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A NEW BASIS

THE END OF COPENHAGEN & A WHOLLY NEW BASIS / REALITY AND TRUTH / THE NATURE OF REALITY / WHAT IS MATTER?
WHAT IS NATURAL LAW? / MATERIALLY OR MATHEMATICALLY DEFINED PHYSICS? / SPEED AND SIZE

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Carl Andre - 10x10 Altstadt Lead Square, 1967

A New Basis

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The End of Copenhagen & A Wholly New Basis

by

Jim Schofield



Welcome to Special Issue 60 of the SHAPE Journal. If the Copenhagen Interpretation of Quantum Theory is a dead duck, where do we go next, and what does this mean for Physics, and indeed, Philosophy.

The current major crisis in Sub Atomic Physics is actually the clearest evidence of a much larger, and, therefore, more general set of definitely terminal dead-ends, in literally all intellectual disciplines, and primarily resident in both the philosophic and scientific underpinnings of them all.

Indeed, an apt metaphor, for the current state of Understanding, has to be that it is like a finally totally stunted-and-dying Bush, with every single, finally-produced twig permanently terminated by a seemingly totally, non-transcend-able impasse.

Apt because it is now an entity with absolutely nowhere to go, with literally everyone switching from twig to twig looking for a way out, but always finding none!

So, both the depth of the crises involved, and the fact that the producing-situation has been in place for some 2,500 years, without any significant improvement across

the vast majority of the human population, also attests to the difficulties involved in making any sort of necessary and transforming change, which could even begin to address the almost endless impasses now terminating ALL attempts at real understanding.

It doesn't mean, of course, that there are none. Just none on this bush (in this situation): the problems were set-in-place much too long ago, on a long-passed initial twig, which has now become the supporting trunk of the resulting thicket of dead-ends!

Yet, such a devastating opening to this paper was, I'm afraid, absolutely essential, for what is required is no mere Change-of-Course, but a truly Revolutionary Transfer to an entirely different tree, currently depended-upon by no-one, but nevertheless in sight, and available, if the leap across can be effected.

Don't get me wrong! There will be some branches, upon the dying bush, that could be effectively transferred by grafting it onto the new Stock, but all their terminations will have to be savagely pruned, and the saveable graft properly cleaved-in and wedded to the new vigorous stock.



So, let us systematically reveal the diseases involved in arriving at this dire state, which were, surprisingly, initially significant advantages, but which gradually became liabilities, as the overall entity grew significantly in size and scope.

Indeed, all of them will be shown to have the same sort of disadvantages, actually never having the more-general-applicability, with which we mistakenly endowed them, and hence becoming increasingly debilitating features.

It has been a difficult trajectory, and really nothing like our usual assumption of a simple aggregation of ever more "understanding", ultimately destined to explain absolutely everything.

For, definitely no-such-mechanism even existed prior to the first appearance of Mankind. Thinking, as such, was a human *social* invention, initially pragmatically assembled, via various arrived-at-means that "seemed to work", but were always, at best, only pragmatic solutions, in particular contexts, and never ever general truths. Indeed, they couldn't possibly be anything else!

In the several million years of the hominid line, and, of that, the only 200,000 years of Homo sapiens (humans), Philosophical thinking only really started around 2,500 years ago. And, for almost all of that prior history the Pragmatist tenet - "If it works, it is right!" was all we had.

So, the following series of papers has had to attempt to describe that trajectory of development in a very different way - NOT as some systematic erection, but instead as a series of always insufficient attempts, all of which, at crucial points, had to drastically rebuild its foundations in order to proceed further. As V, Gordon Childe always insisted - Man makes himself!

The "available alternative bush" mentioned earlier has to deal with dynamic reality, based upon Hegel's Dialectics, but radically altered from a system which was limited to Human Thinking, to one transferred wholesale to a materialist basis, and hence applicable to all of concrete Reality too.

The project will reveal its efficacy (and its inadequacies) in its application to Sub Atomic Physics.



Reality and Truth

The Lost Paths

in Philosophy & Science

On reading various current papers about the Copenhagen Interpretation of Quantum Theory both in Sub Atomic Physics and in present-day Philosophy, it is becoming absolutely clear that literally nobody actually knows what Science is really about, do not also understand the Basis of Mathematics, and finally have no evident programme for the pursuit of Truth.

So, with such an empty toolbox it should not surprise anyone what a mess the current intellectual climate is in. Of course, all the participants in this chaos, do regularly find their ways home, put all the right keys in all the right holes, and manage to eat with efficiency. But as to the problems listed above they seem totally bereft of means to address them.

For a collection of telling reasons, they can find NO way to concretely address their difficulties, and it is evident that it is precisely what they have been told to ignore or reject in their Education, that so completely disarms their Thinking from finding the necessary solutions.

So, I must start at the bottom, and attempt to give them some appropriate ground, so here are a few premises and early steps:-

Absolute Truth is always unobtainable!

Homo sapiens were not and never have been genetically evolved to be able to reveal it! Man was evolved in order to survive and to reproduce, and, certainly very differently to how he does it now. Man is, as you know, a Great Ape! But, being a social animal, is hence more intelligent than any loner species.

And, he did evolve into becoming a bipedal, ground-dweller. This released his branch-grasping hands to do more interesting things than mere locomotion through the trees. Man's initial, crude vocalisations gradually became Speech. And, his adaptable hands soon did many wholly new things. He began to find and use flints with a sharp edge. And, gradually learned how to knap those flints into effective tools. Most of what he began to communicate via his speech was to do with these primary functions and activities. Only with the fairly recent Neolithic Revolution, did his life change radically - for he stayed in one place along with others, communicated and co-operated much more, and began to develop new means of life, such as Farming the land, and Domesticating animals.

Now, I hope you will forgive this snail-slow initial progress, but it was to make clear just how very late was Mankind's use of Language in an at all sophisticated way. So much so, indeed, that many of his necessarily-invented words are not always helpful, and, indeed, were often as much a hindrance as a help!

In other words, Man had to learn how to initially abstract from Reality, and thereafter refine, or even correct, that language as best he could: and has necessarily been doing so ever since.

Yet, the emergence of intellectual disciplines occurred very late in that long process (circa 500 BC and ever since), and when such did happen, it also simultaneously-and-vastly extended his verbal reach, while often, and unavoidably, also set-into-stone extremely important conceptual mistakes, some of which have persisted to the present day.

Meanwhile, the earliest, pre-Greek tenet of all, embodied in “If it works, it is right!” - basic Pragmatism, is even today daily claimed as being more important than literally all the other generalist conclusions, whatever the debate!

Now, that important intellectual revolution, achieved by the ancient Greeks, was established, perhaps surprisingly, upon an unusual basis - Geometry - the Study of Shapes, in which the unavoidable simplification of things, was in addition, extended to the perfecting or idealisation of those shapes into “Study-able Forms” - because once in such Forms, they were found to be both analysable and easily juxtaposed to deliver a vastly extended range, about which all sorts of rules could be derived and confirmed by Proof-via-suggested-Theorems.

Let us be clear, this wasn't about *naturally*-occurring Shapes, but about idealised versions of them, though Mankind soon learned that if one kept to such Forms in his construction and organisation of real world things, he could much more easily plan and calculate things to his advantage.

But, and this is very important, the range of things, that could be carried out in this New Discipline, were NOT the same as those applicable in the real world! Mathematics, as it ultimately became known, was a discipline of Ideality - the World of Pure Forms alone, and NOT of the real concrete world. And, the reason for this was that everything in this New World was permanently FIXED - they didn't qualitatively change or develop at all.

And, this greatly simplified what could be done with them.

Much later, this was embodied into the Principle of Plurality, in which all things were assumed to be eternal *qualitatively!*

Interestingly, at almost the same time in India, The Buddha, a major spiritual leader, was saying the exact opposite - All Things Change, and Everything Affects Everything Else, which was later embodied in the opposite Principle of Holism.

Nevertheless, the power endowed by idealisation in Mathematics was so useful, that the same sort of discipline was then established in Reasoning, where it

was called Formal Logic, and somewhat later it was also similarly applied to Descriptive Science. Absolutely all of them conformed to the Principle of Plurality - which isn't actually True in anything other than Mathematics.

Perhaps surprisingly, apart from a brief criticism by Zeno of Elea, soon after the Greek Revolution, no general criticism of Formal Logic was mounted for about 2,300 years, so we can only draw the conclusion that even mistaken principles and consequent intellectual methods were very unlikely to be changed, and particularly when the bottom-line of “If it works, it is right!” continued to validate new conceptions, discoveries and inventions.

Nevertheless, Hegel, revisiting Zeno criticisms, finally realised several important mistakes!

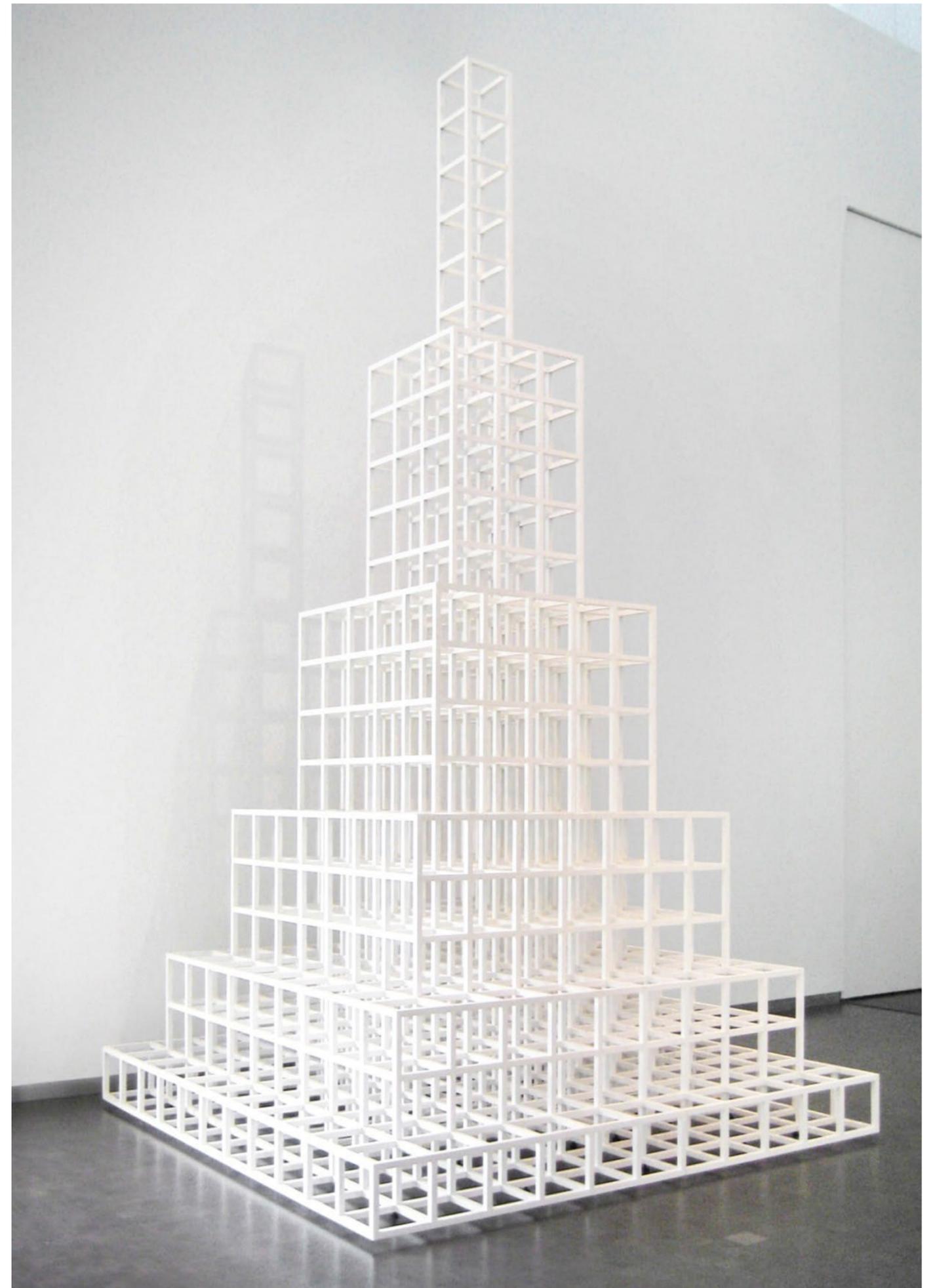
First, he realised that Dichotomous Pairs of contradictory concepts, which according to the long-agreed Rules of Formal Reasoning, were both equally applicable at certain points in a line of argument - yet, in fact, only one of the choice ever actually worked, and, which one it was, could only be discovered by trying them both out! Formal Logic, as such, was, indeed, failing, and Hegel had to find out why.

He not only re-assessed Zeno's cases involving Movement and the concepts of Continuity and Discreteness, but, in addition, sought out as many such Dichotomous Pairs as he could find, and then always looked for what should have distinguished between them in the assumed premises.

He found that in every case the premises used were always insufficient, and if a new kind of premise was included the usual impasse in Logic could be transcended. The new premises turned out to always be concerning Qualitative Changes, which, of course, were prohibited by the Principle of Plurality.

Hegel decided that he had to install Qualitative Changes in a wholly new Science of Logic, but, to do such was much easier said than done, because when things didn't change, then the Old Logic was sufficient, so careful investigations would have to be undertaken to assess all situations.

Hegel attempted to generalise all situations into a New Form, composed, at the extremes, with each of the concepts from a Dichotomous Pair, with varying premises





actually positioning the situation, at one extreme or the other for “those orior singly-defined solution cases”, or somewhere in between, where a sufficient change in circumstances could precipitate a flip from one extreme to the other.

He called his scheme Dialectics, but as it was clear that in certain conditions a single option could be ensured by Pragmatism, so they did that instead.

NOTE: A similar trick is used throughout Science, for, if the experimental circumstances were suitably restricted, and then rigorously controlled, they too could count upon particular outcomes, so they only used such “extracted Laws” in the identical circumstances, as those under which the Law had been extracted.

Indeed, this theorist labels the usual incarnations as Pluralist Logic and Pluralist Science, and is currently erecting a Holist Alternative to the Copenhagen Interpretation of Quantum Theory.

Now, there is a great deal more to this story, than has been addressed here, for the pluralist approach in Physics has other major flaws, the most important being the total trust in pluralist formal equations as against the holistic alternative of Causal Explanations: for apart from the control of circumstances necessary to get a relation both clearly displayed and extracted too, it was also the usual next step of fitting up a purely formal mathematical form to the extracted data by substituting sets of measured data into a given General Form, and thereby getting a set of simultaneous equations, in the so far Unknown Constants of that General Form.

Then, solving the simultaneous equations would give the values of those constants, which would then be inserted into the general form, to give the Equation of the Law! But, it, most certainly, isn't that at all!

It is both a pluralist aberration AND also an idealistic version of the Law.

So, it will, therefore, have built-in inextricably-into-it the limited range of the ideal version, so that it blows up, in the real world, when that range is exceeded, along with whatever local features were also included due to its artificially-arranged-for pluralist context.

So, what do they cause to happen when fitted up with a causal Explanation based-solely upon such flawed formal results? Those explanations will certainly fail!

BUT, is it the fault of making a Causal Explanation? NO! It is caused by the mangled formal representation used to determined that explanation.

Truth? So, where is Truth in all this mess!

The Absolute Truth often demanded cannot exist in the above pluralist and idealist manipulations. Indeed, what is actually achieved frequently minimises any Explanatory Truth to be found there, and replaces it with Pure Form alone. And, the methods used don't ever deliver any Aspects or Parts of the Truth, which can, indeed, be the case with a directly attempted causal explanations.

Yet these can, and indeed do, exist with direct attempts to explain, in the old, now discarded ways, of Causal Explanation.

What real scientists seek is termed as more Objective Content in their explanations, than were previously available. So, it is an infinitely better, if erratic, route towards Truth, because, as distinct from mere formal descriptive methods, it alone asks the vital question, “Why?”

And, only a constantly-repeated insistence upon that question, can overcome prior inadequacies and refine our conceptions!

The alternative route, which can only ever answer the question, “Why?” with, “Obeys this equation!”, not only explains absolutely nothing concretely, but is clearly also totally idealist.

A Revealing Journey

into the

Nature of Reality

Unlike the Journeys of Discovery which often posed important, if initial, Questions-to-be-Asked, I am about to relate a tale of much later perambulations, in a variety of different areas, that together changed the whole game both profoundly-and-empoweringly, via extra and wholly-new questions requiring a very different philosophic stance and methodology to be effectively addressed.

We are forced to radically change our basic assumptions and ground, to even begin to consider that these questions are at all relevant, and this necessarily wholesale change of stance is made extremely difficult, because, for millennia, Mankind has been locked-into a fruitful and effective amalgam of contradictory stances, pragmatically validated by the “solve-all” test of, “If it works, it is right!” in practical problems, and, by unbridgeable Divisions of Labour, into distinct intellectual disciplines, all underpinned by the Principle of Plurality. Yet, in spite of its shortcomings, that approach did actually enable the most significant period of development in Mankind’s History so far.

Indeed, for those very reasons, absolutely nobody even questioned the consensus stances for almost 2,300 years! In fact, the new discoveries, as they emerged one-by-one, merely apparently undermined, to a limited extent, a fairly restricted range of the “steadfast truths” - delivering, in those areas alone, uncertainties and even doubt!

Now, the seeds of a more general answer was initially revealed by the German idealist philosopher Hegel, with his criticisms in the fundamental area of Formal Logic - of the universally subscribed-to Methods of Reasoning, where he began to uncover an increasing number of

crucial flaws, which, initially at least, could seemingly never be overcome.

But Hegel’s sound criticisms were embedded in Idealist Philosophy and so necessarily limited to Thinking, and were too abstract and complicated to immediately and naturally extend beyond Philosophy. Literally all the other well-established disciplines were not moved by his many described exemplars!

And, though a universally denounced maverick called Karl Marx did begin to apply these discoveries to concrete Reality, he was disregarded literally everywhere, and even those who followed him, were not enamoured of his philosophical methods as much as the political conclusions they lead him to.

So, here I will be recounting the intellectual journey of this modern day Physicist (myself), having a very-wide variety of interests beyond his professional career, when attempting to solve problems across a range of many different areas, and at a time well over a hundred years after the death of Marx.

He had rejected the current Copenhagen Interpretation of Quantum Theory - a cornerstone of Modern Sub Atomic Physics, at a very early stage in his career, and, consequently, greatly widened his interests, at first into other scientific disciplines such as Mathematics and Biology, but also as an artist - a practising painter and then as a sculptor. Latterly and fundamentally, he became a computer expert in Systems Design and Programming.

Finally, he became an expert in Computers-in-Control, and, as such, became the first port-of-call for researchers,





in the same Institution, requiring such things in their studies: where he covered most disciplines from Nursing to Taxonomy, and Engineering to Mathematics, but crucially when asked to help with unsolvable problems in the Access-and-Control of video resources in Dance!

In spite of experience amounting to 16 years in a wide variety of projects, it was Dance recordings, and their effective use, not only in teaching Performance, but also in teaching Choreography too, which led to a break through in philosophy and method!

He was presented with two recording methods - Analogue Video and Digital Video and Film (both of the latter using progressive still frames)! The crucial analytical and dynamical aspects of creative and expressive movement could not both be adequately delivered by either of these techniques. And, this inadequacy was strongly insisted upon by the discipline expert in Dance. And, with her explanations, it was soon understood by this computer expert exactly what was required, and why it was impossible by either technique, used alone.

But, exactly how to solve it wasn't at all obvious, and he was finally forced backwards in time to arrive finally back at Hegel, to re-consider his famed Dichotomous Pairs of contradictory concepts, and why their generated impasses were usually insolvable.

Now, I'm afraid as Hegel's studies were all solely about Thinking, his solutions, via changed premises, were no use here: for this was a Real World problem!

How could these two methods in recording Dance both deliver their separately coped-with properties simultaneously in appropriately-controlled moving images of complex and creative movements?

It was solved by simultaneously shooting with both methods, with two identically positioned and electronically linked cameras. Then positions, from the pristine stills, were overlaid upon the Analogue Video frames, as animated dots, both for the past, current, and the future movements of fixed positions upon the body of the dancer!

With fading-out of past positions and fading-in of future positions, along with slow-motion, forward or reverse display over time, and simultaneous display of different angles of view, the required dynamical and positional information was simultaneously delivered appropriately, and for the first time understandably.

My colleague finally got her Ph D, and we were both winners of a BIVA award for this revolutionary Dance Disc!

Now, I had done what Marx had said was not only possible, but necessary in Science. He never got around

to doing it himself, but, it was not only possible, but vastly superior to all the current pluralistic methods: it was a holistic, yet scientific, approach!

Now, what had been achieved in real world studies, as distinct from Thinking, was a means of dealing with Qualitative Changes that the older methods in ALL disciplines could never really address.

The whole prior approach had been to ONLY address stable situations!

Mankind had created a way of dealing with the world and his own ideas only if they kept still! What had been built was a way of dealing with Stability only. In Thinking, concepts were fixed and unchanging. And, in Science, the entities studied, and the Laws they obeyed, were similarly fixed.

Development, as such, was never addressed *dynamically*: it was replaced by an unexplained sequence of differing stages (like frames of film), usually mapped onto the passing of quantitative Thresholds, without any explanations at all!

In spite of an increasing awareness, since Darwin, of real Evolution, pure random chance was made the sole agent of actual qualitative changes, though Darwin's Natural Selection was an entirely holistic explanation of the mechanism involved at the population level.

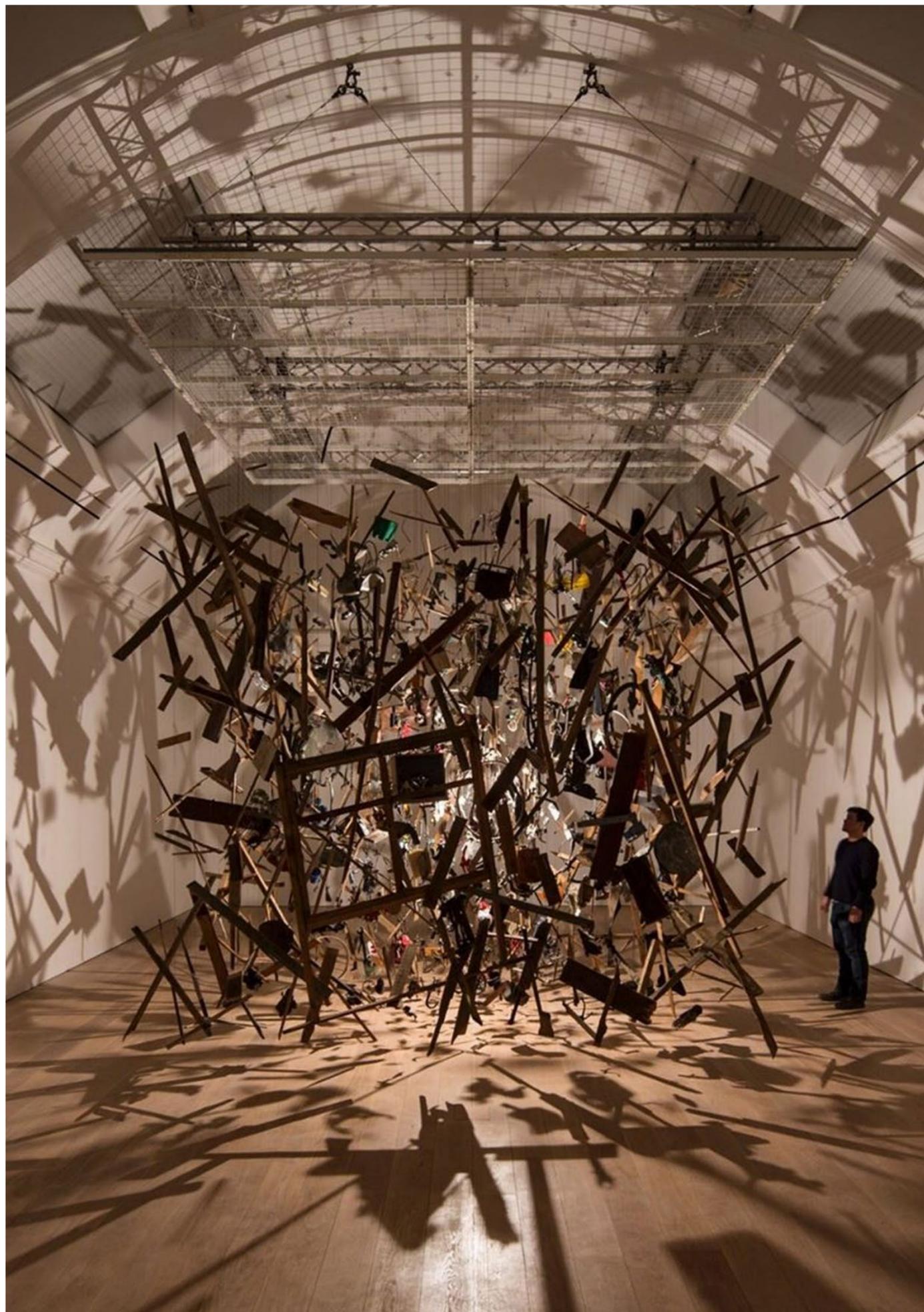
Indeed, the contributions of the Ancient Greeks, though they gave Humanity crucial enabling disciplines, also strapped Mankind into a straight-jacket of seeing things entirely pluralistically - that is composed entirely of qualitatively fixed things and Laws, only changing quantitatively.

Complication was the answer to everything!

Now, though perhaps too much time was devoted here to a single case, far from everyday and most scientific concerns, it nevertheless was imperative. For it opened the door to a multitude of problems for which the older pluralists methods were totally inadequately equipped to deliver anything of real consequence.

The vital explanatory side of Science had been re-instituted, and upon a far superior basis than previously, because now it could handle Qualitative Change and Development. And, for the first time extend the Dialectical Materialist stance into Science in general, rescue Physics from the Copenhagen aberration, and begin to re-establish Real Theory in politics.

Other papers in this series will point the way in diverse, but necessary areas of study, but without this essential first step, they would not have been possible.



What is Matter?

We think that such a question as, “What is Matter?” is easy, and have many common-sense premises about it.

But, one of them is that we can divide-up anything material, time-after-time, until we finally arrive at a limit in what physicists term The Elementary Particles, though the current means of interacting with them, deliver many contradictory results, as such Particles do NOT behave exactly as we would expect them to do, and can seemingly act as if they are governed by their own determining extended Waveform, while, a moment later, acting like a solid point-like Particle.

Now, there used to be a set of premises that worked well at the Macro level, which could explain such an anomaly! It involved the particle moving within a both effecting-and-affected Substrate, so the two behaviours could be separately interpreted as:-

1. a Particle meeting another Particle would act accordingly.
2. If the Particle was alone in a substrate two-way effects were possible.

Clearly, that would be OK, unless such a substrate could not be detected by any currently-known means! For then, the scientists would say that it didn't exist, and would have to explain both kinds of behaviour, even though they were contradictory, as being entirely due to the “real Wave/Particle Properties” of the entity!

Now, for centuries two totally mutually-exclusive philosophical standpoints had been applied to phenomena in Physics.

First, the Materialist view sought physical explanations for all investigated behaviours.

Second, the Idealist view took measurements of a controlled situation over a certain range, and then fitted-up a Purely Formal General Equation from Mathematics to that data.

But, was it the physical explanations or the Formal Law that determined the observed behaviour?

The answer always-given was due to Pragmatism, via its basic tenet - “If it works, it is right!”

Now, apart from these differing stances, it has to be explained that such an Equation could never-ever be extracted directly from Reality-as-is! It always required a special context, one removing most of the factors acting there, and rigorously controlling all the others except one. For, then and only then, could the same Law be extracted every time.

Now, you will have noticed the problem!

If you attempted to use that law on totally unchanged Reality-as-is, it simply wouldn't work: you wouldn't only get the wrong predictions, but the situation would give different results every time you repeated the attempt.

Of course, you might say,

“You have to control the situation exactly as you did in getting that Law!”

Perfectly True!

But, is that Law only true in that organised situation, or true in all situations, but hidden by all the other simultaneous effects present?

There is a Principle which fits the case, and answers that question one way. It is the Principle of Plurality, which makes all such relations totally unchanging; the Laws of Nature are eternal and unaffected by context.

Now, subscribing to that principle you could still make the Law “work”, but only if the very same conditions delivered for the extraction of that Law, were also repeated exactly, for its use. It wouldn't make the Principle of Plurality right, of course, but you could get away with believing it was!

And, sadly even if you could get away with it, whenever the necessary conditions could be constructed, maintaining them thereafter would frequently be impossible, and, fairly minor wandering from the required “straight-and-narrow” would be enough to cause the Law to fail.

Clearly, we still have much to do, to deal with all possible situations. The controlled situation method will only work in production, when complex real World situations are converted into a sequence of separate stages, each one dedicated-to and arranged-for a single Law, and though that sequence doesn't do what the unfettered natural situation does, it is both similar to that, and, delivers exactly what the extracted Laws predict.

It is thus quite adequate for Production or Technological purposes, but is majorly misleading in Explanations, particularly of the Real Natural Events.

Indeed, ALL formulae-supplied solutions have limited ranges, and beyond those limits, soar off into impossible situations that we term Singularities.

But all these really tell us is, “It isn't true here!”

Now, I am bound to relate here an alternative way of using the extracted and supposed eternal Natural Laws to cover complex situations - theorists can literally add separate Laws together as a series of terms in a “general equation”, just as if Plurality is actually true (but it isn't, of course). And this frequently happens in situations where controlled targeted experiments are impossible to arrange, and as an alternative way of fitting these (as a linked set) to Reality: the various-law-components are

each furnished with their own individual constants. For then, data can be collected without any control and the collected data sets individually substituted in to deliver a set of simultaneous equations in the as yet unknown constants. And these, when evaluated, are substituted back into the overall general equation.

Now, mostly this will not work, but, if it is only used in fairly stable overall situations. it may be helpfull in a whole set of stable situations that appear to be very similar. So the theorist ends up with a set of these “models” for various common situations, and he switches between them as conditions change.

Indeed Weather Forecasters use past data to identify also the threshold values of certain Key measured parameters to signal when such switches should be made,

The general tern for these methods is Simulation. but they only work if the situations involved have occurred before. It is entirely retrospective!

Now, returning to our titular objective, from this necessary excursion into means, we realise that our Matter has already split into two very different groups. For, with our preoccupation with Reductionism, we sailed-right-past a crucial boundary between these two groups. And that boundary is embodied in the Atom!

Almost everything we categorised as Matter, prior to their final definition, is composed of Atoms, which come in a great variety, and have a host of different properties, actually resident in the particular structure of each version of that unit. Yet, all of them are composed of just three Elementary Particles:-

The Proton
The Neutron
The Electron

But, the properties of the various kinds of atom cannot be predicted just from the natures of these components and their intrinsic properties as such. Indeed, all material entities occurring below the Atoms, constitute that other distinct group of material entities - The Elementary Particles!

Now, though not generally considered as such, the creation of Atoms was what holists term an Emergence! What was possible after their appearance, could never

have been predicted from the nature of their composition. It was a whole new Level of Organisation of Matter, and expanded its possibilities colossally.

Now, this Revolution wasn't magic!

It involved the stable integration of something Non Material into a material structure - namely Energy. Now, Energy could always be associated with Matter: all movements of material objects were made possible by its associations with Energy.

But, Atoms were different: the involvement of Energy was intrinsic, it was integrated into the structure of the Atom.

And for this to happen, a crucial property of the Elementary Particles was involved, which is termed Charge. There are two kinds of Charge - Positive and Negative. Like charges repel one another, while opposite charges attract one another.

Now, atoms include Protons, having a positive charge, and Electrons, having a negative charge - so they attract one another! But, if they both also have the energy-of-movement, when they approach one another, these two things can, in the right circumstances, turn into a stable balance by the creation of an orbit: the electron can stably move in an orbit around the Proton. We call this stable union an Atom!

But, this stable union was remarkable: in that it has a stable base level of contained Energy, but the electron could be promoted, temporarily, to an even higher energy orbit, so if the atom moved, it could transport such energy to different places, and even deliver it to another unpromoted Atom.

NOTE: Elsewhere, other stable mutually orbiting joint entities composed of pairs of different Elementary Particles, on the exact same basis, have been proposed, but could be consisting of identically sized particles of opposite charges, which are impossible to detect, except via any promoted energy they carry: they are usually termed Photons!

Now, problems arise when the idea of Matter is extended to entities below the Atom - that is to Elementary Particles, as such, and their interactions, especially at very high energies, as their nature was intended to be revealed

by high energy collisions in Accelerators and Colliders! The ideas of Matter used for entities above the Atom, began to fall apart, when used for those below the Atom.

The different kinds of Atom were successively uncovered in Nature, but their original creation of the alternatives was suggested by the Splitting of very heavy Atoms in Atom Bombs, and the fusing of Hydrogen Atoms (the simplest) into Helium Atoms in the Hydrogen Bomb!

After which Fred Hoyle suggested that all the higher elements were created within Stars in a series of cataclysmic Changes of Phase in their development.

And, as you can see, that Boundary is in Nature, very significant indeed!



What is Natural Law?

Is it Eternal or Variable?

Is it Determinative, or merely Descriptive?

The first fact, that is clearly evident, is that Natural Law is an entirely human concept, and in the long history of the hominid line, a fairly recent one at that!

It only really came into prominence well within the last 1% of Man's existence upon this Earth, and only after the very long, successful and vigorous growth in numbers of our species, and an increasing spread to reach literally all corners of the globe.

It only very tardily followed the great advances embodied in the Neolithic Revolution, when Mankind switched from being hunter/gathers to farming-the-land and domesticating wild animals. And, it even followed well after the beginnings of Civilisation.

Perhaps surprisingly, it didn't even emerge during the significant intellectual developments that flowered, even later, in Ancient Greece, even though significant conceptual-seeds were certainly planted then, which would, much later, play a significant role in the final emergence of the concept of Natural Law - but it did not do so until a couple of millennia later, when Man had finally developed a reliable means to reveal much wider relationships within natural phenomena.

We have first to accurately-appreciate Mankind's initial approach in dealing with his environment and his place within it, which was merely pragmatic. And, it was majorly and unavoidably constrained by a truly holist World beyond, in which, very puzzlingly - "Everything affected everything else!"

It certainly wasn't easy to bend things, in such a world, to adequately fulfil Man's needs and wants! But, human

beings were both dextrous and intelligent, and slowly, by one means or another, they began to control some of their world, and to a remarkable extent, even without the intellectual tools to actually understand WHY!

We, of today, who believe we have a handle upon understanding-our-world, see this early period of our own History through "modern spectacles", and impose upon a vast trajectory of prior development, our current ways of thinking, which were certainly not present in our ancient ancestors' actual attempts at all.

But, some 500 years ago, the Concept of Natural Laws, which were supposed to, entirely alone, *direct* everything that happened in Reality, began to be seen, as an "explanation" of why things behaved as they did. And, as with all such conceptions, it only emerged along with Mankind's increasingly evident techniques of controlling aspects of Reality, which led to effective methods of their revelation, extraction and use.

But, as such, these only ever delivered particular solutions, so more general means were then sought, to both explain these achievements, but also enable their much wider reach into new, though, in-some-way related, areas.

But, though significant, the achievements of the Ancient Greeks, nevertheless, also endowed all those that followed, with an inadequate amalgam of disparate, and even contradictory gains, held together only by the usual pragmatic validators.

Not only were both Idealism and Materialism delivered from that great flourishing of intellectual developments, but also they were always constrained by implicitly-held

beliefs about the *constancy* of most things, and their inter-relations (which were much later formally embedded in the Principle of Plurality as the true nature of all such things!)

This endowment greatly restricted the forms that the new general ideas would take: the relations became Natural Laws, which, when represented via mathematical forms, had soon morphed, for many investigators, into being the “idealistic causes” of the studied phenomena.

But, importantly, for others, they were merely the descriptions of resultant Fixed Natural Laws, but definitely determined, instead, by the intrinsic properties of the substances involved.

Both of these alternatives, whether idealist or materialist, were, nevertheless, both severely restricted by their commonly shared pluralist assumptions.

And, Science, therefore, developed primarily in a technological way to deliver fruitful outcomes, rather than ever-better explanations.

But, the assumption that Natural Laws were eternally fixed is wrong: it is a mere reflection of only the many, ubiquitous and persisting Stabilities, which can indeed exist, at least for a time, in Reality, or can be made-to-exist in the laboratory or factory, in order to make a particular “Law” both clearly evident, and then, both extractable and predictably usable.

In a nutshell, the seeming impossibility of investigating a naturally Holist World, was overcome by either finding or creating the absolutely necessary Stabilities, which would enable the display and extraction of “apparently” eternal Natural Laws!

But, the limited worlds of the Laboratories and those temporary *Natural* Stabilities, were always just simplified and adjusted parts of Reality-as-is! They appeared as a seemingly coherent and comprehensive world, which would also be true of all-of-that-Reality, as all of the as yet uninvestigated regions were also included.

But, that was a myth!

And, no matter how hard the scientists tried, their basic premises began to be occasionally exposed as inadequate. So, the original pragmatic solution to such problems was

to divide Reality for them, precisely-at these anomalies, into separately-dealt-with Sciences.

But, such a solution was, at best, a temporary measure, because many of the most important phenomena traversed these artificial boundaries, and demanded interdisciplinary solutions to delivering an understanding of what was actually happening and why.

The physicists had confidently continued to delve ever deeper into situations, in order to finally arrive at the bottommost level - that of so-called Elementary Particles, where they would also reveal the bottommost Natural Laws too.

But, instead, their explanations, in this area, became increasingly self-contradictory, so, at times, to become totally untenable - the many Wave/Particle Duality phenomena made all their explanatory theories nonsense.

So, for the first time the idealist-equation-worshippers came to the fore, and delivered equations that could be used for prediction, but had NO physical explanations whatsoever.

This so-called “revolution”, devised by Niels Bohr and Werner Heisenberg, and termed The Copenhagen Interpretation of Quantum Theory was finally presented at the 1927 Solvay Conference, where it was victorious in spite of the opposition of Albert Einstein.

But, though revealed at the Sub Atomic Level, these inadequacies were also generally true, but were usually got-around with both the pragmatic tenet, and the clear successes in both natural and artificially stabilised situations - and, of course, the impossibility of developing any sort holist analysis-and-usable method, due to “every damn thing affecting every other”.

It genuinely seemed impossible to do things differently!

But, of course, even the old methods were now also increasingly untenable, as the previous parallel holist explanations had now been abolished as self-kid by the Copenhagenists, so the old amalgam of idealist equations, holist explanations and the validation via the pragmatist tenet were no longer available.

The past positivist, tacked-together-Ground was gone!

Here and there, and even in the citadels of Sub Atomic Physics, dissenters were questioning the eternal nature of the found Laws, as well as the values of the Constants-of-Nature: they were all being questioned.

But, the final collapsing earthquake came from a very different source!

It came from the renewed assumption of the existence of an undetectable Universal Substrate.

But, even with that, by no means did it turn out to be totally sufficient, though it did, indeed, fulfil the primary tenet of delivering a great deal more Objective Content than the Copenhagen Interpretation in many extremely important areas.

And, the first was in the Foundation Stone of that consensus Stance - the ill-famed Double Slit Experiments. For, the Wave/Particle Duality nonsense was adequately dealt with by a division of labour between a Particle of Matter and Charge, on the one hand, and an undetectable, but both effectible and affecting Substrate, on the other.

Every single anomaly was physically explained purely by this single added premise, though. of course, the actual nature of such a Substrate would also require a full definition for its clearly universal role in literally all other circumstances too. And, the requirement of undetectability would, certainly, be the most difficult property to deliver!

But, returning to the main question - The Nature of Natural Law, we see that the abandoning of the prior idea of a Universal Substrate after the Michelson-Morley experiments, also changed, significantly, the way Natural Law was thought about.

For, that decision removed the Context for such Laws throughout the Majority of the Universe. Laws couldn't be in-any-way altered there by their context, because there wasn't any Context: Space was Empty!

Yet, the possibility of an, as yet undetectable Substrate, re-opened the possibility that all Laws, and everywhere, could also be subject to a Context!

Would they, really, all be totally independent of Context as Plurality always insisted was the case?

The alternative principle to Plurality, that of Holism, stated the opposite - “Everything affects everything else!”

And, the detailed definition of this Substrate by the same theorist, revealed a rich extension of all Laws acting within such a Substrate. For, the nature of the Substrate was NOT itself immutable: it could, for example, be temporarily dissociated - delivering a very different mode, consisting of randomly moving units. And, if driven by energetically-moving particles, it could then be driven into energetic Streams of itself in yet another mode, or even be turned into multiple Vortices!

For, then, its changed affecting nature would inevitably cause differences upon what was acting within it.

A remarkable example was that involving orbiting electrons - for the effects would NOT be temporary, as the orbiting electron would be constantly returning to all its own, self-produced vortices, even exchanging energy with them, until finally establishing various different, yet stable, possible orbits!

The myth of eternal Natural Laws is in fact an invalid generalisation of particular situations, which are only true within Stabilities - all of which, though apparently permanent, are always, in the end, temporary!

Science could, and indeed, did become the Science of Stabilities, and as long as such Stabilities were maintained, either naturally or artificially, it “appeared” to be the “absolute” truth.

And, the process of setting up and maintaining such stabilities progressively changed the real nature of “Science” into its pragmatic offspring Technology.

Science had always historically, and with some justice claimed, that it, in addition to enabling effective use, also delivered ever-better explanations of why things behaved as they did, and there was indeed some truth on their explanatory theories, but, they were based solely upon evidence from Stable Situations: they purposely omitted all phenomena outside of such stabilities.

Clearly, though both brilliant, and capable of delivering achievable and valuable goals, it invariably could never deliver the Full Truth. And, as with its fellow-pluralist disciplines of Formal Logic and Mathematics, all three of these disciplines DO NOT address Qualitative Change



- they just can't! All real Development is simply not addressed as an explainable process: it is both described and retrospectively predicted using past experience, but never explained.

But, what would the natures of Holistic Laws be like?

And, how will we both reveal them and adjust them appropriately to changing contexts?

What will be the correct uses of such effectible Laws? And, how will we handle them in complex, dynamic situations? And organise very differently both our constantly changing experiments and our productive situations?

Suggestions on a postcard please!

M a t t e r i a l l y
or
defined

Mathematically
Physics

I

Why is Mathematics imported into Physics?
What role does it play?
What are its shortcomings?

To even begin to answer such questions, you have to establish your ground! You must define exactly what your version of Reality consists of, and what the various Properties involved are, and what they are caused by.

We can start very basically, with the idea of Matter, as a basic component, but it must also exist somewhere - that is in some also-real Context. But, where is that, and also, what does such a Context consist of too?

We can also add Charge, which appears to be a property of Matter, and Energy, which must, somehow, be associated with Matter in various diverse ways, and never exists independently of it, yet is sometimes absent or, at least, undetectable.

Also, attempting to answer where Matter actually exists, unavoidably also delivers a difficult problem - for that location could be wholly without any properties of its own - purely Empty Space, or, it could be an active, intervening Substrate, though if that, it is very likely to be made of matter too, and also, itself, be situated somewhere.

It could, in addition, be that Energy cannot exist by itself, but has to be associated with Matter - so then some form of Matter-with-Energy might well be the universal basis. And, if so, could be merely either a particle moving through Space(?), or much more likely, the interaction of different bits of matter relating to each other via their involved energies!

NOTE: This latter suggestion, surprisingly, makes mutually-orbiting pairs of particles (enabled as such by Matter, Energy and Charge) into possibly extremely Basic-Components, for the energy is integrated into the joint stable entity via the nature of the orbit involved. And, we have had demonstrated to us, by Science, that such joint-entities can be of a whole range of forms delivering many different Properties, which, let us be clear, dominantly make Reality what it is.

Indeed, without such diverse, richly-proprieted amalgams, we couldn't have the vast range of properties that we know to exist, and, indeed, actually need to explain phenomena causally.

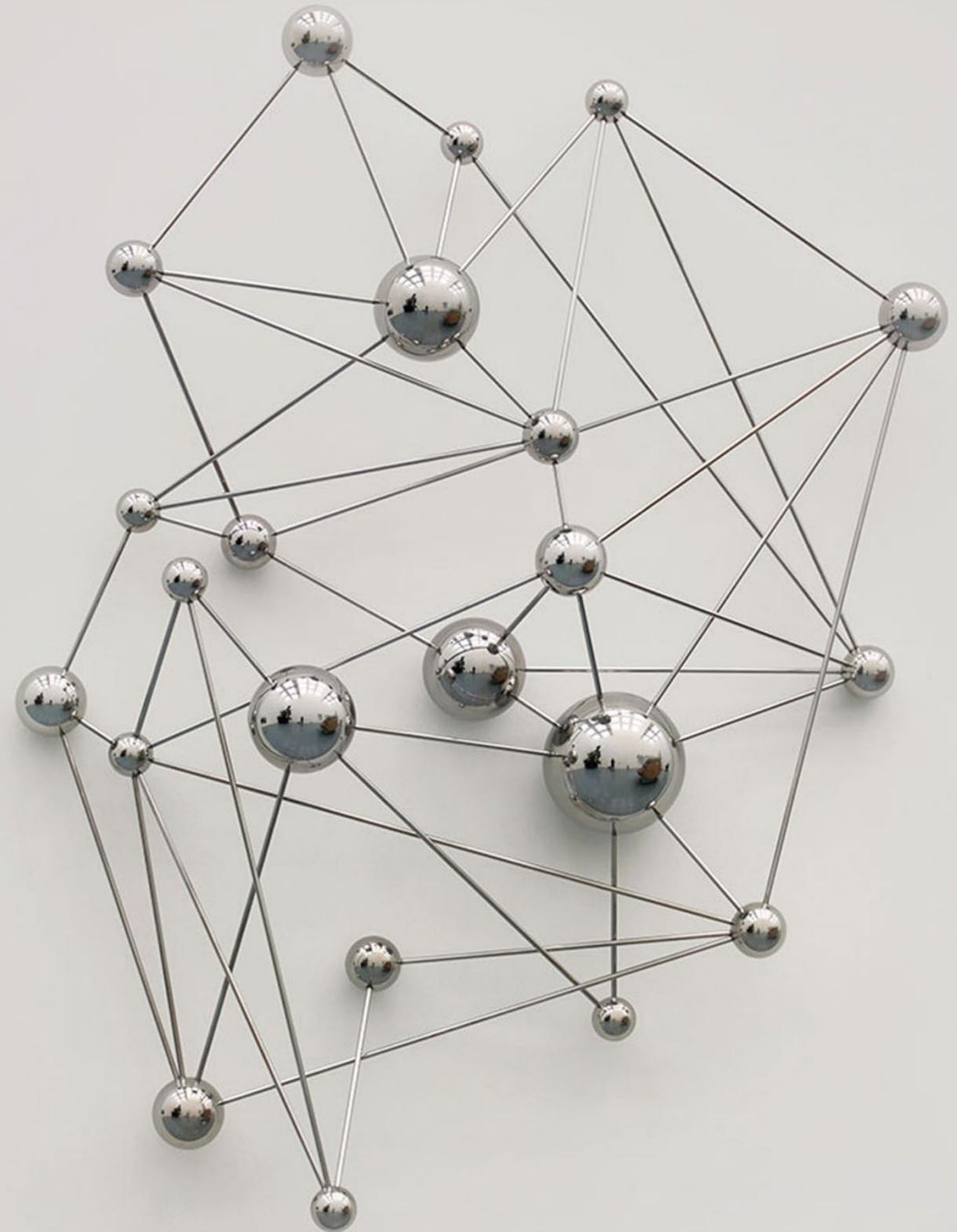
Think about it!

Can you imagine generating all the vast richness of Reality purely from Elementary Particles of Matter alone?

Indeed, the only other obvious variables to consider are differently sized Matter-entities, to add further properties, but not merely quantitative amounts of Matter alone, but, once again, with interactions involving Energy, would then appear to be absolutely essential to deliver what we know to exist.

What is Form?

Now as soon as diverse arrangements of Matter, Charge and Energy are considered, they must come together into caused patterns - some entirely due to the intrinsic, physical nature of those components - while others will be imposed by the human observer (consistent, of course, with the current understanding of those observers to interpret what they see).





And, these two versions will mostly not be the same at all! Indeed, for most of the existence of human beings upon this planet, Explanatory-Understanding of Reality was totally impossible for them. But, they became able, with the invention and development of Language, to roughly describe what had been seen, and what had happened, but it was always in simplified versions of commonly-occurring natural shapes.

These usually had absolutely NO intrinsic relationships between them. The first beginnings of relations came from Mankind's increasing use of found (and even later, *modified*) proto tools, to enable transformed-descriptions to carry a great deal more than mere rough-descriptions.

But, the most powerful improvement came with the Greeks' idealised descriptions of Perfect Shapes in their development of Geometry. For, these really did relate to one another "causally" - that is, there were formal relations between these idealised forms, which enabled them to be brought together to generate a whole family of other Forms via these relations. The name of this system of related, idealised Forms was Euclidian Geometry, which was widened into a general system of all kinds of idealised Forms into Mathematics.

Now, we must be crystal clear about all this!

Physical causes for driving actual phenomena in Reality are very different from the purely formal causes relating idealised Forms together in Mathematics. They are so different that the latter is consigned NOT to Reality, but to Ideality - the World of Pure Forms alone.

No Matter, Charge or other Properties exist there, only Shapes or Forms - although these can be made to represent physical phenomena.

It is, at best, a Reflection of Reality (like a fairground comedy mirror that distorts what it reflects) containing only the reflected-and-distorted idealised Forms and nothing else! And, as such, it has different Laws entirely, as well as different relations and rules between them.

Mathematics strictly obeys The Principle of Plurality!
Yet Reality strictly obeys The Principle of Holism!

Now, there is an important feature of Ideality which causes great difficulties when it is arranged to conform to carefully designed and constructed locations within

Reality - for these adjusted-on-both-sides arrangements bring a Tailored Reality and an Adjusted Ideality closer together, but only pluralistically!

It enables useful predictions and productions to be achieved, and is therefore pragmatically very useful; but is all handled solely within Ideality.

And, Ideality is NOT limited solely to the formal contents of Reality. It is far wider, including multitudes of things which actually NEVER occur in Reality!

Multiple Dimensions? - that's Ideality!
Strings of Energy? - that's Ideality!
Quantum Entanglement? - that's Ideality!
Wave/Particle Duality? - that's Ideality!
Space-Time Continuum - that's Ideality!

The full list is already endless.

And it just isn't researching Physics at all! It is researching Mathematics within its own ideal realm.

Now, that is not, as it is considered by current scientists, for almost every one of them accepts the Principle of Plurality as being true, universally, and that mathematics is the language of nature. The most important consequence of this is the assumption or even belief in the eternality of Natural Law. So, in spite of the fact that they can NEVER use such a Law in Reality-as-is, they assume that it is acting there, but masked by a simultaneous set of others also involved.

And, this allows them to make many incorrect assumptions as to what even occurs there. For example, they make assumptions about how they can process Raw data from that real world case, using equations derived in farmed contexts - so for to them, the same single eternal Laws act in both.

They don't!

M a t e r i a l l y
or
Mathematically
defined
Physics

||

So, what is the Alternative to Mathematical Physics?

How can we study Reality Holistically?

And, there are two answers to this important question!

The first is relatively easy, as we have been doing it for centuries: it is what we always termed Explanatory Physics - answering the question "Why?".

But, of course, this must be done with a real appreciation of the affecting role of a changing *Context*, and, at best, a measure of dialectical understanding of the way multi-factor situations, which can also flip dominances via dramatic changes, and, of course, why that is so too!

After all, we have no trouble explaining why the accumulated snow upon a steep mountainside can become an avalanche!

And, there has always been an abundance of developments in everyday life, which can only be appreciated holistically - from Pregnancy and Birth, to the miracles of a child taking its first step and learning to speak!

We already do this without thinking.

But, with the enrichment of a dialectical stance, these and a multitude of others are understood much more profoundly and extendably.

And, the artists among us have often been motivated to search for ever more meaningful ways of interpreting our world and ourselves within it.

A holist approach is crucial in all the best Art!

NO, we are not without the means to appreciate real qualitative development. But, the second area of application, within the Sciences, when it occurs, will indeed be revolutionary.

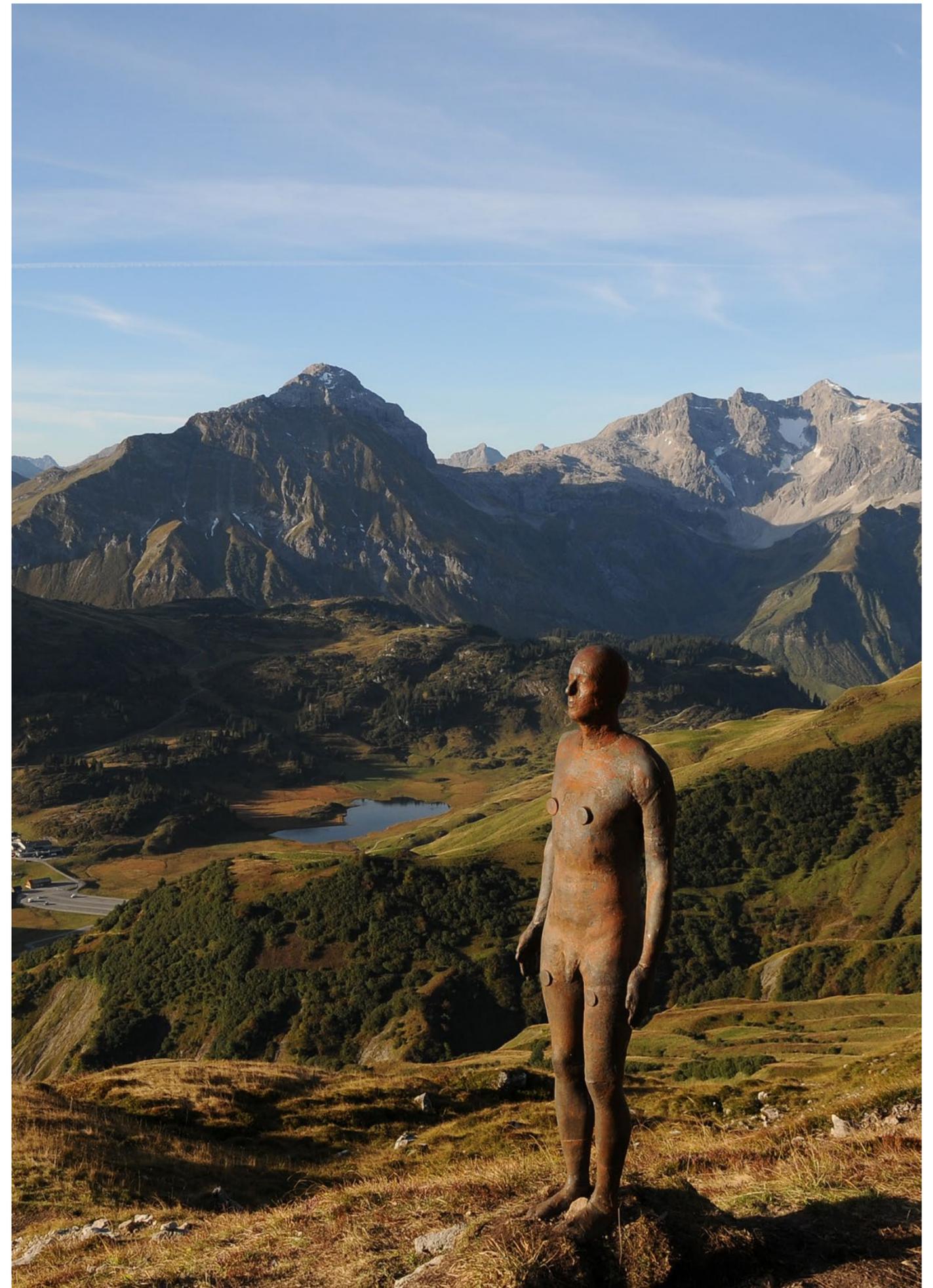
Let us see what we do now, to help define what has to be changed in our methods.

Presented with a naturally Holist World, Mankind was initially largely prevented from bringing any parts of it to heel: it was both too complex and too variable: so he took to using what didn't change, any more, because it was dead!

So, for example, for literally millions of years the hominid line (our ancestors) could actually make Absolutely Nothing! As tools they only used fragments of flint, which could easily be persuaded to break with a sharp edge. Or they would pick up a dead branch from a tree to reach fruit high on the bough. They used dead, unchanging things because they always acted the same.

And, for the same sort of reasons, the first real studies were of the Heavens, because they didn't really change: they were cyclical and therefore predictable.

But, in time, as everyday experience increased, across an increasingly social organisation of people, it enabled some things to be both controlled and shared, so they, very-slowly, developed shared-means of keeping -things- still, it meant that they could study a couple of things that seemed to change in step with one another in a predictable way.



So, Science developed NOT as a study of Reality-as-is, but of tightly-controlled locations within Reality. And, it delivered “Laws of Change”, but only within those carefully organised situations: the Laws never worked outside of those appropriately-controlled domains.

But, most things weren't like that, without the Farmed Situations, things behaved very differently, and this was interpreted correctly as many Laws acting simultaneously and confusing the results.

But, they also assumed something else! They assumed that the involved Laws were NOT changed by their complex context - they just added together to deliver a complicated sum. And that was wrong!

Intuitively, they had inferred the Principle of Plurality, which meant that for centuries they would be developing ONLY a Pluralist Science - the Science requiring differently-arranged circumstances for every single extracted Law.

And, the consequences were many and varied!

If a natural process was to be carried out in this way, it would have to be repeated separately for every significant Law involved: each time with all the other Laws suppressed.

So, the simultaneous natural situation could only be transformed into a sequence-in-time of separate productions - one for each involved Law. But, such a sequence would have many possible orders in which the full set of all the various Laws would be applied: all of them giving different results, and none of them would give the same result as the natural simultaneous version.

Now, the very best technologists could constantly modify things, so that finally the required outcome could be achieved, but it will have been arrived at very differently from the natural version, and which may have only ever been achieved pragmatically.

BUT, what would the theorists do, if they wanted to theoretically extend the processes into slightly new areas: they are NOT technologists spending hours or even days pragmatically establishing a new pluralist sequence. They are theorists who need to investigate quickly, and on paper, to predict appropriate results... In America they call it, “Doing the Math!”

They can only use past mathematical formulaic versions to develop the answers: so how would they do that on paper? It isn't known what would be necessary, as they are attempting an extension: the actual sequences haven't yet been physically carried out, so, the theorists construct a New Overall Formula, composed out of the ones they already have had the defining data for, plus a guess of any as yet untried components, and their relative contributions.

It can be nothing more than a formal trick.

But, it has become the way that present-day, sub atomic theorists do what they call “Theory”. And, consequently, most experiments are merely to correct and refine those Formulae!

It is a long way from the old amalgam of stances of the past. No holist explanations, of the prior type are allowed, mainly because they don't ever work in these contexts: and sadly NEVER WILL! And, this is also because there are now no holist theorists involved.

No James Clerk Maxwell to intelligently model the situation by involving conceptual additions that make sense: No conception of an increase in Objective Content as being the primary purpose of Theory. Now, it is considered to be absolutely basic entities obeying Absolutely true equations that are being dealt with, merely addressing the ever more accurate constants in the equations used.

But NONE of that is Reality-as-is! The subsequently constructed experiments couldn't be more artificial!

Consider the Large Hadron Collider, which they assume to be modelling high-energy transactions in the Early Universe.

Clearly, to establish Holist Science, in both its Experimental Method, and in its Theories, many changes will be necessary. For, though the old “holist theory component” from the pre-Copenhagen era is a starting point,. It is certainly NOT also dialectical. So, the experiments required to resonate with the holism of Reality will have to be very different indeed.

Some years ago Stanley Miller devised a thoroughly holistic experiment to investigate what processes were going on in the Atmosphere and the waters of the Early

Earth, which ultimately will have led to the Origin of Life on our planet! He put what he knew of the early atmosphere and water into a sealed container, with an occasional spark - to emulate Lightning, externally applied heat, and a condenser to deliver “rain”.

He left it for a week and opened it up to find that somehow an amino acid - important in subsequent Living Things, had been produced.

But, he had no idea how this had come about.

He needed multiple sequences of both time-based and context-based information, and crucially the separation and monitoring of many different simultaneous and sequential processes, in a variety of circumstances: but he had no idea how to do it at all.

But, if the Large Hadron Collider has taught us anything, it is how you use what you get from initial runs, to re-design the whole system, which is then re-built with modified objectives. But that's all that can be got from the LHC, I'm afraid!

From Biology, with the Nobel Prize-winning revelation of the role of cyclin in the repeated division of the cells from a fertilised egg, it was clear that related sequential methods would be necessary in a re-designed Miller's Experiment.

But also, in addition a system of channels included to direct air and water into particular, different flows, produced by impervious walls containing non-invasive, regularly-timed, monitoring of the presence of certain possible substances.

And, the results would only define how the whole experiment should be modified for a further, very different run. Indeed, this might be as a long-winded a series of runs, as the with the LHC, but with vastly superior objectives and results!

There is still so much to do, but in this example we now have a direction and a method!



Speed and Size

Relative Motions in Different Realms?

An interesting diagram in a lecture by a modern Particle physicist on YouTube set me thinking, and the reasons-why deserve explaining here.

I am in the midst of defining a holist alternative to Quantum Theory. In my theory an undetectable and multi-level Universal Substrate permeates all known space. It is composed primarily of Elementary Particles (Leptons), but existing here entirely in stable mutually-orbiting-pairs, with diametrically-opposite properties, which, as such, deliver all the necessary features to explain what is physically inexolucable from the Copenhagen stance.

It is a purely theoretical, model-making exercise, in the style of James Clerk Maxwell's orior effort with an undetectable Ether, and has the same objective of delivering more Objective Content than is delivered by the currently consensus theories.

And, what has emerged, surprisingly, is a hierarchy of Levels - widely separated both in the size of the joint-particles involved, and in the different multiple functions that they deliver.

Now, as all of these units, comprising such a substrate, were physically totally undetectable, due to the cancelling of all their properties, either within each joint-particle, or, alternatively, overall, due to mirror-image, "reflected" entities of the joint-units, delivering a directly-opposing population. None of this was of course, directly observable.

And, the lecturer's suggestion was that, within sub atomic particles, the speeds went up with reducing size,

so it delivered intriguing possibilities, particularly for the tiniest particles of my theoretical Universal Substrate, which were apparently those delivering Gravity.

Clearly, highly energetic tiny particles would not normally aggregate as their local gravitational attractions would be constantly overwhelmed by both the speeds and energetic collisions involved: a "Cosmic Dust Cloud" would never, of itself, aggregate internally.

Such muses not only rationally confirmed the clearly emerging evidence, in my theoretical researches, for the clear separation of properties at the different and distinct Size-Levels of the Substrate, but also gave increasing credence to the relative independence of these levels: for smaller size particles in a different level seemed to effectively exist within the interstices of the next level up - and, significantly the tiniest neutral particles are currently seen as passing straight through whole planets totally unscathed!

Of course, such theorising can, initially at least, only be speculative.

BUT, and this is important, the approach and findings are wholly physical, and hence depend solely upon prior physical knowledge from elsewhere in Reality, and is, therefore, at least free from the many drawbacks of current idealist Sub Atomic Physics as embodied in the Copenhagen Interpretation of Quantum Theory.

The approach was also encouraged by the brilliant "Walker" experiments of French physicist, Yves Couder, who, in spite of eliminating everything except Energy and a Substrate, managed to create his persisting "Walkers",

and even get these macro entities to perform “quantised” orbits!

Perhaps delving ever further down the Rabbit Hole of the LHC is not the only way forward in Physics!

NOTE: One of the discoveries, of this research, concerns the differing kinds of propagation possible within the various Substrate-Levels: for example, the Neutrion Substrate-Level not only delivers electromagnetic energy propagation via bucket-brigade transfers of quanta between the internal mutual orbits of the individual units, but are also so loosely linked as to be very easily dissociated into their individual units, which can still carry energy within their promoted internal orbits, and be driven by the passages of energetic particles, into both Streams and even Vortices, which can then be shown to enable sophisticated energy stabilities, and even explain so-called “quantized” orbits, entirely physically. Clearly, the properties of either liquid or gaseous Media, do NOT exhaust the physical possibilities.

Another remarkable theoretical finding is concerned with the “Magnetron” level in the Substrate Hierarchy, for this has required a mixture, in exactly equal numbers, of two mirror-image particles, with exactly opposite properties, which means, in their default mode of incessant random movement, that it will cause them to cancel each other out - to be totally undetectable.

But, these remarkable entities are also composed of mutually-orbiting sub-particles, and are therefore capable of carrying and delivering energy.

But, they too display other modes, in the presence of Charged or magnetically empowered entities. For all Magnetons have Magnetic Dipole Moments, and when near a charged particle will gather around it in a complete shell, but with one pole of their magnetic moment pointing inwards to the initiating particle, while all their other poles are orientated exactly radially outwards. to attract even more Magnetons.

In addition, these magnetons can hold and deliver energy to the emerging “field” (produced by the concentric shells, in proportion to the enclosed charge. So, as the ever larger shells are built around the charged particle, they will deliver an inverse-square-law field in every single participating unit, which will be supplied with energy in each one, residing in its internal orbit.

And, remarkably, these same magnetons can also deliver a Magnetic field structure within the substrate, in the presence of a Magnet or magnetic device. But, in this case, the magnetons link by the opposite poles of their dipoles to form Magnetic Lines of Force - starting upon a S pole of the initiator, and forming the Line round to the corresponding N pole of that same initiator.

And, taking this line of theoretical investigation, has led to several, very different Levels in the overall Substrate, displaying a variety of distinct phases. And, these differ, markedly, depending upon which Level is considered, and, hence, which Substrate units are involved.

There are at least three Phases in the Neutrion Level, and three different Phases in the Magnetron Level, which have already been explained. So whatever happens to the overall Theory, these discoveries will indeed provide new areas of Theory in better, replacing theories later.

After all, though Maxwell’s Theory of the Ether was dumped, his Electromagnetic Equations have proved valuable ever since!

Indeed, such theoretical speculations, purposely limited to only physical, explanatory methods, are likely to be the only way that the idealist Copenhagen Stance will be defeated.

Though, it must also be made clear that, in addition, throughout these studies a purely holist and dialectical stance has proved crucial - for the whole idea of a Universal Substrate, apart from its physical, explanatory virtues, was also suggested by Hegel’s discovery of the role of erroneous or missing premises resulting in Dichotomous Pairs of contradictory concepts in Formal Logic, so the glaring anomaly of Wave/Particle Duality, immediately suggested the obviously missing physical premise of a “Substrate” in Sub Atomic Physics!





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