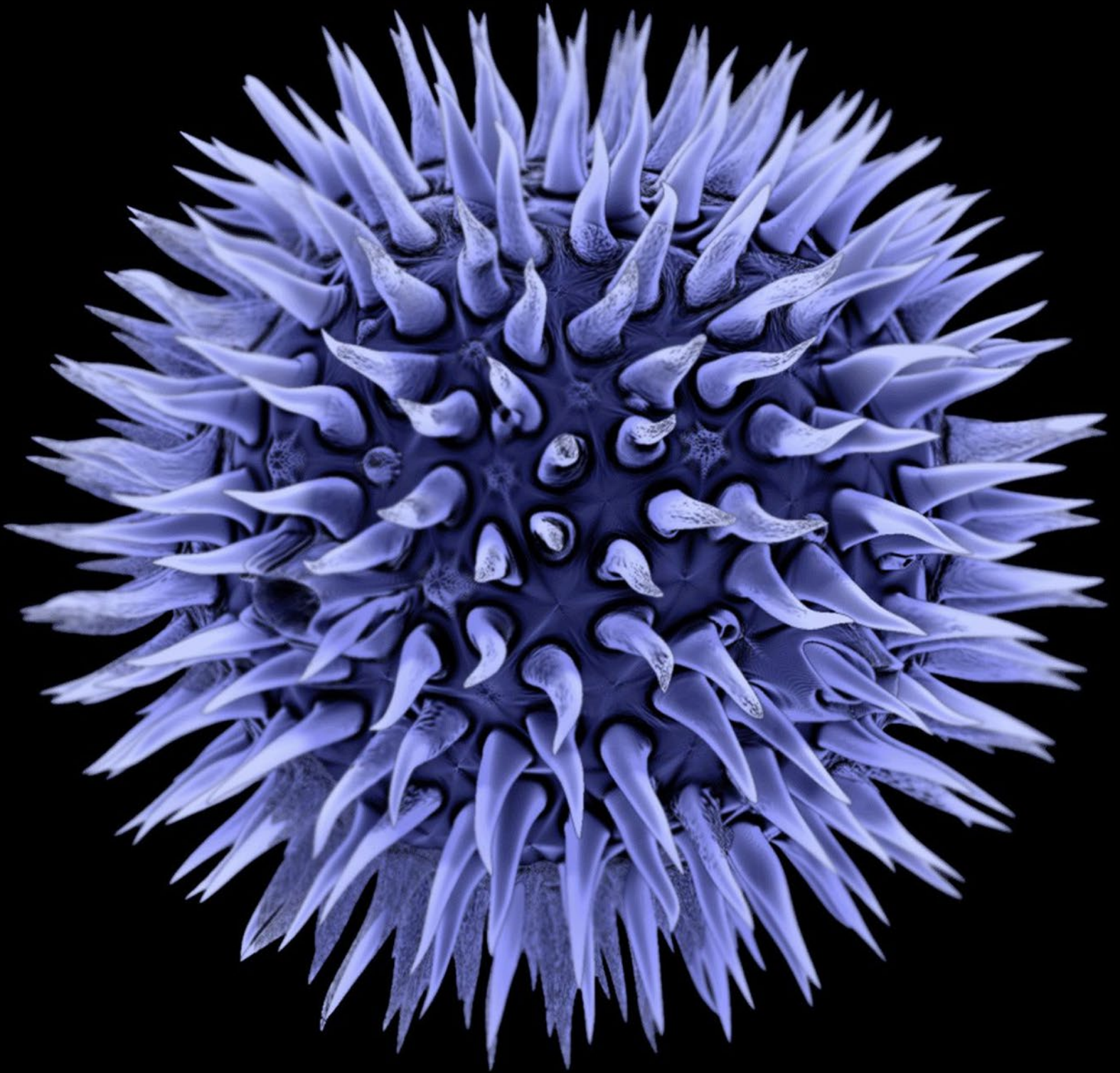


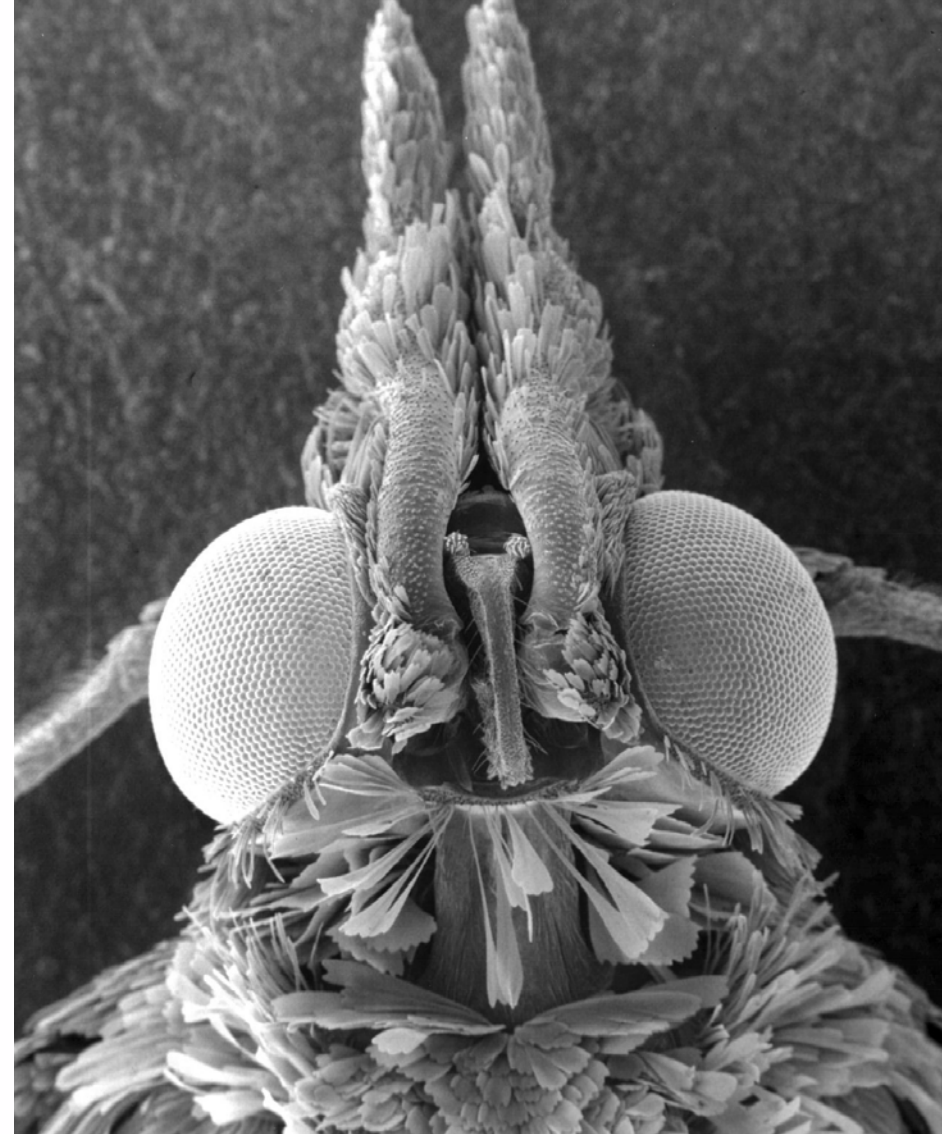
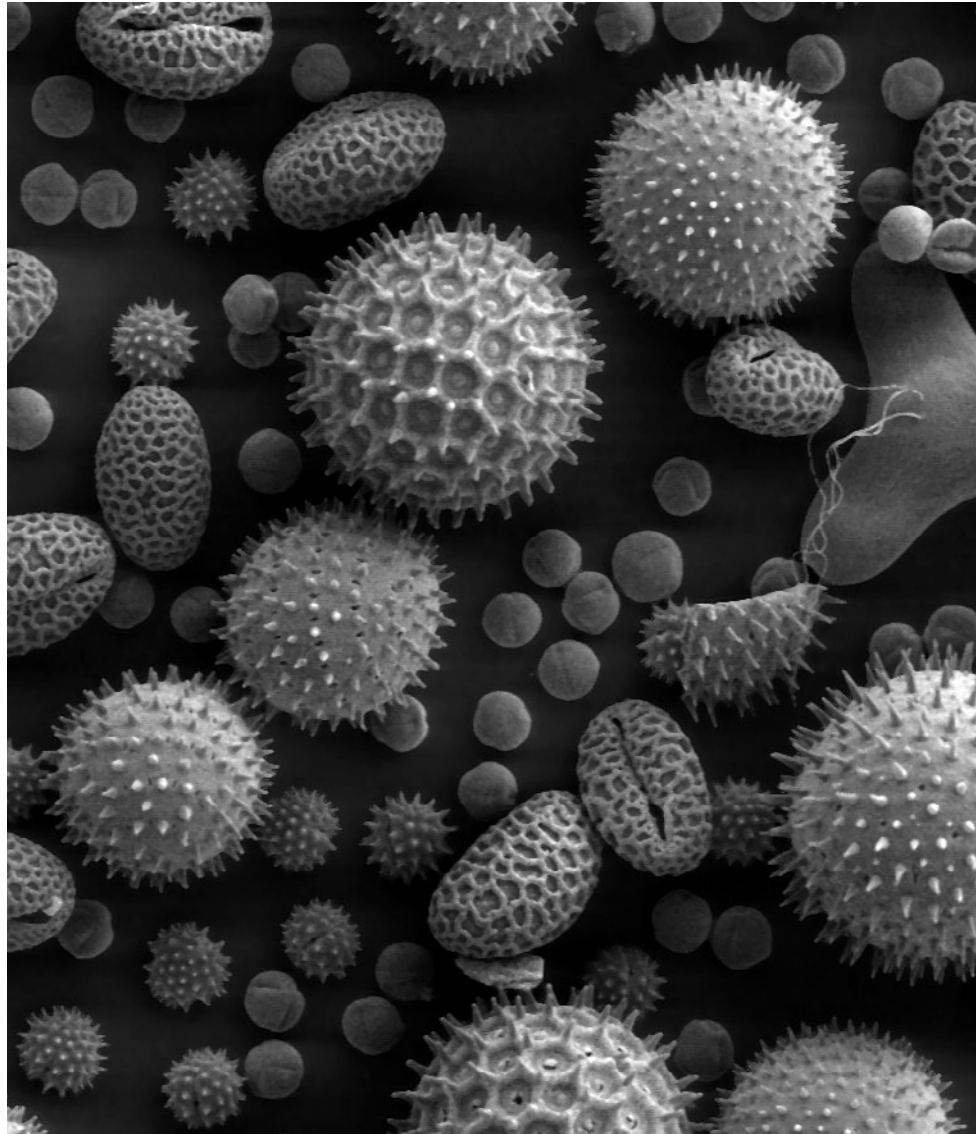
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SHAPE JOURNAL

EVOLUTION

A HOLIST APPROACH TO EVOLUTION / THE ROLE OF GENES / HOLISM AND DNA / INCREMENTAL OR REVOLUTIONARY CHANGE / RANDOM CHANCE? / NEIL SHUBIN / WILLIAM MCGINNIS / TRUE EMERGENCE / CULTURE VERSUS NATURE



Evolution

Issue 60 / July 2018

4. Introduction: The Alternative Holist Approach to Evolution
7. The Engine of Evolution
9. A Holist Muse upon Genetic Code
12. Incremental or Revoutionary Change?
16. Random Chance
20. Neil Shubin's Evolution
23. The Culture versus Nature Debate
24. Genetic Code Development in Hominids
27. The Emergence of Reality

The Alternative Holist Approach to Evolution

by

Jim Schofield



Welcome to Issue 60 of the SHAPE Journal, a long-overdue return to the theme of Evolution.

This is certainly not a full-and-final definition of an Alternative Approach to the Study and Explanation of Evolution. But, it is something of a well-informed muse upon how that might be addressed - contributed by a philosopher who has specialised in just such an approach in Sub Atomic Physics, primarily in opposing, and finally disproving the current consensus stance of the Copenhagen Interpretation of Quantum Theory.

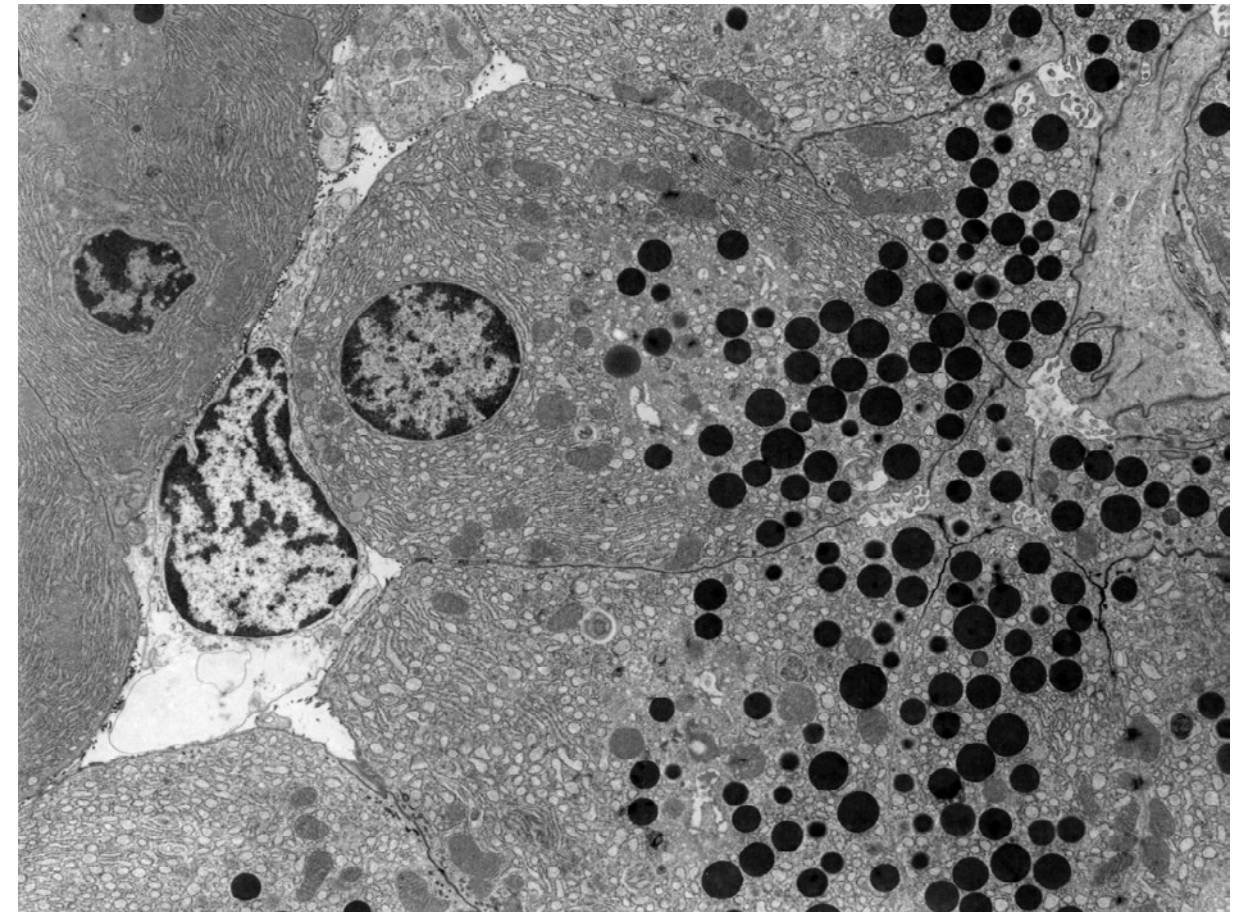
It resolutely rejects the universally-supported Pluralist Stance, which underpins not only Mathematics and the Sciences, but crucially Formal Logic too. And, the reason for its failures is that it focuses exclusively upon Stability, not only as the underlying basis, but as the only means to expose and allow the extraction of Reality's supposed "Eternal Natural Laws".

It thus necessarily excludes all *Qualitative* Change in all its analyses, and uses only Quantitative Change - thus substituting Amount for Quality, and Complexity for Emergence!

It has, of course, proved to be invaluable in dealing with situations within such Stability, but useless in coping with Qualitative Development such as Evolution.

It is also significant that the Holist alternative to Plurality was, and is still, a widespread philosophical standpoint, particularly in Asia, and among Buddhists, for it was first extensively described and used by the Buddha in his many Suttas. But the modern version arose out of Hegel's criticisms of Formal Logic, and was developed as a system by Karl Marx in his Dialectical Materialism.

This short collection of papers is an initial argument for the holist stance to be applied to Evolution, as it was originally defined by Marx in his analyses of the development of Human Social Systems, and their transformations in Social Revolutions. And, also as demonstrated by this writer via the application of his Theory of Emergences, in his works on Philosophy, Mathematics, Science and Formal Logic.





The Engine of Evolution

The Role of Genes in Facilitating Natural Selection

On viewing a series of YouTube videos upon current studies in Evolution, I noted both a significant omission, along with a serious switch in emphasis - closely related to that omission, which both crucially and effectively derailed any chance of a serious study of the Primary Engines of Evolution.

So, they were, undoubtedly related to the previously universally agreed engine of all inherited change in living entities - namely the mutation of genes in that entity's Genetic Code.

For, since its inception, that theory was crystal-clear that the changes occurring there could never be purely due to actual changes in the prior real-world experiences of the entity involved, and, therefore, eliciting particularly appropriate mutations. And, the reason was that all the many articulations ultimately delivering any particular behaviour were far too involved and unknown, for a particular change in a relevant gene to be identifiably-predictable in its effect, or even implementable by any wholly natural means.

So, the theorists, in proposing that original theory, could only conclude that there could be NO required-cause of any particular gene mutation, and the nearest assumption to what actually goes on, just had to be that these events were totally random, and without any required result!

What was missing was both an emphasis upon the actual process and ultimate effects of gene mutation, and an investigation of gene *management*, testing, correcting or elimination, which surely must exist in some form?

Yet, what was, instead, often being substituted, was, when analysed, a total reverse of the usually involved causality - so, instead of considering the multi-gene production of systems of processes and behaviours in the living entity, we were being "informed" that the "culture" of that entity (usually, restricted to Mankind) was actually determining the success of mutations, and therefore somehow(?) also ensuring their consequent survival(?).

Now, I am a strong advocate of culture playing a role in Evolution, but ONLY via Natural Selection, and NOT on the survival of individual gene mutations. Indeed, the essence of the original stance upon Gene mutations was that they were entirely accidental and independent of the culture of the affected organism.

And, in addition, would not the affected genes have to be resident in the reproductive centres, where Eggs or Sperm were created, in order to ensure the presence of that gene throughout the finally delivered new entity, containing only that changed gene in every single one of its cells?

Indeed, I have always believed that such centres would have long ago developed monitoring and selectivity in dealing with newly mutated genes, which to enable useful evolution, must also be both a constant and considerably larger damaging problem too.

Finally, and most importantly, any criticism which did not oppose the usual Pluralist stance of most modern day Science and scientists, would necessarily omit the most telling reason why the theories generated in that tradition will absolutely-never address the crucial Emergences of the Wholly New, anywhere and in any Living and evolving entity.

It just has to be the paramount mechanism of Qualitative Change, as the pluralist alternative always excludes such changes absolutely.

For, the only alternative then has to be the pluralist substitution of mere additive-complexity as the means by which the wholly new appears.

“Have enough different components in a bag, and shake it long enough, and in enough time absolutely everything will be produced!”

No, it wont!

Such a tenet in reseearch will deliver vast amounts of totally irrelevant findings, as was proved by this selection of papers purportedly upon Evolution.



A Holist muse upon

The Genetic Code

The Performing Engine of both Reproduction and the direction of all functions during the Life of the subsequently-produced organism, necessarily involves this Genetic Code. It is originally delivered within the Female parent organism by a necessarily unique union of two halves of Genetic Codes contributed by both parents in the fertilisation of the female’s “egg”-half, along with the male’s “sperm”-half, of the respective Genetic Codes.

Even when functioning as the Genetic Code within a Normal Cell of an organism, though capable for reproduction purposes of being split exactly in half, the two produced halves are NOT identical, but composed of opposite corresponding bases throughout. Yet, both halves are equally capable of being used in Reproduction.

So, the Genetic Code clearly has two different purposes, in Reproduction, it delivers a different result to either of the parent’s codes, with therefore different potentialities for its second purpose, when resident in every single cell of an offspring, where it becomes a kind of program for all the living processes of that individual during its life.

NOTE: The writer of this paper is no expert in these matters, it must be said, but he is an expert in the only philosophic system capable of dealing with not only Qualitative Change in general, but also, in particular, the capability of it producing the Wholly New in Real Development, which none of the usual Pluralist Disciplines can ever deliver. Clearly then, his purpose is to address the thus far un-addressable occurrence of the Wholly New in Evolution, which while being obviously the case, has, up to now, never been effectively explained.

Once passed on to a surviving offspring, The Genetic Code had been delivered to every single cell within that organism to tell it what to do in every possible situation.

But, of course that includes every single process in every part of that individual, and at all the different times throughout its development!

How can a Single, Necessarily-Fixed Program do all of these very different things, and at the precisely corrent moments?

NOTE: As a Systems Analyst and Computer Programmer of long experience, especially in my special area of Computers-in-Control, I can see how sequences of mere 1s and 0s can code for extremely complex systems. So, the roles of the pairs of bases at the heart of the DNA molecule are conceivable as a program. But also, as a holist philosopher, I am also aware how incomplete such a simplified analogy is, in the system we are considering here.

Clearly, The Genetic Code is NOT a single, straight-through program - starting at one end and carrying on through top the other end. It is clearly a set of programs, residing in single molecules of DNA, with discrete sub-programs that have to be turned-on by some external agent.

This agent will have been produced elsewhere in the organism by another program in the Genetic Code, whose sole purpose is to set the identified program into action. The code obviously co-exists with a crucial, entity-wide communication system, in the form of one or more liquids, such as blood, carrying both initiating keys and dissolved necessary resources.

And, such an initiator will be moved about the body of the organism as a unique “key”, by the blood stream, or other similar flows, until it encounters its unique “lock”, which it alone can turn-on.

Of course, the whole Genetic Code is available from the beginning, in the single fertilised egg, in which the “key” to the “whole house” is turned on from the start with its initial process. And all of these processes (or causing sub programs) will also enable the turning on of subsequent processes by identical means.

Now, even a meaningful description of this system so far, turns out to be impossible to deal with in an explanatory way, via a pluralist stance. For, all natural laws are fixed and only *sum*: all causal sequences are linear - Reductionism is the norm!

And, therefore, the non-transcend-able impasses first revealed by the Greek Zeno of Elea, and further researched by the German philosopher Friedrich Hegel, in the form of Dichotomous Pairs of contradictory concepts or processes, would regularly occur - thus scuppering the Formal Logic Reasoning involved, and hence only bridgeable by well-established, pragmatic “suck-it-and-see” tactics.

As soon as systems, such as the one I have described above, are involved, clearly, prodigious numbers of “initiator keys” and different resources are all simultaneously present, all the time and everywhere, and mutual effects between these carried substances will not only be inevitable: they will, when seen from a holist stance, be absolutely essential!

Now, why should this be the case? Well Stability, according to Plurality, is ensured by the total immutability of Natural Laws.

But Stability, according to Holism, is achieved by a self-maintaining, system-mix of multiple processes.

So, when Pluralist Stability dissociates it has to be due to some external cause. And, what happens next could be all sorts of outcomes.

But, when Holist Stability dissociates it has to be due to significant changes in more-than-one contributory factor, and there is a known trajectory for the consequent temporary “Dissolutive Chaos”, AND importantly for the gradual re-establishment of a new self-maintaining Stability -

it is termed an *Emergence*.

So, if its researchers know about the majority of these contributing factors, and also their natural mutual effects upon one another, actual possible outcomes can be considered, including the establishment of the Wholly New!

Now, clearly, the Genetic Codes of every living organism must themselves have evolved, ever since they emerged for the first time ever. And before that, there was also a definite Origin of Life, and prior to that, absolutely nothing remotely similar.

So, clearly, the recurrent origins of the entirely New, within such Codes have also to be the really significant events in Evolution - the apparent incremental changes outwith those interludes of significant change will never deliver a Law, to predict the future.

Yet, in a recent major Conference about the earliest hominids on Planet Earth, every single change revealed in fossils covering about 5 million years, appeared for NO discernible reason!

Retrospectively, it was possible to see the role produced, but that was NOT why it first occurred. And even if, by some miracle, thousands of steps were revealed in a sequence, they would NOT be steps towards that final result. For Evolution is not a *directed* process! And, the key changes must have happened in an undirected Emergence.

So, clearly, the actual trajectory of change would only happen within an Emergent interlude, usually NEVER available to for study - at least in that field.

Just as Marx was able to do, by revealing the trajectories of qualitative change within Social Revolutions, it was only possible, because the tempo was slow enough, and he had in his hands the detailed History of the French Revolution by Michelet, as an invaluable blow-by-blow account.

So, the answers for Evolution will also have to be found elsewhere, in a series of developments that were slow enough to be seen, but fast enough to enable the observer to see a whole set of causal developments.

Once more, the usual Scientific Experimental Methods of Pluralist Science, will never suffice.

NOTE: Researchers thought they had done it with their Evolutionary studies of Fruit Flies: the tempos seemed ideal, but without a Holistic approach that also could not reveal the required trajectory, and an understanding of the sequences of phases involved.



Incremental or Revolutionary Change

The *Why* and the *How* of Evolution

The idea of Evolution did not come easily to Mankind!

Indeed, the first conception of the variety of living Things was that many were so different, that they could not, in any way, be related. Also, not only did they never change within a Man's lifetime, but also never throughout all the records of written history. The conclusion was they had all always been exactly as they were now forever.

But, time was clearly passing, and both Man and all animals were born, grew to maturity and finally died - so though the forms seemed unchanging, questions about some sort of a Beginning were also being asked! And, the usual answer was that some supernatural force, a God(?), must have been responsible.

But, voyages of Discovery, such as that of the Beagle, revealed different creatures in different parts of the world: and on isolated islands, wholly unique creatures were found. Indeed, Charles Darwin, who sailed with the Beagle, found different varieties of Finches upon different islands of the isolated Galapagos Group in the Pacific Ocean.

Now that, certainly didn't gel with the usual story, for such closely related birds to be so different on different islands of the Group, inferred different changes accumulating in different conditions. He later considered that some form of Evolution must have occurred.

Later still, he wrote his book, *The Origin of Species*, which argued the case for Evolution, but its causes and tempo were not established, though his suggestion of Natural Selection via competition between living animals, and the consequent survival and reproduction success of the fittest was his devised activator.

But, of course, it didn't explain what *caused* the differences, and why they were selected.

And, it was scarcely credible to relate ALL living animals - from those in the sea, and in the air, to those on land. But, the finding of fossilised remains within rocks laid down under past oceans, began to reveal all sorts of intermediaries between later species, and though the gaps were high, the answer was that it took vast numbers of tiny changes to deliver the vast variety that gradually became evident.

Yet, though there was an evident overall sequence, from the sea, to the land, and even to the air, nevertheless, the gaint gaps between such environments seemed impossible to conceive of.

And these, in the consensus philosophical stances were never able to be explained, until the Dialectical Materialism of Karl Marx was extended, via a detailed study of Social Revolutions, into the idea of Emergent Interludes, in which prior, seemingly permanent Stabilities, began to dissociate to produce a short period of cataclysmic change, ultimately delivering a totally new, and therefore, wholly unpredictable established Stability.

The Theory of Emergences, which explained exactly how such interludes behaved, was only delivered as recently as 2010 (and by a current Marxist theorist - the writer of this paper).

For, in spite of the significant revolutions in Philosophical Thought, first by the brilliant idealist thinker Hegel, with Dialectics, and then by Karl Marx, with his transformation of those ideas to an entirely Materialist Basis, the actual Transformative Interludes between long-persisting Stabilities was not fully generalised into a



common trajectory, applicable in all levels of Qualitative Changes.

Indeed, many of such interludes are so fast, that they are unobservable, and appear as inexplicable, instantaneous switches between alternatives. Without a Holist, rather than the usual Pluralist stance, such Interludes are totally inconceivable! So, let us explain that vital difference.

Plurality arose out of the Discipline of Mathematics invented by the Ancient Greeks, out of their Euclidian Geometry, which had delivered into their hands the seemingly wholly consistent system of Truths, made extendable by reducing everything considered to only Perfect Forms. And these could never change!

Such a system sees everything in terms of qualitatively-unchanging entities obeying fixed (indeed eternal) quantitative Laws. And, of course, that can never be true of an *evolving* Reality.

The reason why the Greek Revolution was so significant, was that by both simplifying and idealising things, it enabled them to be developed within a parallel (if altered) World, one that we could completely control - still close enough to Reality, in carefully arranged-for and maintained circumstances, but NEVER the truth of the wider Reality-as-is.

Now, Holism, established at almost the same time as the Greek Revolution, was described in an extended series of

Suttas, by The Buddha, in India. and took the opposite stance insisting that “Everything affects everything else”, and, “Everything is in constant change”.

And, the consequences of this was that such Single, Separable Laws never exist as such, and all natural situations were composed of many simultaneous factors; some conducive to one another, while others were opposing one another. And, the usual situation was for these to gradually interact to deliver a self-maintaining Stability, where an undermining change in one of the factors, would be automatically countered by opposing changes in others.

And, such a Stability would therefore persist, with occasional failed crises, until multiple changes finally became just too much, and the Stability dissociated - seemingly heading for oblivion, but actually returning to a situation where the formation of stable sub-systems could begin again, but this time ending in another, different and wholly-new self-maintaining Stability!

Now, we should relate the usual Pluralistic Methodology in Science, to what Holism insists is the actual content of what is being investigated.

First, the real, natural situation can never usually be effectively investigated, it is too variable to deliver anything of consequence, for even if it is a naturally achieved holistic stability, its component factors only cancel out, overall-and-overtime.

So, various techniques were developed to overcome the intrinsic variability. Many runs had to be made, and an average of the results taken: this did produce a “Law”, but it often couldn’t be explained physically, because it was still due to the remaining amalgam of factors that hadn’t cancelled out!

Indeed, historically. many such “laws” included many abstractions of complexes of factors represented by overall Abstractions like Temperature.

So, the method was refined further, this time with only a particular momentarily-glimpsed factor in mind. And, this was achieved, by selectively removing as many lesser factors as possible, while holding others constant.

An effective transformation of this kind could be such that the targeted factor became clearly displayed, and could be extracted by measurements over a given range of the chosen independent variable. But the extracted “Law” would only ever be applicable over that range, and in those precise circumstances.

The great justification, for such a method, was indeed the Principle of Plurality, because that insisted categorically that all laws were separable from, and unaffected by, all others. “They simply summed!” was the conclusion. And, if you knew them all, you could arrive at how the whole set would act.

But, though such things were carried out theoretically in mathematical manipulations, in the real world, each revealed factor would be implemented alone in its own ideal context, followed sequentially by all the others in turn, each in their own contexts too.

Visit any Factory!

Now, returning to Evolution, we have to see how such a Pluralist stance attempts to cope with Qualitative Change. And, to, at least, do justice to their current attempts, we can only go to current Public Lectures delivered by its lauded stars. So, following this paper there will be others addressing such lectures.

Random Chance

The Necessary Backstop for Pluralist Science

The trouble with the usual view of Causes in the Sciences, is centred around a consensus set of assumptions and premises that, though they can deliver within certain kinds of context, are certainly NOT universally-applicable. And, in the most important areas fail absolutely.

Elsewhere, I have written at length upon The Principle of Plurality, the agreed basis of that consensus stance, which assumes that all Natural Laws are eternal - they never change! And, an unavoidable rider to this stance, is the belief that complex mixes of simultaneous causal factors merely sum to give an overall effect: but they never effectively-modify one another in that process, in any way at all.

Now, such a stance also inevitably leads to the Standard Experimental Method, of carefully tailoring the involved contexts, to make particular Laws both clearly evident and extractable, without, in any way, changing them. This is untrue!

Though it certainly can, and does, allow successful use of a given Law, by necessarily limiting the use-context to exactly-the-same as that provided when the Law was extracted. So clearly, productive-uses can be well-served, but explanations of aspects of the World, as they naturally exist, are crucially and unavoidably distorted.

This critique of what I term Pluralist Science, has been thoroughly developed elsewhere in extensive writings by this theorist. But, the unavoidable consequences in the distortion of Scientific Theory, are many and varied - particularly with respect to Causality, for it unavoidably slips into turning attempts at a thorough-going explanations into Reductionism - inferring that backwards tracing of effects-and-their-causes, will always

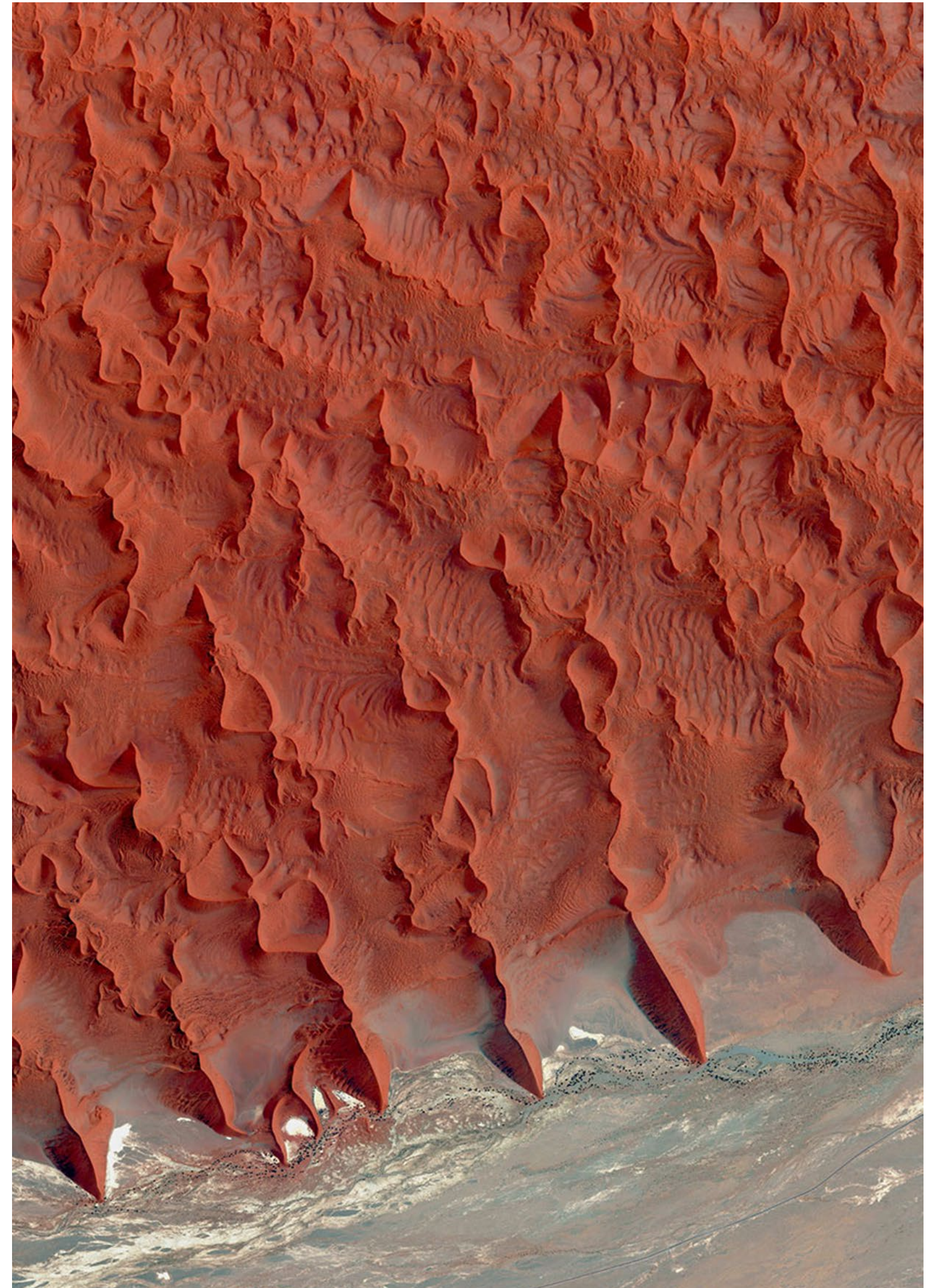
ultimately lead, soundly and smoothly to the same final Elementary Entities and their fixed Natural Laws. Now, it doesn't actually do that either! So, an added excuse must be imported, to cover such inadequacies: and that "cover" is usually termed Complexity.

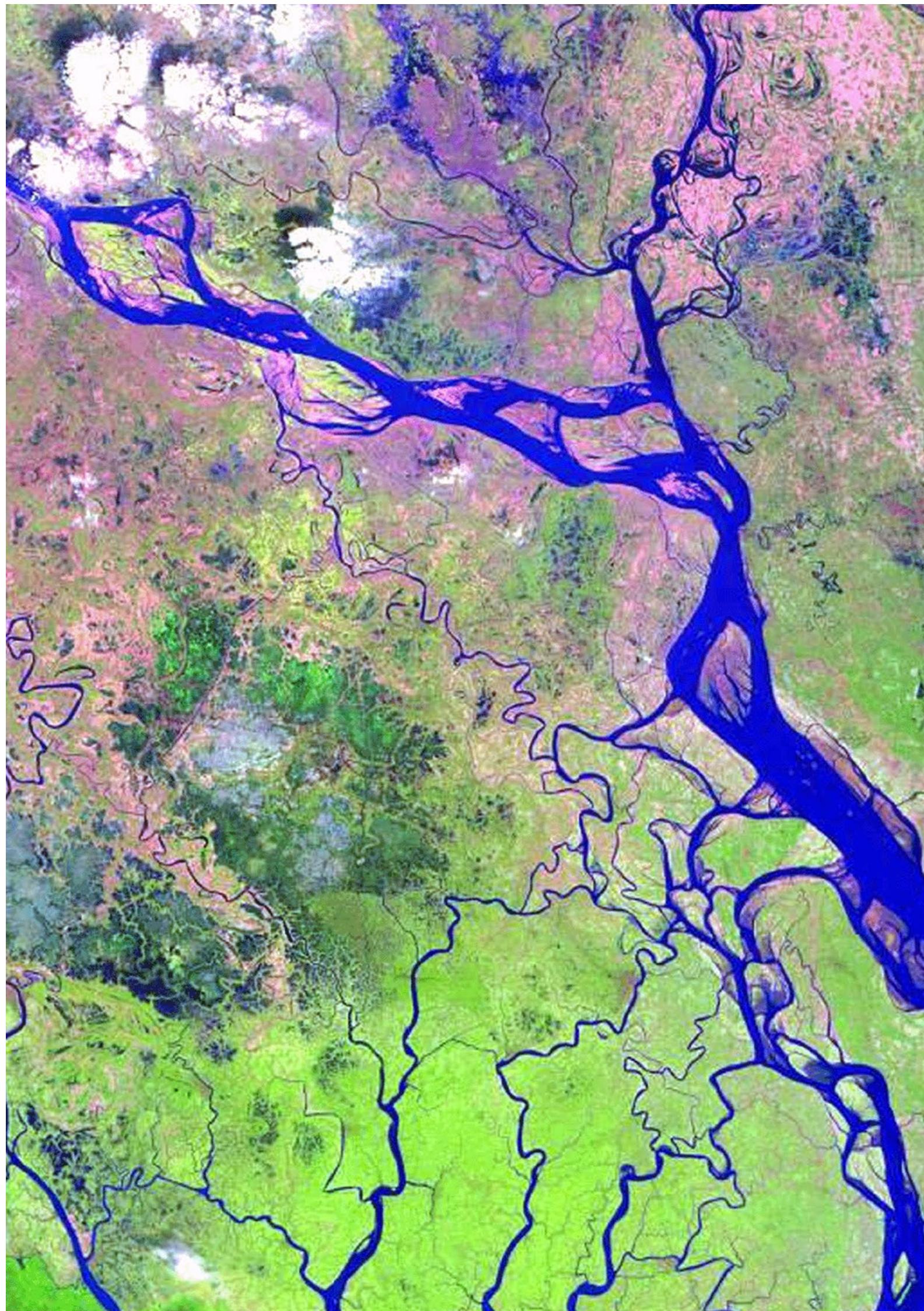
Now, how can Complexity actually achieve that task? What happens is the changing of Complexity into a system with only purely-additive-properties, which, when allied to "infinite-variety", is supposed to deliver absolutely everything that there is. "Absolutely NO Emergence of the Wholly New ever happens!" So, no appearances of new qualities ever occur, without it being explainable as a consequence of a Tree of Findable Causes. And, as a final extra cover, we may also require a dose of extreme Random Chance!

Though, Reality may have begun much simpler than it has now become, the multiplicity of entities and conditions can multiply at an ever increasing rate, to immeasurable proportions - upgrading the range of available possibilities up "towards Infinity".

But, these are vague, un-thought-through inventions, and do not address possible tempos and hierarchies, in any profound way at all - they give up, in the face of 'Complexity'.

For, simultaneous, yet different, Causes-and-Effects will inevitably vary in different localities, as local preponderances will give varying mixes and even the tempos involved: and cause quite different dominances to emerge at different times, as such processes unavoidably change their own contexts. For then, the products from hierarchies will, within the margins between such localities, inhibit or waylay what would usually happen within that same locality, if it were isolated.





To leave out such recursions is obviously incorrect.

NOTE: Early plants produced copious amounts of Oxygen, which, being highly reactive, combined easily with available Iron compounds to lock the Oxygen into Iron Oxide precipitates, and hence thereafter into inaccessible layers of the ultimately produced rock. And only when that set of circumstances was exhausted, did large amounts of free Oxygen become available in the atmosphere. and, thereafter, enable the emergence and development of animals!

Indeed, elsewhere, when investigating the possibilities, within the Pre-Life environments upon Early Earth, this researcher discovered that such considerations as to localities, variability, when even different hierarchies were extended to the interactions of dissolved chemicals in water - consisting of a large variety of contexts, yet with outcomes communicate-able across wide ranges of Oceans and Rivers. It soon became clear that though local preponderances would generate diverse local possibilities, the movements of currents and driven flows would soon bring about diverse mixes actually affecting one another, and even at quite different stages in their local time-determined hierarchies of processes.

Amazingly, a Non-Living, Truly Natural Selection became clearly evident, involving the competition for resources, and even the development of rival dominances with diametrically opposite predominant processes.

Now, it must be admitted that such research was not, and should never be, pluralistic: yet, to address such questions properly, the approach would have to be holistic: "Everything affects everything else!" So, it is not surprising that Pluralist Science could never wander into such rich territories.

But, in addition, the linking together of conducive processes, where, for example, the product of one process, became the necessary resource for another process, while, at the same time, other processes would actually compete for the same resource, and the dominance of one-over-the-other would necessarily inhibit the loser's success.

But, of course, the major omission, in the usual Pluralist method, has to be the main consequence of Holism - namely via, "Everything affecting everything else", producing, at some point, the Emergence of the Wholly New, due to the undermining and evitable collapse of a prior Stability as a self-maintaining system of many

both conducive and opposing processes in a persisting balance, and via a seeming descent to chaos, thereafter, as the remaining processes begin to self-reorganise themselves into a wholly new, self-maintaining Stability - constituting, overall, an Emergence!

Now, clearly, without a full explanation of the wholly new, the pluralist tradition primarily resorts to the ever more complicated-sum of many eternal Natural Laws - like an ever larger jigsaw puzzle - clearly inadequate to explain the Origin of Life, Man and Consciousness. And, hence, requiring some unexplainable cover via Complication, Random Chance, statistical Laws and Probabilities! The separation of different Sciences, and then specialisms, kept apart the more glaring consequent contradictions. But, clearly, such a means could only ever be temporary, and the increasing richness of revelations was bound, in the end, to result in totally debilitating Crises, which reached irresolvable situations and required drastic surgery to maintain any sort of consistency and justification.

The major breakdown occurred in Sub Atomic Physics, and what was jettisoned, as no longer supportable, was physical explanation itself. So, what had long been an increasing aspect of Natural Law - the Formal Equations, thereafter became the sole "dependable" means in that Science. It would, of course, as always, deliver in Pluralistically organised experiments and productions, but it terminated, once and for all, any further attempts at Physically Explicable Theory - the Understanding of Reality, was abandoned, but masked by a re-definition of Theory, in terms of the manipulation of Formal Equations. Sub Atomic Physics had become a branch of Mathematics, and hence Plurality was legitimate, and Physics has become fundamentally idealist!

What had historically been effective mathematical means of dealing with Populations, rather than individual phenomena, which could quite validly involve probabilities, now became intrinsic to even individual simple events.

Probabilities were intrinsic at "every single level", and consequently, the whole set of technique and assumptions used in such areas such as Random variations and probabilistic methods were now part of a New Causality!

Neil Shubin's Evolution

On watching a YouTube video of a lecture at Berkley by Neil Shubin about Evolution, it was remarkable how the most-revolutionary strand in modern science has been stripped of its real dynamical explanatory potential, to fit tidily into the old forms, in pre-Darwin and pre-dialectical patterns, which turn to ever more detailed description as a substitute for real explanation, for why those developments occur and are also so successful, not only in the Darwinian sense, which was also scarcely mentioned, but crucially in the dialectical sense of explaining the emergence of the entirely new.

Shubin initially sounded as if he was going to reveal important reasons for successful Evolution, whereas he definitely diverted into tracing the more pedestrian mechanics of processes, without revealing the vital determining causes for successful production of entirely new adaptations, and also, exactly why they should deliver higher working levels of organisation out of only prior existing processes and components.

I must perhaps clarify what *should* now be happening in Science, since revolutions in Philosophy initiated by Hegel and Marx, and finally, and very belatedly also applied to Science, following the *Theory of Emergence* (2010), and the then consequent demolition of the Copenhagen Interpretation of Quantum Theory in Modern Sub Atomic Physics - effectively achieved by first exposing the amalgam of contradictory stances that have delivered an unconscious positivist basis for all the Sciences, literally since their conceptual basis in Ancient Greece.

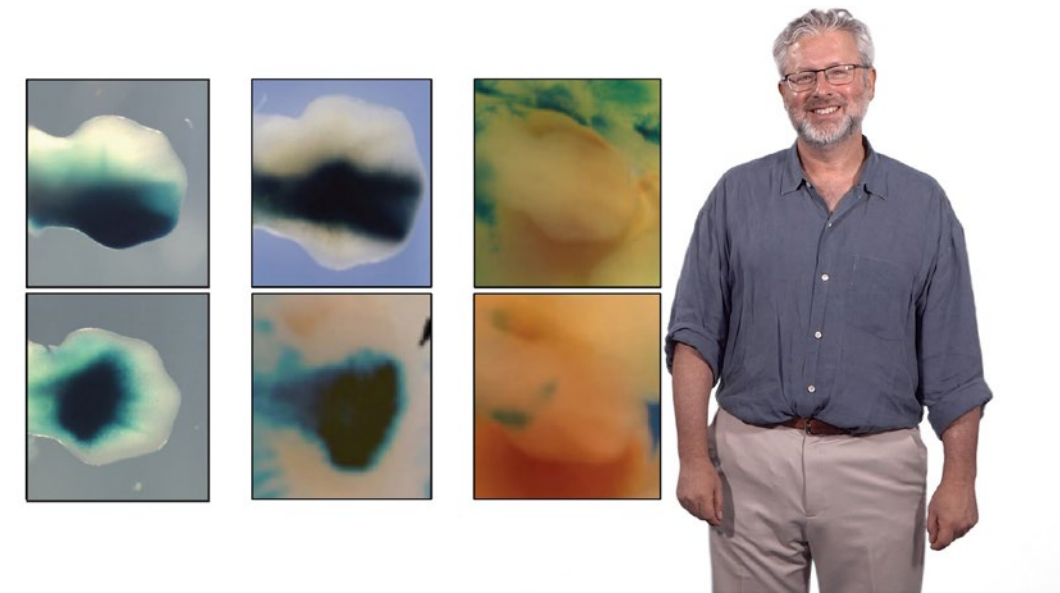
The joint Foundation Stones of Reason coming from both the long-standing Pragmatism of Early Man, and the Plurality extracted from early Mathematics by the Greeks, directly into the Thinking of Mankind, unavoidably meant the seeking for only eternal Natural Laws in all phenomena and even in the rules of thinking itself.

The actually existing and unavoidable interactions and modifications of multiple simultaneous factors, was replaced by the mere complication of fixed laws.

And, this was very evident from Shubin's account. As is the above-described norm, he initially sought for Common Factors across diverse ranges of organisms, effectively doing the same things in very different contexts. Mere self-generated complication was all you needed to deliver the entirely NEW - Wrong!

Clearly, such processes must involve qualitative changes never possible by mere complication! Otherwise you reduce even the Consciousness of human beings ultimately ONLY to a complication of Elementary Particles... NB: This is what they actually do!

As Hegel revealed, some 200 years ago, Formal Reasoning was inadequate as it entirely failed to deal with Qualitative Change. It was clearly only a means of describing stable, non-developing situations and processes. It worked only within Stabilities: and could at best deliver complication, so that is what scientists felt was their task to reveal and describe such seemingly endless complication, without ever explaining anything!



NOTE: The increasingly evident substitute for real explanation, has been, of course, the increasing inclusion of mathematical formulae as Natural Laws: but Mathematics is, and always has been, pluralistic. It cannot deal with fundamental change either.

Indeed, the other obvious refuge for pluralists, incapable of explaining Qualitative Change, has been to hide innovation within a new, straightforward, if extreme, complexity of the old, as with almost infinite random chance changes.

Now, the best description of Qualitative Change that torpedoes all of these diversions, is the Trajectory of an Emergence - the transformatory interlude delivering a real qualitative change mapped out in the *Theory of Emergence* (2010). This sees the usual pattern of relative permanence and dramatic Qualitative Change, as typified by the cataclysmic transitions between long-lasting Stabilities and short, turbulent transformatory Interludes termed Emergences.

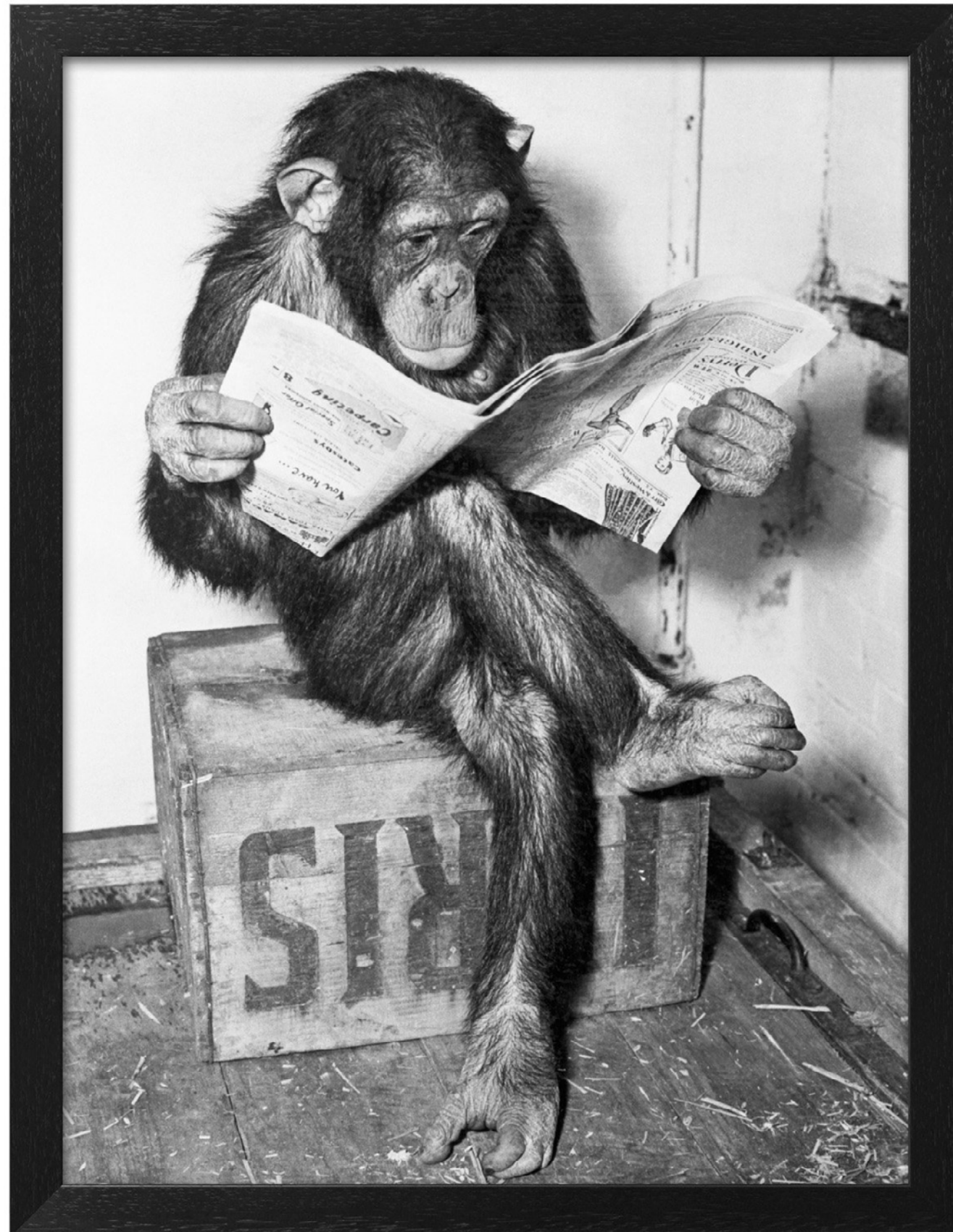
For Stabilities appear permanent and unchanging most of the time, but occasionally suffer Crises, which threaten a dissolution, but, more often than not subside. But, ultimately a series of such Crises, quickly both subsiding and re-invigorating, until a final Crisis deepens into a total collapse of the Stability, in which all the restorative processes finally fail, and The System, which was that Stability is dissociated back into its basic processes.

It seems to be heading for chaos, but what has actually gone is the whole system of *balanced* processes, with its self maintaining reactions to threat - It dissolves!

But, that allows wholly new conducive and opposing relations to interact into subsystems and ultimately into a wholly new, self-maintaining balance - a New Stability can form!

Clearly, because of the intervening calamity, the New cannot be predicted directly from the Old Stability, or even, in a formally rational way, from its still-existing, originally formative component processes: exactly as how that is achieved is NOT predictable.

Indeed, the old myth of The Phoenix arising from the Flames of a catastrophe, is most apt!



The Culture versus Nature Debate

In a series of papers, mostly out of California, the recurring debate about Nature-and-Nurture is once again re-invigorated, and, in the main, supported by statistical analyses of correlations.

But two things must be clarified:-

1. How can the actual mutation-of-genes be related to cultural environments, particularly with respect to which-genes and how-are-they-changed. In other words, how do certain conditions pick out the precise genes with particular functions and change them in significant ways?

and

2. The problem is about system change, when the mechanism is supposedly random damage to random genes. And, of course the individual damage will be to only a single link in a whole system delivering a particular function. Most such events will be entirely dissociating of any such function. Now, the argument goes that large numbers of failures by such means, will in the end be resolved by one particular occasion, when entirely by chance the function is not destroyed but *changed*, and in a way having a significance in that containing environment.

Surely, the usual, "Large numbers of monkeys with typewriters, over vast periods of time, writing the complete works of Shakespeare" is once again utter nonsense?

Indeed, if that was the true mechanism of Evolution, it would *never* have happened!

Pure random damage cannot suffice.

There would have to be some sort of built-in genetic-health systems - dumping anything that didn't fit some systemic criteria - and these could be overall rules, or particular to a particular working system - the former being kill-functions, while the latter would allow some things to remain.

We are aware of damaging genetic flaws that do persist, but they do not stop the organism coming into the world and surviving for a time.

The system cannot be limited in the way it usually is: some regulatory system or systems must intervene, which throw away most genetic damage and filter the rest to allow only a tiny fraction through which can have a variety of affects.

Genetic Code Development in Hominids

In an excellent recent lecture upon early pre-humans and Neanderthals, Richard “Ed” Green delivered a fascinating description of what is now possible from “decoding” the found Genomes of now extinct near-humans, and comparing them with both living and long deceased Humans.

I cannot do justice to his remarkable revelations and conclusions, but they are all available on YouTube, and should be obtained directly, and in full, from the producing source. And, though Green does not make the same conclusions as myself, there is little doubt that what he derives from the now available evidence, takes him a long way from the prevailing Pluralist philosophical stance, and much closer to the alternative Holist stance.

For, I can draw, and indeed have-drawn, conclusions which, I believe, are extractable from Green and his many colleagues’ work, when early humans are compared with other animals, in terms of their then unavoidable “Means-of-Life! Green arrives at remarkable results for the natures of the Genome in all the early Humans and near humans investigated. They are considerably different from what happens in herd animals and also sedentary groups of animals, for they seem to bear the genetic stamp of being isolated Hunter/Gatherers, which, necessarily, imposed upon them a lifestyle of constantly-wandering small family groups, and even spread them, even at that early stage over extensive areas of the Planet.

And, such a lifestyle meant that to reproduce they would have to come across other, maybe very different family groups, from which partners were found and new mixes produced to then continue the incessant wandering.

The evidence available to Green, indicates the “localisation” of genetically different groups - not only Neanderthals, but others in both different parts of Asia and in Southern Africa, and interbreeding causing present day Genomes of particular humans to include a mosaic of features from “ostensibly-different” hominids -

yet, still producing *viable* humans as a result!

Clearly, in spite of long periods of time, and extensive spatial separations, these populations are more like country or regional differences of today, for they all remained humans, according to all agreed definitions, and they would certainly have continued to have the same conditions and consequent lifestyles too.

Finally, if a holist stance is taken as the basis for all analyses in such developments, the emergence of the wholly new - the change to a new species, would have to involve a major crisis, which dissociated the prior Stability, and from its dissolution a new stability - a new species could result.

For, with such a stance Evolution CANNOT be incrementally achieved: the changes that occur without such an Emergence are NOT qualitative, but merely quantitative, the species has new varieties within it, but its essential nature is unchanged.

In other words, the lifestyle tended to isolate families over extensive areas. But the necessity of Reproduction also required access to others, probably forming still-separated, but communicating overall groups, which later came across one another (probably in the form of individual wandering families).

So, though such “local groups” might become extinct, something of their Genome would be preserved within surviving individuals long separated from that group by joining a still wandering group and contributing, genetically, to some its offspring.





The Emergence of Reality

Preface: This is an old paper, but, nevertheless, posed the most important problems to be addressed in Science, and is just as relevant to Biology as it was to Modern Physics - both disciplines currently fail to deal with the Evolution of Reality.

There is an inherent contradiction in the way we deal with Reality.

Though our methodologies are founded on Formal Logic, and hence manipulate immutables, this does NOT sit well with the fact that all around us is incipient qualitative Change.

How can we rely on an approach which denies the essential nature of what we are trying to understand? And, let us be clear, most of these changes no-one would for a moment dispute. All living things are born, grow up, grow old and finally expire, but somehow such things are not seen to impinge on Reality itself. They are considered to be more like a background narrative, which does not impinge upon the solution of innumerable, immediate problems. It is an acceptable backcloth, but it is always treated differently from the everyday tasks and problems that require immediate attention. Indeed they seem irrelevant to these concerns and are not in any way considered.

So, though everything is clearly qualitatively changing, the tempo of such change, is in most concerns, imperceptible compared with the dominant determining factors, and is confidently left out of the reckoning.

And indeed, our analyses and explanations, and certainly our equations reflect an approach that sees all reasons and causes as eternal and not subject to constant change. When we find an equation in some area of study, we don't expect it to grow old and die, do we? We certainly cannot imagine it growing in front of our eyes, and maybe changing into a different one.

No, we insist that we are looking for the essence in things, and essence does not get born, grow old and then

die. It persists! And exists, a priori.

Now, this rather surprising attitude of ours, also seems to work! When scientists discover some feature of Reality, it doesn't in time pass away and die. It may not be 100% accurate, but it is considered to be "for ever" – an essential, immutable feature of Reality.

One aspect of such things is that we do not catch them on the fly! We don't pick them out as they pass as part of the richness of interacting Reality. On the contrary, we very carefully engineer their revelation.

Science and Technology is as much about what we put in, as much as what we get out of an investigated situation. No experiment is worth anything if it cannot be repeated with exactly the same results. And, the usual slant put on this necessity, is that such repeatability confirms the Truth of the findings. But, in asserting this we conveniently ignore that to replicate the findings of such an experiment, we first have to always replicate the exact conditions of the experiment. And these involve quite extensive CONTROLS. An experiment can only be conducted with a hope of revealing something, if most things are "nailed to the ground". We have to fix as many variables as possible, so that a single pair (say) can be carefully manipulated, watched and measured.

Thus, we don't merely imagine things immutable, we MAKE them so, in order to reveal some "supposedly underlying" or, more accurately, well-embedded "eternal" relation.

Now, if this seems to contradict our background assumptions of slow change, "So be it!", is the usual attitude. "We must not waste our time on the inevitable degradations, but instead concentrate on

the manipulateable eternities". Thus our attitude is mechanistic in Science. But, it reflects a very similar posture in our methodology of argument and "proof".

Our primary tool in discussion, and in extracting the maximum from any "indisputable" premises and assumptions, is to apply the Rules of Formal Logic to them, and so reveal the whole range of features determined by them. And these Rules DO always imply that things are immutable.

The classic case is, of course, Euclidian Geometry, where from a set of basic premises and assumptions [none of which are entirely true], a whole superstructure can be developed by Logic alone.

Now, why would we do such an artificial thing? The answer is, "Because it works!"

Euclidian Geometry may be founded upon artificial premises, but they can "stand in for" aspects of Reality in a very useful way. Lines of no thickness, and dots of zero extension, and all the others, are useful immediate models for their counterparts in Reality, and allow a great deal to be done with it, in spite of their inaccuracies over time. Ignoring real lines and dots for the eternal, simplified and immutable fictions of Euclidian Geometry not only leads to useable conclusions, but extracts the maximum, because only the limited Form is only being considered. In the solution of immediate and constrained problems, the ignoring of impermanence, actually enables us to both simplify the World, elaborate on the possibilities in the Form and, perhaps most importantly of all, act upon it.

Now, I could go much further with this line of reasoning, but I believe the point has been made, and it is not our major purpose in this paper anyway.

It had, of course, to be addressed, because the actual truth of the World is that incessant and creative Change, though apparent over time, actually occurs in short interludes between longer and often maintained periods of Stability!

And we had to see just how Mankind managed to progress in its study of Reality, without being swamped by the slower tempo but insistent developments, that in the longer term change everything.

Now, in using the term "creative" in association with Change, it maybe considered that I have changed my premises somewhat, from what I associated with Change at the outset of this paper.

For, then, I was admitting of degradation and death as the inevitable consequences of Change, and so they are. But, now I switch to Change as Creativity. Is this not something of a U-turn?

The answer is "No!", because both are true, and the directions and content of Change are diverse, and occur at widely different tempos.

Tempo is crucial!

In learning a foreign language, we don't predicate whether we should do it on the fact that we will eventually die. The Tempo of Life and Death is imperceptible compared with the requirements of our next Summer Holiday. And the same considerations are irrelevant when applying carefully extracted truths to achieve immediate, productive ends.

We ignore slow-tempo Change, for the immediate manipulation of seeming immutables, and also for controlled inanimate "externals". And this works very well. But, obviously, our manipulations and interventions are carefully "farmed" in areas where they can indeed succeed.

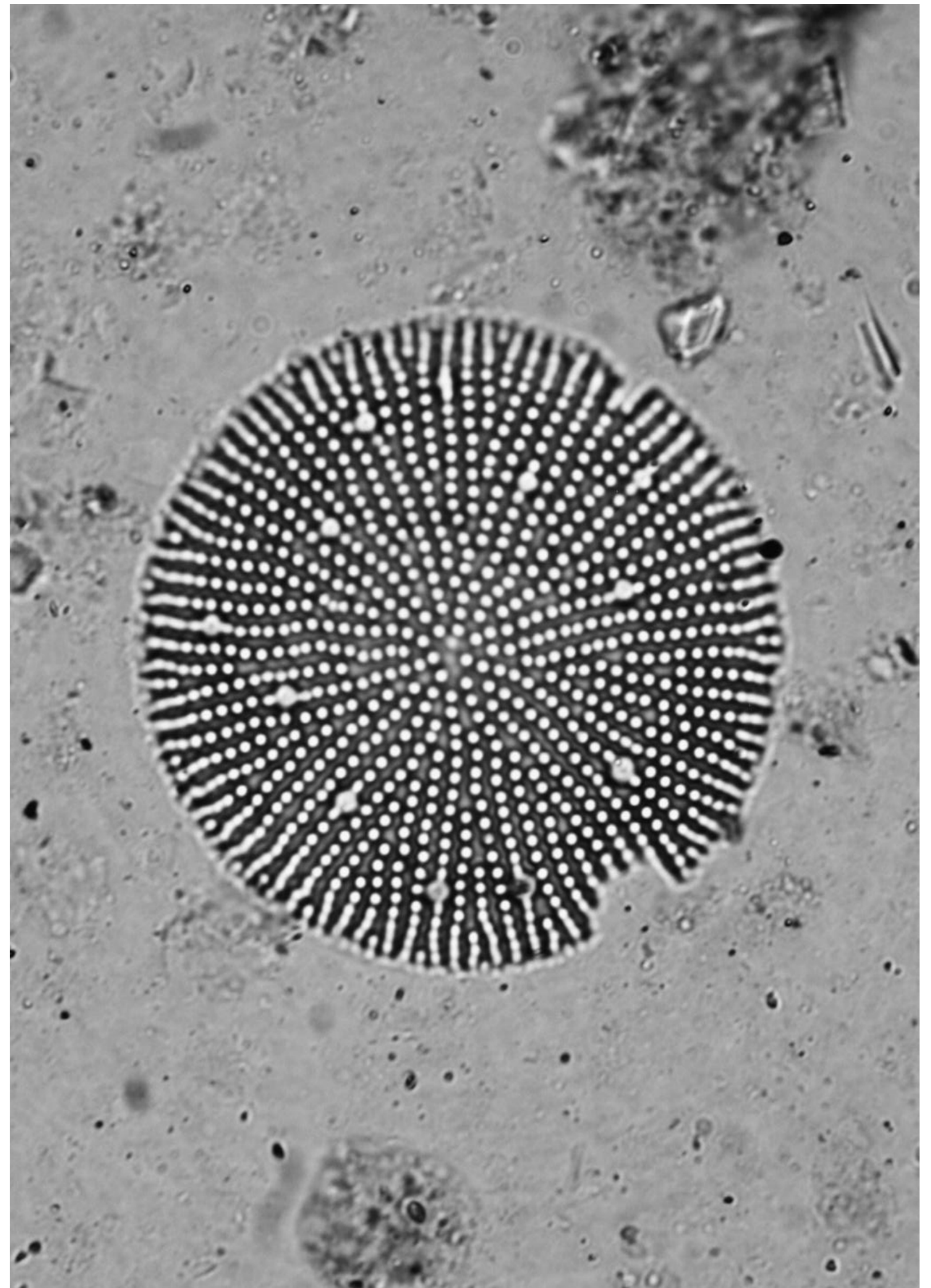
If what we need-to-address is, unavoidably, to do with qualitative Change, we cannot use our usual methods, for then Change has to be at the heart of our conceptions and methodologies in such circumstances.

And, perhaps surprisingly, given the above arguments, we CAN address Change. So, the questions must be

Where? - in what areas of Reality?

How? - what methods do we use?

The answer is that we Change Gear! We must adjust to the new Tempo and select appropriate methods. Perhaps the most successful areas where such methods were unavoidable were Geology and Palaeontology. In studying these long gone periods of the Earth's past, scientists had to look for evidence in the rocks beneath their feet, where it had become clear that they could find the minimal residues of previous changes that had often





taken millions of years to complete. And, in addition, they began to find Fossils – the remains of living things of the very distant past. The concept of Tempo slowly became clear. The changes recorded in the rocks took place at such slow overall rates, as to be imperceptible to humans within their tiny life spans. Mountains that had existed throughout the whole of Mankind's history, were actually built and then worn away many times at the new Geological Tempo.

On this scale everything changed all the time! With the Fossil record, similar things became evident. Animals which seemed to have always existed simply hadn't.

At the new time scales, change had caused major differences, and indeed new appearances and disappearances, and easy to see adjustments in shape and Form, and seemingly, even in function! And such remains were as far from our everyday lives as it is possible to be. We were opening a book of the past, where the pages were in hundreds of thousands, or even millions, of years. Nothing remained unchanged! Everything was quite obviously "on the move".

So, our intrepid investigators had to try to deal with things with Change as their only discernable feature. Any laws or conclusions could only be about how-and-when change occurred. Their narratives were about how things changed. How things prospered or declined, or even became extinct. The changes evident in these records could NOT be ignored. They were the substance of the Science.

Nothing at our usual tempos was remotely available in such records. So, these scientists had to learn to deal with Change as their stock-in-trade, and gradually new techniques to supplement their sequences of fossils, also enabled some reconstruction of the past climates and conditions that had prevailed at given times to be determined also from chemical traces in the associated rocks.

Remnant traces of chemicals trapped in the rocks when they were laid down revealed something of the primeval atmospheres and climates.

Thus, it was an unusual science – Geology that primarily posed important questions about Change. And this led ultimately to the formulation of a Theory of Change in Living Things.

This was the concept of Evolution via the processes of Natural Selection.

But, perhaps the most surprising source of such questions came from the seemingly totally unchanging Heavens.

It was from Astronomy – the study of the unchanging patterns in the sky, that discoveries made questions about Change imperative. The recession of the Galaxies, implied that they had once all been close together in the same place, and that something had sent them careering off in all directions. There seemed to have been an initial Big Bang. And, if this were true, there must have been a time when there were no Galaxies, no stars and certainly no planets.

For everything to be in such close proximity following an almighty explosion, NOTHING could have been like it is now. Slowly, using the discoveries of sub-atomic physics, a Theory of the Universe was developed, and it was not only FULL of Change, but also FULL of Creation.

At every stage new things (never before in existence) emerged into Being.

In a recent TV programme on the Universe, just one short narrative was very revealing of a new Logic imbued with Change.

It was in the History of Stars.

By a mixture of observation and Science, sound trajectories for star histories have been constructed.

[NOTE: Observation of the Heavens is unusual in that the further we look into Space, the older we see. The speed of Light is finite, and hence we see distant objects as they were long ago. With the latest instruments, we can see back in time billions of years, and Astronomy begins to take on some of the properties of Geology, in that we can see the Sequence of Events laid out before us]

These star histories show some significant features. First, the basic element that makes stars possible turns out to be the simplest element of all – Hydrogen, and under the colossal pressure and temperature caused by natural aggregation, this can become fused together to produce a new stable element – Helium, along with prodigious amounts of energy which makes the star shine.

Thus stars had created a new element – Helium.

But, though it takes billions of years, the Hydrogen available for such Fusion in a given star can be sufficiently used-up, and the star begins to collapse under gravity. But, it does not continue to do so, for it causes even higher pressures and temperatures until the Helium itself begins to fuse into a still heavier element. By a succession of such collapses and re-ignitions, the whole series of Elements are successively created. All the elements of the Universe were created in Stars.

That is Change!

And, we can find more and more areas where such Qualitative Change HAS to be addressed, and clearly creative Events take place, which lead to wholly new forms of Reality - real Emergences.

Indeed, apart from the Emergences outlined above in the Life Histories of Stars, we also have the regular appearance of such Events throughout the History of Living Things, and in Thought and even the development of Society.

Now, everyone, I believe, will accept the occurrence of these Events, but may well rationalise them into mere complication of prior forms. This is the usual interpretation, and it is very easy to do. After all, the sources of these trajectories are NOT available for experimental confirmation, and their tempos are much too slow for any possible purposive interventions.

But, such tidying away, shoe-horning change into our fore-mentioned Logic and Methodology of immutables, which simply MUST be countered as untenable. It explains NOTHING from these breathtaking scenarios. We MUST insist on a rigorous study of what records we have, which must also abandon our old, inadequate methods and embrace this special kind of Change as the engine which produces these results.

We can start with the one unassailable example – the Emergence of Life on Earth, and we must reveal the tempos of Change, both the catastrophes and the revolutionary Events, which opened up new lines of development.

We must study the Nature of Emergence, and the trajectory of their actual appearance. We must contrast periods of Stability with the turning points involving great Instability.

We must create a Science of Qualitative Change and Emergence.

Postscript: This is a ten year old paper, which immediately preceded the launch of this journal in 2009, which set as its task the tackling of all that was implied in this paper. And with the tenth anniversary of that decision, the majority of what was intended to be addressed, has now been successfully completed.

By 2010:

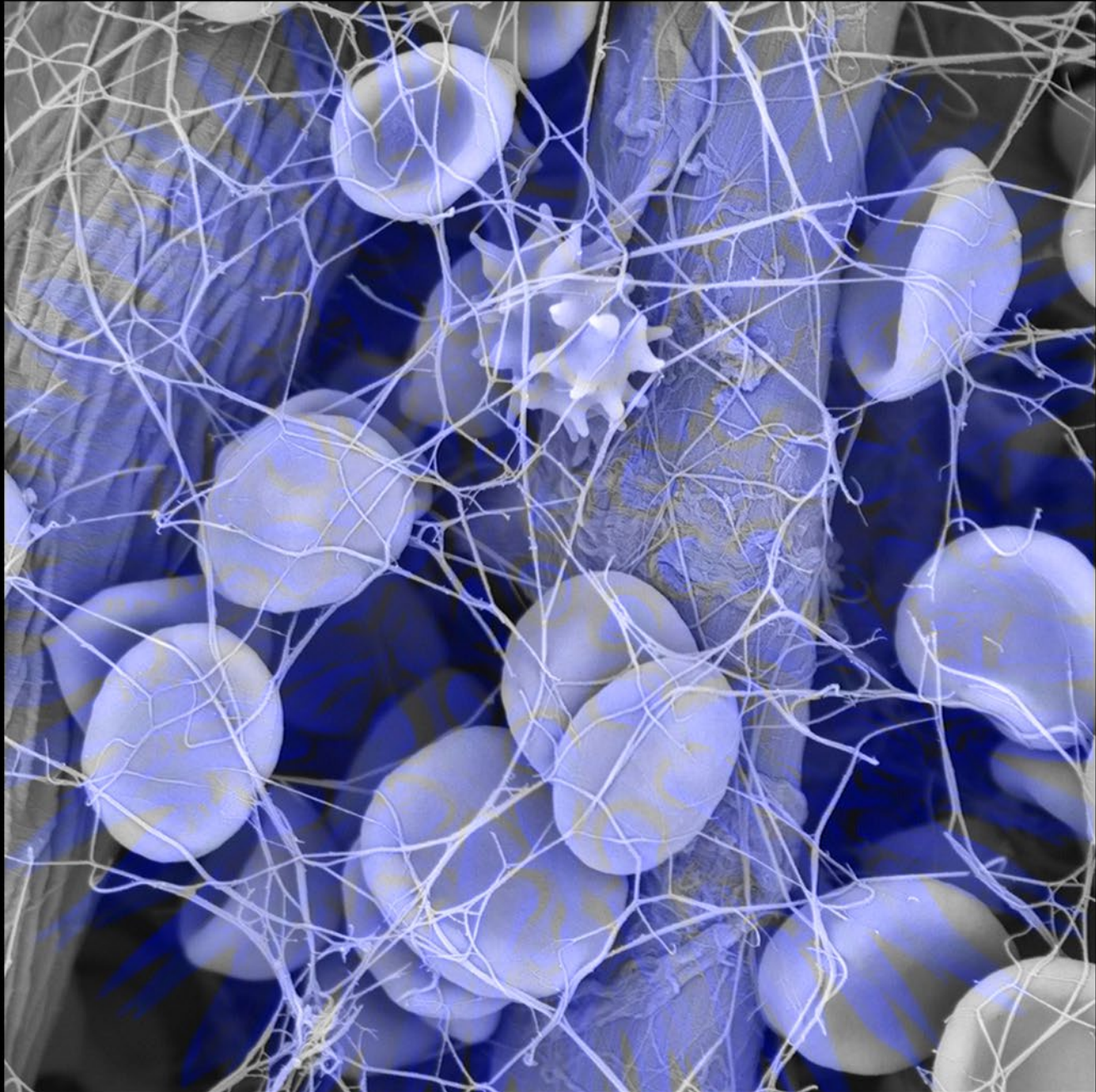
Trajectory of Abstraction Development,
Theory of the Double Slit Experiments,
The Theory of Emergences

had already been achieved, and

by 2018:

Demolition of the Copenhagen Interpretation of QT,
and its replacement with Substrate Theory.





8 μ m

8800x
30.5 μ m

10kV - Low
BSD Full

Blood cells

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