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NATURAL PHILOSOPHY?

A HOLISTIC AND DIALECTICAL REALITY / THE MYTH OF REASON / THE IDEAL AND THE REAL / DESCRIPTIVE SCIENCE
THE MORALS OF PHYSICS / HAMED'S "NEW PHYSICS" / WHY QUANTISE SPACE AND TIME?

Words **Jim Schofield**
Design **Mick Schofield**

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God the geometer? "Science, and particularly geometry and astronomy/astrology, was linked directly to the divine for most medieval scholars. The compass in this 13th century manuscript is a symbol of God's act of Creation. God has created the universe after geometric and harmonic principles, to seek these principles was therefore to seek and worship God."

What has really changed?

Natural Philosophy?

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Reality and Man

What came first, the chicken or the egg?

What is Reality?

Who is interpreting it?

And how are they managing that?

To address the questions of Science and Philosophy entirely in their own terms isn't at all objective - without dealing with those primary questions effectively. And that isn't at all easy!

For, unless there is a non-material, yet conscious Entity, outside-of, yet-observing, Reality, that interpreter can only be Man. And, Man is not only many and a key part of that Reality, but also a product of it too.

Immediately, on such a realisation, Reality ceases to be static: not only must it actually evolve, but in so doing transform its intrinsic content creatively into wholly new properties and relations.

Its Laws therefore, cannot be fixed.

So, any conception of Reality involving eternal Natural Laws, must be wrong! Yet, the dominant and universally-assumed principle of Reality is that of Plurality, which sees all of Reality exactly as produced by wholly separate-and-fixed Natural Laws, somehow merely "summing" to produce all the contents, relations and qualitative developments possible in Reality.

And, that includes Man!

Yet, Mathematics, Physics and even Formal Reasoning - all the products of Man, assume Plurality.

Whether it is entities or Laws in Science, or Statements in Reasoning all manipulative processes are not allowed to produce contradiction, as this confounds the Principle of Plurality.

But, excuse me, we are already attempting to run, before we can even walk! The above diversion is clearly jumping ahead too far.

We have completely omitted the vast trajectory of development from entirely non-living Matter, via the Origin of Life, the Evolution of all Living Things, the Emergence of Man and then that of Consciousness itself! For without this, we have NO observer-and-interpreter of Reality anyway.

Yet, such a diversion was indeed necessary: for, with the above trajectory of Change and Qualitative Development, the actual subscription to Plurality is, in retrospect, clearly wholly untenable.

But, still another enormous leap forward was required before any sort of sound approach could be defined. Man did not achieve a fully developed Consciousness in one fowl swoop! Man too had a trajectory of development, which is still underway, and still very far from perfection.

To reflect-accurately and interpret-soundly was by no means easy to do, and for most of Man's presence on Earth as a distinct species, the question "Why?" did not even

occur to him! His first major intellectual achievement was -"If it works, it is right!"- or Pragmatism! So, after deciding on "What" he was dealing with, his main preoccupation was "How did I do that?"

And, by the time he got around to finding "Why?" important, he just didn't know enough to ever get the answers even partly right. So called Absolute Truth was then, and still is now, wholly unobtainable.

But, what he did extract wasn't mere invention, however. Actual aspects or fragments of the truth were extracted and embodied in invented models of what was being addressed, usually based upon other phenomena of which he had more knowledge - they were analogistic models or, as I more generally describe them temporary explanations containing at least some Objective Content.

In addition, his means of doing this were also imperfect! Remember the foundational Greek contributions - Mathematics, Formal Logic and Science - they all incorrectly assumed Plurality, which is undoubtedly incorrect, but nevertheless, with the inclusion of Experimental investigations, and rigid control of both Experimental and Use conditions, were able to "make things work"!

But, as Zeno of Elea had long ago demonstrated, in his Paradoxes, and, much later, the German Philosopher, Hegel, had both revealed-and-corrected the causes of failure in individual and significant cases. Indeed showing that Formal Logic rests solely upon statements which are never Elements of Absolute Truth, and are, instead, every single one of them, always based upon inadequate, wrong or even missing premises, which result in sequences of reasoning, frequently being halted in terminal impasses, by what are termed Dichotomous Pairs of seemingly legitimately available, yet contradictory concepts.

Indeed, delivering situations in which a pair of totally contradictory concepts (like Zeno's Continuity and Descreteness) seem equally applicable, but prove never to be so, sometimes one leading through to subsequent reasoning, while in other circumstances it would only be the opposite that would carry through.

Hegel revealed many such impasses in Reasoning, and solved them by seeking-out the premises-assumed, and showing them to be mistaken - enabling corrected premises to turn the impasse into a clear and rational fork in the Reasoning! But, even these cases were only one aspect of how wrongly-assumed premises led to even more inexplicable breakdowns in Reasoning.

For, the most perplexing cases were when Laws were varying much more quickly, flipping over certain situations from one outcome to its exact opposite. Indeed, Hegel was able to suggest major re-definitions in Formal Logic to accommodate these anomalies, which he termed Dialectics.

But thinking dialectically was just too much for most logicians. And scientists, with the increasing dominance of Mathematics (in which Plurality was legitimate) in most investigative and productive situations, ultimately led to Mathematics being given priority over Physics, particularly in the anomalous areas delivered by Sub Atomic Physics.

This seemed to be the nail in the coffin of any extension of Dialectics into the Sciences - which looked to have been made possible by Karl Marx's transference of Dialectics to a Materialist basis - but he first applied it to the current Economic System of Capitalism, and his conclusions were an anathema to literally all academic scientists, who were almost totally from the *owning* Classes! They rejected his Revolutionary Politics, and along with it his philosophic basis too.

The new approach to understanding was never applied in Physics, so the subsequent trajectory, of that Science, was determined by that omission, and the time just had to arrive when its philosophical basis would fail to cope because of its incorrect premises.

An existential crisis was inevitable!

The Ideal and the Real

Plurality vs. Holism?

West vs. East?

Mankind has had to find its own way to understanding Reality, but, never, it must be emphasized, by finding the Right Way!

Indeed, Man's dexterity and intelligence led initially and inevitably to pure Pragmatism. And, we should never downplay the efficacy of this tenet. dominating the vast majority of Mankind's existence as a separate species, and in which period he not only spread to all accessible parts of planet Earth, but developed a succession of rich cultures based entirely upon knapping flint slivers into a variety of effective, if transient, tools and weapons.

It also led him to the greatest development in his history so far, for while still dependant mainly upon stone tools, he nevertheless totally transformed his lifestyle, both technically and socially, with the magnificent Neolithic Revolution, when the previous wandering Hunter/Gatherer lifestyle was replaced by a static, and far more social, farming and animal husbandry alternative.

And, up to that point, asking "Why things behaved as they did?" was totally pointless, because he just didn't know enough to furnish any meaningful answers. Pragmatism dealt with survival. Mysticism filled in the gaps.

But, of course, the new economic mode of life brought people into closer and persisting contact, and instead of those prior multiple lone paths to truth, that process became much more social, and inevitably led to a significant development of Language and shared ideas.

The change in the means of Life also led to a transformaion in thinking which elicited many new techniques such as metal working, and a major boost in both social interactions anmd organisations, and even led to writing, and a significant increase in the interchange of ideas. So, by the time of the Ancient Greeks a major intellectual revolution became possible too.

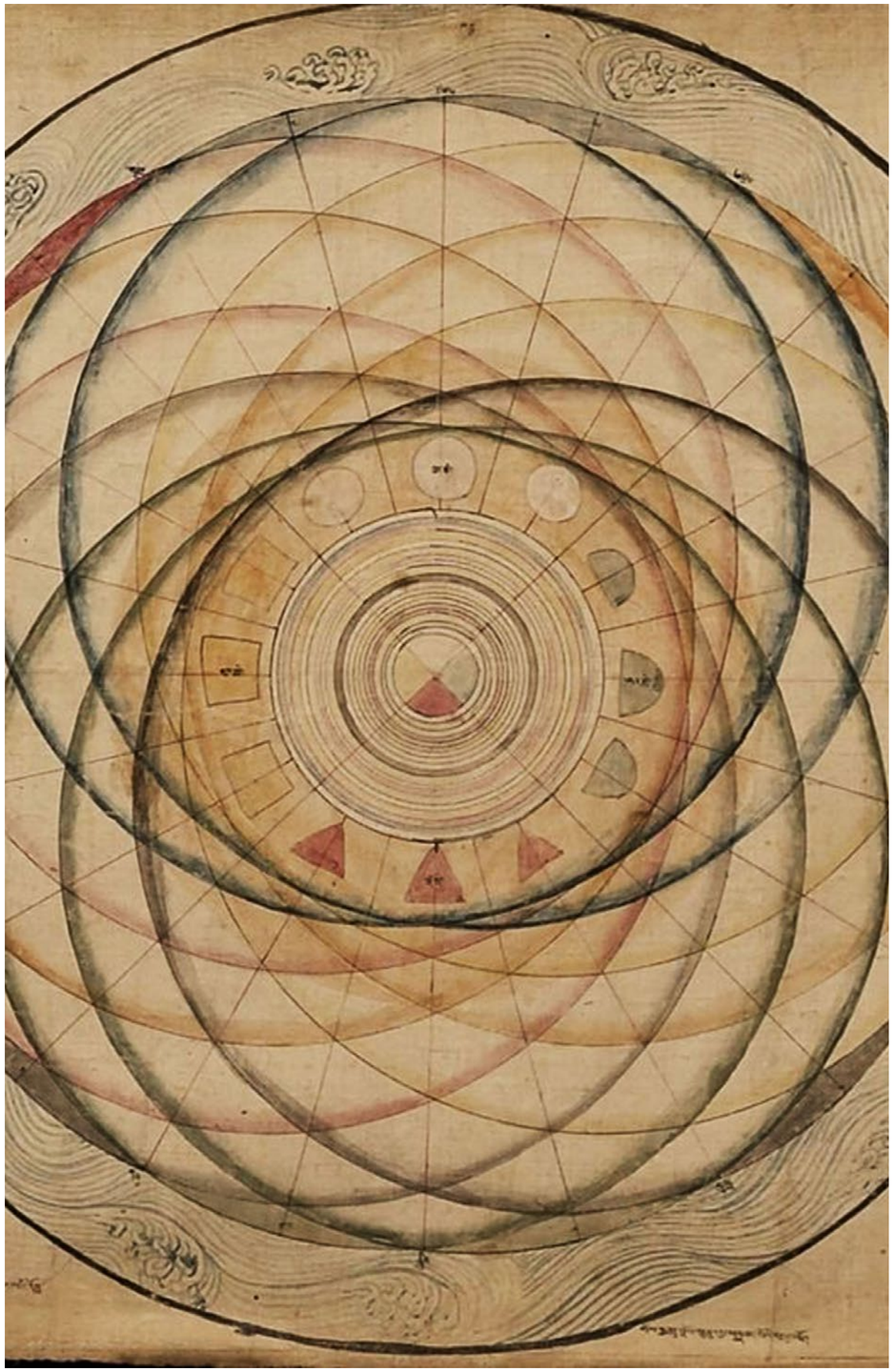
Although it was both vital and significant, it was also unavoidably flawed, as Mankind's still inadequate knowledge and means of thinking would set limits on what could be achieved - which lasted for millennia!

But, nevertheless, the new thinking was still both revolutionary and significantly better than pure Pragmatism, and the first wholly new ideas occurred in a surprising area! It was initially concerned with the Shapes or Forms, which occurred everywhere in Nature, as well as in the structures made by Man. And, they were initially studied via line drawings in the sand.

Mankind had long abstracted from Nature, and named his extractions. But, he also began to do the same for their Shapes or Forms too. But, of course, he simplified them, as they were then much easier to study, and find out about. Squares, Triangles and Circles were tackled in this way, and studied in their most perfect or idealised forms, which allowed an apparently coherent set of relations to be revealed, which ultimately was developed to become a coherent system termed Euclidian Geometry.

Now, the Greeks raised these relations to the status of the Essence of Form, and as they then built the much wider discipline of Mathematics, in the very same way, their much extended list of idealised components were given the same kind of status.

Now this was indeed revolutionary, but also premature! For, the real world wasn't merely a summation of such



idealised components. And, as well as the essential nature of individual Forms, there was also the crucial question of how they came together into more complex systems.

The simplest assumption about this, namely - Plurality, considered that the components involved were unchanging, like the perfect forms of Geometry, and simply "summed" to deliver the compound results.

Whereas, an alternative assumption - Holism, considered that the components were always variable, so that - "Everything affects and changes everything else!"

And, the Greeks, and subsequent Western culture, chose Plurality as the case. While in India and much Eastern culture following The Buddha, chose Holism.

Now, it certainly will depend upon exactly what is being dealt with which of these diametrically opposed worldviews is appropriate! But, for Plurality to pertain, you would have to be dealing with permanently-fixed entities, while in all other cases Holism would be closer to the truth!

So, Mathematics is of the former category - Plurality is correct, but such is almost never the case with concrete Reality. Hence, to make this very clear we talk of Mathematics as being about the World of Pure Form alone, residing in Ideality, involving only a pure-form-reflection of aspects of concrete Reality.

Now, whilever the old pre-quantum Amalgam of Idealism, Materialism and Pragmatism co-existed as the philosophic base of Science there could be a physical, causal Explanation, existing alongside any purely mathematical and therefore Idealist formal representation. So, with the usual pragmatic switching also being considered legitimate, an acceptable explanation could correct any idealisations. But, since the demise of physical explanation in the Copenhagen re-interpretation of sub atomic phenomena, that has been lost completely, and the idealist formulaic representation is considered to be the Absolute Truth.

The Myth of Reason

Is reason really Mankind's access to Truth?

Ever since the Ancient Greeks re-applied what they had discovered in Mathematics to Formal Logic, there has been an ever-expanding System of Reasoning which seemed to deliver Consequent Truth in a remarkable way.

Indeed, the power of this methodology was-and-is considerable, and in many areas has multiplied-up available Knowledge to a remarkable degree. Indeed, it was the joint consequences of juxtaposed "truths" that began to deliver Reason's extendable range of connected-knowledge into ever-larger areas.

The result was an increasing confidence in what was termed Reasoning: and, indeed, many began to believe that Knowledge and Reasoning alone could deliver more than any other human process, so that, ultimately, with a sufficient increase in Knowledge a great Wisdom could be generated by Pure Reasoning alone.

Now, as with all major developments in Mankind's Thinking, this was, undoubtedly, a significant turning point in that endeavour, BUT the belief that by Debate and Reasoning alone everything could be revealed was obviously never sufficient.

It was not by chance that historical sequences such as that involving first Socrates, then Plato, and then Aristotle, with their very different emphases, came in such quick succession! Within a generation-or-two, a universally and long adhered-to Pragmatism had been "added-to" by both Idealism and Materialism, into an amazing amalgam, described by Formal Logic, but underpinned by our ever-present Pragmatism!

So, the universal subscription to Reasoning, could hardly be said to have been based upon solid coherent ground!

Nevertheless, as long as new Knowledge was being regularly supplied by "doers" of all types, Reasoning was capable of building "logical structures" to describe-and-relate them.

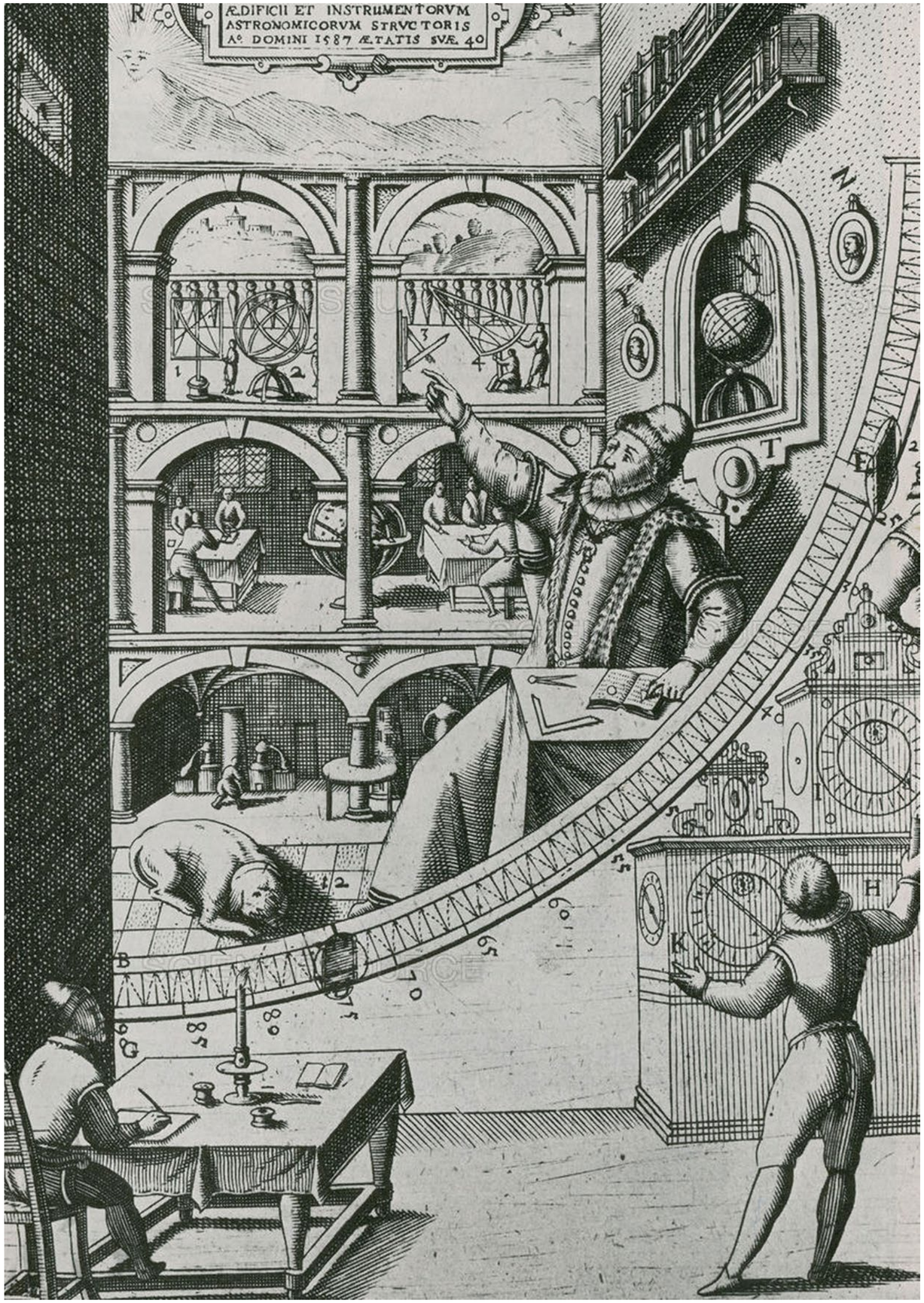
But, deep within Man's universal-but-unstated premises, there was always the implicit belief in what has been termed The Principle of Plurality: and this assumed an underlying constancy in the Nature of Reality - which was supposedly delivered by eternal Natural Laws.

And, since such bases were so fixed, the extension to all revealed "truths" was also implicit in Mankind's Thinking and methods. But, in addition, the initial level of extractions from Reality, would inevitably be of those that were "evidently fixed"!

But, any complex structure requires more than facts, just as a building requires more than bricks! There have to be things that deliver connections in both, for any structure to cohere.

So, in Reasoning, apart from entities, there would also be properties and behaviours associated with them, and by far the most important criterion for a rational explanation of such things would have to be a total prohibition of Contradiction! Sequences of observed behaviours would only be acceptable as long as no contradictions emerged. And, this could only be guaranteed if all the elements involved were fixed.

But sadly, such contradictions did immediately emerge within the heart of Formal Logic, when Zeno of Elea had demonstrated such in his famous Paradoxes (involving movement). but it was not until the German philosopher, Hegel, some 2,300 years later, that the teasons for



these contradictions were revealed as being caused by erroneous premises underlying the reasoning involved. Man, almost unconsciously, assumed certain premises, which were not overtly evident, and these could lead to terminal impasses in many logical sequences.

Reasoning depended upon Man's, often-implicit, assumptions, that were not at all evident. Now, of course, the contradiction-is-banned tenet could dispose of individual additions, but it would never show exactly what had caused them, and hence could very easily "throw the baby out with the bathwater", because in our Real World which is not composed solely of fixed things in neat categories, contradictions would inevitably occur in all Qualitative Development.

So, in Formal Reasoning, observed sequences that recur in Reality, and did not lead to subsequent contradiction, were assumed to be "causally-connected" without any further explanation so commonly occurring sequences were used as "explanations", while they were, in fact, only non-explanatory, analogistic models.

NOTICE: Such reasoning never reveals why-and-how such things are causally connected - only that they are... somehow!

Now, thus far, we are considering Formal Logic as the Greeks did it, but very much later, Science, with its investigative Experiments, attempted to go further and supply detailed proof of causal relationships. Nevertheless, Formal Logic still remained the means of reasoning - even with this very new kind of Knowledge.

And, it increasingly failed to deliver, wherever and whenever substantial change was involved!

Hegel realised that Formal Logic could never cope with Qualitative Change, because, in such circumstances, what was involved had, quite legitimately, become something different, so that contradictions were therefore unavoidable within that system of Reasoning.

So, he used his knowledge of Dichotomous Pairs (as in Zeno's Paradoxes) and how to correct them, to begin to construct a new Science of Logic, which, he believed, was ultimately going to cope with Qualitative Development generally.

The inclusion of Qualitative Change into the new type of Reasoning was revolutionary, and immediately the Principle of Plurality (with its fixed elements) just had to be jettisoned totally, and replaced with an alternative - based originally upon his solution of the Dichotomous Pairs flaw, but extended into what he termed as an active and transforming Interpenetration of Opposites - as the general mechanism of qualitative change. He called his new system Dialectics.

But, Hegel was an idealist and limited all his studies to Thinking about Thought, so, for his discoveries to really change things radically, they would have to be applied to concrete Reality and its processes and developments too.

This massive philosophical leap was made by the leader of the Young Hegelians - Karl Marx, which he termed Dialectical Materialism, and which he effectively applied, first to History, and thereafter to Capitalist Economics.

But, it was, of course, a gigantic undertaking, and his first major task, that of Capitalist Economics, took him the rest of his life to complete.

For, though that task was difficult, in itself, it was also his self-constructed vehicle to deliver a Whole New Method of Reasoning, which for the first time ever in Mankind's History attempted to explain not only qualitative change, but also Creative Emergences of the wholly new...

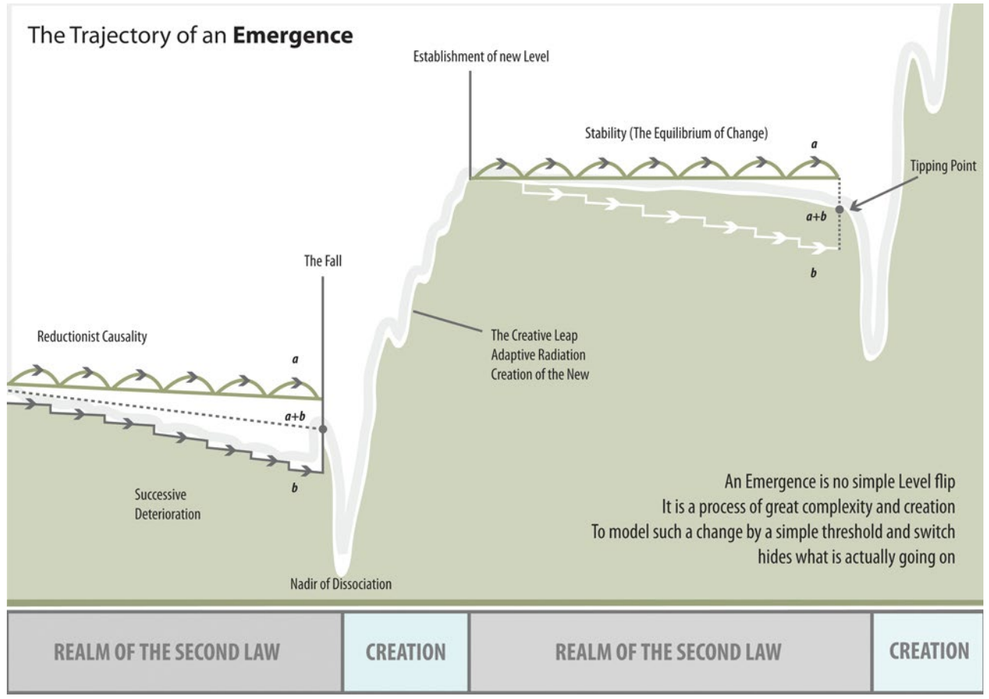
So, it wasn't just a new Formal Logic at all: the prejudice of a purely cerebral, yet universally applicable means of arriving at The Truth was now clearly dead! A general process of Reality-itself, which included its actual Developmental Change was not only applicable in Thinking, but even more importantly in the actual Qualitative Development of Concrete Reality as such!

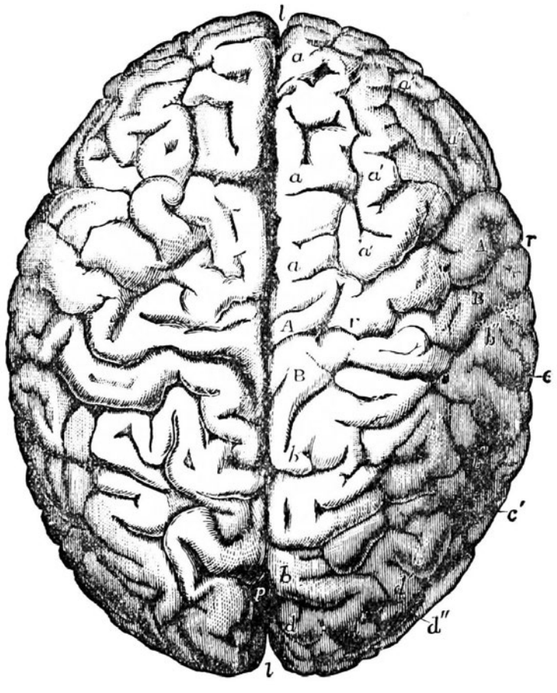
And, Hegel's Interpenetration of Opposites in Thinking was transformed into Theory of how Concrete Reality actually developed. And, it was NOT via incremental quantitative changes "adding-up" to a qualitative change, so-called Quantity-into-Quality, but something very different indeed!

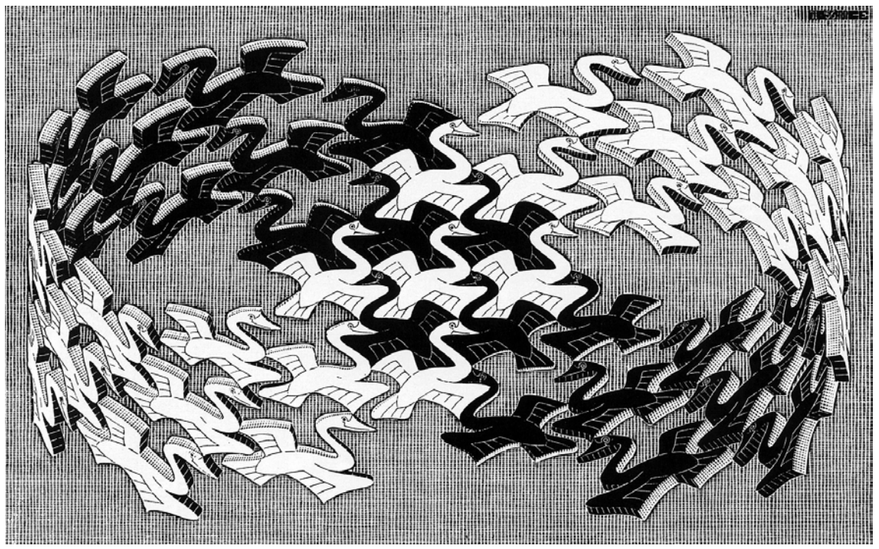
Marx's Dialectical Materialism has no longer to be painfully extracted from Das Kapital as an implicit, but undefined, methodology, but now stands as a sophisticated philosophic approach relating Stability and Change via The Theory of Emergences, and the

detailed trajectory from established Stability, via Crises, and ultimate Collapse, down to a Nadir of Dissolution, which alone allows a wholly new ascent to a never before achieved New Stability!

Postscript:
This may seem to se an unsubstantiated claim, but that is far from the truth! The last decade has seen remarkable philosophical advances in this very jounral, primarily in the application of Dialectical Materialism to Sub Atomic Physics, resulting in The New Theory of the Double Slit Experiments, The Non-Copenhagen explanation of Quantised Electron Orbits in Atoms, The Theory of Emergences (see below) and a total of almost 800 papers from the new stance covering Mathematics, Physics, Politics, Philosophy, Evolution, The Origin of Life on Earth and Cosmology!







The Abstraction of Opposites

in a Holistic & Dialectical Reality

This paper constitutes a muse upon the usual, unrevealed, but, nevertheless, invariably-implicit-assumptions taken as the appropriate and necessary bases for Formal Logic, and, therefore, their often debilitating effects upon what is believed to be Sound Reasoning, by a surprisingly large fraction of the Human population of Planet Earth!

For, with Formal Reasoning so dominant, we have to ask what are the elements of such Reasoning?

To be able to even start, "the elements involved" had first to be given names: and these could be of objects, living things or even feelings and ideas. And, by far the most important initial-universal-assumption in thinking about these things has to be that they are unchanging and can therefore be defined!

Many would disagree with such a claim, but bear with me... Could we discuss a "Black" that could convert somehow into becoming a "Green"? Or, could we have a rat that could become a cow?

We would never get very far with reasoning juggling with continuous transformations, so we took the exact opposite stance and made all such elements fixed!

And, since its inception in Ancient Greece, that conception was a cornerstone of Reasoning for over 2,000 years. But, in contrast, the philosopher Hegel was adamant! He insisted that a Formal Logic, based as it most certainly was upon such a premise could never ever handle any qualitative change at all. And, logically describing and explaining Creative Development, delivering the Wholly New, would always be impossible, if limiting oneself to such a Logic.

Indeed, something naturally flipping to become its opposite would be totally impossible for Formal Logic to handle. It would constitute a contradiction and hence be rejected as Wholly-Wrong-in-Sound-Reasoning! But, such things can and do happen in Reality, so how do we cope with them?

It certainly isn't via Formal Logic!

Neither is it by the use of a single formula!

But, scientists have to do it all the time, so they find a different rule that holds for each side of such a flip, then, monitoring many such flips, while measuring all associated parameters, they would seek a parameter occurring both sides of the flip, but which effectively signals the change by passing a fixed threshold value. Then, checking constantly on this parameter, they switch to the other rule when the threshold value is passed.

But, what justifies such a "trick" in Formal Reasoning? The answer is,"Nothing at all!"

So, what actually happens is a fall-back to the much older method of understanding - Pragmatism - do what works!

This pragmatism offers no explanation, but it is easily integrated into a situation making it applicable throughout the changing situation, and seeming to cope very well. But it is a trick based solely upon prior knowledge. It delivers NO causal reasons whatsoever for any change. All we learn about the change is how to cope with it.

But, in contrast, a holist would see no problem in such a transition: for clearly, from that alternative stance, some

conflux-of-multiple-simultaneous effects nevertheless can usually generally deliver a fixed outcome, unless, that is, the conflux as a coordinated-whole changes sufficiently for a past-and-persisting balance to be lost, yet, immediately, replaced by a new and different one, which emerges from the changed components of the now-dissociated prior stability.

The problem is that most scientists, and all formal logicians, are not Holists but Pluralists: all laws in pluralist systems are both separate and unchanging - the famed "eternal Natural Laws".

And, you can easily see why such a world was universally assumed! A holist world would seem to be impossible to effectively deal with - for in trying to make investigations easier, you would naturally keep changing what was involved, until it clearly had arrived at an unchanging Stability - which was also revealing an "evidently-unchanging" law. And, arriving at such a situation, you would naturally consider that you were effectively revealing the underlying causality.

For, in some entirely Pluralist World, all such changes would have absolutely no effect, so what you could extracted would always be the exact same and hence "correct"!

But our World is not pluralistic, so experimenters always endeavoured to make-it-so by significantly filtering and adjusting a situation until the targeted law was finally both clearly-evident and persistant, and only then extracting it.

"But, that's no good", I hear you say, "it will only be true in that achieved configuration!"

Very True!

But, nevertheless, finding-the-truth is actually abandoned, for, instead, finding an extractable version of it, and then ONLY using it, when those exact same producing conditions have been put in place, where you mean to use it.

Believe it or not, the whole history of effective investigation, and consequent production, rests totally upon these methods!

Of course, only a single law at-a-time can be both extracted-and-used by such methods. So, any attempt to exactly replicate what Reality naturally achieves, had to be done only by a Sequence of such Production Steps, one for each pluralistically-extracted Law involved. Ultimately, it became the Factory System of the Industrial Revolution! But it, was, in fact, enhanced Pragmatism-writ-Large.

Yet, its pragmatic success prevented any real explanatory alternative emerging for millennia

In spite of Zeno's early criticisms in his Paradoxes, it was not until Hegel's philosophical investigations regarding Thinking about Thought in the early 19th century that a revolutionary advance was made!

Continuing with Zeno's line on Dichotomous Pairs of contradictory concepts, Hegel was finally able to transcend the impasses they always caused in Formal Reasoning. by seeking out and correcting their causes in the assumed-premises that underlay the concepts involved.

And, he extended his alternative holist approach by considering all Natural Relations, and he found that he could simplify his general findings into the Struggle-between or the Interpenetration of Opposites.

We can think of this restructuring of Logic as Dialectics!

But, Hegel was an idealist philosopher, and was really only talking about Human Thinking! So, his odd revelations did not impress either scientists or the pragmatic engineers who were clearly very busily Changing the material World!

Even the significant contribution of his best student, Karl Marx, transferring Hegel's ideas wholesale to a Purely Materialist Stance, didn't elicit the necessary switch, mainly because Marx drew politically revolutionary conclusions from the new stance, which didn't go down at all well with the bourgeios community needed to actually complete the revolution - the scientists and engineers!

But, of course, in addition, the case for Hegel's Relation-between-Opposites had still not been established generally, and Hegel, concerning himself only with Thinking didn't, and indeed couldn't, do it.

The extension of Dialectics into the concrete processes in Reality by Karl Marx, did enable investigations into Physical Reality, in order to explain the intrinsic relations between opposites and though such was Marx's own approach in his work upon Das Kapital - a substantial Critique of Capitalist Economics, neither he nor anyone else undertook the necessary application to the Sciences.

Indeed, it took this physicist and mathematician a detailed excursion into Biology, and the consideration of the problem of the Origin of Life on Earth, as well as unavoidable detours into Organic Chemistry, before the consideration of conditions, immediately prior to the Origin of Life, took the holist approach into that crucial period, by demanding answers to how systems of non-living chemical processes could actually evolve!

NOTE: After many years attempting a holist approach to Science, it has become clear that the crucial steps are always hidden in what Dialecticians term Emergent Interludes - short revolutionary periods, wherein all innovatory qualitative changes exclusively occur.

But, to reveal the inner workings of such Emergences, required an extended and detailed study of the actual Trajectories of Change involved, from initial Crises in a prior and persisting Stability, via a Total System Collapse, and thence to a unique ascending and constructive process of creation. that occurs absolutely nowhere else, and only terminates once a New Stability has been established.

The answers sought were arrived at in those pre-life chemical reactions (described as Truly Natural Selection), and which ultimately led to The Theory of Emergences, and its content of long-lasting, self-maintaining Stabilities and their final inevitable demises within further System Emergences.

Postscript:

Though it appears elsewhere in great detail, I feel that the natural emergence of Opposites in Reality has not been established here, but is clearly crucial to Reality, Holism and the Dialectical modification of Classical Formal Logic.

And, it also turns out to transform the usual ideas of random movement and randomly occurring processes, so it just cannot be omitted here altogether.

The key image for this researcher was the remarkable Metabolic Pathways Diagram of the biochemical processes of all Living Things.

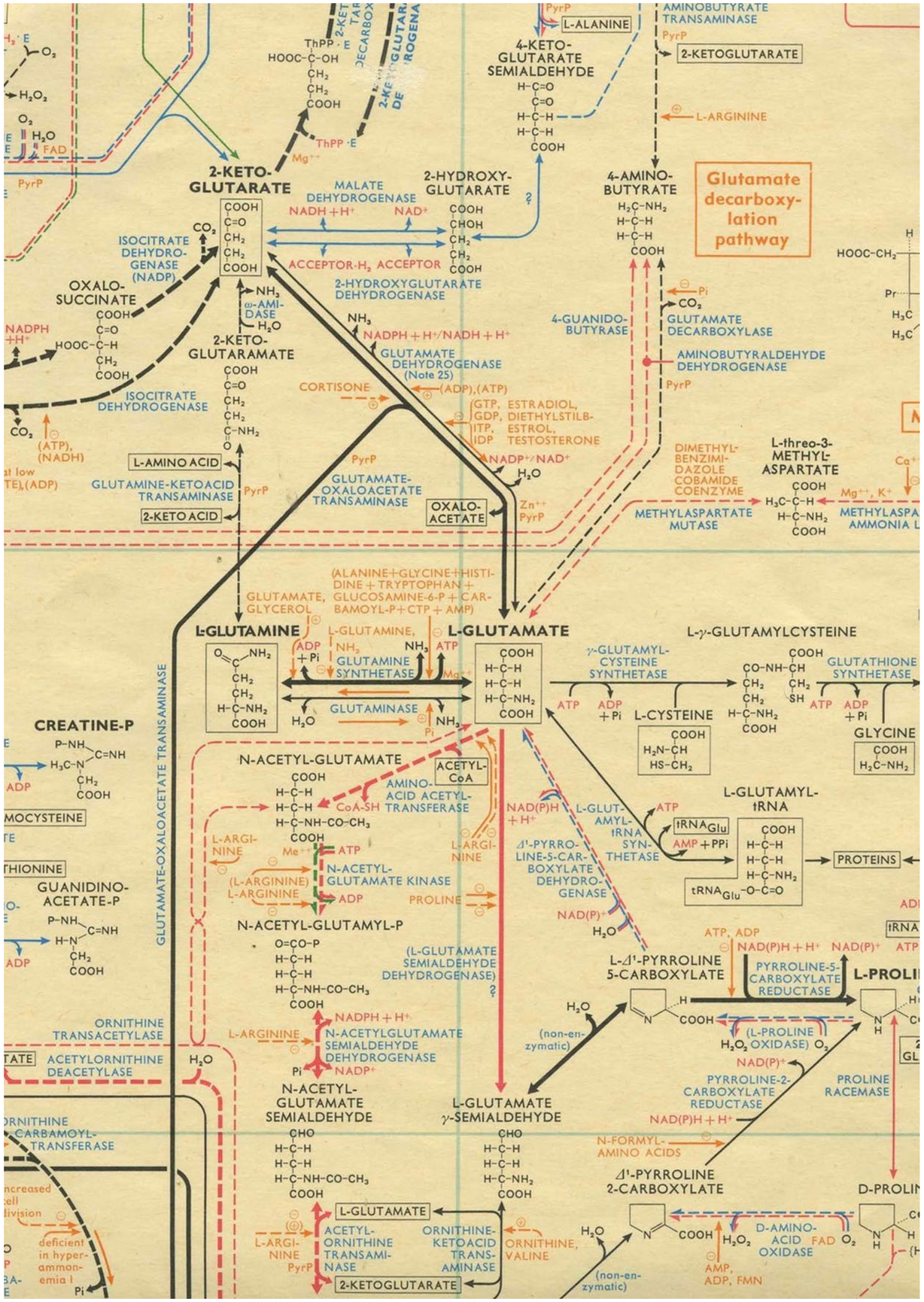
For, though, it was gradually put together by studying Life, it also clearly delivers crucial evidence of how unrelated processes became intrinsically related, and established into a hierarchy of interacting stabilities at the very heart of Life, and presumably its immediate precursors.

The crucial consideration was of a range of competing processes within a body of water, delivered of its dissolved contents, from a rich surrounding land and atmosphere. And, the effects of certain preponderances of required resources for some of the possible processes present there, deciding which would prosper and which would not.

Crucially, IF the dominance was due to a particular proliferation, then ALL processes requiring that resource would grow ever more dominant! But, processes-so-selected, could also be what could produce the exact opposites (in their consequent effects), and would uniquely succeed - as either one or its opposite, or to some mix of both!

Then, with the inevitable development of conducive chains, and even loops, of processes, in an increasing hierarchy of systems, such would ultimately produce a complex, multi-layered super system, composed of lesser systems, finding-a-balance with some major dominance, dependant upon the overall maintained conditions.

Clearly, this would be a kind of holistic Stability, only possible because of its multiple-interacting and mutually-affecting processes, that only got established, because minor changes would usually be easily accommodated



within the same maintained Stability. Crises would still occur, but would be overcome - for, after all, that was the reason why this Stability had established itself as against all others, and persisted.

But, because of its dominances due to a particular preponderant resource, within that Stability, there was hidden another potentially dominating process - its direct opposite, but almost as dominant, due to the very same resource availability.

But, situations can change, and if enough of the non-dominant, involved processes change sufficiently, the Stability as a whole could be undermined. A moderate set of such changes may just enable a switch to the nascent opposite-dominance. While major changes would lead to an overall system collapse, and a totally unpredictable outcome.

As will be evident from the above necessary inclusion, that a coherent and consistent Holistic account naturally addresses this last-mentioned emergence of a wholly unpredictable outcome, in what is termed an Emergent Interlude, and such, when considering the Histories of Human Societies, are what propelled Marx to his political Stance, and his consideration of the role of Revolutions in Societies as well as Qualitative and Creative Developments in all of developing Reality too!

Description-Dominated Science

The inevitable initial stance for certain...
but debilitating if permanently adhered to

On reading general papers concerning a particularly interesting area of study, I am often frustrated by the total absence of explanation in the descriptions of relevant work in such areas.

I can completely understand how such an approach is vital when initially addressing a new area, or even in studying or extending an older area. But, to continually only seek out ever more unexplained features, seems, in some cases at least, to reflect a basically *non*-scientific stance - indeed, what I would call a purely Observational or Descriptive Stance!

Of course, it has always been possible to fit-up pure abstract-mathematical-patterns to quantitatively-measured-data, without any effort having been undertaken to also explain such results. It isn't difficult, and I have done it myself (especially as I was originally a mathematician, long before I switched to Science).

Indeed, further steps, along that same route, can continue to be taken, for the forms fitted up to collected data, can become Equations, and thence claimed as "Laws of Nature", which can then be used to predict a particular conjunction of circumstances, encapsulated into the a "Law", either directly from concrete observations, or by extension of that same form, into an as yet still unexplored area.

But, though such is always claimed to be "Science", it isn't. It is only systematised Technology!

For *True* Science only emerges when those results, embodied in a Form or "Law", have also begun to be explained in terms of what substances are involved, and what properties they have to deliver such results.

I originally switched to Science because the best practitioners there also demanded to understand *Why* such results actually occurred. 'How' was not enough.

Indeed, such a stance was originally claimed to be *Natural Philosophy* - for that is what it was, and would be judged in a similar way to Philosophy itself, but with the added justifier of a possible recourse to Reality itself as the final arbiter.

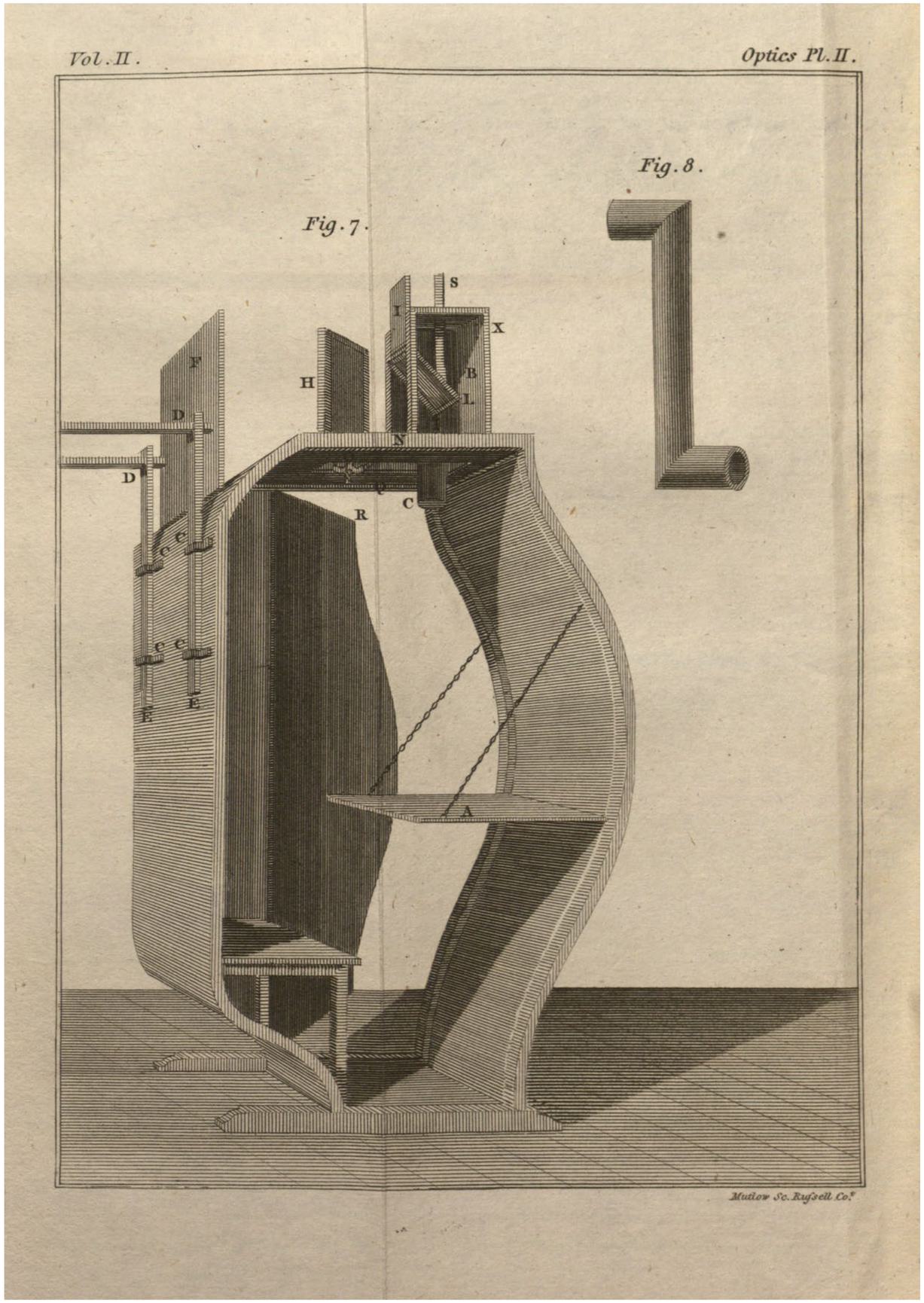
But, such a course was far more difficult than the always-pragmatic, purely-technological approach: for in the latter only particular sets of instances were captured, and by limiting oneself to the very same context, predictions were to a great extent reliable.

BUT, True Science, in contrast, would be dealing with qualitative properties of everything involved, and they were only very rarely fixed! And, that being the case, the relations between various entities, with their individual properties could be developed in several different ways.

Number one: the qualities could be mapped onto other similar situations, allowing more general use of what had been found: a very good thing.

Number two: The qualitative properties and their inter-relationships could also be mistakenly seen as eternal Natural Laws, which is NEVER true: clearly a very bad thing!

Now, the mistake which masks that latter fault, is due to the universally subscribed to Principle of Plurality, and this false tenet made the explanatory route full of pitfalls, due to Plurality's insistence that Natural Laws were totally independent of context: for that is totally untrue!



Indeed, the alternative Holist stance insists that "Everything changes and, in doing so, affects everything else" so no found Qualitative Law is absolutely true in all contexts, but, nevertheless, it can contain Objective Content - aspects or parts of the truth, so the best scientists do not seek the unobtainable Absolute Truth, but, instead, an ever-better Objective Content!

While, the technologists amass ever more purely quantitative and assumed-to-be "eternal Natural Laws" (which they are NOT), the real scientists seek ever better Objective Content!

Indeed, it wasn't until the contributions of the idealist philosopher Hegel, some 200 years ago, that this major flaw, not only in Science, but also in Mathematics and even Formal Reasoning, had a chance of being addressed.

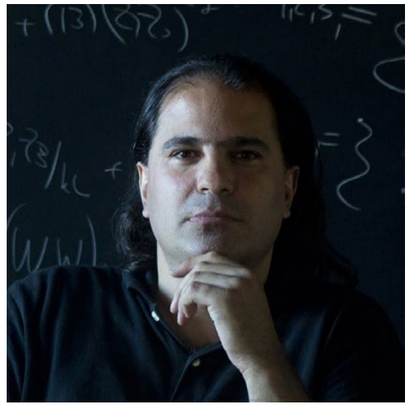
Hegel certainly began to address the problem in Formal Logic with his study of Dichotomous Pairs of contradictory concepts, and his alternative strategy which he called Dialectics.

But, though then taken from Idealism and into Materialism, by Karl Marx, it was not comprehensively applied to Science, and still hasn't been so, to the present day.

It is only since the publication of *The Theory of Emergences* and the *Theory of the Double Slit Experiments* in 2010, that necessary turn has begun to be made, and the almighty retreat delivered by the Copenhagen Interpretation of Quantum Theory began to be challenged and even exhaustively debunked, from that standpoint!

The Morals of Physics

according to Nima Arkani-Hamed



In a lecture at, I believe, Cornell University, there was an attempt by Hamed to give a non-religious "moral" basis to the built-in imperatives of studying Physics and seeking the "Truths of Reality".

He did not make these truths absolute, however, but having what he called a "local" validity, so that a great deal wider and deeper truths would still remain to be revealed.

NOTE: As it is close to my own conception of Objective Content - aspects or parts of the Truth, I will occasionally use this alternative concept when referring to Hamed's conception, but they are not identical, as will be seen later.

There is much validity in Hamed's position, except in one very important respect - namely, that he overtly couples Mathematics and Physics together in his considerations, and thus, unavoidably, transforms his assumed ground dramatically. And, you cannot do that, especially with his own stated purpose for his whole undertaking in this lecture. For these are very different disciplines - or at least they should be!

Physics is a Science, and seeks an understanding of Reality: it is therefore materialistic!

Mathematics is concerned with the Pure Forms of Ideality: and is therefore idealistic!

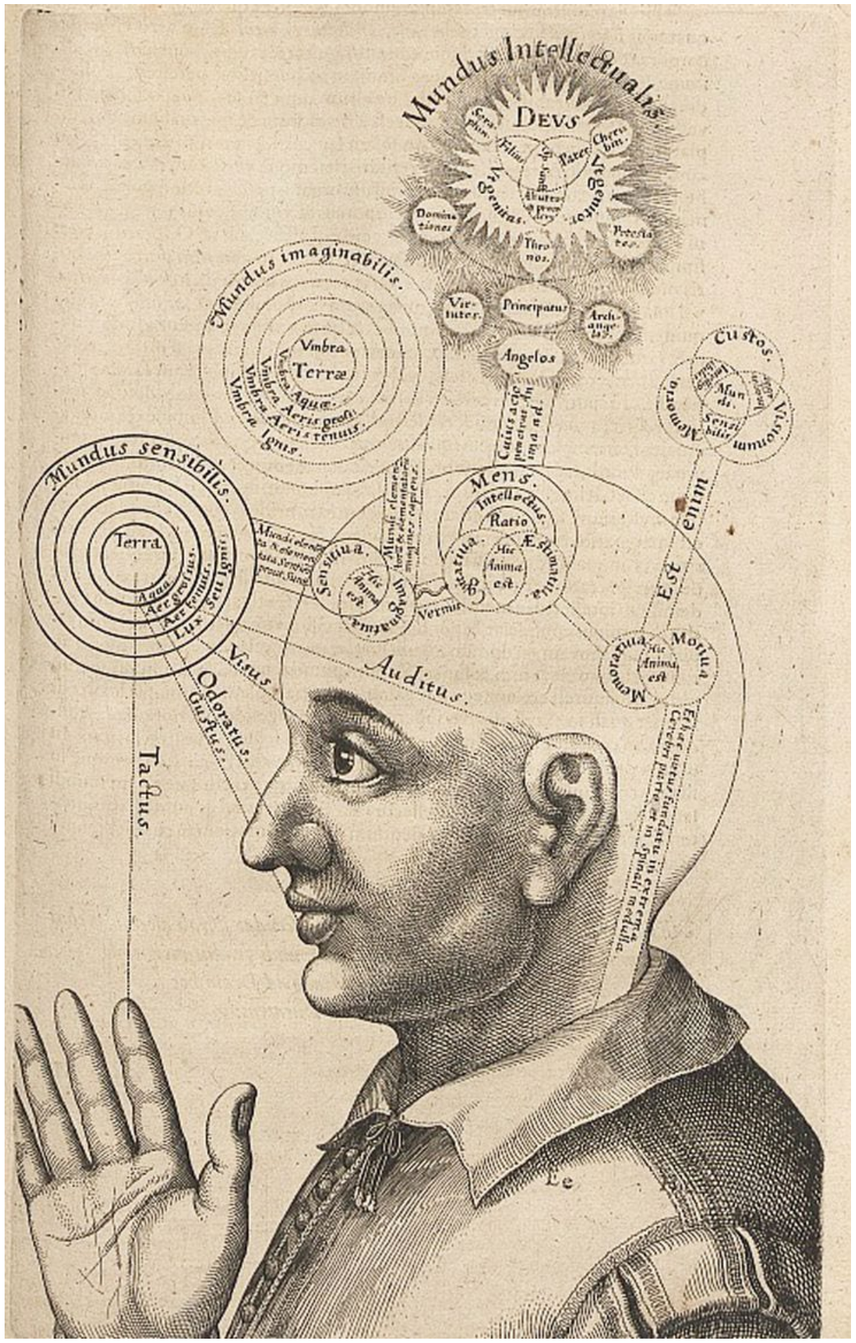
Now, of course, despite these crucial differences, these two different disciplines are, nevertheless, closely related to one another. They both involve ways in which Mankind has attempted to conceptually deal with an often difficult Reality via mental Abstractions and mental techniques of relating them. It was actually Mathematics that came first, with the ancient Greeks, via the idealisation of observed natural shapes into Perfect Forms, and the consequent much easier study of these, rather than those that actually existed in found Nature. It turned out to also be useful in the Real World as, with appropriate techniques, the ideal forms could be reasonably-well applied there.

But, it was also immediately taken on as The Correct Way to deal with Reality, due to the long-dominant Pragmatism - "If it works, it is right!" of Early Man. And, it was also extremely fruitful as Euclidian Geometry, and, thereafter, as a whole intellectual Discipline - Mathematics, which was built with bridgeable relations to the Real World.

But, with this process by Hamed, because of other features of Mathematics, even more mismatches were being built-in to Mankind's premises and methods.

Mathematics, because of its pure abstractions, was legitimately pluralistic: that is, its laws were fixed forever, and this feature was next carried over first to the new discipline of Formal Logic. then, some time later, into the first steps in Science.

And, of course Hamed uses all of these in his devising



of the Moral methods required! But, in spite of an informative description of multiple alternative routes to the same conclusions, he does then rank them morally - positioning the deepest and often the *simplest* as the best!

But, as I have outlined, his methods, though ostensibly physical, are equally also mathematical and formal-logical - in other words they are pluralistic.
So his objectives are always eternal Natural Laws.

Towards the end of his contributions, Hamed mentions Wave/Particle Duality, as a seeming contradiction, but assures us that an alternative route to the very same result will be found that will be a better moral solution and will replace that anomaly!

The damning criticism is that his assumed plurality, torpedoes his whole line of reasoning, because it isn't about Reality-as-is but is a deep investigation of Ideality - the World of Pure Form.

At this point, perhaps a more general look at Academic Rationality, beyond the so-called exact sciences, may well have contributed to the direction typified here by Hamed.

In a book by the philosopher Husserl *The Crisis of European Sciences and Transcendental Phenomenology,* it is very clear that he sees Rationality as being majorly defined by the exact sciences, and their methods of reasoning, while surprisingly saying nothing about the weaknesses of Formal Logic from its very origins in ancient Greece, and almost immediately revealed by Zeno of Elea in his Paradoxes, and closer to Husserl's time, thoroughly investigated, and partially solved, by the German Philosopher Hegel earlier in the same century that Husserl's career got underway.
The whole question of Hegel's Dialectics and Marx's further development by switching it to a materialist basis is totally absent in Husserl's first few chapters, yet it is there that he establishes his premises. He gives maximal credit to the "hard sciences' contribution" to Reasoning, and nowhere even mentioning the evident major weaknesses due the erroneous, inadequate or even missing premises - mistakenly arrived-at by Mankind, many times over.

Indeed, it cannot be by chance that Husserl and Hamed's faith in reasoning is almost identical!

Nima Arkani-Hamed's "New Physics"

as delivered in 2017
at PSW Lecture 2384

Hamed's latest theoretical stance under the title, "The Doom of Space Time", takes his current move towards Pure Form in Sub Atomic Physics even further than ever before! Though he correctly jibs at where he considers both Space-Time and Copenhagen Quantum Theory have failed, he incorrectly puts it down to his conception of the amalgam of contradictory stances embedded in the premises of both these theories, for though Causal Explanations have been largely replaced by Formal Equations, there still remains the unavoidable mention of both physical entities and surprising philosophical Rules and restrictions to actually make things work.

But, his solution is not so much a correction as the attempted imposition of a single monolithic stance!

As has been evident elsewhere, in other lectures by Hamed, he seeks "more fundamental, formal abstractions, which can deliver the exact same results" as the theories he rejects! But, as he himself admits, he has chosen a very conducive, if also very narrow, area to apply his formal researches to! He limits it to the high energy interactions of colliding Gluons.

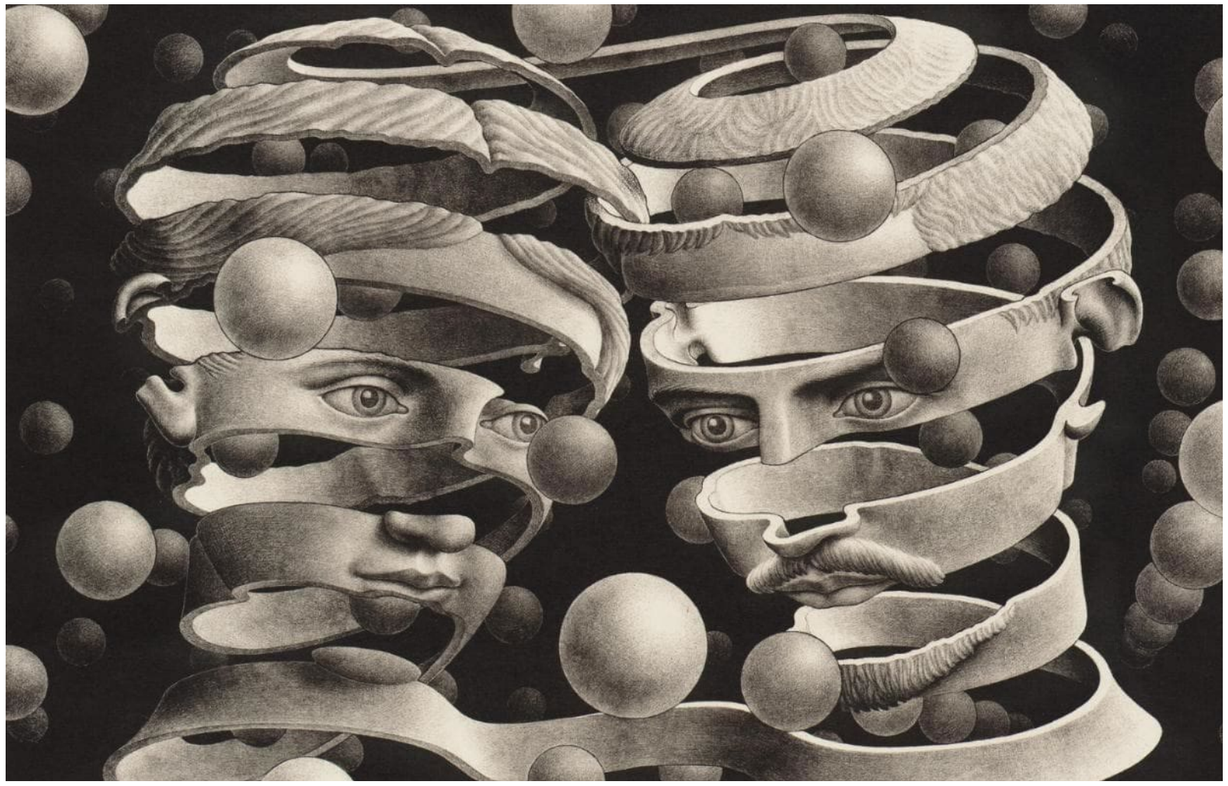
And though, in extremely restricted cases he does find direct formal analogues for thousand's of alternative Feynman Diagrams, he has just substituted a much simpler formal way of doing the very same thing!

Absolutely NO Causal Explanations are involved I might add: just the involving of less, though far-more-abstract alternatives.

Of course, his approach can never take things any further!

He even admits that it is still purely formal, and delivers exactly the same results as the prior alternatives.And, even more profoundly, both his and his opponents positions suffer from the very same fundamental premises and methods.

As Mankind did from its very origin as a separate species, he also depends upon Pragmatism as The Bottom Line! He also, along with all his opponents, is a Pluralist, which has all Natural Laws as totally-fixed. And of, course, by the very same historical route depends solely upon Formal Logic in all its reasoning.



And, as also occurred historically, ALL of the above premises originated in the single most profound invention of the Ancient Greeks, originally as Euclidian Geometry, but ultimately via the establishment of Mankind's first, seemingly-comprehensive Intellectual Discipline - Mathematics.

The methods involved in mathematical manipulations, and even in the Proofs of suggested Theorems, revealed a new and powerful way of bringing together fixed relations, into ever more involved and revealing higher level relationships.

So, if "indisputable truths" were also being used in reasoning and argument, the same principles could also deliver the discipline of Formal Logic too. [Clearly later, when Science was added to these disciplines, it too assumed the very same basic premises, and Natural Laws were assumed to be fixed too!]

So, the Principle of Plurality, which is most certainly NOT true, underpinned all these crucial disciplines from their very conceptions: but primarily in the West!

Simultaneously, with the contributions of the Ancient Greeks, a very different Principle was being established in India by The Buddha. For, he considered that the Principle of Holism, or, "Everything affects everything else!", was the only basis for attempting to deal with Reality, and used Living Things, and particularly Human Beings as his source.

Now, you might say that they couldn't both be right - but, they were! It's just that some things change quickly, while others do so at a much slower rate.

All things change, but also arrive at periods when they don't - termed Interludes of Stability. Indeed, all natural situations involve many different processes, which often "find-a-balance"- in a kind of self-maintaining situation, until something, finally, pushes things too far in one direction and the stability dissociates.

The point I am arguing here is NOT just Holism over Plurality, but a very different feel-for-Reality itself, which its discoverer, the German philosopher, Hegel, called Dialectics! It resulted, initially, from his rejection of Formal Logic's inability to handle Qualitative Change

and Development, as proved by the innumerable rational impasses unavoidable in Classical Reasoning, and his successful corrections in the causing situations of Dichotomous Pairs of contradictory concepts, which he achieved via his seeking-out and correction of the causing inadequate premises. And, thereafter, fundamentally in his redefinition of Thinking as a nexus of large numbers of competing, simultaneous processes.

Such a conception was totally incompatible with Plurality, and demanded a wholly new approach to serious studies. Indeed, if Physical Reality itself also became a possible suitable area for this approach, due to Karl Marx's wholesale transference of Dialectics into a Materialist stance (remember for Hegel it was limited to Human Thinking alone) it still awaits its necessary comprehensive implementers in Physics.

BUT, and it is a very big 'but', while this was *not* occurring, the developments in Physics Theory were in the exact opposite direction - towards Pure Pluralist Form rather than Material Content and Cause. And, the most extreme line of all is that followed by Nima Arkani Hamed: he seeks the purest formal expression of Ideality!

Ironically Hamed is pleased when he reveals many different starting points and routes to the very same results, and feels that it confirms his stance.

But, of course, it proves the very opposite: Form is indeed Universal, and transmutable, and each one occurs all over the place, so it can never, therefore, be explanatory!

A single Form may be common to many real world phenomena, but that doesn't mean they all have the same causes and explanation at all. Mathematics is therefore a flexible and useful toolset to use in studying phenomena. And Form is a useful Handmaiden but never the Queen!

Postscript: Nima Arkani Hamed is not actaully studying Reality! He is studying Ideality to a great depth. He should be welcomed into his true home - the separate discipline of Mathematics.

The Formal Trajectory

in Sub-Atomic Physics as typified by Nima Arkani-Hamed

Observing yet another video of a lecture by Nima Arkani Hamed, which initially seemed completely incoherent, as he switched between alternative formal approaches with esoteric names, I stopped attempting to follow his abstruse Mathematics, and instead thought about the approach taken for a while, in terms which I have been developing for some time now, as part of a damning critique of the Copenhagen Interpretation of Quantum Theory. And, when I did, I realised that what directed Hamed's ideas was crucially due not only to Copenhagen, but primarily to a very much older theoretical stance and philosophical position, which had originally been established millenia ago.

Hamed was, in this lecture, fitting mathematical forms to particular physical situations in the Sub Atomic Realm, in order to get a useable-handle on a difficult, multi-particle situation, so that he could reliably predict various outcomes correctly. It's an old type of exercise, attempted innumerable times since the Mathematical revelations of the Ancient Greeks, as a relatively coherent descriptve discipline.

But, such an exercise has always been fraught with difficulties, primarily because Mathematics is limited to Pure Forms alone (it is a wholly abstract and idealistic discipline) - while Reality involves matter, with diverse properties: it is physically caused, and hence materialistic.

From the outset, historically, Mankind had TWO alternative ways of dealing with a studied phenomenon. They could attempt to understand it in terms of physical causes and consequent effects. Or, they could take measurements over a period, and attempt to find a mathematical Form that would fit those data.

Now, the inconsistency of using both an idealist and a materialist approach together was regularly overcome pragmatically - and this acted as a justifier for the switching about between incompatible stances: results were achievable, and an explanation was available.

The amalgam of Materialism, Idealism and Pragmatism though never resolvable into a single coherent stance, did indeed enable progress for a very long time! The competent Theorist could adeptly switch between stances like picking his way across a stream via a series of Stepping Stones.

But, with the major Crisis in Physics caused by the discovery of the Quantum, explanatory contradictions proliferated and things like Wave/Particle Duality torpedoed all attempts at producing physical explanations. And Bohr and Heisenberg suggested dumping Explanation for a wholly mathematical system they had constructed, which could be made to deliver reliable predictions.

But, having NO explanatory account meant that the usual switching about was now impossible!

Yet, all the major weaknesses of the mathematical version were still there! It was an idealised version, now involving only fixed Pure Forms, and no physical content - so all formulae would inevitably have limits: they would zoom off into what were termed Singularities, whenever the form exceeded its applicable range. So, all the stepping stones across the river of ignorance were now purely formal. A crossing could be made and an acceptable result achieved (justified once more by Pragmatism)!

But Hamed has a great deal more to say!

Indeed, he reveals several alternative routes across the void, showing that the same results can be achieved in diverse ways. To his audience of committed Copenhagen type physics theorists, he considers that he is confirming the overall method via this diversity of "proofs".

But, of course, what is required is a physical explanation as sole-justifier, and that will never be available when all is founded upon the Copenhagen stance.

Yet, a non-Copenhagen and wholly physical explanatory stance is under construction by this theorist, in which the crucial resolving premise is the presence of an existing, but currently undetectable, Universal Substrate. Now, elsewhere, in a series of papers over the last decade, a very different philosophical approach-and-method has been developed for application in the Sciences - but most particularly and initially. at the point of deepest crisis, in Physics.

It is certainly not new philosophically, and has primarily been successfully applied in both Historical and Economic analyses, but has never previously been rigorously applied in the Physical Sciences: it involves the transfer of Hegel's criticisms of idealist Formal Logic to a wholly materialist stance. It is holist rather than pluralist, and hence dispenses with the assumption of eternal Natural Laws, which immediately also severely criticises the famed Experimental Method - aimed at finding these separately - one-at-a-Time!

It is Dialectical Materialism, and because of its brilliant application to a critique of Capitalist Economics, by its originator, Karl Marx, has become widely known as Marxism.

But, it isn't solely, or even primarily, a political stance: it is a general Philosophy! And, along with its correct criticisms of Mathematics as wholly idealist, it also condemns Copenhagen for its total dependence upon Formalism, its distortions within Philosophy, and its abandonment of Physical Reality as primary.

There can be no criticism of the adherents to the Copenhagen Interpretation of Quantum Theory without this vital correction of Philosophic Stance.

When Mathematics Dominates

Does not the tail wag the dog?

In an initial lecture upon Cosmology (prefacing an intended following series) by Nima Arkani Hamed, he immediately aims towards a Quantum Wave Function of the whole Universe (or at least of its "Empty Space"), as being responsive and contributing rather than totally inert. For, he supposes that it effectively propagates all Electromagnetic energy passing through it. So, such a content would not only be essential, but even somewhat theoretically approachable, via the present day researches into local phenomena, not because the very same causes are involved, but because Reality itself is deemed to be quantum-mechanical, and must therefore be looked at in the same probabilistic ways as we deal with the Double Slit phenomena, for example.

The whole method of a Wave Function delivering ALL the information for the full set of individual instances as can occur, is considered more important than revealing what physical causalities are involved!

It is roughly analogous to how we use probabilities in dealing with Random movements within a gas - overall resilts are see as the effects of the full range of all possible states. So, by such methods it is a "Physics" devoid of physical matter, and instead delivered by a quantised Space via Mathematics.

Now, such is, I suppose, to some extent, excusable, as we are clearly totally unable to observe the actual past development of the Universe: it has all been-and-gone long ago, unobserved by us, so the usual pattern of observation over time, and investigative experiments have been impossible.

But, what Hamed seems to be suggesting is literally nothing to do with Cosmology at all, but merely the same approach to everything due to a stance which is full of Quantum Mechanical Fluctuations. So, it all boils down to the Mathematics describing such a Universe.

Listening to this initial lecture, I heard a vast amount concerning Wave Mechanics, and not-a-single-word about the development of the Physical Universe as such. Yet, perhaps the most significant feature of the Universe is surely the finite Speed of Light, so that in looking ever further into the distance, also means that we are looking ever deeper into the past. So, something of the History must be available, and should reflect, and hence deliver, something of the developments involved.

Let me mention a problem which I have often puzzled over, and never found an answer to!

If the Universe was once tiny, and thus our position now would then have been very much closer to what was going on, why, in our now very distant position, can we possibly see, what was happening then? Surely, the light then would have long since passed "our position then" so that whatever has happened to us since must be now lost forever to us? And, to see now what we are said to be seeing from early in the Universe, there must have been an expansion of the Universe close to the speed of light, so that the light has taken all this time to only actually reach us now?

And also, how is it that whatever direction we look in, we still, if we look far enough, see that same early Universe? Surely that is impossible?

Consider, scanning round in any circle through 360 degrees, until we regain our initial view - if we observe, throughout that circle, at that same early time, we will be seeing the Universe as it was then, somehow now spread out over a vast distance. And, this could be repeated around an infinite number of such circles at every possible orientation. Light from all directions is said to be arriving now at our current position from the early Universe and has been travelling ever since its ancient origin! Doesn't that sound as if the Universe was big THEN?

For, how can what was then in a relatively tiny area, end up all around us, at truly vast distances, and in every single direction, and yet still JUST be arriving at us now? It doesn't make any sense at all.

I'm afraid we can see why physicists abandoned Physics for Mathematics - for such impossibilities are not impossible in Ideality - the World of Pure Form alone, as is also evidenced by the resorting to multiple Dimensions and multiple Universes to solve impossible problems!

Has the evidence for the Big Bang been misinterpreted, and the turn to Mathematics taken us into a Virtual World that is no longer Reality?

That seems to me to be what is happening - and Physics therefore is not an investigation of material Reality, but, instead, of Ideality.

Somehow the interpretation of what we see in Space is incorrect, so that what is required is a re-investigation of the observable Universe, without the rose-tinted spectacles of Pure Mathematics, to interpret what we see entirely physically and holistically! That is involving development and change: and certainly NOT the same unchanging laws throughout that long History.

Indeed as with Palaeontology the past must be divided into eras, wherein both the contents and the Laws will have changed, and, slowly, some idea of what happened and why be constructed.

Just as the Palaeontologists could not experiment in conditions that no longer existed, but have nevertheless, delivered a reasonable trajectory based upon what the could see, we will have to do the same with the heavens!

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