



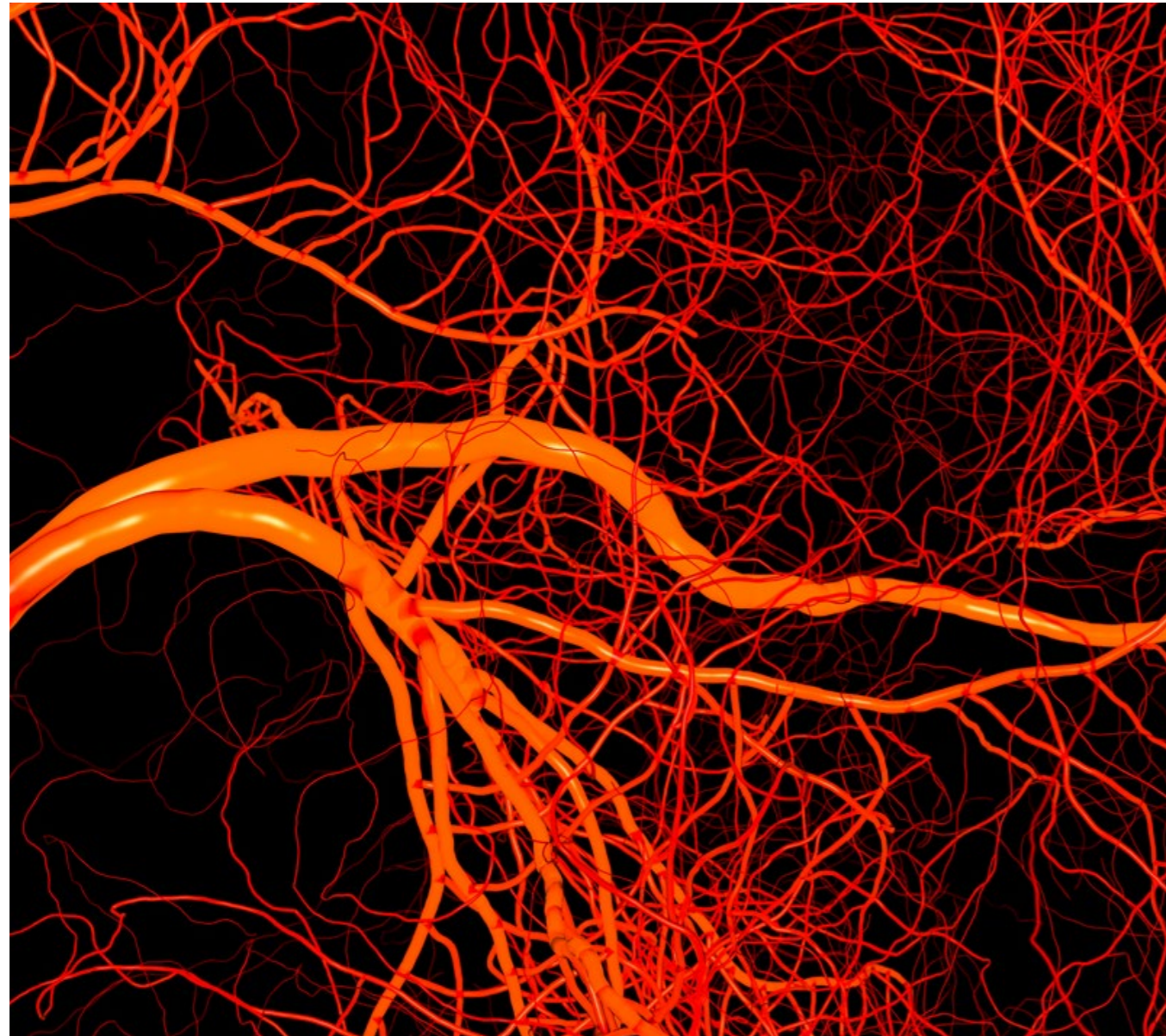
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**THE
SYSTEMS
THEORY
OF EVERYTHING**

PART 5

JIM SCHOFIELD





The Systems Theory of Everything V Special Issue 78 / October 2022

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Art Director's note

The illustration in this series of issues on Jim Schofield's new Systems Theory, draws heavily on the genre of fine art known as action painting, of which Jackson Pollock was the most renowned exponent.

The reasons for this choice are more than aesthetic.

Action painting marked a sea-change in approach during the 1950s, in which process and method became more important considerations for the artist, than the final image created. The movement also saw a renewed acknowledgment of the painting's own materiality and objectness, not as an illusory depiction of some scene or person, but as a trace record of real matter, motion and time.

The approach of abstract expressionism may have been intuitive, with the artist responding to the changing canvas, but it was also often the result of a repeating schema or cyclical systematic approach to mark-making. This can be seen as an interesting analog for natural systems and their emergences, where simple repeating processes and feedback loops result in systems capable of responding to changing conditions, and can lead to seemingly impenetrable complexity - even the creation of entirely new forms of matter. These are universal phenomena that reductionist science has never been able to fully understand and explain. The Systems approach to reality attempts to address these shortcomings...

The cover of this issue used DALL-E 2 artificial intelligence to create an image representing the synergy between action painting and natural forms such as rivers and veins. The issue also features artworks by Vero Glezqui whose paintings address the complexity of natural systems.

Introducing Jim Schofield's

Systems Theory

Mick Schofield

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

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

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

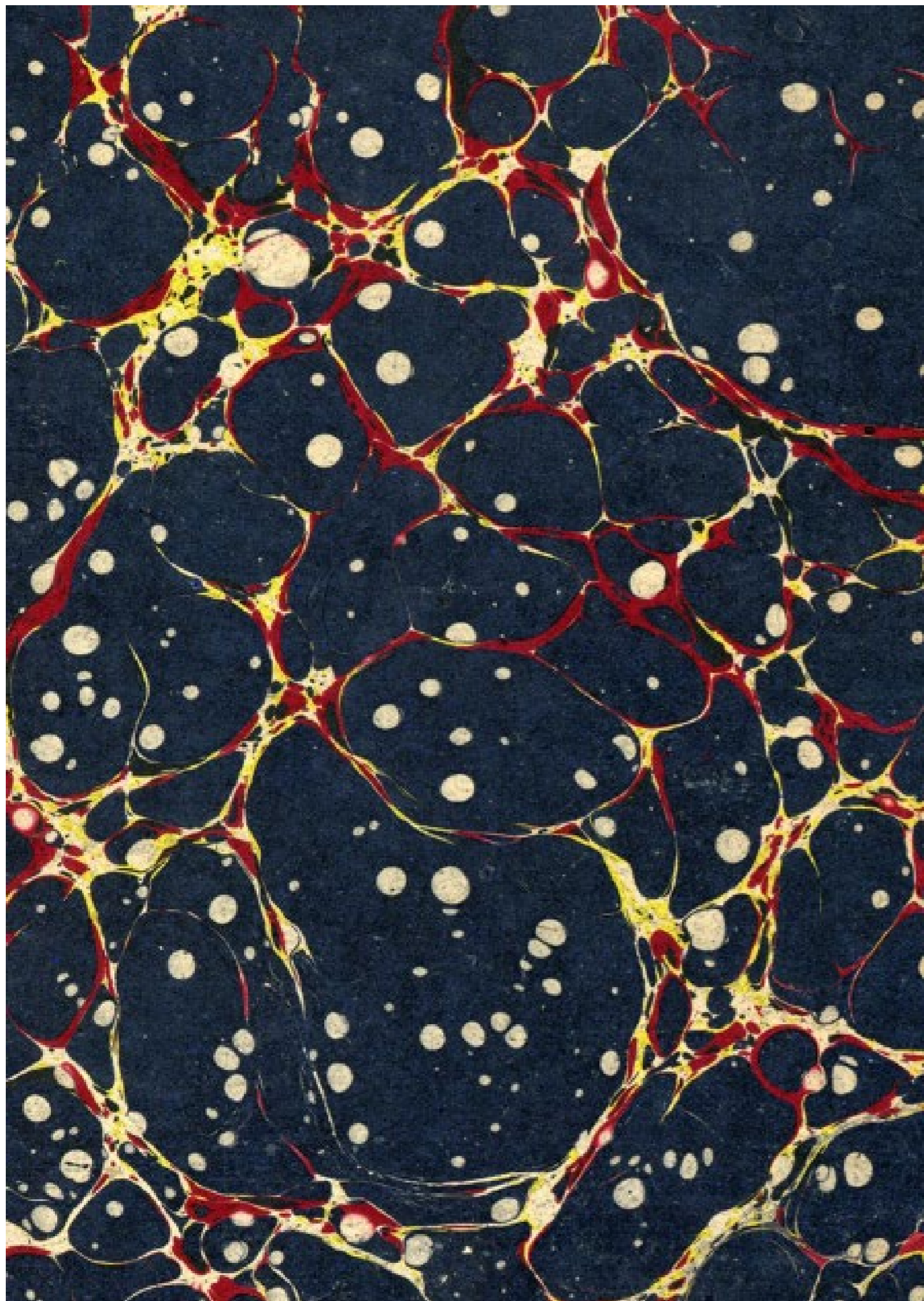
This approach was dogged by a rigid and ordered way of seeing things and was largely rejected by Marxist sociologists in the 1970s, which favoured examining conflict, change and contradiction, as the key driving forces underpinning social conditions. Similarly in systems engineering, machine logic, computer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

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

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

The series of papers examines the history of Pluralist Science and how we might begin reversing its many mistakes.





The Bases of the Sciences

Part 1

Jim Schofield

The very beginnings of what were later called The Sciences kicked off in ancient times, in the hands of able Artisans, who, initially as Farmers, attempted to make their daily tasks easier, by starting to devise simpler ways to undertake the many onerous processes involved, by the careful and intelligent design and making of helpful Tools. They were never initially trained in such tasks: they just had to “Suck-it-and-See” in attempting to alleviate some of the more time consuming jobs, that were absolutely essential to successful growing, animal husbandry, cooking and crafting. In time, these increasingly effective innovators became independent of individual farmers, and formed a valuable aid to the whole community. For doing their specialist tasks and nothing else quickly speeded up their Development AND the Efficacy of the aids they made, used or trained people for use. In the more developed Feudal Communities, they might be employed directly by the Lord of the Manor, and even equipped with their own small staff: and this greatly extended what they could usefully do...

But, these Artisans were essentially Pragmatists - finding the best and most effective means of achieving their aims through experiment. They rapidly became indispensable, and were joined, in the employ of the Lord, by professional soldiers, with the efficient tools of their defensive and coercive trades, to maintain and even increase the extent of that Lord’s Territory! And, in such circumstances had to extend the skills of the local Tool producer to making and improving the weapons of the soldiers too. Indeed, in Sea-side or River-side locations these increasingly able Artisans began to be called upon to provide boats and minor bridges too.

Now in the so-called Classical World, dominated by Greece and then Rome, the soldiers became more associated with the Ruling Class, as feudal Domains became only parts of Militarily acquired Empires of great size, topped by a growing Ruling Elite, who were able to follow differently occupying lifestyles, and pursue concerns like Philosophy and the Arts! They got their riches from vast estates, particularly in conquered Lands. So, developments in attempts at Understanding began to take two very different routes: though in the case of the Ruling Class, their bases DID NOT originate as did the older Artisanal route within Pragmatism, and the solution of everyday Work Problems, but instead in their purely conceptual experiences in their cerebral preoccupations.

These two alternative routes in Thinking diverged markedly. For while the Pragmatist still solved the Everyday Problems, the Conceptions of what pure Reasoning could achieve, were considered to reside only in the Classical Ideas, and NEVER in the simple Pragmatism of the Artisans!

So, when the Ancient Greeks came up with the very first Consistent, Concise and Comprehensive Rationality for Mathematics, it was Wholly Wrongly assumed to be about ALL Kinds of Thinking! But those privileged Thinkers, largely a part of the Ruling Class, knew Nothing about the Applied Knowledge of the Artisans! Indeed, their devised Logic was only legitimate within the tightly maintained and Restricted Areas of Disciplines like Mathematics: wholly Pluralist sets of circumstances and Processes.

Yet in the alternative approach of Pragmatism, they were also stymied by a very different and undermining mistake: for their approach involved NOT a purely cerebral Discipline, as was the Classical Stance, but changing Real World situations that frequently undermined their conclusions.

Interestingly, BOTH sides considered that they solved their inadequacies by Combining the Two! But this didn't fully solve the problem. The only approach for both of these just had to be Holistic: because, to some extent - Everything affects Everything Else!

Nevertheless, the Pragmatists embraced the classically developed Mathematics of their Rulers, because of its seemingly-reliable-consistencies (and in spite of its blatant Plurality): while the Classicists, in turn, embraced the Real World Causality of the Pragmatists (in spite of its evident inconsistencies and physical limitations - always limited to known, local and highly constrained situations).

And the closer we study our consequent Laws within both of these alternatives, the more Significant Inadequacies are revealed: and, the more failures we notice, whichever Stance we choose to make!

Let us, therefore, re-address what was historically-considered necessary, in order to make sense of what was being revealed within the first general Approach of Chemistry!

For as this discipline developed, it certainly seemed able to deal with particular features, such as the various different Elements, which clearly combined-together, as units of the substances involved, and always as Single Atoms or Molecules, even if the Context was a great multiplicity of these units: the overall Bulk Effects being merely seen as multiplied-up versions of the Exact Same Products! - in spite of the individual single-unit-reactions by NO means happening simultaneously...

Of course, these methods work pragmatically within artificially-constructed Experiments, with absolutely nothing else in the mix - all variables must be controlled! But such circumstances would NEVER occur in unfettered Reality-as-is!

Indeed, absolutely all Experiments are limited-to these kinds of restricted cases. And, it is obvious that in less "clean-and-ordered" conditions, things would certainly not only be very different, but also would occur at different tempos, and include other usually NOT considered components too. And also, given time, and a Real World Complex Mix, all sorts of reactions including those that, by diverse routs, also end up adding to the expected result's total by other means.

And, of course, standing behind all of these assumptions is the Major Error, that separately derived cases simply Add - when happening together and simultaneously - but THEY DON'T! As The Systems Approach regularly proves.

And, of course, Chemistry played no part in the Artisan precedence in many other nascent Sciences! For, it was primarily developed by specialists within Education, and a limited band within Production, where in both of these, its study was given the usual greatly restricted Context, with the usual severely biased results! Indeed, most supposedly relevant studies were treated to similar restrictions both in Education and Production. And, always seemingly with just Causes - as the more Natural occurrences would always involve a multiplicity of simultaneous, mutually-affecting Processes, thereby making any meaningful understanding of what was going on, impossible! And, particularly as, with little or no revealed Causal Laws, separating out the various contributions to any overall results, was effectively impossible too.

Indeed, the establishment of Causal Laws, AND their separation from the overall effects, was imperative - BUT also impossible as more and more such relations were initially totally Quantitative, and hence indistinguishable from all other Quantitative contributions. And as these Causal Relations didn't appear at the same Level, as the exclusively Empirical Results, this became increasingly difficult to both correctly match up and apply.

And, to make matters even worse, the multiplicity of confusing Systems Effects - which, remember, were NOT even acknowledged until recently - the disentangling of these differently caused contributions was never fully achieved!

The solution, though obvious, is nowhere generally admitted and hence NOT undertaken! It has to be an all-out assault upon Systems Theory, involving the detailed definition of Causal Elements, in order to Fully Explain their contributions, as well as including their purely Quantitative aspects.

Now, with a well-entrenched and dominant Mathematical Rationality, the current scientific methods simply cannot easily do this.

Let us look briefly at a single Systems Approach revelation by this researcher, in order to effectively reveal the involved difficulties!

It is the unavoidable preponderance of CHAINS and even CYCLES of Processes, that are necessary to analyse the Effects of particularly important faults that regularly disturb these Sequences!

Now clearly the Processes involved in these sequences are NEVER lined up in a queue, ready-and-waiting for their turn! They will merely be available within a pre-existing "random mix" - - perhaps more numerous than others not regularly required in this way: BUT, because of their randomised positions AND the possibility of their being

pre-empted by others with the same linking variable, could have a mistaken join up and hence a confusion which could show up in the final Quantitative results, with NO indication of WHY?

Now, an important aspect of Systems Theory, is when a particular Natural System, involving a whole consequent series of Separate Processes, gets established, and is multiply repeated simultaneously, and also over time: for the constant repetition ensures not only the resulting final products, but also the continuing presence of all the required components in the mix - especially if they are involved one way or another in other Processes too! For they came to have assured presences in the containing population, where others not so integrated, would tend to die out!

So the finding of the next required Process in a sequence would always be easier (though not always guaranteed). So fairly "ordered" populations could gradually be achieved!

Large-scale successful process successes, tended to restructure their environments, sometimes dramatically, at least to some extent removing the prior "randomness", and making the sequences ever more likely to succeed!

But such kinds of vital population massaging, would never be straight-forward to interpret Quantitatively.

It is when we start to think this way about dynamic Natural Systems, that the age-old pact between experimental pragmatism and mathematical logic begins to break down irrevocably.



Part 2

The so-called CHAINS and CYCLES, which I quite validly promote to The Primary Role within these Discussions, have currently revealed themselves, upon extensive study, to be much more complex than I had originally defined them to be! Their true Nature, and Alternative Roles have shown themselves to be at the very determining heart of the way that Multiple Simultaneous Entities actually mutually-interact in the Really-existing World - as distinct from how we invariably define-and-describe them, universally, at present.

And, the reason for this incorrect mismatch was, initially, wholly pragmatic, as without such imposed Major Controls (ensuring this), and the then consequent Simplifications, there would have been absolutely NO CHANCE of either achieving any even approximately true conceptions, OR, indeed, doing anything remotely constructive within Reality-as-it-really-is.

For Reality-as-is, itself, is Not Fixed - indeed, it has actually Evolved-over-Time - both in the Nature of its components, AND in their Processes of Interaction (and even its countless re-organisations): and this, only in the very-latest-period of Mankind's arrival upon the scene, with their still-developing Interpreting Consciousness!

The "Complex-yet-Random" World which we initially assumed, turns out to be colossally different to the actually self-shaped and evolved basis upon which Natural Systems had to necessarily develop, in order to organise themselves to even survive in a changing and unpredictable Universe.

And in achieving this, having absolutely NO CONSCIOUSNESS within itself to guide that

development, it could only be via a kind of self-selection of what could continue-to-persist! Natural Selection cannot be limited to living Systems.

Now, this latter realisation, made some years ago by this very researcher, is still an on-going and as yet incomplete process, that will be extremely difficult to deliver, particularly within a Scientific Community that currently does not yet think in these new ways yet.

So, I have decided to take my readers along-with-me upon my Current and Crucial Task - namely, to understand Natural Development's Repeatable Loops, as they certainly exist within Reality-as-is!

For, the Major Difficulty arises within the Formulae that are always used to describe what is going on, and which are assumed to contain Absolutely Everything Required! And, this was because the substances involved are considered to exist as merely, wholly-inactive subjects, responsive only to the Effects of these associated, active Formulae: so, that they are never conceived-of as actively, self-organising, in any ways at all.

But, that is exactly what they really are! And, indeed, have been so, over a very long and sometimes tumultuous Existence over Time!

They are NOT The Inactive Random Mix of reducible components that we assume them to be - for quite apart from these superficial organisations of matter into Solids, Liquids and Gasses - they also possess Selective Self-Reorganisations, in order to facilitate their ensured continued survival: and these crucial processes are NOT at all evident.

Indeed, we assume that we only have a Chaotic Randomness to deal with! But, in actual fact, wholly without any intervention, Reality-itself is subject to diverse, ever-more-confusing Active Processes, that react, in self-preserving ways, which oppose many such disturbances: and it is these that we must consider, as making Reality itself a very significant and self-moving contributor too!

Now, as merely stated baldly here, this does initially seem very unlikely, so, I would like to take an important, yet very common case, in order to bring these important operations into much clearer focus.

We will, to this end, consider separate CHAINS composed of different Processes, and the even more important Repeatable LOOPS of such Processes, where the Output from each-and-every process, becomes the required Input for the next one in the series. These, as a whole, form both important CHAINS & LOOPS, but, nevertheless, at first glance, seem wholly unlikely to ever occur, if not actually totally impossible - indeed, they are processes that occur wholly naturally.

But, what could possibly direct "within-the-midst-of-such Chaos" such a series to somehow actually arise?

The solution, to such problems, is NEVER addressed, just as I have described it here, BUT, instead, it is ONLY within the unique formulation of the individual-steps-required: for surely these must constantly be having to be achieved, and in the right order to actually facilitate this! While the actual components, within all the single steps, simply MUST, in order to continually involve the very sane steps, have TWO equal-and-opposite modes. One as part of the overall process required. And the other as its necessary RESET!

For, to be used again-and-again such Dual Mode Reactions would be invaluable: one to deliver the required Function, and the other to RESET it, immediately, so that it could be used again-and-again! So, once initially used in this way - from scratch - each individual process MUST be altered to only perform these two related processes, and no others.

They get effectively *marked*, as the ones for these two necessary processes required - the actual Function Step & its RESET.

Each-and-every Step will finally include the Two Mode Action Processes, plus a direction to the next step.

Now, it must be remembered here that absolutely NO Controlling Program of any kind directs this pair of related process sets: for the action of it must automatically re-run again, after completing the required Function. But this second time, in order to merely wholly reset things, which were changed by their actions, to then be ready for its next series of identical required uses.

So, exactly what causes the two distinct sets of actions to perform in the Right Order when required? What determines the Sequence? With the reset Run replacing the changed first set of processes, once again, by all the resets changing-things -back automatically!

It must be by a built-in, terminal director, at the end, back to the start of the Process sequence, but, this time merely resetting each one (or perhaps more likely just switching the action to an already-existing Second set)!

Remember this is a purely theoretical effort: appropriate Experiments must be devised to concretely identify the necessary mechanisms! And somehow these must emerge from the natures of all the included simultaneous processes, that automatically, over time arrive at an optimal set, with the sequential elimination of all the other options.

And, upon this run, it surprisingly resets everything back to all its initial states - primed-and-ready for its next activation! But now the same optimal set every single subsequent time.

But clearly, without a guiding Program, directing what needs to be done: Everything must instead be implicit, actually, somehow, within the Entities Themselves, (such as, for example, their innate Properties) which in this particular situation, can exist in the two sets of states & their possible actions - the primary one to carry out the necessary activations, while the second one merely resets each-and-every involved process step ready for the same action Next Time!

Now, this is exceedingly important, because it demonstrates how given Entities can be switched between different processes! Indeed, substituting for a separately conceived-of set of processes.





Indeed, the Man-invented system involving only very simple-and-inert entities, and a separately designed overall Activating Program, was the only way we could originally conceive of it! This is STILL how we model Natural Systems inside our own computer programmes.

And, it explains why Mankind initially conceived of a God (Nature's Programmer!), creating, directing and using what they achieved "naturally", acting within a relatively inert Nature!

Of course, when similarly applied to Reality-as-is, this approach in fact requires NO Directing Programs: but, instead, a very different Reality, composed of Complex, Multi-Aspect Entities developed in a clearly Evolutionary Fashion, via true Emergences, to deliver, what appears to us to be "programs" delivering sophisticated action, BUT delivered by mere seemingly mechanistic entities within Concrete Reality. Of course, the processes of Evolution that actually deliver such sophisticated Entities, still require to be studied to reveal how they actually work. We don't know how this happens!

And, crucially, some as yet unexplained, regular assumptions, must be revealed as mere Placeholders, and the real Nature of these oversimplified concoctions revealed instead.

It concerns what are usually described as Properties!

For these turn out to be the Wholly New Built-in Aspects of Entities, which though essential, actually both radically-alter and indeed significantly-extend, what we have previously considered them to be. For, generally, and entirely without explanation, their actual Effects are simply put down to "the Properties of that particular substance". And the reason for NOT adding any Explanations is because these properties are evident in the Bulk Substance, wherein No Evident Reasons are yet available!

But, upon constant-and-repeated subdivision of the Substance involved, those properties remain exactly the same - right down to the Atomic Level: so that is where the explanations must lie!

So, the classical means of disentangling such complex mixes, as always has to be the limitation to - a single Law at a time. And individual investigations of what they will do, and when!

Reality-as-is, is, indeed, developable, & only establishes The Wholly New Over Time, and if it is also maintained in some way! The most reliable way is by being established as part of a repeating Cycle, which can establish The New, at first Locally.

Let us make it absolutely clear: The Wholly New can never be predicted before it first happens! For, in such a World as this, the New only gets established if it always happens, in other words, every time the conditions for it recur: indeed, we only consider it established when it does so.

And for that to be the case, there have to be the same conditions repeated many times, and nothing else New appearing which can eliminate it! And, of course, no other New appearances that require it.

You can see why it can take time for the New Inclusion to become established, AND also why our way of characterising all Laws ONLY at the Atomic and Molecular Levels is Wrong - and leads to misleading conceptions!

For, if our means of characterising Reality will never always exactly deliver an adequate description of a Developing Reality, but, at best, an always truncated version: ONLY somewhat more fully descriptive over time! And clearly NEVER capable of predicting all possible eventualities. Indeed, such a System seems eminently capable of contradicting itself as it develops!

Think about its trajectory so far!

Could Life have been predicted?

Surely NO!

And Everything that has happened since?

Also NO!

Indeed, it wasn't until the arrival of Man, that anything could be addressed in this regard: AND THEN only retrospectively!

And there will be limits!

Without appropriate supportive Environments, Nothing will ever be able to transcend these ultimate limits, for even Mankind would have to create and maintain its essential Environments, wherever they go!

SYNOPSIS:

Reality-as-is is never finished!

Neither does it have a Final Objective!

But it does generate its own potentialities!

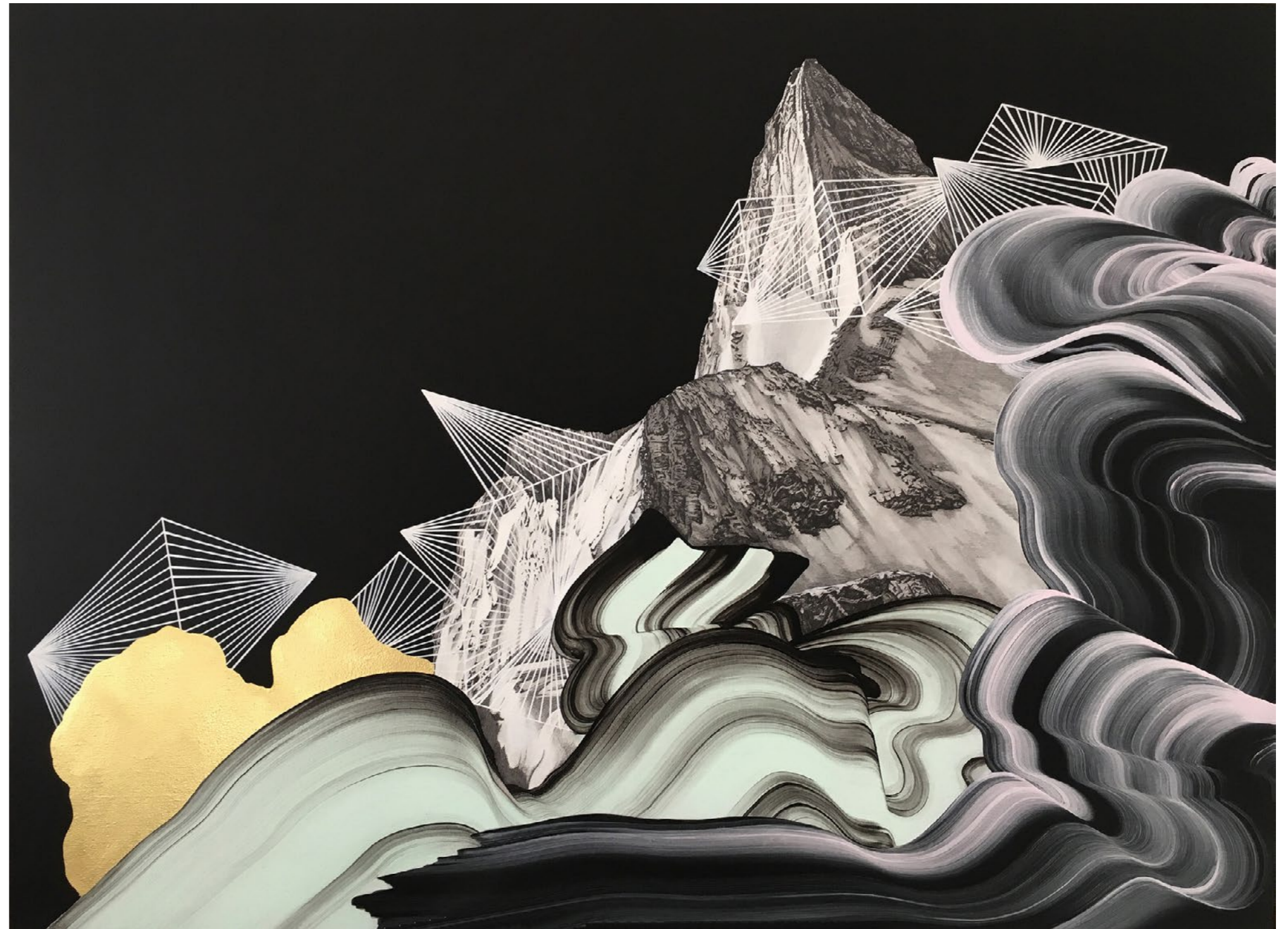
Reality itself is a Developable System with apparently NO limits, which may have started “mechanistically”, BUT soon relied upon its own possibilities, and found its maintainable Sub Systems.

Remarkably, it ultimately revealed a self-consistent set of laws (through us!) which made sense of what occurred, and could be used to achieve their produced states when required. But each such process would only work within the correct enabling context - Pluralist Science!

None were independent of Context!

So required overall Productions were only possible, if always kept within those enabling Contexts!

And very few of these were Totally Natural Contexts: each required Process had to be carried out within its required Context - and these were different for every single law!





Nature's Context

The True Situation without Human Intervention

Clearly, quite apart from what Mankind imposes upon Reality-as-is, the World around us also has its own Naturally-arrived-at Contexts. These Contexts are not only something that Mankind frequently has to deal with, but it is also how Nature finds itself, within, what we describe as its own implicit Purely Natural Development.

For, these Implicit Developments will, undoubtedly, still constitute the vast majority of All Wholly Natural Contexts in which wholly undirected Natural Developments will take place: and so, it will be imperative for Mankind to also understand all of that, along with those Contexts he has himself imposed, and even sometimes purposely maintained to his own evident advantages.

Indeed! What are usually termed The Sciences, simply MUST be of this kind, if Mankind is to continue to make further Progress in bending areas of Reality-as-is to its will and intended purposes! Most of Nature, and, also, for most of the time, there will be many constantly-changing-things, within an immediately, reactive Reality, which, most certainly, will, in time, reach its Own Balance of Many Conflicting Contentions, and, for-a-time at least, will settle into naturally-acquired Stabilities, at least until, it is both Significantly, and either Naturally or Purposely, Changed!

Now, in spite of being wholly Natural, these achieved situations are never permanent: for Reality-as-is, itself, is NOT WITHOUT CONTENTIONS, and so it, all by itself, will too, most certainly, be subject to further unavoidable changes.

And, these will never be allowed to remain stable perpetually. They could continue to accumulate, to ultimately precipitate a General Collapse and a consequent, following Overall & Complete Re-Organisation of a Significant Slice of Reality: indeed a veritable Thorough-Going Collapse, finally terminated by a New and Different set of relations, which, thereafter, gradually-establish themselves into a Wholly New Related Set of Relationships - what we call an Emergent Event, or even a Revolution!

And, let us be crystal clear about these Transformations: they are the Wholly Natural Turning Points within such a System. They are NOT imposed from without! There is ample undoubted evidence, within the Ground beneath our feet, that such Revolutionary Upheavals have quite naturally occurred in the past - and will continue to occur again in the future.

The most important assumption in addressing all Truly Natural Developments is simply that they must be Entirely Holistic: which characterises all changes as being due to literally Everything Affecting Absolutely Everything Else! The alternative of things being in Fixed & Limited Sets, within rigidly-maintained Contexts, is certainly the usual Basis within The Sciences - this Pluralistic assumption is incorrect.

Reality-as-is naturally is basically Completely Holistic, whereas most constructive activities of Mankind are always (and have to be) Totally Pluralistic - in order to keep them under Steadfast Continuing Control!

So, naturally, most reliably-productive interactions by Mankind, just have to be under those standard cond-

itions: whereas, any attempts to Understand Reality-as-is must be by addressed only in fully Maintained Holistic Conditions, to have any hope of achieving them.

On the other hand, the Profound Beauty of Nature, is due to its being entirely Holistic! For, Nature finds innumerable subtle Balances, whereas Mankind, always requiring maximal Control, must take the much more pedestrian Pluralist Route!

Now, such a steadfast division is, by no means, the best for Mankind as a whole, but it is considered imperative for those IN CHARGE of all Money-Making Production: for they require that state of affairs to keep things performing exactly as they are. So, when the financial benefits accrue to the owners of the overall System, while exactly the opposite is the lot of employed workers and their supposedly-served customers, such a set-up puts these groups on diametrical opposite sides to the Owners.

So, very clearly, the Optimum Method that should be used to ensure the maximal benefit to both workers and customers should always be the Holistic Approach!

In a Socialist set-up, where the workers and customers are paramount, a Holistic Approach must be insisted upon, as the primary purpose must never be Profit above all else! And, to arrive at such optimised results, Research Organisations to serve a socialist Government, must be to allocate sufficient time for arriving at those Ideal Results, and then implementing them in the required factory premises too! Indeed, elements of Production common to several Production Processes, should be located at the heart of a related bunch of such Processes.

Now, the time is certainly well-overdue, to tackle the problems created by the failures to explain, Qualitatively, the real reasons for actually caused changes in behaviours: and their mistaken replacements, instead, by incorrect alternatives! For, to remedy, such mistaken conclusions, requires a New-and-Deep Understanding of what is really going on, in order to adequately intervene, to correctly describe what will have been caused to happen.

The problem occurs in dealing correctly with certain consequent changes, so that incorrect predictions are discarded, and the Right Moves to remedy the present Wrong Outcomes, are put right.

For, these mistaken methods certainly predominate, when attempting to intervene in mistakenly diagnosed situations: so that instead of the required actions, useless alternatives are too often chosen, that regularly fail to have the required Effects!

The situations that occur, within such Processes, and which need to be strongly countered to terminate the consequent mess they actually cause, and often they are therefore not, so the necessary re-directions DO NOT TAKE PLACE!

The most profound cases occur in situations wherein the set-up is very easily mistaken as being due to one assumed cause, when, in fact, it is entirely due to something else! The commonest situations occur when attempting to control a Near-Balance State, that with small applied adjustments, and the chosen checks, turn out to have the exactly opposite Effects!

They occur, most commonly, in close-control-situations, where whatever you do, remarkably, has very little effect, indeed, and the opposite corrective actions also elicit only the same, very-tiny-reversions. For, before you can do the right thing, you must first develop an Appropriate *Negation*, for use in checking what you are actually doing.

A certain amount of experimentation simply must be undertaken in order to arrive at that Required Correction, before, thereafter, using it regularly to achieve what you actually require! For, only when these moves are reliable, will the necessary Control be useable, and the required results obtained. In these near-balance adjustments there will always be minimal ambiguous effects, and in your attempts to be "on the right foot", you will always encounter these difficult situations. Indeed, without an adequate method the seeker may always give up! Knowing exactly what you are doing, when in these circumstances, is most certainly absolutely imperative! So, such a difficulty MUST be soundly overcome: for without it, problems will only accrue.

Of course, the closer you get to Reality-as-is, and away from the usually aimed-for Pluralist Conditions, the more difficult (and Real) these situations become - unavoidably proliferating if these confusing situations predominate: so that the most likely changes will always be to perpetuate the Tidy and Wrong Pluralist "reliability", instead of the essentially required Holistic Approach!

Indeed, a major Variable when investigating Natural Possibilities within Reality, just has to be the various possible Contexts involved, AND, of course, their Contents!

For, these are, by no means, easily-given-situations, with invariable Contents: and, as these change, as they will, so also do the possible modes of Existence, and even the Range of achievable performances for the multitudes of Contexts increasingly possible.

Indeed, the Properties displayed by any given Entity, is NOT fixed, but varies, both with the Context involved, AND the Full Content of simultaneous accompaniments, as well as the Range of values achievable in a given situation.

And, these variabilities DO NOT constitute unvarying sets, but actually evolve into wholly New Contents and Environments Over Time.

Indeed, overall, the complete set is Never Fixed, unless made to be so by some newly-involved, all-powerful organisers! And, even the Revealed Laws - governing what will happen, will change, along with variations within the Context then occupied.

Indeed, Mankind is aware of certain Absolutely Crucial Contexts, which are essential in determining the maximal effects on whatever takes place within them. The most crucial being a Totally Holistic Context, which will deliver literally all possible behaviours, which will always be reduced to limited subsets by any restrictions made to that Context!

It is, therefore, imperative for that Context to be achieved, if the Full set of possibilities, and all Consequent Laws are to be revealed!

It is the required Context for establishing the most Complete Theory governing ALL that could possibly happen!

Now, clearly, such an objective, will be exceedingly difficult to establish: so, most situations set-up will be vastly restricted Pluralist Situations - always characterised by very simplified and rigidly-maintained Contexts designed to deliver very restricted sets of behaviours within Special Circumstances.

These are the Contexts imperative in the Production of Particular Processes (and Nowhere Else).

Clearly, Reality-as-is is undoubtedly a self-developing, and hence always On-Going System! It copes with innovations by integrating them over time into, what for it is a series of minimally disturbing arrangements, that, as far as possible, moves things towards purely local Stabilities!

But, such a locally Stable System, naturally constructs an increasingly precarious Overall Condition, which is very easily flipped into a more general Formal Re-Organisation - an Inevitable Revolution, when large tracts rapidly Re-Organise to something more sustainable!

The Misleading Failure of Bottom-Up Causality

Long ago in the Mists of Pre-Historical Time, Mankind began to see Evidence of Order within the Properties of the Composing Entities of their Context of Reality-as-is! In particular, certain features of particular substances were evidently independent of the quantities involved. They appeared to be universal, & wholly independent of the amount involved.

And, it became a Banker Discovery! Yet, as there were many different Substances involved, such a principle did NOT help in Mankind's Effort to know more about these myriads of Natural Substances: AND, of course, the reasons for their so-different properties.

After many millennia, Mankind began to wonder of what more basic Substances, certain Key Entities were composed-of! But, no matter how often they managed to divide a given substance, its properties seemed to be Totally Fixed!

Yet, destructive natural Processes, such as Lightning-produced-Fire, could and always did, transform burning substances into something very different! Evidently, they were not, as they seemed, single permanent substances, but in some cases, at least, composed, if only in part, of at least one burnable component.

And, in spite of Mankind's own primitive abilities, they very-early-on learned to cherish, feed and maintain, a carefully-tended Fire - not least to keep them warm, on cold nights, and also to frighten-off Wild Predatory Animals - for dead wood was available everywhere, and could be collected to feed a permanently-maintained Fire, at the heart of a Defensible Space!

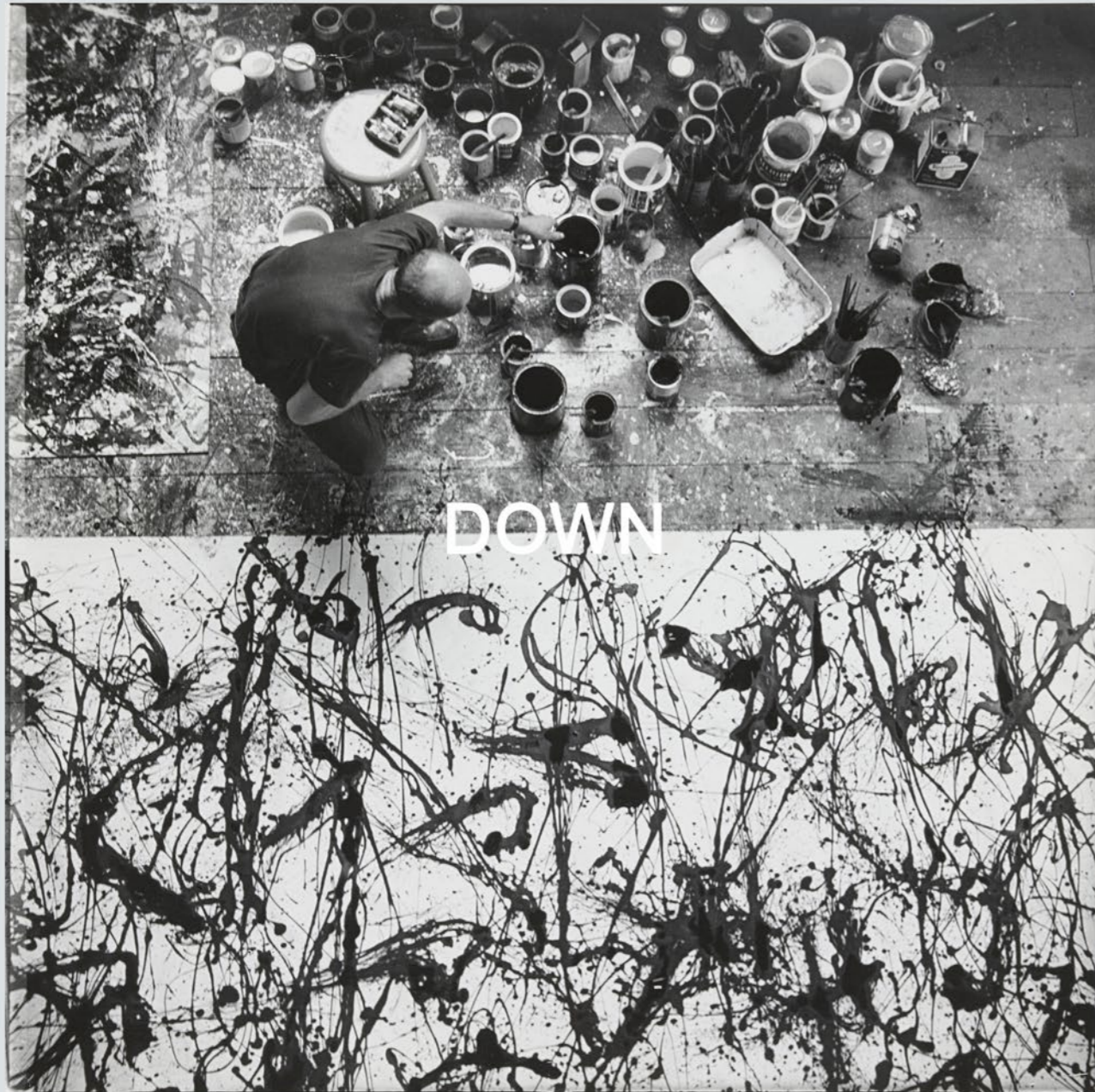
But, initially, in Mankind's earliest natural habitats - the Equatorial Jungles, such a thing as Fires were very much more a threat than a boon, and it was only following Significant Climate Change, involving the decline of the Equatorial Jungles that Mankind found better chances in the more open and easily visible Countryside! So, instead of a a four-limbed Monkey-like existence - up in the trees, Mankind had to develop a highly efficient and sustainable form of Bipedal Locomotion, that also made him Viable Hunters, for defensive weapons were also ideal for hunting too.

The Hand-to-mouth foodstuffs, of the Equatorial Forest, had to be totally transformed in many different ways to work on the open plains! The short-sprints of escaping prey, were no match for the persistence and stamina of the Long-Distance Weaponised Hunters! And, simply "come-across" usefully-found tools, were no-match for the vast developments of constructed aids like Spears and Bows-and-Arrows. Mankind, who had been a Prey Animal in the Forest, became capable teams of Skilled Hunters of great herds of Plains Animals! Indeed, the limited warning voicings of them as Prey animals, begat the development of meaningful communications between co-operating hunters! A very different and superbly-equipped population of communicating Hunters and Makers dramatically replaced their forest dwelling ancestors, and vastly extended what they could do!

The achievements of these sorely challenged escapers from their originally narrow, but comfortable existence in the Equatorial Forest, was surprisingly a very successful Turn-Around.



TOP



CAUSALITY

For, from being a Prey animal, they ultimately were transformed into a highly direct Opposite success!

Now, there is a great deal more in this than was first realised: based solely upon the fact of things Wholly New, never being predictable before "First Occurrence!" Indeed, this important feature of Development, makes conscious planned Development Totally Impossible. And, the only way forward to be a rich study of such Events, with a view to getting the feel of them, and making the best of a seemingly impossible situation!

It is not so way out as it at first seems, because in such an Evolutionary Change, the "best" is made of the given situation, is arrived at by indirect-but-in-some-way optimised means. The criteria involved will never produce a wholly unstable result.

Indeed, with extensive experience of such Revolutions, vastly experienced Revolutionaries will do remarkably well, whereas the usual type of Thinker will do remarkably badly, as they always refuse to make decisions in that way!

The usual way of Thinking in such circumstances can Absolutely NEVER lead to a Stable Solution, and only a temporary, and very short-term Fix. This will always require another different temporary Fix, very soon. And, this too will always ultimately Completely fail, and be taken-over by a Naturally generated and unavoidable Revolution!

Notice that the successful Revolutionary has not only to be good at dealing with revolutionary situations, but also very knowledgeable about *Stabilities*, in general.

But, let us return to the primary Purpose of this contribution, which seems to have been mislaid in the above details: but, of course, it hasn't!

It just had to, also, put that set-of-ideas into their wider actual context - without, of course, "The Tail Wagging the Dog!"

For Bottom-Up Causality, as a General Principle, has undoubtedly been guilty of doing precisely that! For, as should be evident from the above: making it the ONLY Determining Causality has been very misleading - and for completely understandable reasons too.

The tendency for this incorrectly Generalised Principle, has been the clear absolutely everywhere (if only locally) with the applicability of that Causality ONLY ever applied! But, why is it that these Causalities are NOT Universal?

The Answer has to do with the Evolutionary Means by which True Development always emerges - for it is NEVER Always-and-Everywhere IN CHARGE!

Indeed, the underlying tendency, is always to simplify, minimise and stabilise itself: BUT only-kicks-in when multiple, submerged and radical changes co-operate in a limited incident termed a Revolution! Reality, being a Developmental Process, unavoidably oscillates between "Normal-&-Extended" Mechanistic Changes, AND Short Dramatic Interludes of Revolutionary Transformations.

Now, this was altogether Too Much to Ask of Mankind for many, many millennia! So, Mankind learned, wherever possible, to artificially-maintain situations within those simplified Contexts - as long as possible, and effectively delay the necessary radical Changes, until they could no longer be kept that way: and a Revolution would unavoidably take place.

Yet, any on-going "successes" entirely achieved only by those merely attempting to maximise their own gains alone, CAN, nevertheless be incapable of perpetually avoiding an ever-closer approach to an inevitable General Overall Collapse!

Indeed, such blind adjustments, can only partially alleviate the overall Effects: for, by only addressing the easiest problems, addressing ONLY what they personally require, will only Surely-and-Steadily bring the General Situation to an ever more accelerated Collapse, when that finally-and-inevitably occurs. By only concerning themselves with their own Problems, they Guarantee an ever-more certain AND unstoppable General Crisis!

Now, once again the Cause for this erroneous set of decisions is the total reliance upon Bottom-Up Causality, as the answer to all the problems encountered!

It just isn't True! Indeed, the required Causalities, which are never even considered, are those delivered only by Systems Theory, which are often unavoidably *Top-Down*, AND always involve multiple factors, which together

can deliver a whole range of diverse Effects, without knowledge of which, NO explanations are at all possible! And, to get some idea of the vastly different nature of such Effects, it is worth a study of the Systems Approach of the Oxford Biologist Denis Noble. in which he has begun to address Top-Down Causality in the human body. And, the beginnings of a Holist Approach, as pursued by myself, within Physics.

Indeed, the reason that this has never happened previously, has been the Universal Belief that Absolutely All Causality is Exclusively Bottom-Up, so everyone was looking for Causes in the Wrong Place - also strongly compounded by the Distorting Pluralist Way, they attempted to "explain?", what Causes they found there! The Pluralist Basis for literally All useable Science, has a great deal to answer for! There are Causal Explanations available for Every Single Law, if you know where to look, AND are well informed of the Methods of the Systems Approach!

Now, it rapidly became clear that though the Usual Pluralist Approach was fine for both Engineering & Production, it was useless for The Explanatory Sciences, for their main purpose was NOT confined to effective Use, but had to also deliver a Real Understanding of Reality-as-is, because the strictly-limited Pluralist Scenarios NEVER occurred as-is in Nature, AND coping with that was of paramount importance, as well as understanding why both modes existed, and their True Inter-relationships between them imperative to fully understand! Of course, without access to all the Causes involved, there could be NO Chance at all of achieving this.

Pluralist Science could never adequately inform our dealings with Reality-as-is, and so, alongside an Effective Productive Stance based upon Pluralist Science: there had also to be a Sound Holistic *Explanatory* Version, to even hope to actually also Understand Nature-as-it-is too!

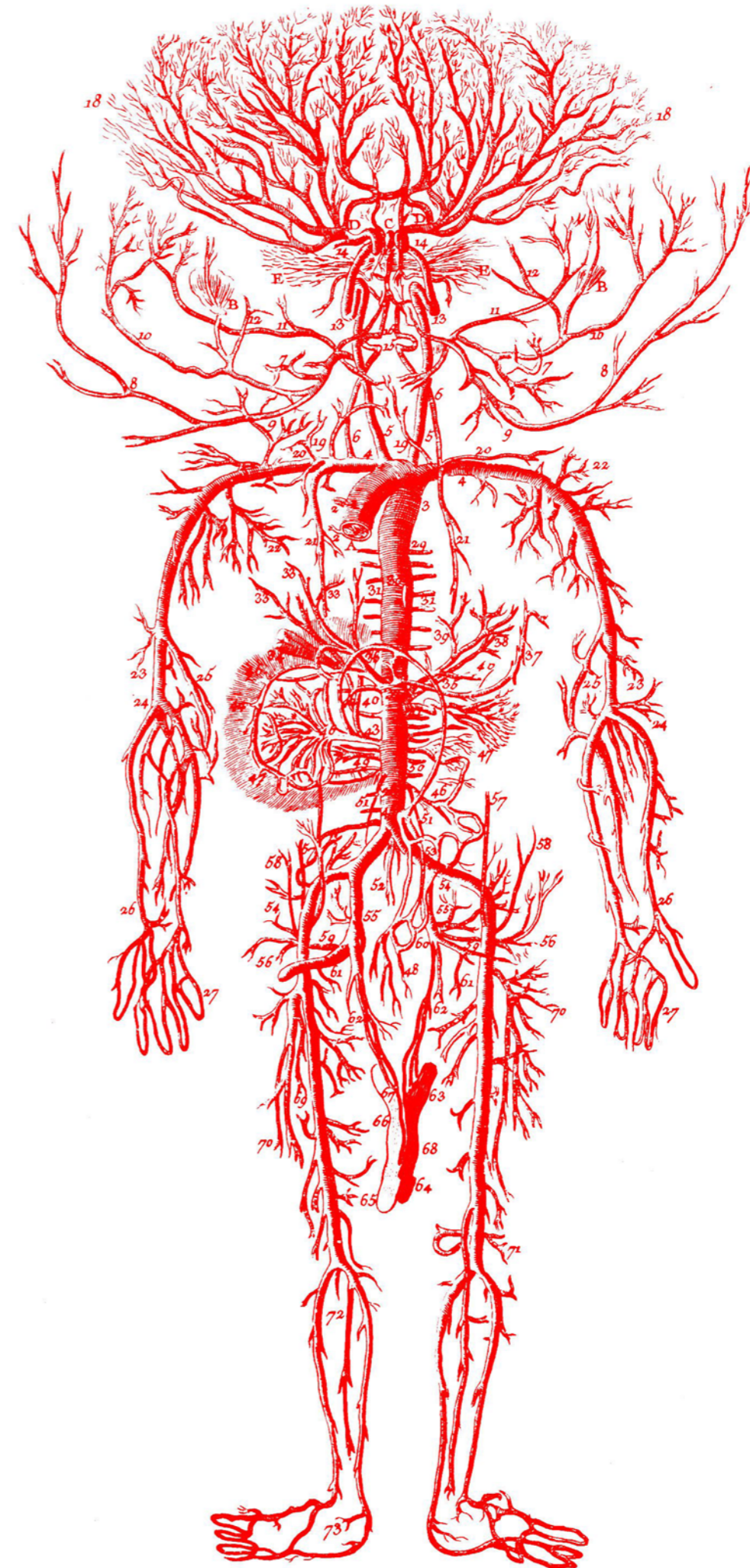
Now, Systems Theory had zero takers within Physics, which had finally established itself as the "assumed-to-be" Most Basic Underlying Content of All of The Sciences, and was both being majorly extended downwards with Sub Atomic Physics, and upwards into Cosmology, totally without any of the absolutely necessary Control, to be handled in the usual Pluralist Way: so the complex use of solely Pluralist Laws, without the required Controls,

could only be a wholly illegitimate extension of the usual Production Formulae - yet without the legitimising Controls - via applied and maintained Constraints! So, the vast bulk of this "Theory", had absolutely No Basis: it was a Theory - Wholly Without Real Content effectively only a Game-with-Rules derived-and-applicable elsewhere, with literally No Chance of reflecting the Reality that it was supposed to Explain! Frankly, without the Causal Explanations, generally, for these areas, only available within a, not yet available, greatly-extended Systems Theory, what was merely-inferred from purely Production-type Physics, and would, therefore, be bound to be a Wholesale Fiction!

The involved insurmountable Problem would most certainly be created by the very different Levels unavoidably involved: for the Laws which though inaccessible, are exactly as would swamp all tiny accompaniments, leaving the Totally Dominant Contributions as the only ones worthy of consideration, and the rest entirely ignorable, would there be wholly sufficient: but in other cases such assumptions would be wholly wrong! Clearly, with multiple factors simultaneously involved, including very different sizes, and acting at multiple Levels - in spite of their universality, their significances could be extremely different, so that what are exclusively addressed will vary tremendously between the Levels, at any one time, but could effectively be very different at different times.

POSTSCRIPT

For anyone doubting the profound significance of the position that has begun to be described in this (and other similar essays) may I add what I consider to be the clincher for this approach! It is based upon the undoubted Evolution of Life itself from Non Living Things, and thereafter, its continuing and expanding dominance thereafter! There was certainly a time when Absolutely No Life existed upon Planet Earth: and also No Way that the earliest slivers of Life could have survived a Carried Journey through otherwise Empty Space to get here! So, Life must, somehow, have Emerged from Non Life, solely upon this Planet! But, of course, with an exclusively Bottom-Up conception of Development such an Origin is obviously impossible! So, what is there even in the most primitive of Lifeforms, that above all else characterises its unique Nature? It is, of course, that it requires others of the same Nature, which via contending-yet-completing features can actually replicate! And, what is that if it isn't a very simplified Form of Top-Down Causality?





The Problem of Laws and Levels

The last few papers in this important series will not immediately deliver the full sense that they actually embody, without a truly thorough-going & radical Re-Definition of The Rich, Multi-Level, yet Understandable History of a Truly Evolutionarily Developing Reality-as-is! Indeed, MOST of what it was, always has been, AND still is, we find embodied, but now completely invisibly, in its always-changing appearances, and just has to be, somehow, found & revealed, in order to deliver any hope of not only a true Understanding of what has been, but ALSO to help deliver the sorts of changes that are, most certainly yet to come.

For though, this would have been the ideal Basis for these absolutely crucial future Developments: this theorist had to reveal them piecemeal: just in order to throw a revealing light upon this truly-vital transforming, and always creative trajectory! He couldn't, of course, initially preface all of these subsequent papers, with a correct & necessary grounding, as he was (and still is) totally within, and hence unaware of, the, as then, incomplete Set of Processes of attempting to realise them overall himself.

I ought to explain that I embarked upon this task, some 16 years ago now, AND long before I had made any of my own crucial personal contributions, to get to this point has involved the creation of some 1,600 associated papers, at the rate of about 2 per week! And, in such circumstances, when you are always inevitably Addressing New Ground, you don't, and indeed can't, always take the most direct routes: you take what appear to be the most fruitful Lines of Research at the time: and though many have certainly not been the most direct routes, they have all been essential in seeking a

path towards a new method for dealing with all Dynamic Systems in Reality.

Indeed, papers very like the one, turn out to be absolutely vital, because occasions always occur in which totally hidden-yet-vital precursors, now no longer at all evident, can be, and are, clearly revealed: and are certainly not only worthy of detailed study, but also throw exclusive & crucial light upon how the currently evident situation was indubitably-and-causally reached. In other words, a diversion, at such a point as this, which is imperative for a correct-and-essential, both historical-analysis, AND also an absolutely necessarily-modified current set of developments too.

Now, for Everytime Understood so far, we must re-read the above account, for, I feel the need to attempt to explain things in much more detail: but that is not the real problem! For, what is crucially missing, is a vital alternative to the usual Strict logical arguments based solely upon totally unvarying Rationalities - such as that embodied in both Mathematics, and indeed literally all the Sciences!

For, with all such Wholly Rational Stances, it is always possible to arrive at what is thought to be "The Truth" But, of course, that was never the case! Researchers could indeed Restrict Contexts so remarkably, that the situations artificially-created were always completely within a Context of our own making, in which that belief would always be bourn out! BUT, such were never really about Reality-as-is! They were instead only severely restricted, artificial environments, in which such assumptions were forced-to-be the case: and therefore ONLY ideal for Production, BUT absolutely NEVER for Understanding

Reality-as-is, which actually Evolves, if slowly, constantly into the Wholly New. No Rationality can EVER deliver that, as it can only deal with Fixed Laws at a given Level.

The Jigsaw Puzzle Capabilities of already existing Fixed Pieces to solve any Puzzle is wholly inapplicable to an Ever-Evolving Reality!

The name of the alternative Stance is Dialectical Materialism: the Dialectical component of which was revealed initially by the idealist philosopher Hegel, which had been a problem since the time of the Greeks, but never adequately addressed. Hegel incorporated into his Philosophy by allowing the Emergence of The New! But Hegel, being an idealist, was NOT explaining Reality-as-is, but only really Human Thought about such things.

Dialectical Materialism, on the other hand, addresses the appearances of the Wholly New within concrete Reality-as-is. So, of course, it is very different to Hegel's purely cerebral version: it is about Real Qualitative Developments, and not just the way it can be incorrectly dealt with as Thought alone!

Now, the undoubted Reality of all this, certainly makes for the Truth to be an on-going Development: and when something Wholly New Emerges, its actual nature will certainly NEVER be derivable from what it was immediately before that transformation occurred. And, our usual way of affixing Laws to Reality based solely upon the properties of individual Atoms and Molecules - and simply "multiplied-up" for its effect in the Bulk Form, which will invariably lead us astray, as this method does not acknowledge Reality working on different Levels.

Yet, just how it does so, is even now NOT understood! And the reasons for our failures in this regard, are down to the vast multiplicity of applications, though initially only applied in very few instances, so that the apparent General Law will supposedly still appear to be the prior, as yet unchanged version! The actual overall Law will change over time until the majority of instances have flipped and the New Law will now be evident!

But, the same trajectory will be true for all of the many simultaneous Laws actually happening in a given limited location: and will they all, only very latterly, get into synch with one another.

You can see the problems that will most certainly mislead investigators!

You can also see exactly how very different answers can be achieved at different times, especially when several simultaneous, and within the processes of various Developing Laws are definitely involved.

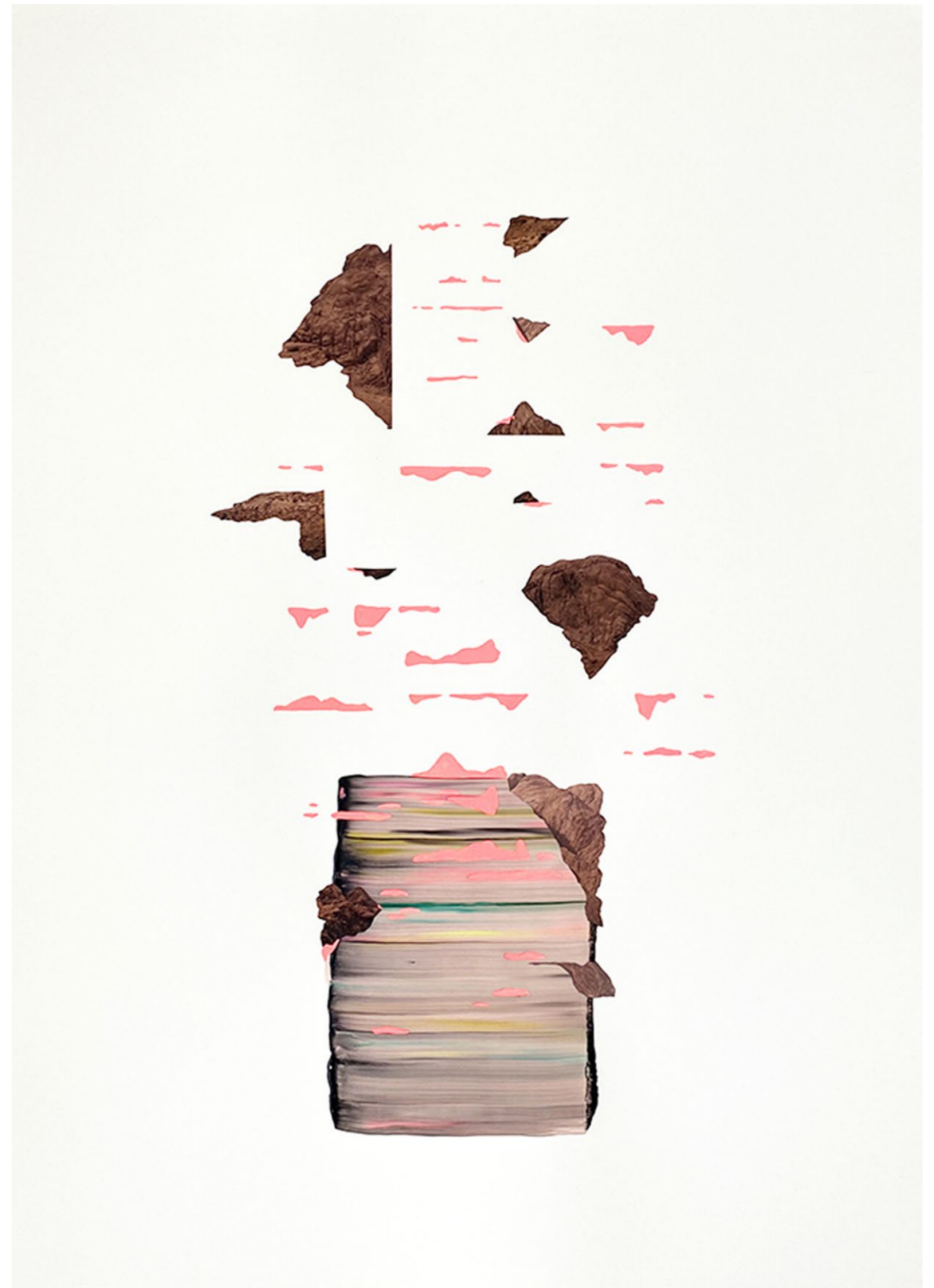
And, if the researcher involved is still wedded to the idea of forever-fixed Laws and essential Reductionism, such an investigator will have had absolutely NO CHANCE of ever getting it right!

And, the chances of all such Developing Laws all being together in the latter stages of transformations, it will also be extremely unlikely, especially as such transformations are likely to have been the main purpose of the Experiment. Indeed, what initially seems most like an ever changing Chaos will be what we appear to be confronted with: and consequently NO single version will be discernable for each-and-every contribution to the seeming melee.

It is difficult, if not impossible, to disentangle the mess! And, the only means to sorting out such a chaotic picture appears to be a whole set of, somehow-obtained, single process experiments carried out in various likely contexts over the whole set of transformation periods, (remembering the various distorting pitfalls of the Usual Pluralist restrictions, which always *change* what is happening), in order to give adequate information upon the ultimate aimed-for targets sought, AND also addressing the intermediate stages for each.

Now, of course, these points are the major difficulties within this Crucial and necessary Process! For not having as yet, tried them and solved them, I cannot describe a process that I do not yet know about: and, as experience has showed - the clues as to working solutions are invariably found in unlikely forced diversions!

But, as such has already informed what I have achieved in the past, I am well primed to explore such diversions with the new and necessary perspective!



Science for Understanding, not merely Production



Pluralist Science - which I have extensively revealed to be greatly misleading, in the absolutely necessary Development of an absolutely full and necessary Real Explanatory Understanding of Reality-as-is - has proved to be severely-limited and entirely-restricted, in both its true effectivity. It is really useful only when used within Purely Effective Production Methods: and, even there, significantly-limiting in what could ever even be achieved, in that extremely valuable area!

It has, also, unavoidably, and very badly distorted any attempts, both at a fully-subsequently-developable Understanding of all the on-going further possibilities, achievable even within those now drastically-restricted-and-maintained components, still always seen to be absolutely all that is involved, AND certainly-thereby, also due to its consequently-misleading Methods - which actually forcibly always omit the possibility of many other useful extra Productions, mainly because their possible subsequent Manufacture - isn't even realised, as ever being achievable via related methods! Only the more obvious "Paths-through-Reality" were ever considered in Production.

Surely, a thorough-going Revolution-within-our-Approaches, is long overdue! For that will be absolutely imperative, not only for a True & Wide-Ranging Understanding, but, in addition, for a truly mammoth, and important, extension of what a Real Science could deliver.

And, as those already familiar with my writings over the last period will already be expecting: these absolutely necessary transformations will be impossible unless also accompanied by a Dialectical Materialist Approach,

which has already made a whole series of Essential Developments in Politics, established via a major & revealing re-interpretation of History, not only in terms of warring Social Classes, but most profoundly, also, in the necessity of taking-the-side of the Working Class, and steadfastly working against the increasingly established, and now ruling, Capitalist Class.

But unless this is seen as an example of "The Tail Wagging The Dog", we must also emphasise the damaging inadequacies of current Capitalist Rule, in Mankind's Understanding of Reality!

For millennia, Theory has solely been the exclusive Domain of a series of Ruling Classes, which because it has never been in the hands of The Doers, absolutely always reflected and supported the position of the Classes that had developed it.

The position from which these Developments CAN ONLY be achieved, most certainly, being that of an entirely Socialist one - and entirely committed directly against the Capitalists, and their self-centered priorities! And, such a Stance is absolutely imperative, as for literally millennia such Ruling Classes have had the power and made their Decisions, entirely without the wherewithal, within their Class, to actually DO any of the clearly necessary Work, or even, to ever get a real understanding of it!

Theory and Practice have largely become based upon Different Social Classes, and this exclusively determined their priorities for millennia.

For though, I am originally the son of an unskilled labourer, after a surprising success within an extended Education, I have worked for many, many years in Schools, Colleges and Universities, and across a very wide range of Scientific Disciplines, with significant success, so these social conclusions can never be attributed solely to Sour Grapes! But, it was also never a Smooth, Sweet & Fruitful Ascent to Glory!

It was a constant fight, with many battles, that just had to be won, and also necessarily immediately-followed by the successful acquiring of a new job, often even with a switch in country required, in order to ensure that subsequent necessary judgements there, would be based solely upon my clearly-demonstrated achievements, rather than Class background.

And, as long as these were regularly being achieved, they predominated in how I was assessed for new posts within new places! Indeed, I had an extremely wide range of appointments and contributions in many different cities, with Professional Demonstrations, Lectures and even Posts in eight different countries - including throughout the UK and Ireland, then Hong Kong, along with significant work in Spain, Portugal & Greece, and others in Holland & Belgium. And, surprisingly, any local victories NEVER meant that you could stay in that Institution, for no matter how good was a current position, success also invariably makes you a rival for the ambitions of similarly involved others, so a gain is ONLY guaranteed by an immediate move!

But, clearly, returning to more General Developments, well beyond the strictly personal, with such a remarkable Political Stance as mine, there could be no chance of building a soundly understood General Position, without an increasingly soundly-realised Real History of Development (as it really should be), AND absolutely crucially based upon a Sound & Profoundly-Grasped Philosophical Theory, fully able to explain all Historical events, as well as be ready to further explain them again once they have produced all possible following Developments too.

No such Informing Theory was even intimated until the arrival of the truly Revolutionary Philosopher Karl Marx, in the early 19th century, whose principle area of study, initially, was Ancient History, some of which was available within the still available Writings of Civilisations like those of the Greeks & Romans. But,

Marx could not believe that they accurately described the earliest Developments, and he, among a wide range of other investigators, with varied agendas, began to go much further, and consider the very much earlier Origins and Developments of Mankind.

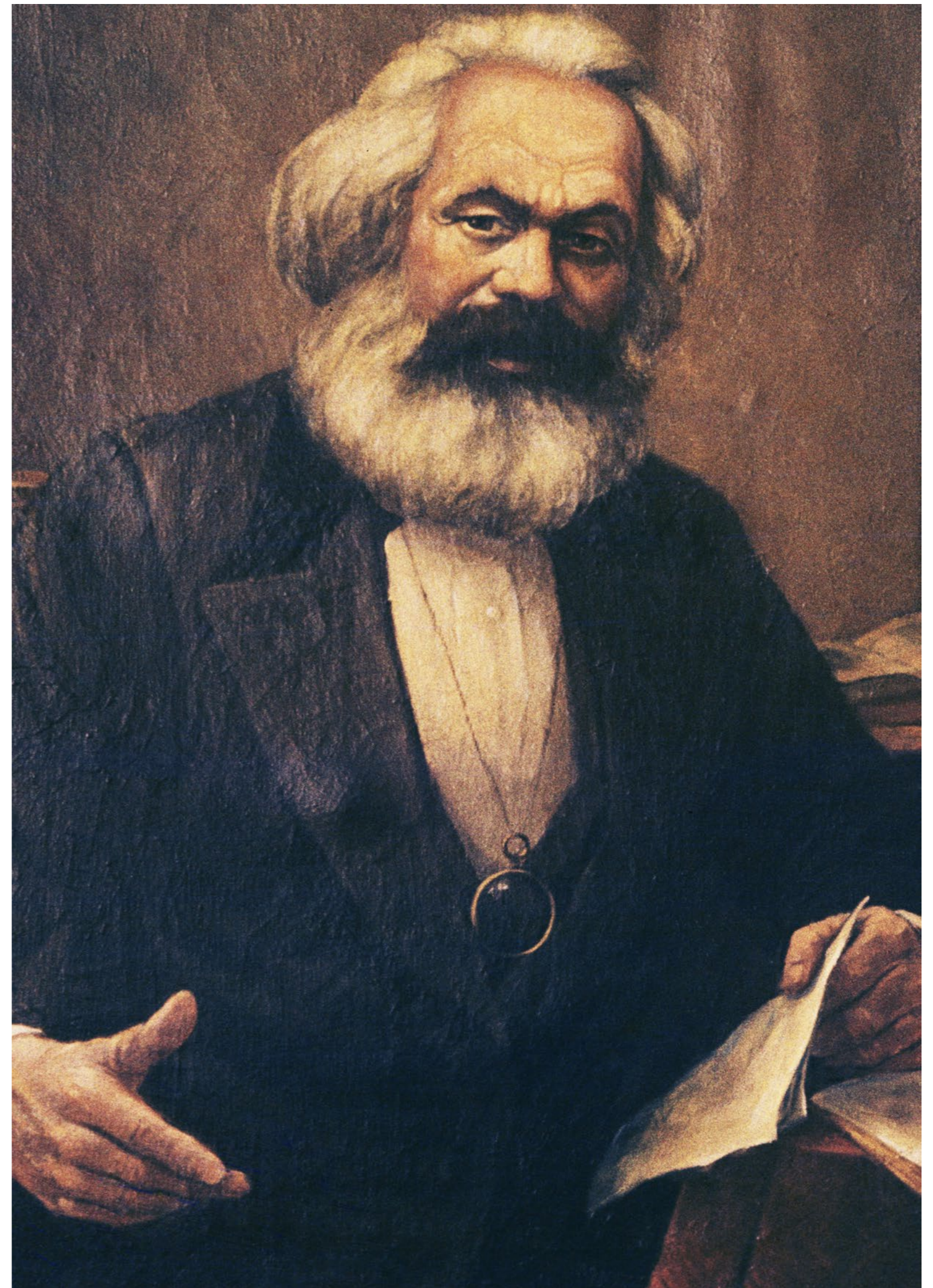
And, it was unavoidable that the transitions between, say, Hunter/Gathering and Farming, would surely have to be established within a subsequently greatly-accelerated Form, within a further set of Developments, which were characterised by him as constituting actual Social Revolutions!

And, very clearly, such Emergences had to have happened also only in the Innovative Developments of the entirely Wholly New, and, of course, within the very First Appearance of all Living Things too!

And, Marx's Major Conclusion was that these dramatic- and necessarily Swift-Tempo-Transformations (not evident within the usual Slow Tempos of Everyday Trivial Changes) were undoubtedly the Key Interludes of All Major Transformations, which would have to be understood, to ever really meaningfully--explain all such significant Revolutionary Changes!

Now, Marx was initially a committed follower of the Idealist Philosopher Hegel, especially in his remarkable tackling of the most outstanding problem, left totally unsolved by the Greek Developments (way-back in History), which certainly did NOT fit in with their Generally Universally Celebrated Approach: the appearances of wholly unexplained, yet certainly consequent Qualitative Changes, and the only reasons Hegel could consider for them, was because, as an Idealist, he never ever addressed Reality-as-is. Instead, Absolutely Everything, Hegel believed, developed entirely within Human Thinking - where absolutely Everything was possible - so solely within that Powerful Context, he could deal with Qualitative Changes as necessary changes in Thought, and NOT changes in material Reality!

But, it was, at this precise point that Marx parted company with Hegel, for he insisted that these significant Changes took place entirely within concretely-existing Reality-as-is! Hegel's effective Sleight-of-Hand, in locating all such cerebral ideas as only existing within the only-and-unavoidable way we related such things, was Wrong. Hegel was clearly relegating such things





entirely to Things of the Imagination: and Marx knew that this merely avoided the Real Problem, which would be irrelevant when addressing Really Existing Situations.

And, of course, this revealed that “Hegel’s Solution” actually achieved Absolutely Nothing: and would legitimately be immediately rejected by those who daily dealt with Reality-as-is, AND actually regularly physically-made a whole host of Real Things.

So, naturally, the Makers-and-Doers within Society had to base things upon something incomparably more solid than those based upon the idealist Belief of Thought alone!

Indeed, the whole of Manufacturing and Production, just had to base its methods entirely upon Real World Properties and Laws relating Real Things.

BUT NOTE:

In order to cut Reality down to a handleable size, it still had to be severely-restricted to forcibly limit it to One Single Law at-a-time, to enable the situation to be so simply-directed. But, Complete Manufactures would, therefore, have to be composed ONLY of a full & separate set of individually artificially-restricted situations, each thereby obeying ONLY a Single arranged-for Law at a time.

But, let us be crystal-clear, though avoiding the lies associated with the usual assumptions about the Nature of Reality, even with the truth-filled view, it still had to be severely maintained so, in order to be at all useable in Full Productions: AND that approach was majorly misleading too, when it came to correctly Explaining Why things happened exactly the way that they did!

The Devil had merely been replaced by The Deep Blue Sea, when it came to both Theory & Real Understanding!

And, the full set of problems involved, were not easily simultaneously solved, for the Real World as such is absolutely NEVER a mere Summation of Fixed Laws: indeed, they most definitely affect one another, and not just by individual modifications, but, instead, also widely by interrupting-one-another, and even, wrongly, linking parts of different Laws into concatenated mixed sequences - to give inexplicable & useless results!

Indeed, the only solution to this seemingly unsolvable mess, would have to involve the Finding of the actual Causal Laws, that certainly deliver the only available Empirical Versions, currently the only ones easily ones accessible.

And, until recently, these were nowhere to be found: and that was because Mankind was permanently wedded to the Myth that all such Laws were exclusively Bottom-Up! Yet, the Causal versions of these Laws turn out to be exclusively Top-Down, and will only be both found and revealed at a Higher Level.

The Causes were only made available by all the extensions, found to be also involved solely within Systems Theory! And, these will turn out to be Nothing Like the usual “Within-Level” explanations available for the usual Atom-Level Laws, extracted from the Properties & their Processes available at the Atomic & Molecular Level, (and because they are solely numeric) also to be able to be simply multiplied-up, totally unchanged in Quality and varying only in Quantity, when acting at the usually-required Bulk Level!

But, the New Systems Level Laws, on the contrary, are very different indeed: for they are effectively-and-always combined with each other there, to give overall very complex qualitative results: though in the usual normal “within-Level” Way, though with absolutely NO Qualitative Causes being evident there - can still give only Quantitative Results, so the New NON-Quantitative Laws can never be further analysed into individual separate Causes at all, without a very different Qualitative investigation of the Causal Laws that also delivered them!

Now, historically, for many generations, Physicists ONLY sought Quantitative Causal Laws, as these, knowing the Properties of the Atoms & Molecules involved, could also presumably Fully Explain-why things acted as they did! But, by the 20th century, and its vigorous extensions of Physics down into the Sub Atomic Realm, there began to Emerge ONLY Purely Empirical Laws, relating only the combined Quantities, and with absolutely NO Evident Qualitative Causes at all evident! And this was because these Laws were Causally Qualitative, and hence though associated Quantities could indeed be merged correctly - by so doing the individual Qualitative Causes were not-retrievable, but totally LOST by such operations!

The combined Quantitative results were entirely CORRECT, but the reasons for them were LOST!

And, try as they might, no Physicists were unable to find a single Cause!

Henri Poincare & Ernst Mach reacted by defining a Wholly New Stance, that they called Empirio Criticism, in which they insisted that Empirical Laws should be given the same weight as was the case for Causal Laws. But this stance was initially (and correctly) rejected by the majority of their colleagues, worldwide! But, as there then followed a Positive Avalanche of these Purely Empirical Laws, the general mood flipped-over to begin to agree with the position of the previously-rejected Positivists, and there were even those who placed such solely Quantitative Laws as by far the more Basic!

They were wrong, yet until such Causes were found and, ALL the Laws that underpinned that “wrong-turning” would no longer be seen as correct! And, that discovery still turned out to be a very long-time-in-coming, because traditional Methods had all efforts to find those Causes totally unsuccessful - for they were always inevitably looking in the Wrong Places, and for the Wrong Things!

The tradition had been that all Causality is always Bottom-Up!

But, that meant that all searches for Causes would be in situations BELOW what we were seeking explanations-for: but, they weren't there, and it wasn't until Researchers happened upon the wholly new Systems Effects, that the possibility of Top-Down Systems-Generated Causes began to be considered.

Yet, it still wasn't obvious, exactly what these New Causes were!

They were, of course, nothing like the usual Properties of Substances - traceable all the way down to individual Atoms and Molecules, which had simply been multiplied-up unchanged to describe the usual Bulk Effects! They were, instead, many and varied Causes - always involving interactions between different Situations, or even different Processes: so the simplistic Causal Laws, involving ONLY the Effects of Properties, were most certainly NOT what were happening at the New Systems Level.

In fact, the only reason that the usual type of Atomic

Level Laws worked-in-the-usual-way, was because the arranged-for Experimental Situation was always very massively restricted to only the very minimum of Key Purely Numeric Variables, so that the Atom Level Properties that still worked in exactly the same way, as the numeric Effects could be added together correctly: BUT all other possibilities had been forcibly excluded, as they were clearly NOT numeric.

Now, the initial users always believed that their extensive editing of actual situations, did Absolutely Nothing to the various contributing Laws - merely revealing each focussed-upon-one, by removing the complicating and confusing others that were normally also present: and because of their non-numeric nature greatly hindered any attempt to understand what was happening due to these type of cases!

They believed that their methods were revealing the components that simply delivered Reality, via only a Direct Sum of all the numeric values of those delivered by their component Laws!

But, it just wasn't true!

They didn't all simply ADD, for some actually also causally affected & changed each other: and these original contributions had by then been totally lost by the mistaken consequent Methods used.

Now, the ones actual causing transforming interactions, at this Level, are many-and-varied, and hence, considerably more complex than the usually wrongly-supposed, merely numeric consequent interactions. And, therefore, the actually Transformed Overall Results would always differ considerably, from what those mistaken assumptions naturally misleadingly delivered.

It is also quite impossible to guess exactly what has actually been implemented, solely from the only available related source - the Overall Purely Empirical Results that are always easily achievable: by combining just the final solely numeric results alone. There will, most certainly, be more-than-one contributing Purely Causal Law: and to overtly do what is required, will be possible only if we certainly involve the finding and revealing, of all the many different necessary efforts to deliver them all.

But, where can we find, all that diverse evidence, to carry out these revelations?

It will certainly have to be at a Higher Level, as they must be Top-Down!

But, as they will be several, and of different Natures, due to being caused by very different processes: SO, the initial essential researches will be to consider the various ways these may be caused!

And they clearly wont be Solely Numeric!

Chains & Loops

By far the most important change, involved in these wholly New & Necessarily Also Qualitative Effects, are those generated by the fact that they are The Results Of Multiple Combined Causes residing within quite separate simultaneous Processes involved.

The crucial differences compared with ALL of the prior Single Process Causes, which always predominated in Properties occurring at the Atom Level, and were selected-for, by very strict and very artificial imposed restraints upon the Contents allowed in ALL arranged-for Experiments.

Now, this investigation will undoubtedly be substantial, so it will be tackled in the next paper in this series!

Qualitative Causes and their Investigation

via Systems Means

Now, this particular sort of Investigation cannot but take us into a Wholly New Realm!

Though it must also be clearly emphasized, that it involves an absolutely imperative change in the way All of The Sciences simply MUST, henceforth, be conducted, if further Real Progress is to be ensured.

For, The Famed Greek Intellectual Revolution of 500 BC, though undoubtedly an absolutely essential Step Forward in the Evolution of our Understanding, also achieved what all such innovations of that kind invariably install - a misleadingly inadequate Over-Simplification!

Many Inevitable & Damaging Detours are always totally unavoidable as a necessary Unifying Product of the very same Commonly related Developments - for Mankind - is embodied in attempting to understand the processes, which ultimately will totally leave unaddressed the very processes that have produced the investigators too! Think where that omission positions the Investigators, and their employed means...

But, the increasingly evident superiority of the Investigators, unavoidably would be distorted by their clear differences to absolutely Everything else: and, the most obvious conclusion would always be that THEY were specifically included, as some sort of Reflection of an all-powerful Creator!

So, they certainly never saw themselves as a mere part of the remarkable Vista (which they were increasingly converting to Their Own Uses), but outside of it somehow (Idealism): and by their Analyses and Explanations they revealed ever-more about The Supposed Supreme

Creator of it all - and especially as they, in their own way, were revealing The Creator's Intentions!

The separation of Theory & Practice was physically embodied, for centuries, with Many Different (currently dominant) Social Classes, wherein all the Practical Work (and even New Inventions), were unavoidably-situated with the Skilled Workers, which I term "Artisans", while whole "Explanations" of the World were reserved for the Educated Class of Owners.

So, the many mismatches between these two Class Worldviews (and Approaches), were to some extent softened, by the somewhat privileged positions bestowed upon the Very Best Artisans. Indeed, perhaps surprisingly, easier ways of advancement were afforded to the best Soldiers (for example), and on which side they used their skills against their own Class!

But apart from the "Privileges" that certain highly skilled soldiers could achieve, real Class Mobility was not possible then - prestigious Positions, could happen, as long as they didn't have to Read & Write! But, even that was too much of an economic disadvantage in the end, so the tendency became increasingly to Educate the Working Classes, but to still maintain Class Differentials, as far as possible.

I can speak with some authority on this subject, as I came from an unskilled Working Class background, and after getting Eye Glasses, following General Tests within All Schools in the 1940s, I soared across most of the Qualifying Hurdles, including to everyone's surprise, Passing the 11-Plus Examination to win a place at a prestigious Manchester Grammar School! Where,





over the next 7 years, I had an illustrious Career, finally winning a place at University in Leeds! And following an extra year in Leicester University to Qualify as a Teacher, I started out upon a Teaching Career first in a Middle School, then a Grammar School, and finally in a Further Education College.

But as soon as my steadfastly alternative view of things became evident - certainly different to the accepted Norm - it was then that my Career quite definitely had a restraining lid placed on it! I could not be allowed to in any way "Join the Club", with all its advantages! It soon became very clear that my abilities were there to be Used by their Class, rather than applauded!

It is easy to explain, by the subsequent perpetrators, by adding that I just wasn't up to the task: but a continuing extension of successes elsewhere certainly didn't confirm their prejudiced conclusions. For, having learned to Read & Write long ago, before I was 5 years old, I was, always, an avid regular visitor to any Local Public Library, and the always assumed usual Lack of Knowledge, that was usual in my Class, was certainly NOT the case with me!

I had realized their purposes, and then by-passed them, by thereafter following any success I had achieved, by an immediate move to another institution. And it worked very well until a post in a University, when a few days off with an old illness gave them the chance to try to terminate the job by asking me to resign! But this, I refused to do - and after confirmation of the non-terminal and easily coped-with nature of my illness by a Harley Street Surgeon, I obtained a Full Early Retirement, and, instead, returned to continue my prior Researches into Motion Study, for the next 10 years, with my Dance colleague, and all that despite an Aneurysm, which did lose me a couple of years!

I finally realized that I had to take a termination of those Researches, when I was presenting a Paper upon my work on the Laban Pure Form, at a Conference in Athens (Greece), when it was finally clear that my eyesight was critically impaired, so that all my usual activities depending critically upon that Sense, would have to cease forthwith!

Needless to say, this didn't lead to a restful retirement, but instead to my Final Career as a Full Time Philosopher and Writer, which extended for the next 16 years. For, with the help of my son (who has a PhD, and is a Course

Leader at Leeds University) I was equipped with a four-and-a-half-foot-wide Screen for my Computer, plus a helpfully Coloured Keyboard, and radically re-coloured Screen, with much larger and easily variable Font Sizes.

Indeed, for the first time in my career, I was able to pursue, Full Time, the many differences that have emerged in my Academic Interests, that had become evident in my very first Term at University, when I had begun to attend to study Physics, at the very beginning of my career. And, it was clear to me, from the very outset of that Physics Course, their whole approach was damagingly mistaken!

For, in the early 20th century two different kinds of Physical Law had been reliably begun to be revealed: the first was the traditional Causal Laws, which concentrated upon being able to Explain Why things behaved as they did. But, increasingly, there had begun also to also be revealed Solely Empirical Laws, which related measured quantities, BUT explained absolutely Nothing!

Now, these were clearly true! No matter how many times they were repeated, the exact same results would always be delivered. But the Results from the solely Empirical Laws could never be associated with any single Property - so they explained Nothing!

Much later, it was decided that the numeric results DID NOT refer to any Single Known Property: BUT, instead, to a whole set of very different and, as yet, currently Entirely Unknown Properties COMBINED via their numeric Effects alone. And, as we didn't know exactly what they did, OR how much of each were involved, Absolutely NO Crucial Individual Contributions were available!

Indeed, only a combined purely Qualitative overall Effect, in a single associated overall quantity would be available. But, without a breakdown into Individual Qualitative Effects, and the proportions delivered to each, it could still explain Nothing!

Indeed, for these to be combined purely Quantitatively, it also indicated that these combined numeric contributions were of THE VERY SAME THING! It wasn't of different effects, but something common to them all: like Temperature, or some similar accompanying and definitely additive quantity.

Clearly, the 2,500 year old method of carrying out Experiments, supposedly to deliver what happens in Reality-as-is, has been a catastrophic Failure for our Understanding, even though it was completely adequate for accurately guiding Production. Indeed this Wholly Pluralist Mistake has been profoundly misleading in Absolutely All Attempts to Explain Anything!

Instead, a tidy and achievable alternative was established solely with Production in mind, and the Science of Physics was actually-replaced by its many uses in Engineering and Technology.

However, the Theories of Physics DID NOT soundly inform the Processes of Engineering: indeed, it was the Practices of Engineering which ultimately determined the Theories of Physics! The Full Physical Theories of Reality-as-is are still Unknown! Neither Physics nor Engineering currently deal with any Reality beyond our Technological Control - which instead creates a new Reality that we routinely mistake for Reality-as-is.

To maintain this effective illusion they must be always strictly limited-to Methods & Materials that can be relied upon to perform as our scientific Disciplines require, and hence always demand Absolutely NO self-modifying Techniques have ever been built into our constructions! When they fail, they Fail! And, without extensive reflections of True Reality-as-is in our constructions and methods, many limitations within these edifices will NEVER be allowed-for, and the necessary, indeed, the whole constructional (and even medical) built-in changes instituted - due to appropriate continual monitoring, and consequent triggered remedial corrections, will NEVER have even been considered.

Take the obvious medical requirements of at-risk-patients: instead of nurses carrying out somewhat irregular testing: these could be permanently in place, with even immediate automatic changes in treatment coupled with detailed results sent direct to those responsible & capable of checking and in instituting the necessary modifying treatments. But, clearly, Research and Development teams would have to be radically expanded in the range of Disciplines, and Particular Skills present in the team, or available very close at hand.

For 7 years, in two British Universities, I made myself available to all active Researchers, across the institution, as a ready-and-waiting Highly Skilled & Experienced

Programmer, to assist them where I could. And these were absolutely NEVER mere technological interventions.

Perhaps the most surprising was in Dance Performance and Choreography, which actually won a British Interactive Video Award in 1989. While another transformed the attempts of a Biologist to Classify (and easily identify) the World's Tardigrades, which was highly successful. With another Intervention I helped a Mathematician, who was attempting to model The Actions of The Human Heart, wherein my help revealed both the equivalents of both Fibrillation and even Heart Attacks in his suggested model.

Many other valuable contributions proved possible, and these were only available from an able Computer Programmer: yet I can think of many other Disciplines even more appropriate in many such Researches. And having specialized in both suggesting and joining such teams, the gains made have been so remarkable, but generally were still very rare at that time, and that where such have been attempted successfully, there has still been a dominating reluctance to recognize where the credit should be both admitted and celebrated!

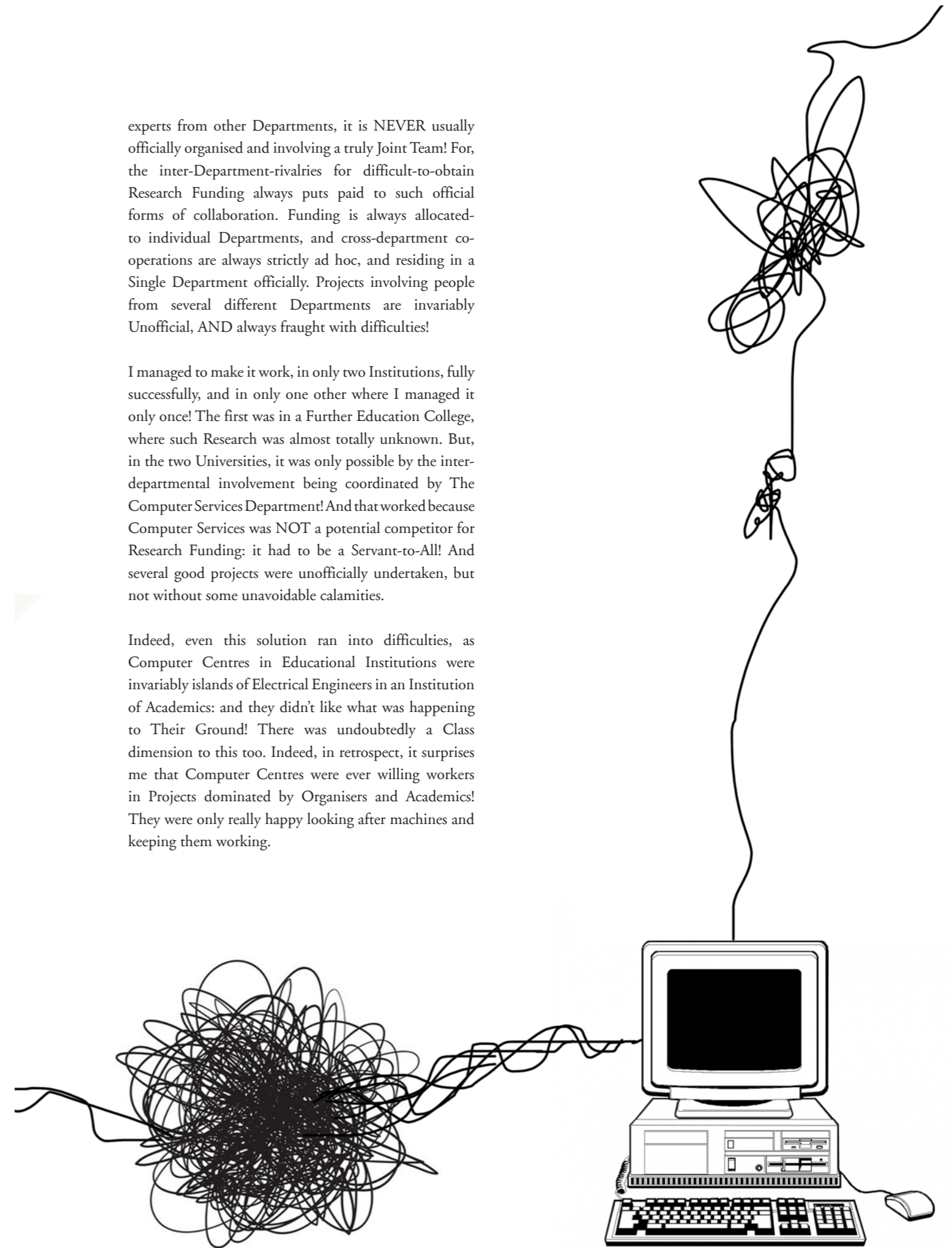
Interestingly, in one post, I had a visit from the Local Examinations Organisation, because they couldn't understand why my students were so much better than literally all the rest in our Region, and certainly absolutely no credit was allocated within the Institution where I worked! Indeed, the Examination Board also asked me to become their Chief Examiner in my Subject, as part of a concerted effort to increase standards generally: but, at an Assessment Meeting the Teachers involved thought the the Level achieved by my classes were due to favoritism! But, the scores in question, commenced long before I was Chief Examiner, when I could do Nothing about the marks awarded... Meanwhile nobody elsewhere within my own institution were at all aware of the success either!

So, the question arises - "How can such successes be used to encourage successful means across involved institutions generally?" It surely has to be regular Informative & Celebratory Events, and maybe even consequent courses, along with sample materials, exhibitions, and even awards for success, by the Board, for informing & helping interested Teachers. Now, these things are never as straight-forward, as they should be, Research can never be entirely limited to a Single Discipline, and even when it does involve a measure of co-operation with

experts from other Departments, it is NEVER usually officially organised and involving a truly Joint Team! For, the inter-Department-rivalries for difficult-to-obtain Research Funding always puts paid to such official forms of collaboration. Funding is always allocated-to individual Departments, and cross-department co-operations are always strictly ad hoc, and residing in a Single Department officially. Projects involving people from several different Departments are invariably Unofficial, AND always fraught with difficulties!

I managed to make it work, in only two Institutions, fully successfully, and in only one other where I managed it only once! The first was in a Further Education College, where such Research was almost totally unknown. But, in the two Universities, it was only possible by the inter-departmental involvement being coordinated by The Computer Services Department! And that worked because Computer Services was NOT a potential competitor for Research Funding: it had to be a Servant-to-All! And several good projects were unofficially undertaken, but not without some unavoidable calamities.

Indeed, even this solution ran into difficulties, as Computer Centres in Educational Institutions were invariably islands of Electrical Engineers in an Institution of Academics: and they didn't like what was happening to Their Ground! There was undoubtedly a Class dimension to this too. Indeed, in retrospect, it surprises me that Computer Centres were ever willing workers in Projects dominated by Organisers and Academics! They were only really happy looking after machines and keeping them working.





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