly all such things must involve an initial variety. The question has to be, “What could that variety consist of, and how would those requirements define the nature of the initiating context?”*



## Postscript

This set , as explained earlier, contains only a selection of stages , which have occurred in the development of a holistic approach to Emergences. So, as such, they cannot deliver even a small coherent subset of what is emerging as a comprehensive philosophical standpoint.

Many other important areas are not even mentioned here.. But, several new Special Issues are at an advanced state of development at the present time – particularly several concerning Stability and its demise within an Emergent Event, and the unavoidable establishment, if such an Event carries through to success, of yet another, higher Level of Stability.

Perhaps the real touchstone for these ideas will be if, and when, they can successfully explain the origin of by far the most important of all stable Levels – that of Life itself on planet Earth some 3 billion years ago.

Jim Schofield September 2012

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