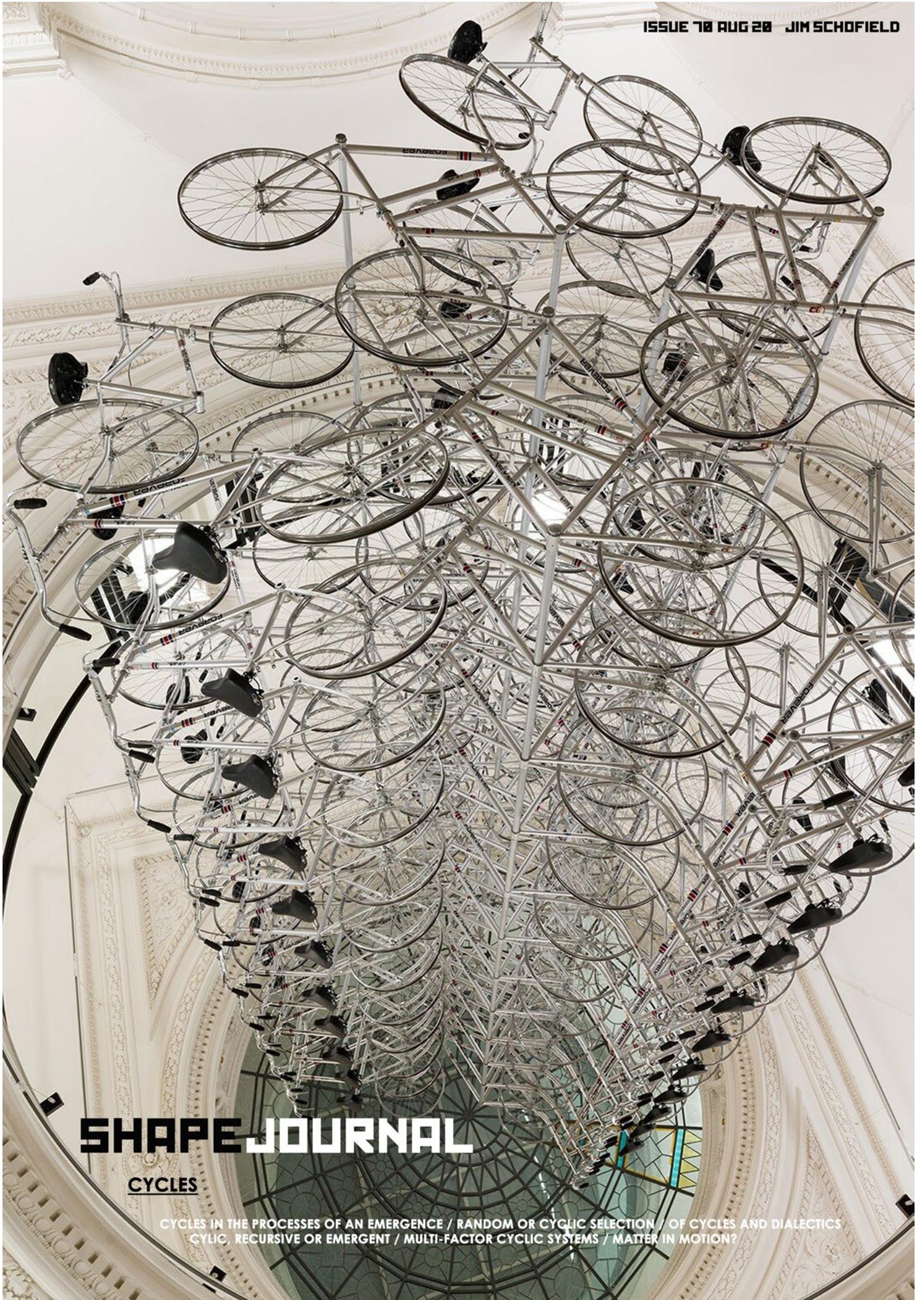


SHAPE JOURNAL

CYCLES

CYCLES IN THE PROCESSES OF AN EMERGENCE / RANDOM OR CYCLIC SELECTION / OF CYCLES AND DIALECTICS
CYLIC, RECURSIVE OR EMERGENT / MULTI-FACTOR CYCLIC SYSTEMS / MATTER IN MOTION?





Cycles

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Matter in Motion

A Definition of Reality?

by

Jim Schofield

“Matter in Motion” is often delivered as a definition of a Materialist stance in Philosophy, and positioned as the exact opposite of the alternative of Idealism, wherein other things outwith those two primary physical categories are introduced as being even more important in defining what will consequently happen.

And such *Essential Extras* can be anything from an immaterial omnipotent God, to a pre-existing set of Eternal Laws which govern absolutely everything that can happen in Reality. If you believe in either of these things you are not a materialist - and arguably not a scientist either.

Both attempts imply some sort of beginning - a Starting Point from which changes occur, leading to ever-increasing diversity and complexity, which must be such as to deliver Our World as it is now: including ALL its evident diverse components, and yet STILL continuing to *evolve*. This vast movement of matter must have crucially involved The Emergence of all Life, and ultimately Man & his forever expanding Consciousness.

Now clearly, if we are to dispense with any Supernatural Agency, as purposely directing the conclusions of a Natural Trajectory of Change, as well as an ever-increasing range of Qualities, the potentiality for which was in-built within the available initial components, to actually deliver, not just ever increasing Complexity, BUT clearly, in addition, the Wholly New - to bring into existence things with not only new properties, but to then participate in any consequent wholly New further changes themselves.

Now, that is essentially very different from mere Complexity, which can only be a purely bottom-up (or ultimately Reductionist) feature: for this very different developmental process, can, and indeed will, regularly produce new entities and natural systems, which also can never-be-predicted from the prior described producing-situation, not least because it is, in addition, *Recursive*, in that naturally produced NEW features which can-and-also-do react back upon their own producing situations, to themselves then contribute to even further wholly new developments!

Now what has been described here are two entirely mutually exclusive Principles of Change.

The first, depending only upon Fixed Laws, Complexity and Reductionism, is termed *Plurality* - and can only really account for Quantitative Change.

While the second, depending upon Variable Laws, the Emergence of the Wholly New and Recursion, is termed Holism - and is capable of explaining Qualitative Change over time.

Now, Mankind, as the sole intellectually-thinking Organism, both existing-within and produced-by Reality, was at first totally unable to conceive of either of these. And, it was the Ancient Greeks almost 2,500 years ago, that via the invention of a wholly new kind of Abstraction, managed for the first time ever, to construct a coherent and developable Intellectual Discipline, that naturally-and-exclusively produced a Pluralist Discipline in Geometry, and which then very quickly developed into Mathematics.



Indeed, it was so successful rationally (in that context), that the Greeks transferred its enabling Plurality, wholesale, to both Formal Logic and even the then-merging Sciences - and these transfers turned out to be wholly illegitimate. For, they made all natural laws totally unchanging (as they are, quite validly, in Mathematics). Indeed, for the next 2,500 years scientists only sought eternal Natural Laws, while, in Reasoning, any emerging contradictions immediately-terminated such a development, as bringing in Falsities, which are NOT what actually occur in both of these disciplines at all.

Now, as a qualified and long-experienced Physicist, myself, I am well aware of how the Principle of Plurality has both dramatically and damagingly affected my own important discipline for millennia, and doing so both experimentally and theoretically.

Early attempts to reveal what determines outcomes in naturally occurring situations always failed. And it was not until Mankind had learned enough, by experience, to significantly restrict the conditions for carrying out an experiment, that they began to deliver something useful. The technique was to remove all apparently non-essential factors from a to-be-investigated situation, and, thereafter, to rigorously control others, so that ultimately only two were left delivering what happened. For, from such situations, the measured data of the contributing and produced factors, were such as to allow a useable relation between the two to be extracted.

This was then incorrectly assumed to be an eternal Natural Law! And that Law was also assumed to act, totally unchanged, in situations composed of many simultaneously contributing factors.

But all of that was wrong!

In fact, when in such combinations, the added presence of other factors, all actually modify one another: the Law was NOT at all eternal!

And to compound the felony, a wholly-pluralist Pure Form, from Mathematics, was then, via its unavoidably-pluralist experimental data, added in to the situation, to produce a particular Law from the imported General Mathematical Form! So now the usual consensus form of the law was both doubly Pluralist and also Idealist via its introduced Pure Forms.

But, of course, as long as the exact same context that had been used for extraction, was also employed in use - it would indeed work. So that is what they did, every single time! Technology became the means by which we delivered its effective use.

But, in the increasingly-dominating areas of the subject - in Sub Atomic Physics, for example, where Plurality still rules, the once key area of Physical Theory has now been wholly demoted, for, in order to maintain the long established approaches in that realm of Physics, large areas have been wholly relinquished to the methods of Mathematics, along with a wholly insupportable, yet consequent, "version of so-called Theory", which mixes together wholly insupportable Wave/Particle Duality, with an illegitimate use of Probability Theory to replace all dependance upon deterministic Laws.

Yet, as has been proved by the writer of this paper, there is a Holist Theory available along with the re-instatement of a now-undetectable, but concretely-existing and both being affected-by intruders and itself acting-upon them, Universal Substrate. All of the anomalies in the old pluralist Theory of the Double Slit Experiments have been totally explained away, without recourse to Idealist fantasies - merely the assumption that there is some matter in motion we can't yet detect.

Motion & Qualitative Changes

Now the Motion referred to in the title to this paper, has two different aspects. The first has been clarified above, with the criticism of the assumption of Plurality: but there is another aspect, which has to do with both Stability and Movement in general.

For, the considered norm in Reality, was (initially at least in the West, and also due to the Greeks) considered to be Stability! If left entirely to themselves, things were assumed to always settle into their most natural and quiescent state of both a natural stillness, and an unchanging Stability in its contained qualities.

So, the assumption was adopted that the true nature of a Thing or Situation was always unaffectedly present within its usual Stable State - its inherent Stability! So, ensuring that a situation was solidly entrenched in that state would be a necessary pre-requisite to revealing its own determining features of both its own nature, AND

its possible effects upon other things, brought into connection with it, and possessing features that could either be affected by it, or alternatively affect that new arrival in some significant way.

But, on the contrary, the most important quality of all must reside in its Movement: for without necessarily changing anything else of its contained qualities, the Movement itself could range over a considerable span of translational speeds, and even also possess a spin over a different range too.

Now, initially, all these appear to be added features to an entity's basic Natural Stability, but once caused-to-move they would undoubtedly persist. Indeed in a reasonably well-occupied Universe, it would soon become a population of material objects all possessing some diverse kinds of Movement too.

So Reality will be categorised as a collection of Material Objects - all possessing certain qualities, along with a collection of acquired Movements.

And these would differ, in that one set would exist as either affecting another's qualities, or even being affected itself, while the Movements would contrastingly be basically about the possession and consequent Effects of such prior Energy transfers in various different ways.

Clearly, the concept of a totally stationary entity, naturally entirely bereft of all Movement, just has to be something of a myth, and what effects could have been previously either received-it-from or imparted-it-into some other entity, and consequently what would most likely be the current result of such a whole history of many such transfers, so the final state could amount to anything across a wide cumulative range of all those transactions, and hence be unknown, apart from its final and dominant features!

And, in addition, the energy taken on by an entity, may be hidden somewhat by its being set into a spin, or it having been captured into an orbit around some other entity!

The point that has to be made is that any entity, with a diverse prior interaction history, will absolutely never display all its current properties in detail or in full! To even detect vestigial amounts, you would have to know what you are looking for. And, if the considered entity

itself may consist of several integrated components, there could be properties that are balanced-out by also present opposites and therefore not even vestigially detectable.

So, Mankind over the millennia that they have been investigating Reality, have had, somehow, to find ways around these difficulties. And, having made the first necessary steps in constructing a consistent and developable Intellectual Discipline relating Pure Forms (as occur in Geometry), the Greeks, very quickly indeed, were able to extend it into Mathematics in general, and by these gains, infer that the process involved was almost certainly infinitely extendable, but also drew the wrong conclusion that it could also be applied in situations in both Formal Logic and to the Sciences - and it most certainly cannot!

The key features, of dealing with Pure Forms, are that they do NOT change: they are irrevocably fixed forever in Mathematics: but that is TOTALLY wrong when dealing with Concepts in Logic, or with Laws in Science!

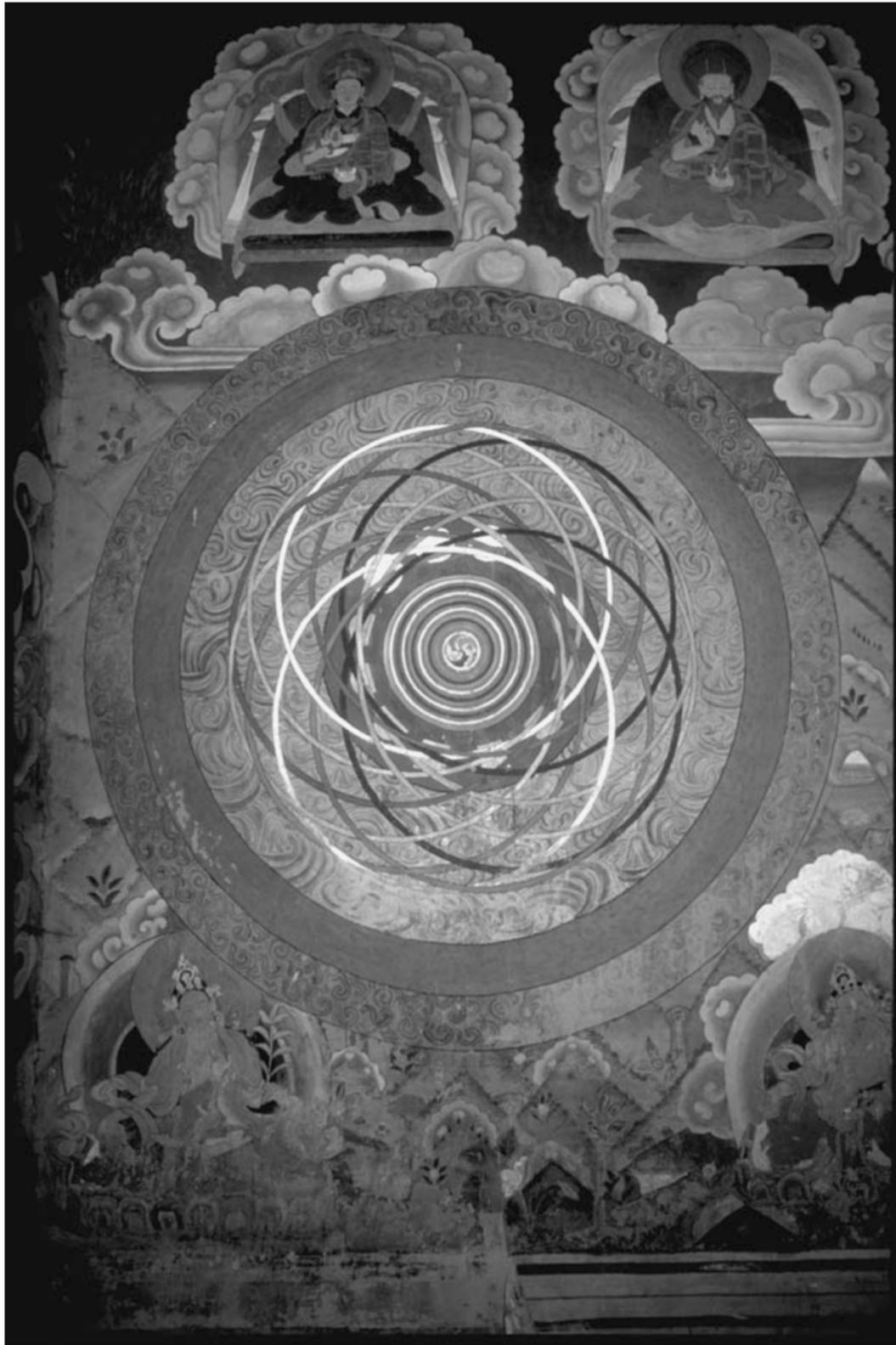
So, returning to our discussion about Properties and Effects in real World entities, it is clear that dealing with those (as described above) would unavoidably be fraught with difficulties!

So, Mankind slowly-but-surely increasingly abandoned their seeking to Understand Reality (which is Science), as impossible to cope with "as-is", and, instead, sought only to effectively Use Reality, but in majorly filtered, adjusted and maintained situations (which is Technology, and certainly NOT Science)!

And, this meant that the actual unavoidable collections of motive forces and their consequences in Reality-as-is, were never revealed: and only artificially-arranged-for particular, and greatly simplified versions became increasingly the only possible products of that kind of investigation.

The Holist World of Reality, was successively replaced by a selected-out Pluralist World, which was NOT even an accurate Reflection of Reality: indeed, as it turns out, it is only a close relative of the World occupied by Mathematics, which we more generally know as Ideality!

And, of course, with these developments, the role of Mathematics as Handmaiden to the Sciences, was increasingly converted into being The Queen of The



Sciences, and its de facto Lingua Franca, which alone could “effectively-communicate” them all!

POSTSCRIPT:

Now, we do know what is necessary, but as the many contortions of current Pluralist Science in the areas of Sub Atomic Physics have shown, and the complex mathematical edifices that they have had to build, even to only satisfy the now dominant Purely Technological/ Descriptive objective, the Defenders (many of whom have built their current status and “successes” upon these myths) will never relinquish them easily! For a success in this objective, will effectively demolish literally thousands of careers.

But the task, though enormous, is already well underway! And what (in pluralist terms) seemed too many (indeed almost infinite) trajectories to even achieve individual steps in the Real Trajectory of Development in Reality, are rapidly being replaced in a Dialectical account with multi-factor simultaneous processes and their interactions, which within certain common circumstances, clearly home-in upon longer-lasting, if temporary, Stabilities, which replace the primitive holist idea of constant change - all-the-time and Everywhere - with a very different trajectory - termed Emergentist in Dialectics - wherein, somewhat remarkably, Balanced Stabilities can be achieved, which actively resist all Qualitative Change, until one of its usually overcome Crises, turns-instead into a general and wholesale collapse of the System - YET, always is immediately followed by a swift construction of an entirely NEW Balanced Stability, which though majorly constructed out of the detritus from the prior Stability, is always both different and superior - because it never-ever reconstructs a copy of the old Stability, but instead finds a wholly New Balanced Stability, and it again will be long persisting, but not eternal.

Indeed, it is also becoming ever clearer that Repeated Cycles of Processes turn out to be imperative, in the way described by the Buddha, in his Loka Suttas. For Repeated Cycles tend to be selectively modified to reach optimum-repeatabilities, within their containing contexts, and, reasonably quickly, become Stable Combined Systems for long periods!

The overall task, though, is far from complete: but remember, it took Mankind 2,300 years to even reconsider Zeno of Elea’s valid criticisms of Formal Logic, when applied to Movement!

And, it took Karl Marx, himself, the rest of his life to comprehensively apply an updated version of Hegelian Dialectics to Capitalist Economics.

And even Lenin’s Materialism and Empirio Criticism, about the then stance in Physics (termed Positivism), has taken a whole century for an alternative to the consensus Copenhagen Interpretation to be attempted, again via Dialectics!

This issue will begin to explore those crucial cycles and recursive processes, as the engines of both qualitative change and all matter in motion.

Cycles:

In the Processes of an Emergence

PREFACE:

This paper was written some 13 years ago, in researches concerned with the nature of the Emergences involved in the Origin of Life on Earth, but has now been returned to, with somewhat different-but-related problems-and-potentialities, currently unsolvable via the universally employed Principle of Plurality, but now clearly demanded by the alternative, and greatly superior, Dialectical Materialist Holistic Approach.

Though, it does not provide the answers ready-made, it certainly points the way to some important solutions.

[Jim Schofield 2020]

A particularly important aspect of the possibility of sequences of positive feedbacks occurring in my current social studies, has showed itself both in my papers discussing the re-establishment of Stability, after a partial dissociation, following a whole bout of positive feedbacks, AND also profoundly within the discussion around Metabolic Pathways (all of which are detailed elsewhere).

First, those musings considered only a SINGLE isolated positive feedback situation.

It was one where such a feedback initially flowered, and then, inevitably, died away!

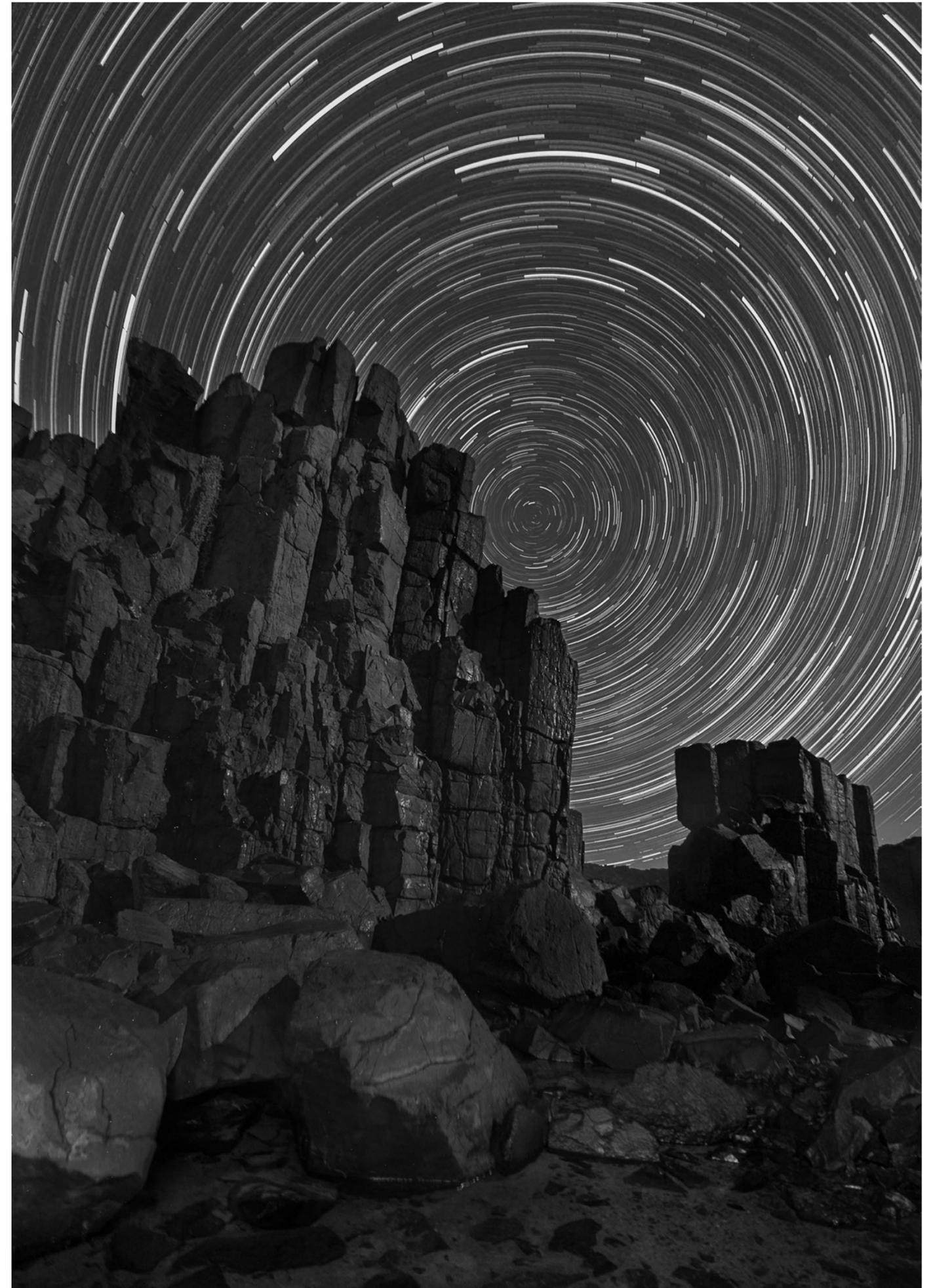
Next, I considered whole SEQUENCIES of positive feedback situations – when each new bout was “feeding” upon the results of a preceding one - like an avalanche of collapses.

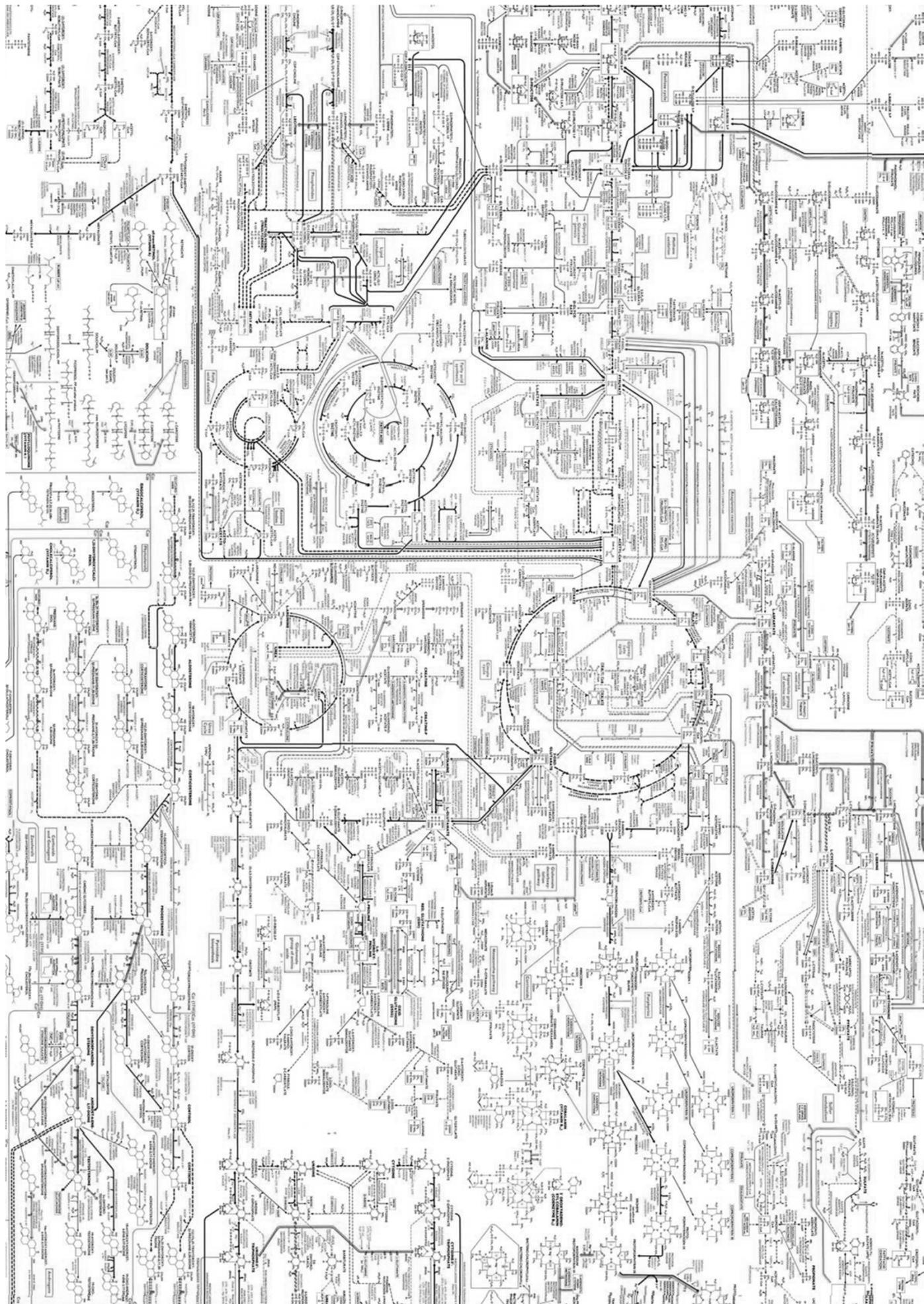
So, instead of a single peak of activity, this seemed to promise a continuing and ever-developing series of such consequential bouts.

Then finally, as an extension of the idea of sequences, it became evident that actual CYCLES were not only possible, but indeed actually *likely* outcomes, and could be extremely important.

So, in such cases, instead of a simple linear sequence, we had a series in which the “last-one” could, and indeed often did, link back to the “first” step in the sequence - forming a Cycle.

The initial process, which could easily have ceased long ago, could actually be resuscitated by the self-provision of its primary required Resource, but delivered it, but in a different context, by the last process in the series. So, instead of a beginning and an end, we had the prospect of repeated or even “potentially-eternal” cycles of such a set of processes.





For, all that would also be necessary, would be a reliable constant supply of all the other involved resources, but now turned into a cycle, by the last output also being that initial resource too! But, even that does not yet deliver the limit of possibilities.

For, a close inspection of such cycles, among the now well-established Metabolic Pathways - on which all living things depend, lest we forget - showed that these were NOT wholly self-contained processes by any means at all.

Secondary-yet-necessary resources were also constantly being sucked in from outside of the sequence, while incidental minor products were also being vented out laterally as well! So, the summation of the resources, and hence the processes involved, necessarily extended beyond that single primary structure. The incidental inflows-and-outflows, which were, of course, those that had been previously-produced, or subsequently-used elsewhere, made for the possibility of a complex and wide-ranging SYSTEM of related processes, and even multiple Cycles, eminently possible.

Let us pause to consider Contexts!

For, in spite of the recursion involved in such a cycle, its subsequent survival, or its ultimate possible terminations, will depend upon its varying contexts, as it progressed through the various phases of its overall cycle.

Resources will not only be being extracted from that context, but others will be being vented into that context. So, in some circumstances, overall, though the context will be oscillating in composition, it could, nevertheless, become an entire-and-sufficient context for the cycle to be maintained literally indefinitely. But, certainly more generally, drifts, along with other initially minor-yet-simultaneous processes, could, after an extended period of time, take the System, beyond its supportive state, and cause a dissociation.

It could also be a Selection Mechanism, with only the mutually supportive Systems surviving and the others selected out!

And, in less supportive contexts, to allow such a whole System to continue to survive, some sort of Transport of the required elements-involved would be unavoidable, if it were to survive.

The required things, to allow such a system, had to be available at the right places, and at the right times, both to sustain a single Cycle, and hence, ideally, both a whole supporting-and-supported System of many such Cycles!

It should, therefore, be no surprise that the Emergence of such transport systems was a revolutionary and potentially multiplying component, vastly increasing the tempo of the systems and accelerating the possible appearance of yet wholly-new Emergent Events.

These, of course, abound in Life - not only in the circulation systems of higher animals, but also crucially in plants. And, prior to internal transport systems, these processes of living things had to depend upon some external, ready-made transport methods and channelling outside of Life.

So, here again, it should be no surprise that Life originated within those multiple prototypes of transport systems - the currents and related eddies within, and at the margins of Oceans.

Non living circulations caused by temperature differences, and even the rotation of the Earth, created a global mixing and even persisting cyclic transport systems combined: and within labyrinthine systems of natural channels, in the shallows, could allow the systems described above to become established, even if not always continuously.

For eons, the transport base for these complex chemical sequences of change would only be the oceans themselves. But, such a system was so very BIG: its inertia must have been considerable. It was not in any way a directed transport system. Getting stuff about to where it could be used by chance currents alone, and would take vast amounts of time, and could often fail completely.

But, internal transport systems within a contained, and appropriately-structured local environment, could be both efficient and direct. And, in the right circumstances, both accelerate the processes, and by the deposition of carried solids, within the flows, would both strengthen and preserve the channelling.

The epitome must then have been a pumped, circulatory system, with dedicated functional organs for each specialist job, as is found in higher Life forms.

Now, it must be rapidly becoming ever clearer, that the meagre examples considered so far, even here, are only the very tip of a complexity “iceberg” of ever more complicated Cyclic Systems!

AND, crucially, actual hierarchies of such systems - even one contained wholly within another - if a system of cycles, in 3D space could form a porous container - with larger systems being contained, but much smaller lateral outputs and or smaller entities easily getting either into or out-from the porous containers... Impervious cycles, linked together in a helix could produce a tube!

Clearly Sciences like Chemistry, must also thoroughly investigate the potential Forms possible, particularly those in Organic Chemistry, which are clearly essential in Life!

NOTE: a Chemistry colleague of mine, along with a brilliant Mathematician, were together able to demonstrate by means of oscillating reactions within a supportive medium, the actual progress of the reactions involved, naturally as they proceeded, by tracing out a Toroidal Scroll structures!

Now, already, elsewhere in Science, the emerging of a Dialectical Materialist stance and method is beginning to reap rich rewards totally unobtainable by the current consensus of Pluralist Science.

Indeed, in Particle Physics, great strides are currently underway in Theories of an Undetectable Universal Substrate, permeating space, composed entirely of mutually-orbiting pairs of oppositely charged and opposite-matter-type Fundamental Particles. These new ideas are successively dismantling the Copenhagen Interpretation of Quantum Theory, and even coping with Electromagnetic Radiation in Quanta, with zero reference to Bohr and Heisenberg's idealist and pluralist-mathematical constructs!



Multi-Factor Cyclic Systems

And their Forms of Stability & Change

The crucial debate about Global Warming and Climate Change, is complicated by the multi-cycle nature of our World's Weather Systems' Trajectories, as they are affected both externally by the Sun, and internally by the composition and movements of the World's Atmosphere.

The Atmosphere itself is also modified both from within, as well as those without the planet itself, influenced by both natural and Man-made changes (and our global economic policies), and occurring usually at tempos so very different, at least initially, to the actual life-spans of individuals, BUT nevertheless being entirely capable, of succumbing to cataclysmic overall, planet-wide transformations, though more often instead only suffering only from recoverable Crisis Interludes.

Such complications are then used to demote all such negative interludes, as being solely due to quite normal oscillations to-and-fro of any complex, multi-part varying, but, nevertheless, usually any overall self-correcting System, which, as usual, will ultimately come into its “normal-settled-stability” and consequently be “nothing to worry about”, (and if not, only likely to come to a cataclysmic result, long after those in charge are dead and gone.)

And such a conclusion is the only possible one, if and only if, the usually assumed Principle of Plurality, is true: for it allows ONLY Fixed Laws, and Stability as the inevitable outcome in almost every varying Interlude.

So, the problem is, that without the appropriate philosophic stance, for a real changing and developing Reality, it will always be impossible to know where the situation actually is dynamically, and whether the current crisis is temporary or terminal.

The problem is, of course, dialectical, involving the unavoidable causal interactions of multiple simultaneous

factors, which can, and indeed do, occasionally wholly dissociate in what is termed an Emergence or General Transforming Revolution, of what appeared to be a wholly Stable situation beforehand.

The best Mankind will ever be able to do in such situations, is monitor those crises, both as they occur now, and as they have in the past, as ultimately providing sufficient evidence of some interpretable forms, as are generally left behind in the resultant surfaces of the ground, which are later turned into permanent records, sometimes revealed, but also ever more often fairly deeply buried beneath our feet.

Clearly, Philosophy, is NOT as the idealists see it, as merely their Discipline of Human Thought, but, on the contrary, is the Discipline of the Nature of Everything including Concrete Reality, and its indisputable ongoing Development!

But, crucially, the long established stance, in both all the Sciences, and in most Reasoning, has, for millennia, been what we call Plurality, which can only ever deal with a trajectory of merely Quantitative Changes, whereas, for example, the whole clearly evident Emergence of Life, from NON-Living Matter, simply must totally refute such a stance, as being wholly inappropriate for its study - for actual Qualitative Changes would MOST certainly have occurred, in dramatic developments, which would have to physically and chemically explain such Qualitative Changes - always totally impossible via Plurality.

Indeed, though the development of the very first Intellectual Discipline - Mathematics, was made possible only via the invented special relational-premises of the Greeks, they were Totally Pluralist, and could never be the basis of any other Intellectual Disciplines, which just have to handle Qualitative Changes causally, rather than



merely descriptively, and after the fact, so enabling at least the overall trajectories of such changes to be made sense of!

But, as distinct from damaging total calamities, the vast majority of natural situations are NOT straightforward avalanches of Change, but always involve whole sets of multiple simultaneous and interacting processes - usually significantly always involving whole sequences of differing Cycles, though, at the same time, of similar Qualitative Changes, resulting in very unusual trajectories involving both long-lasting interludes of "Balanced Stabilities", which were preceded in their final formation, by a series of multiple Crises, and always, at some terminating stage, are totally dismantled in a general, everything-involved dissolution, which then rather quickly builds a wholly new Balanced Stability upon the changed products and properties of that Dissolution.

Now, the Earth, as an affected body within the Solar System is NOT as Newton might have believed, majorly determined by Geometry and Gravitation, but also subject to other influences and past collisions, to maybe cause its Spin, its axis Tilt, and its capture of a Moon, plus an evidently constant Solar Wind of energetic Charged Particles from the Sun, and whatever caused it to develop an internal Magnetism and extensive Magnetic Field.

And, just to concentrate upon its Global Atmosphere, with constant angular momentum throughout, but with different radii between the Equator and areas closer to the Poles, the surface will be moving at very different speeds an affecting the local atmospheres differently.

While the different angles of the Sun's rays onto its curved surface as well as the Day/Night on/off nature of that Radiation will all affect various areas of the Atmosphere differently too.

Finally the Earth's Orbit around the Sun is elliptical rather than circular so there will be Yearly variations in the radiation reaching earth at different times and places.

Indeed, all of these will be modified by the Earth's Spin - there will be a vast number of interacting cycles, all of them constantly repeated, but at different rates, and different amounts of external heating from the Sun.

And the Question must arise, "Why then is the Weather usually so *ordered*, within a season, and what might both make this happen, and, alternatively sometimes appear to approach chaos?"

Random or Cyclic Selection?

Considering the Natural Processes of Qualitative Change

There is a puzzling Dichotomy within our experienced and known aspects of Reality, which is very difficult to transcend rationally in any explanatory way!

It concerns the opposing concepts of Stability and Change, which appear to be Totally Contradictory States, and therefore likely to produce very different results within any World in which they are significant. For while *Random* Change, of itself, seems to promise almost infinite new possibilities, Stability suggests, on the contrary, as its direct opposite, a total absence of significant Change.

And, perhaps consequently, way back in the 5th century BC during Mankind's first Intellectual Revolution, two separate civilisations chose those opposite conceptions of the True Nature of Reality - either intrinsically stable or changing - in order to primarily guide their efforts to describe it, and maybe even understand it.

Both of these approaches, in their very different ways, did indeed make significant, if also strictly limited, progress possible.

And, that surely indicated that, in different ways, they may well both be right, but never absolutely!

But, Reality-in-itself is neither clockwork nor completely alive, and it is constantly supplied with Energy (on Earth primarily from the Sun), which is surely, ultimately, the underlying engine of All Changes.

But, Mankind, though occasionally acutely aware of these interpretive approaches, could not for many, many millennia ever integrate them as simultaneously natural aspects of a self-moving World. And Stability, instead of being the inevitable and final result of any long period of decline, appeared, on the contrary, to be regularly re-suscitated from a seemingly terminally inert

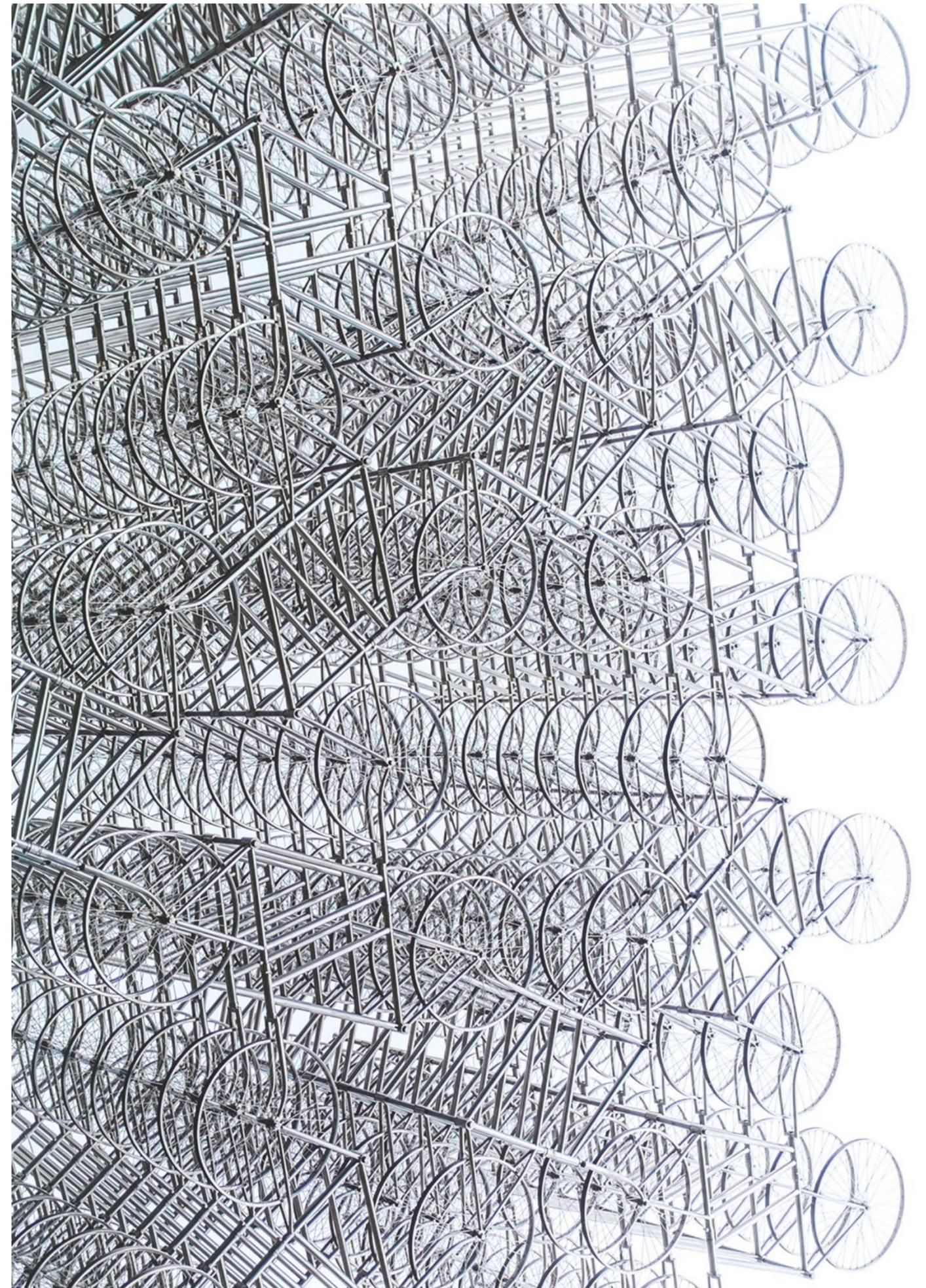
state, to resume again within a trajectory of Change and Development.

Clearly, an achievable Final Permanent Stability is quite definitely a Man-Made simplification of real Pauses of presumably only temporary duration, Stabilities which are extremely common, and indeed actually essential in the Actual Trajectory of a Developing Reality, which includes both it and Qualitative Change as opposing necessary Phases, in a Real Natural integrated Dynamism, which both establishes necessary and persisting Dominances, and also at some inevitable termination of that state, precipitates general transforming Changes!

But, the tempos involved, within such a Real and wholly Natural Trajectory, are usually far too slow in their appearances, and then much too fast when they do happen, to be observed-in-detail and considered-and-explained causally by Mankind. Though both much Change and many Terminations, certainly occur, and appear as problems to be primarily addressed by Mankind, as the first-ever Conscious (Thinking) Organism, in a World long packed not only with clearly Non-Living Matter, but also with developing Life!

And, it is, of course, the actual presence of Living Things AND their also inevitable individual Births and Deaths, that proffers a New, Vital and continuing Mode-of-Changes within these developments, which is delivered as with all other Living Things as a kind of Repeating Cycle!

Implicit in the commonest kind of such Cycles, is a Natural Ebb-and-Flow of Energy, which can-and-indeed-does affect the natural forms of Substances, and their rhythms-of-change, at the most basic level, into Gas, Liquid or Solid States. But also, in Living Forms, can even extensively terminate individual living organisms permanently.



And the much less dramatic and eminently surviveable is the Day/Night Cycle imposed by the rotation of the Planet, and its illumination by the Sun!

And coupled with the differing effects between Equators and Poles, and the changing seasons caused by the angle of tilt of the Spinning planet, of the vastly different amounts of heat from the Sun, there occur enormous effects in both Local and Global Atmospheric conditions, and consequent Winds, and even in Current Flows in extensive seas and oceans. And also these Cyclic Effects impose regular rhythms upon both Living and even non-living entities alike, which will also inevitably involve Cycles of Changing Conditions, and even consequent changes in those affected entities.

Indeed, the changes caused by Cyclic events will necessarily be very different from rare individual Changes - primarily because the same regular and frequent cycles of Change absolutely NEVER just endlessly repeat.

Indeed, initially, different changes would happen, which may or may not be completely reversed by the end of such cycles. But, only those changes that FIT BEST into the changing resultant situation will be ultimately selected for, long term.

For, such a Cycle is always a multiple Try-Out, for a cyclic series of changes: indeed a kind of Selective Process!

Now, before taking this discussion any further, we now must finally clarify which of Mankind's alternative Principles of Change fits what happens naturally in Concrete Reality, and produces all the Stabilities that it evidently achieves!

Is it Plurality, invented and developed by the Ancient Greeks via their initial, entirely-correct production of the Discipline of Mathematics, and their then Invalid wholesale extension of that principle to both Formal Reasoning and all the Sciences too?

Or, should it be Holism, developed in India by the Buddha, and concentrating solely upon Qualitative Changes as the sole producers of Reality-as-is?

Well, it most certainly is NOT Plurality, though the West did effectively develop it as the sufficient means for its appropriate forms of Technology, if NOT for either Reasoning or Science!

So, in one single vital sense at least, it has to be Holism, for its necessary concentration on Qualitative Changes. For, though, by itself, it never ever addressed the overall Trajectory of Real Change, that holist approach still had to include a major helping of Stabilities, though always temporary and ultimately transcendable in ways only ever addressed by Holism.

But, of course, as the preliminary achievements of this essay, have already made clear, the Evolution of Understanding of Reality, has to cope both with Stabilities as they naturally occur, and significant Qualitative Changes as they always happen within short Revolutionary Interleudes, usually termed as Emergences.

Now, the Damaging Flaws in Plurality in both Reasoning and Science, were primarily due to their subscription to the assumption of Fixity of relations - as so-called Eternal Natural Laws, and the similarly grounded pluralistic formalism embodied in the same purely mathematical rationality used to deliver all consequent developments.

Qualitative Changes and the inevitable contradictions they seem to produce are never allowed in the Logic used. And any Stability, when arrived at, was always once again considered as an unchangeable state.

In addition, the Pluralist experimental method, unavoidably imposed from the start, was undertaken to reveal a *single* supposedly eternal Natural Law, supposedly in isolation - so a whole series of these had to be implemented separately-and-sequentially, to deliver the supposed full set of the Natural Laws involved.

And, the consequent, universally-believed-in pluralist account of the roles of these Laws was that they could never be individually adjusted, or changed, by the natural-accompanying presence of others! They simply *summed* their unaffected contributions to give complexity.

Now, as long as the Pluralist Experimental Rules were appropriately followed, technological objectives could indeed be achieved! But what would occur in a totally natural situation, would never be either achieved nor understood! The Real World situation with all its (identified-yet-unrevealed) actual physical laws, all acting together simultaneously, with all their mutually affecting interactions would never even be attempted, nevermind revealed.

Now, as a professional physicist, myself, who never really swallowed the current consensus beliefs (for that is what they are), and who never received real answers to my many probing epistemological questions, I developed different approaches. I had also pondered long and hard, upon pre-Life Organic Chemistry, I decided initially to consider the Key Question of complex multi-factor and multi-reaction simultaneous processes dissolved in natural water, as a Key situation of many mutually-affecting processes, which would, most certainly, be re-directed by abruptly-changing dominances, to causally flip to new replacing Dominances, as the consequent balance within the overall populations changed.

And by this means, I managed to develop what I called *Truly Natural Selection*, but applied NOT to Life and its Evolution, but to pre-life Organic interactions!

And, the results were so interesting that I decided to consider similar mutual affecting processes within a supposed Natural Stability, which I re-interpreted into what I called a purely temporary Balanced Stability, which was, in effect, a self-adjusting Stability, composed of multiple processes, many of which were acting as diametrically opposing Pairs, to overall give the Impression of a Permanently-Established Stability, with the remarkable property of internally resisting dissolution, most of the time, by returning system-wide reactions to Stability, but which could, upon certain simultaneous major aberrations, initiate a general avalanche of consequent simultaneous dissociations, delivering the complete dissolution of the whole Stability.

Now, this was NOT based solely upon this research! It also addressed many seemingly inexplicable System-Phenomena, which, though rare, do indeed occur at all Levels of Reality, in a Hierarchy of ever more complex Systems, where they were called Emergences or even Revolutions!

Now, they were never normally considered, precisely because the universally-accepted Pluralist conception had all relations as fixed, and all Laws as independent of one another, so the combined calamity described above could NEVER happen, as all combined effects simply summed! Yet, ONLY it alone, if steadfastly pursued, could also explain the Evolution of the wholly New in Living Things.

Instead of the Fixed Laws of Reality merely adding up, like a game of Lego, it actually developed qualitatively, just as Life does! So, let us consider the Holist Balanced Stability in some detail.

First of all, in establishing that Balanced State from multiple simultaneous, and causally interacting Processes. It could never have happened as a direct single process. The very same processes, all acting at the same time, could never arrive, via a single process, at such a Balanced Stability. It could only happen as a result of an oft repeated *CYCLE* of such processes, holistically affecting one another, NOT, of course, towards some required and predictable result, but, on the contrary, increasingly homing-in towards a finally safely repeated outcome - the only one that could maintain itself!

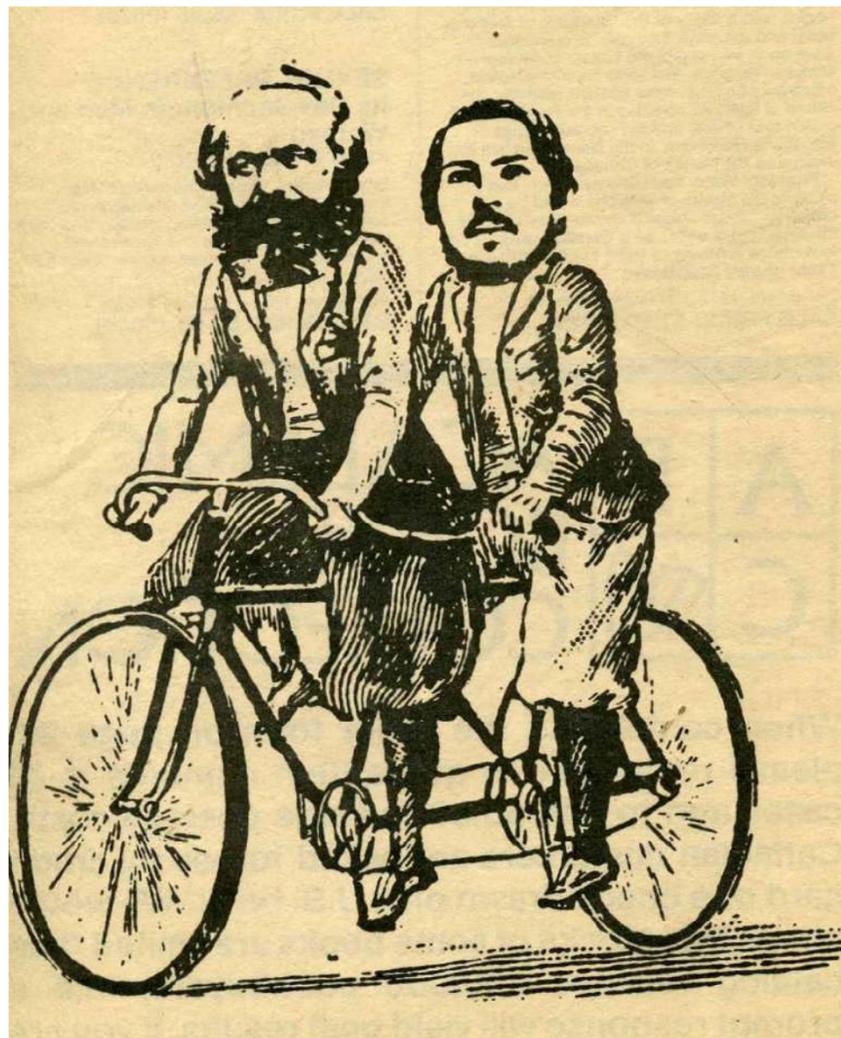
Let us be crystal clear, exactly what that meant! Now, the most evident flaw, since the time of Zeno of Elea (and then only energetically addressed some 2,300 years later by Hegel), just had to be the unavoidable impasses in Reasoning associated with Dichotomous Pairs of Contradictory Concepts in Formal Reasoning.

Now Hegel was an idealist philosopher, so his research into "Thinking about Thought" was finally about the settling upon incorrectly-shared-premises to these Pairs, and he worked out ways of overcoming the impasses by differently establishing those premises, But he had to go further, upon the same lines, to achieve a more general solution, and with his Interpenetration of Opposites, which he, overall, called Dialectics, he was able, in Thinking-at-least, to address many such impasses.

But, at least two of his best followers (within the Young Hegelians), realised that the problem also presented itself in Concrete Reality too, and as a Historian as well as a Philosopher, Karl Marx was able to show that it was clearly evident in the Development of History too! Indeed, Marx transferred both Hegel's Dialectics, and many of his own concretely identified extensions, over to a materialist standpoint, to establish the wholly new Dialectical Materialist methodology.

Now, this philosophic stance changed everything, because the problem was not merely a glitch in Human Thinking, but a feature of Reality. For this reason DM should have transformed all the Sciences.

But that is not what Marx pursued!



For him it was the Dialectical Developments in History that were paramount, so he spent the rest of his life upon a major Dialectical Materialist critique of Capitalist Economics, and in an important sense, he was right to do so!

But, the application of Dialectical Materialist philosophy to the Sciences is what is now, not only long overdue, but actually imperative, as the problem being addressed here of holistic temporarily Balanced Stabilities, instead of pluralist permanent Stabilities, must now be fully-comprehensively addressed.

So, after that absolutely essential-and-defining diversion, let us return to the current problem in hand!

Though the overall trajectory of an Emergent Interlude was effectively addressed some time ago, with *The Theory of Emergences* (2010), the holistic mechanisms though described via their overall roles in that account, were not as yet given the necessary detailed treatment to fully explain what made the various phases within it deliver what they did!

But recently, the detailed *Theory of The Balanced Stability*, based upon what has been described above in this paper, finally requires a detailed explanation, as to exactly why, it behaves as it does.

The rather surprising explanation depended totally upon how opposites both enabled long-lasting Stabilities, yet also both precipitated and explained the role of Qualitative Change in such a Key Transforming Event. Several new approaches were initially suggested by a careful study of the Buddha's Loka Sutta, which surprisingly involved what at first glance seemed to be completely-unnecessary-cycles in each and every step in attempting to explain real Qualitative Change.

For every step was composed of a series of sub-steps, which NEVER led on directly to the following step! The reason was the usual holist idea of everything affecting everything else - for the substeps would cause an inevitable and crucial set of changes, which when the same thing was repeated might cause it to play out somewhat differently. So each set of sub steps would need to be repeated several times to settle upon the actual effects, before proceeding to the next major step. And he insisted upon this for every step in the overall process.

It was the necessary admission of multiple simultaneous processes always both being involved and mutually affecting one another, that required these changes. But, why such repetition of exactly the same actions should settle into the real natural effect, is NOT easy to explain, for it is NOT like an average found from taking several results, it is a very different outcome of Cycles acting within an averaged but unrevealed and unknown background context.

This reveals an important technique to always be used in Holistic Science! Pluralistic Science does averages very differently by repeating a whole experiment several times and *averaging* the measured results - NO cycles are involved, just repetition. Whereas in the holistic version they are imperative, and performed in a sequence - more than once. So, if anything the "average" of the unmeasured background has time to affect the final result!

Clearly, the immediate repetition several times of the cycle of actions, all happening within a self-maintaining Balanced Stability will effectively average (without measuring) the balanced background - exactly what overall produces the Balanced Stability!

Of Cycles and Dialectics

I: Basic Principles

The recent advances in Marxian Dialectics take us well beyond the limitations of Capitalist Economics, while still significantly empowered by the Revolutionary Dialectical Methods, originally effectively developed by Marx in his Grundrisse, and thereafter applied in a disciplined and focussed way to Capitalist Economics within his major life's-work, Das Kapital.

But now, in the 21st century, the latest generation of Marxists has finally begun to apply it much more widely, with the objective of, in time, addressing ALL the Dynamics of Qualitative Change in literally all aspects of our Developing World!

But, as with Marx, and in contrast to all the Idealists - both those like Hegel (Zizek springs to mind!), but also literally all self-professed "scientists" who still energetically refuse to follow Marx's emphasis, that the underpinning philosophy involved in Science had to be some form of Dialectical Materialism, even though he always emphasized that what he was doing was also a Science!

Though neither he, nor anyone else, have, since his death, addressed the outstanding questions of the usual Hard Sciences, which is precisely what the primary contributor to this phase of Marxism - a professional Physicist - has been involved in for the last decade.

But, as his critique of the infamous Copenhagen Interpretation of Quantum Theory is now finished, and available to all via the Internet, this paper will be one of many concentrating upon the significant changes in Basic Concepts, and particularly in Method, due to the final-and-essential abandonment of Plurality, as the simplifying and enabling basis for a Rationality, and instead, institute a major expansion in the current available means, for dealing with Qualitative Changes occurring in ALL true Development, via a holistic rather

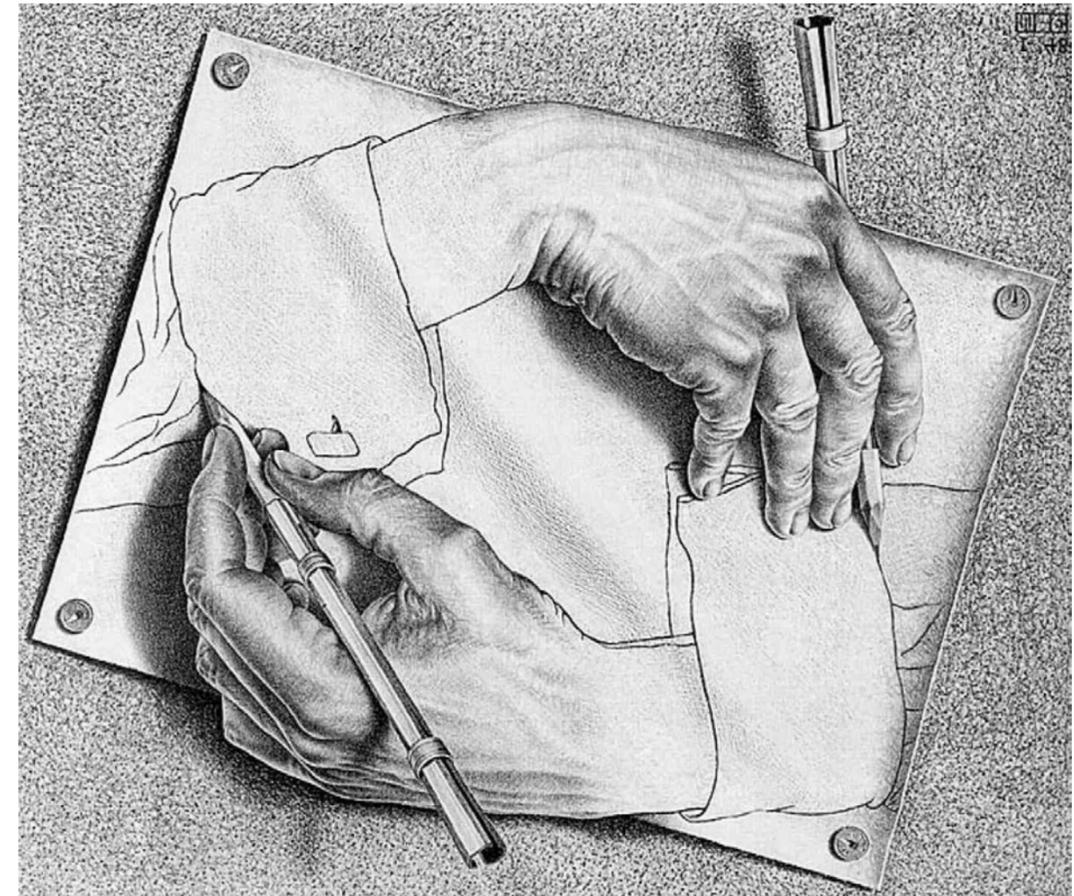
than a pluralistic stance!

Indeed, the historical gains originally revealed-and-used by Hegel via Dialectics, and significantly employed by Karl Marx in his critiques of Capitalism, have been particularly well exposed by David Harvey in his Kapital and Grundrisse Lecture Series, and by the writer of this paper, in both his Critique of Modern Physics, and his current much wider applications, based upon both Marx's revelations upon Social Revolution, and by this modern theorist's extension in what he terms Dialectical Logic.

By far the most comprehensive and integrated offerings have been, of course, in Physics, where the form of Reasoning used primarily, if not actually exclusively, has been resolutely Pluralist - extending Mathematics and formalism way beyond its legitimate remit. But the current concentration upon their applications in a more wide-ranging, yet also more basic levels of developing phenomena across the board, which has elicited a very different and far better approach to finally be used.

The most profound discoveries of the new approach have been achieved for applications involving all repeating-cyclic-Processes, composed of multiple, simultaneous contributions, which are, for the first time in many areas, making the full explanations of what occurs there wholly possible, instead of merely being observed and described. And, delivering detailed explanations of exactly why an unexplained switch to a new law was, in the past, considered to be necessary, merely indicated (but never explained) by a given Key variable transcending a certain value!

Indeed all the accepted Dichotomous Pairs of Contradictory Concepts, which always, in the past, precipitated such inexplicable switches, could, henceforth, be addressed by the new Dialectical



II: Dialectical Dynamics

Approach, that would reveal sufficient causes, for a comprehensive explanation to be available.

And, the reason for such impasses, and fudged-solutions, was always The Principle of Plurality. It is only true within rationalities wherein single FIXED Laws legitimately pertain - certainly true in Mathematics, but NOT in totally unfettered Reality-as-is, where multiple different-yet simultaeously-relevant factors, are always involved, and which DO NOT just SUM, but actually affect and even change one another qualitatively - always leading ultimately to an overall switch in the situation, necessarily delivering thereby, very different overall results.

Such situations are natural not mechanistic, and instead approximate more closely The Principle of Holism!

There is a significant consequence of choosing Plurality over Holism in General Reasoning, apart from is clearly evident simplifications of natural complexity, and that is the imposition of pragmatic measures to make it work - for, "If it works, it is right!"

This attitude has always been the cornerstone of hominid reasoning ever since the "Handy Man Phase" of Homo Habilis, which was crucial in enabling the remarkable physical abilities of that and all subsequent hominids (including Homo sapiens) in alone developing cerably in the way that they did.

Pragmatism even "justified" the gains of the Greek Intellectual Revolution, being permanently accepted - mainly because they gelled with that laided pragmatic tenet, and effectively allowed the rapid development of Technology, in spite of the general disabilities unavoidably built into an emerging Science!

For Plurality did have a worthwhile-and-useable place in Mankind's conceptions of Reality, as long as the situations

to be investigated and thereafter used in Production were purposely restricted to appropriate Artificial *Stabilities*, which indeed could be arranged to conform, and, thereafter, be maintained within those circumstances!

The Stabilities of Plurality were certainly temporarily achievable, but the assumption of their permanence and essentiality was the true mistake.

Indeed the purely pragmatic aims of Technology could be extended by discoveries, but the necessary objective of a Universal Explanatory Science was basically impossible within Plurality! Complex, natural and changing scenarios were excluded or replaced by statistics.

The best that could ever be achieved, was a multiplicity of separated dislines and specialisms, which could never be intrinsically explained over a common Ground. And at best all development could never be explained but only described as a succession of observed and temporarily situated, but NEVER causally explained or fully understood.

And, its easy to see why such a necessary achievement (impossible in Pluralist Science) was relegated to become a section of Mathematics, which, of course, was wholly and legitimately Pluralistical.

Science had become merely a Part of Mathematics, which was, as always, at best a distorted and simplified reflection of Reality in Ideality: and at worst a romp into the non-existing areas of a formal fastasy world.

You can see now, why Dialectical Materialism is needed in Science, I hope!

In Part 17 of David Harvey's series of Lectures upon Marx's Grundrisse, he reveals some crucial features of Marx's version of Dialectics, based upon the repeated Cycles developed in the very intrinsic dynamics of both establishing the wholly New, within processes that then become parts of repeated Cycles, and which in their subsequent development, also elicit other consequent related Cycles, all of which, thereafter, mutually-determine each other's qualities!

But they *never* settle into finally Fixed Forms. This can be confusing for readers of Marx, who expect definitions of things to stay the same - as they do in all Pluralist forms of study.

Indeed, they are always undergoing constant changes, and suffering consequent Crises, for Dialectics indeed emphasizes the Holist nature of Reality!

Now, this makes it very different for Classical Formal Logic (a Pluralist view), which has dominated all Reasoning since the Ancient Greek Intellectual Revolution. This Logic must consider things Qualitatively Fixed, though they can vary Quantitatively, and so-called Understanding becomes a kind of Logical Game - with fixed rules! The most fundamental rule of all forbids contradiction.

And, this meant that, for well over two millennia, that there was NO way of explaining Qualitative Development - which was reduced to Quantitative changes of fixed entities. So though the wholly New was often recognised, it could never be explained: a crude "Quantity into Quality" was merely assumed, and its circumstances noted, and used to predict when & How such things may change, but never Why!

But, certainly, how Marx understood such things, in his Grundrisse, was revealing its intricaces to Harvey!

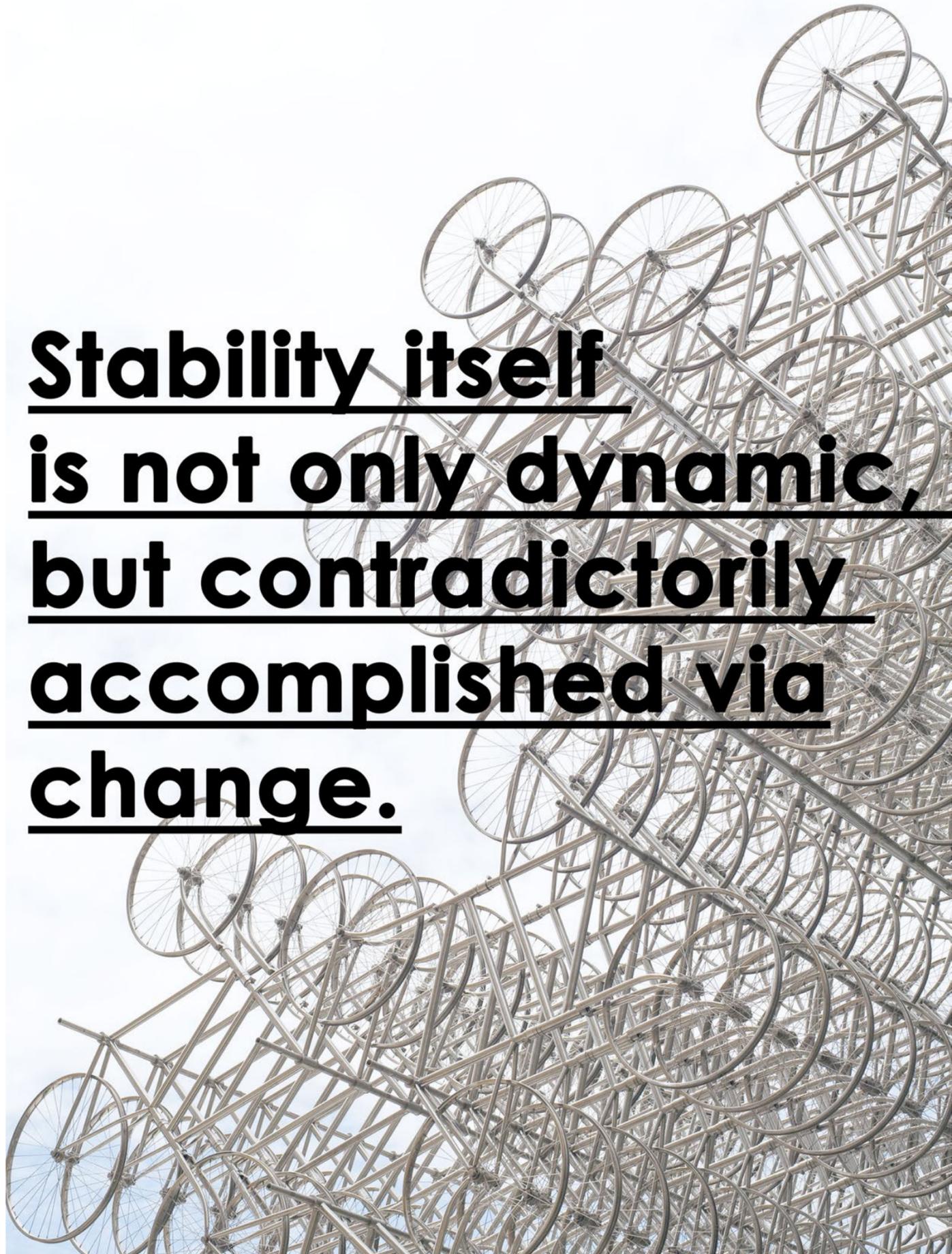
And, some of the most revolutionary processes are revealed there as to how-and-why the wholly New could first emerge, give birth to other consequent processes and cycles, and were then, unavoidably, transformed, recursively by their own creations!

Indeed, though neither Marx nor Harvey were aware of it, recent research into both long-lasting Natural Stabilities within Reality, and their roles both within and outside of Emergent Interludes have been recognised and both described and explained via the concept of "Balanced Stabilities" - Stability itself is not only dynamic, but contradictorily accomplished via change.

For, these are combined phenomena, due to many simultaeous processes acting together, in balancing pairs, which fairly quickly, when subjected to cycles of variability, gradually filter out lesser contributions, yet establish relatively stable pairs of opposing processes, which effectively deliver an overall, co-ordinating bunch of these, which together provide a self-maintaining Stability overall, and, which is usually self-maintaining, for extended periods of time, but which can in extreme circumstances, precipitate an overall dissociation of all the individual component "balances" and finally cause the overall collapse of the complete "Balanced Stability" - a Revolution, in fact!

In consequence usually immediately forming new opposing Balanced Pairs, and ultimately composite Bundles in wholly New "Balanced Stabilities" in so-called "Emergent Interludes"

And elsewhere, and over time, these features, and others like them, are THE ONLY explanations for real, entirely-innovative creation of the totally NEW! Evolution is impossible with a strictly pluralist view of Reality.



**Stability itself
is not only dynamic,
but contradictorily
accomplished via
change.**

And, the holistic mutual affecting of multiple simultaneous processes, and cycles, makes the incredibly long odds of changes by mere Random Chance, in an entirely Pluralist World, a total non-starter!

Also, and perhaps even more important, the Pluralist set up is exactly what leads to the Second Law of Thermodynamics, permanently immobile Stability as the end point of varying factors, and the whole concept of Entropy as nonsense.

And, perhaps, even more importantly, the many wrong turnings due to Plurality, have been the myriads of contradictions that it has caused, initially in the division of studies of Reality into separate "Subjects" and "Specialisms" as a workaround, but most profoundly of all in *dispensing* with very effective Logical Models like The Aether, as an undetectable Universal Substrate filling all of Space, and the *dispensing* of Physical Explanations, replacing them with INADMISSIBLE, entirely pluralist mathematical Equations, which contain none of this crucial dynamic quality, whatsoever.

Reality may not have any pre-ordained directions of Progress, but it certainly behaves very differently when everything can potentially affect and transform everything else.

Exploring this brave new world is where Science must go next.

Cyclic, Recursive or Emergent?

Though I have been using terms such as Recursive and Emergent, one has to remember two important things. First, that these words must be being used very differently in the context that I am using them, from their meanings in everyday, common usage.

It seems to me that phenomena RECUR, but exactly how they do so will be crucial. For, when they recur regularly at regular intervals on the return of a similar external context, they can be said to be cyclic.

Such recurrences can be nothing special, indeed they are easily predictable, and, as such, include NO innovation. But, if the conditions change in a predictable ordered way, and the recurrences march in step with these, we say that there is an established cycle of recurrence. But, that is not the only kind.

The second type of recurrence is NOT in a cycle, but events crop up in widely separated circumstances, which happen to have the same FORM. These recurrences (or re-occurrences, perhaps) are due to the universality of form in nature. It is what makes mathematics the powerful and useful tool that it is, but often tells us very little about causality.

The processes of Abstraction from relations existing in Reality deliver the appropriate form, but such forms are common, and wherever the situations are formally the same, the same forms recur. These situations can be particularly easy to deal with, as somewhere in our bag of mathematical forms, there will certainly be the one we require, or something very similar - spirals, orbits, and symmetry, for example.

But such recurrences do NOT necessarily display any intrinsic relationships between the areas in which they occur, and the forms can *still* be applied.

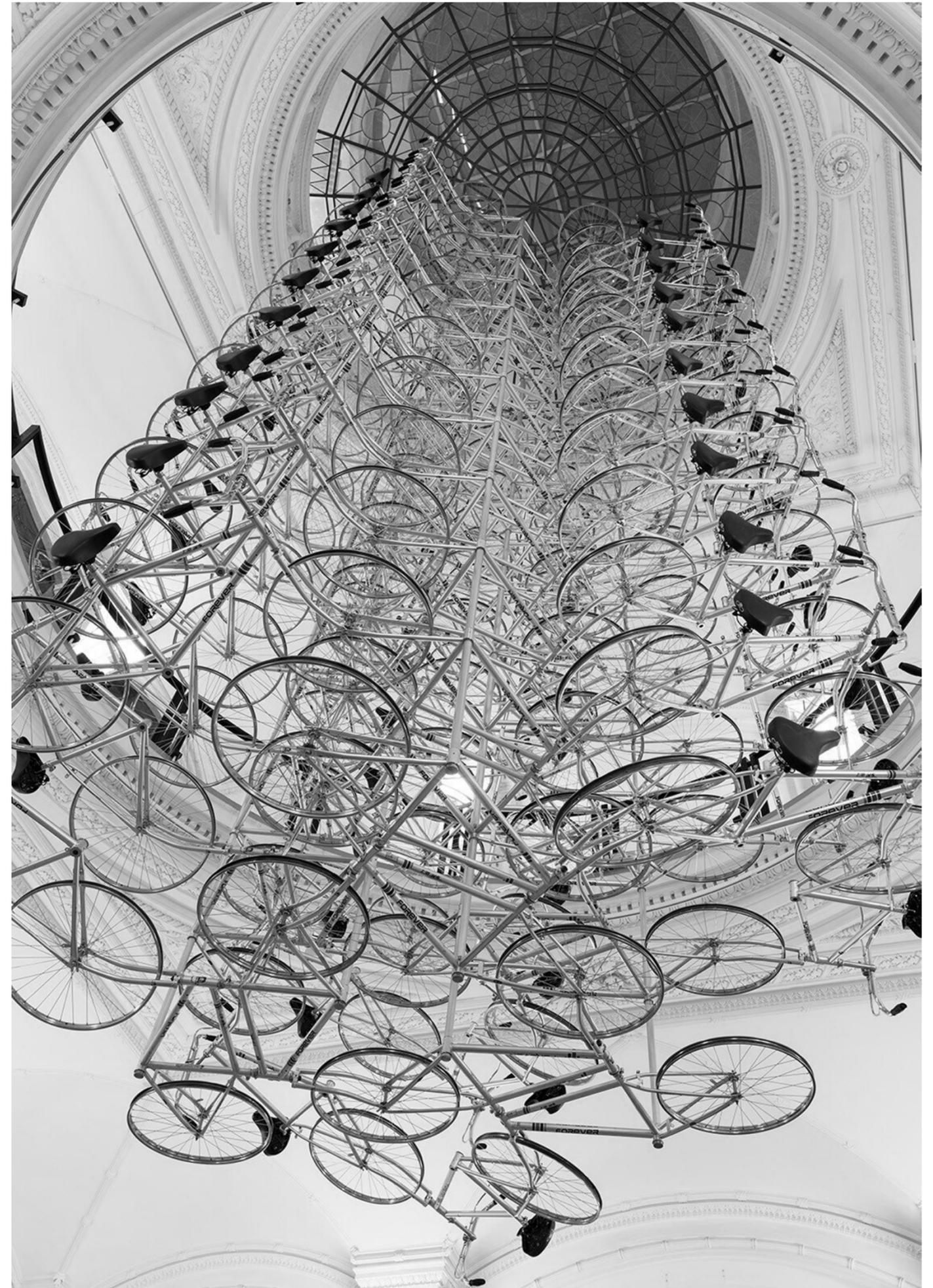
Form maybe universal, but it is NOT absolute.

The third form of recurrence, and the one, I believe, that is usually recognised as being the only really profound case, is when the same form appears, with the same content, but at an entirely different Level of Reality – on either side of an Emergent Level boundary.

These are much harder to exemplify, and even harder to explain, as being due to something more than simple mathematical recurrence. I will, though, try to begin an explanation, but don't hold your breath. These are initial thoughts only. I would certainly be amazed if it turns out to be right!

I think that this kind of intrinsic recurrence is definitely related to Emergence. As I have said before, Emergence of a New Level both constrains sub-ordinate processes, and makes possible wholly new processes and indeed wholly new Levels too. If this is true, let us consider a whole sequence of such Emergences. First, each new Level will spawn a whole set of new domains AT THAT LEVEL, but not below. So, as we ascend the sequence each set of new domains and relationships will be founded on both the new Level and will constrain the levels below in special supportive ways.

Remember, a new Emergent Level will only appear if the various criteria are fulfilled, and we have developed clearly defined limitations of the lower levels to be consistent with the continued existence of the Level, and an opening up of possibilities as the increasing directional forces involved make more likely what was previously impossible. The sequence therefore concentrates this process, Level by Level, until the lower Levels are marshalled increasingly into forms required by higher Levels. In such a contrived structure, it is very likely that recurrence will occur, not just because of the universality of Form in general. But, because of the increasingly

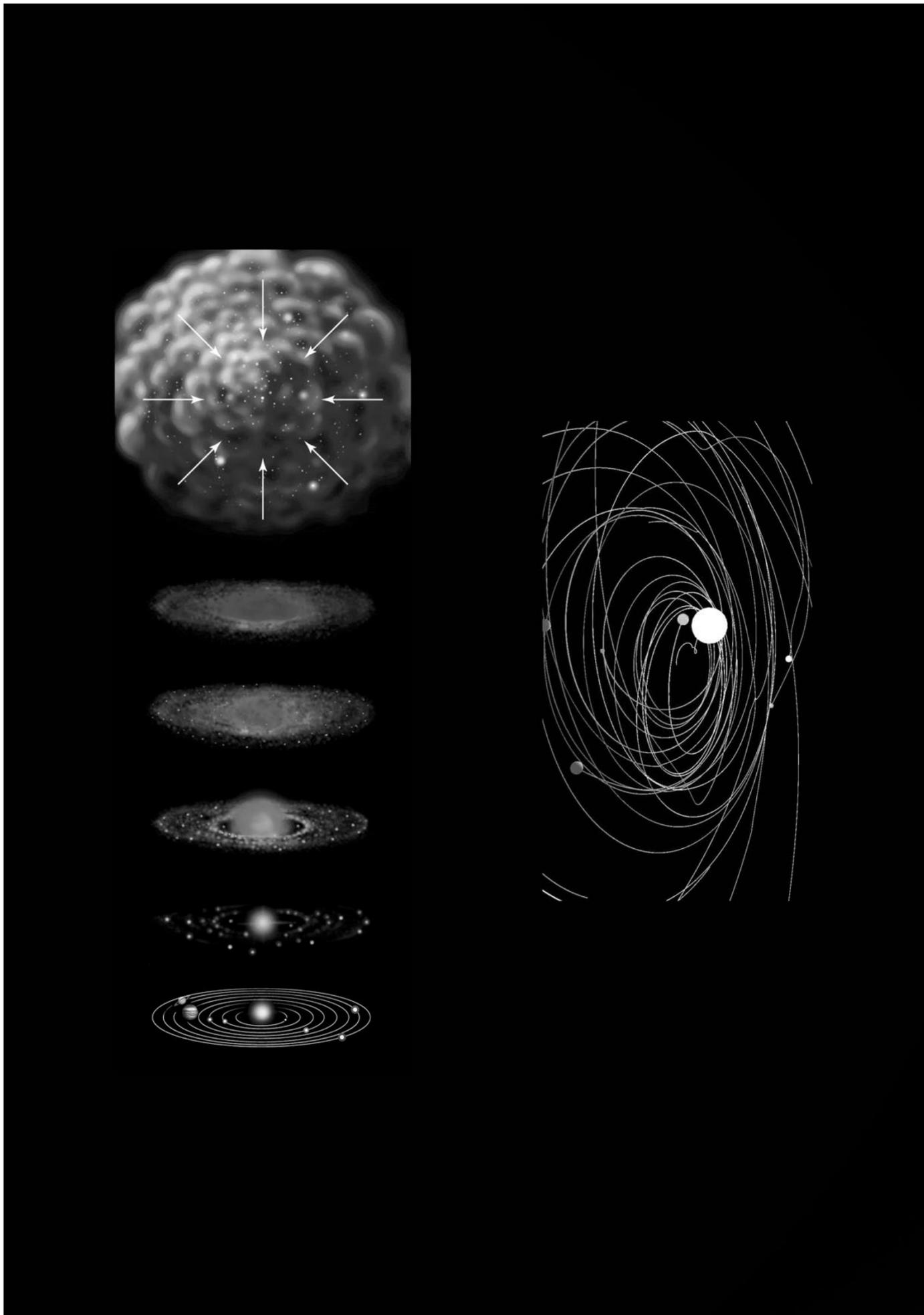


focussed direction of the evolutionary process as a whole, the recurrence will be differently caused.

Instead of a simple popping up of a universal Form, we are likely to have generated causal reasons for it as an understandable and explainable part of the transition process. If the readers requires more here, I have to agree with them, but all I can do at this stage is direct them to the case of the Evolution of Life – a process packed with Emergent Levels throughout, and hence full of recurrent forms.

WARNING : Do not generalise these very special recurrences to include the trivial, mathematical cases. That would not only be wrong, it would be dangerously misleading too.





The Productivity of Cycles

PREFACE:

This essay is part of an initial attempt to delve within Marx's Dialectical Materialism, as he developed it for his book *Das Kapital*, and attempt a similar process to that, but this time addressed to Science in general and Sub Atomic Physics in particular.

And that Science had not only been completely subject to a strongly Quantitative and Pluralist approach for millennia, for the biggest task was to divert the whole discipline away from Plurality, and instead begin to construct a totally Holistic approach to Physics, to replace all the "Eternal Natural Laws" of Plurality, with mutually-affecting, and hence the unavoidably variable, Laws of Holism.

And such a switch is a major and totally Revolutionary change. For it has been dramatically distorted for its entire history, by the assumption that matter follows fixed Laws that have been around forever.

But, a start has been made! And, thus far has concentrated upon a philosophical demolition of The Copenhagen Interpretation of Quantum Theory, and latterly of Big Bang Cosmology too!

In analytically considering both seemingly-permanent Stabilities, on the one hand, and the clearly very different Developments within actively-transforming-Systems, on the other, the undoubted significant-productivity generated within ongoing cyclical processes, and even more complex Systems, both physically, chemically and beyond, are all clearly becoming crucial elements within any understanding of all Real-Transforming-Developments (usually termed Emergences). For these events alone, can, and do, achieve things that would be totally inconceivable without such actually qualitatively-changing processes delivering the consequent re-directions involved: and wherein such are usually-and-wrongly ascribed to entirely wholly-external Random Chance or disembodied Laws, as the only possible assumptions for what thereafter occurs.

And yet, rather than such things being uncommon, exceptional and unpredictable contributions to the consequent trajectories themselves, they are, in fact, slowly becoming increasingly seen as being absolutely internally intrinsic, in causing the evident creative potentialities of all natural systems as they can actually be radically extended and transformed entirely-within the current System.

For example, all such regularly repeated and entirely internally varied cycles are clear demonstrations of potential qualitative change, *hidden within an apparently permanent Stability!*

NOTE: I wont, as yet, give detailed examples, but both the Quantisation of Electron orbits within atoms, and the radical re-organisation of the Solar System, earlier in its history, due to gradual drifting of planet orbits into orbital-resonance-situations with the major planet Jupiter, are already well documented, without them

being seen as demonstrations of regularly occurring Emergences - congenitally associated with all Cycles!

And, the reasons for their not being vigorously pursued, apparently arose out of the many common experiences, in which Consequent Stabilities are always considered to be natural and final (even permanent) Stable Situations, and any variability within such cycles as merely transient phenomena, requiring, at least in most everyday experiences, such cycles gradually settling into natural minimum energy Stabilities, after random inputs of energy are gradually lost due to the Cycle constantly losing all non-intrinsic energy.

Now, Mankind must always, initially at least, trust what are the norms in their everyday experience of the World: that MUST constitute their primary confirming ground. [For, in a Holist World, involving hierarchies of causalities, all at very different tempos, even very long term stabilities display something significant, BUT are never the whole story, and are masking other intrinsic causalities which will take time to reach their optimum for precipitating something different!]

A spinning and arching ball will always come to rest, and stay that way, unless kicked again!

So, the reason is that such processes can incrementally move systems from seemingly almost-stable situations, to those where dramatic changes were impossible, but also move, surprisingly, into those where they suddenly transform to become special circumstances, where such changes actually become inevitable, but are, nevertheless always usually dismissed as having been influenced by external factors that we are currently totally unaware of, rather than being intrinsic consequences of the processes covertly involved themselves.

Indeed, one surprising and rather quick phenomenon taking place in Cycles involving many different sub-processes, is the fairly quick elimination of their evident variabilities, due to the ongoing cyclic repetition. For that enables the main dominance to grow at the expense of the aberrations, so that the cycle initially grows in stability! And, hence it was indeed that latter determination, which was taken as the sole causality present.

The context was correctly assumed to be unchanging; but though without any noticeable effects during most internal changes, normally, the internal processes could

indeed change (without any evident effects), until they could reach situations in which they dramatically affected both each other AND that seemingly unaffected context too!

Such a situation as is possible in a strictly Pluralist Science, composed entirely of only eternally Fixed Laws, while, contrastingly, in a Holist Science, in which absolutely Nothing is totally stationary (even Stability itself), and some sort of motion is always involved in Everything present, the above situation not only could, but actually given time, always would occur!

And the possibility of an *Active Stability* composed of multiple pairs of opposing processes, could come together to form a bunch of such components, which acting together as they affected one another, could indeed form an over-the-whole-bunch self-maintaining Stability, and with every slight diversion from an individual balance, being immediately corrected by an opposing change in another balanced pair!

Instead of random and chaotic changes acting externally, upon an established Stability, and hence suddenly producing, by extremely unlikely changes, a development to finally arrive at a new, remarkable, if temporary situation: it would with cycles, within otherwise majorly stable circumstances, the situation instead seems to allow a kind of *homing-in* upon certain situations having certain implicit potential events, even if it was not evident, as if such was always resident within that situation, but extremely unlikely, by the usually conceived of and totally undirected random changes, which are supposed to precipitate the usual Dramatic Singularities!

Across many research areas, these kinds of phenomena can reveal themselves, but are usually dismissed as freak occurrences, whereas the evidence is beginning to infer what they are, and how real qualitative development actually takes place.

But, such are literally always essentially contradictory - occurring in systems wherein an increasing randomness, or alternatively a settling into a final permanent stability, seem to be the most likely outcomes.

And, the rarity of determined studies, into such areas, seems to arise out of the earliest discoveries of Mankind,

in attempting to understand the shapes and patterns of nature, for they noticed that the shapes produced looked very similar to those that could also be deliberately produced wholly Pure Forms: such as the idealised shapes produced and investigated by philosophers.

They were looking into what would later become Mathematics, as their Lingua Franca of "all" Reasoning. And, they found a means of constructing the very first Intellectual Discipline by concentrating solely upon what later became known as:

Simplifying Relational Abstractions,

which concentrated solely upon the relations between Positions within Geometry, and then on consequent entities built upon them, and consequently also produced a developable discipline, that was wholly restricted entirely to relations, all of which had-to-be (just like their abstractions) entirely unchanging in nature.

First Euclidian Geometry, and thereafter Mathematics-in-general, just had to be composed entirely of qualitatively-fixed components: so the Discipline had to be wholly-and-exclusively Pluralistic!

Now, it has to be emphasized that such a discipline was completely legitimate, but only for uses solely restricted to the study of Pure Forms in Mathematics. But, the Greeks entranced by its power within Mathematics, also transferred its qualities, processes and restrictions to both Formal Logic and also the newly emerging Sciences - where such a discipline would be wholly and misleadingly illegitimate.

It could be used in both, but only if the area it was being applied-to was also totally Pluralistic - that is composed only of qualitatively fixed things: and that is untrue in both Full Formal Logic and all of The Sciences. So, it was used anyway, but only in such dramatically restricted areas - it worked only in Pluralistic Logic, seemingly unchanging Stabilities and deliberately-organised Pluralistic Sciences.

So, if the only way out was to ditch Plurality, and instead concentrate upon the interludes of Qualitative Changes, where both of these disciplines would be totally emasculated without the essential inclusion of Real Qualitative Changes.

And, instead, aim to reveal exactly how the changes involved took place wholly internally.

Now, though the overall general approach has been developed by this theorist in his Theory of Emergences, that technique alone would always be insufficient within its current general form: it only delivered an overall trajectory!

And, just as Marx had to do in transferring-and-developing his Dialectical Method to deal, in detail, with Capitalist Economics, in his book *Das Kapital*, so the application of Dialectical Materialism to both Formal Logic and the Sciences, would also require similar discipline revelations, but in order to spell out all the different implications for those Disciplines too.

And achieving those objectives would make Marx's effort with *Das Kapital* appear small in contrast to what would now be necessary, and very different, in each of these contrasting Disciplines.

How Our Thinking can Limit our Analysis

There is a profound limitation to how we generally think about the problems we encounter, which actually does a great deal more in preventing the finding of solutions, than the usually blamed reasons for doing it that way seemed to promise: such situations might be as either irrational ideas, or a profound ignorance of the area in question.

Indeed, this is determined primarily, by the usually, universally adopted assumptions, that we have always-and-unquestioningly applied to such reasoning in the past, which alone can often make many real solutions totally impossible to arrive at!

And, remarkably, some of them were originally instituted into our Reasoning, long before our time, by the most important Intellectual Revolution in our methods of Thinking about the World - via certain breathtakingly-important achievements arising out of the gains made by the Ancient Greeks.

For, in their original devising of Mathematics as a discipline, they, for the first time in our History, revealed the initial glimpse of a new kind of Reasoning that could indeed solve almost any problem to do with what such Forms could possibly take.

For Mathematics was indeed a System-of-Relations between Pure Forms, initially within what was termed Geometry, and consequently also, in literally all other kinds of Fixed Forms, that could be taken, overall, as both a coherent and a consistent means of expressing their actual formal inter-relationships.

For, the very first time, in the Thinking-of-Mankind, it became possible to suggest Theorems regarding such Relations, and also to develop reliable Proofs, as to whether they were valid or not.

It was a very significant achievement, and was made possible only by the invention of Simplified Relating Abstractions.

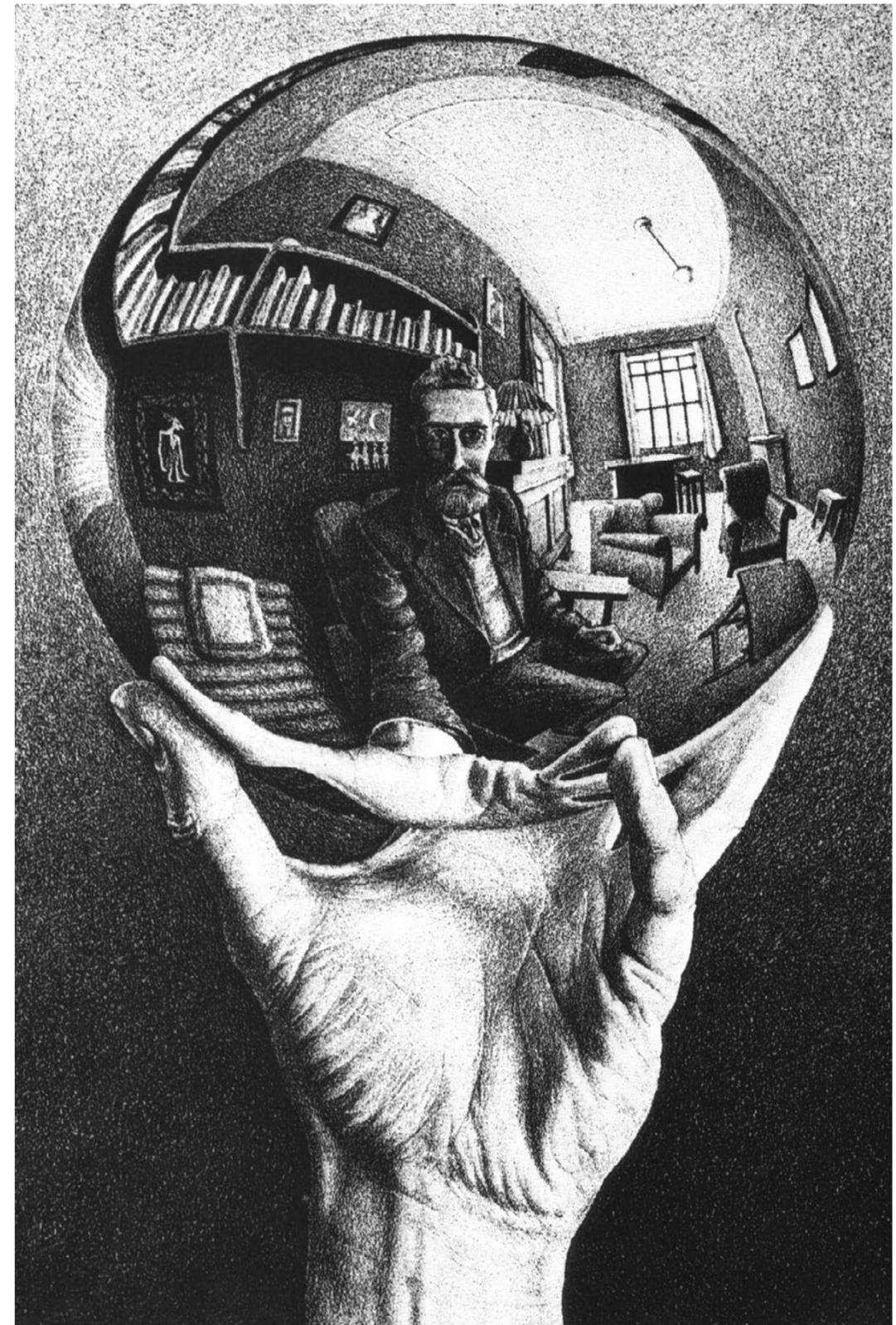
These were abstractions concerning relatable conceptions, which can never exist alone as such, but *only* in relations between them and other such things! But, these were absolutely-and-necessarily always totally fixed in definition: they could never change into something else!

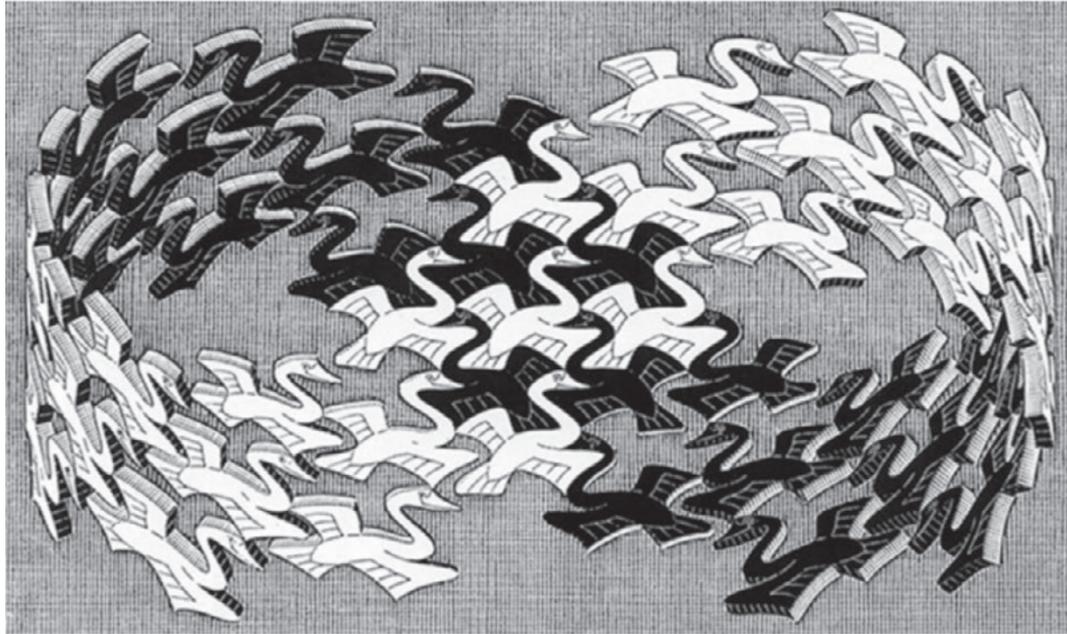
Indeed, such relations could only be applied to Systems composed solely of Qualitatively-unchanging things - like Mathematics! So, they had to conform to The Principle of Plurality, which alone guaranteed that absolutely necessary property.

So, this new Discipline of Mathematics consequently-developed at a remarkable rate, and by a kind of idealisation (or even as a consequence of on-purpose design) of real world things, they could be seen as addressable in certain very specific ways by Mathematics.

A substantial and useful Discipline was rapidly developed using its own type of Formal Reasoning - restricted only to totally unchanging Forms. And that is a Profound Restriction!

The problem began when these ideas began to be applied beyond the abstract world of pure forms, to Reality, via the burgeoning Sciences. Science must allow Qualitative Changes, as Reality is closer to the Principle of Holism, wherein nothing always remains truly constant, and indeed "Everything affects everything else", so using Mathematics in such areas greatly restricted both Logic and Science to only Totally Stable, Qualitatively-unchanging situations. All qualitative development, and even Evolution were purposely omitted from these Disciplines, which quite clearly in Reality always permitted them.





They could be purposely made unchanging, but that was NOT their natural State!

Now, in Science the effect was to always attempt to “hold things still”, and this meant actually removing as many active factors as possible from a situation, and thereafter rigorously maintaining that situation, while it was being investigated.

In Logic however, the demand for unchanging entities and concepts had always been an assumed Rule of Logic, so that was just rigorously maintained, and any changes in a concept were always regarded as illegitimately contradictory, and hence were considered wrong when they did!

Now, Zeno of Elea delivered a whole series of just such contradictions, when applying such Pluralist Logic to Movement in his Paradoxes, but he was largely ignored, and it took a further 2,300 years before Hegel seriously addressed this fundamental weakness in Formal Logic!

And, his form of Logic, which addresses such Qualitative Change we term Dialectics, and the extended correction within Philosophy in general is now termed Dialectical Materialism.

Unfortunately these philosophical insights were never applied to Science. One of the main reasons for this was that Science seemed to be doing rather well! Pluralistic Science still managed to make a certain amount of worthwhile progress (for, as is often the case when confronted by difficult or impossible situations, by physically simplifying the phenomenon under investigation, allowed restricted cases to be adequately represented in that way. Natural situations were made to Conform-to-Plurality, by instituting restrictions via Technology, which prevented any change happening, and thus revealing what was available within those restrictions!

NOTE: As David Harvey has shown very clearly, when Marx was presented with attempting to develop Theories within Capitalist Economics, he too was presented with a very complex set of relations and situations, where Qualitative Change was variously involved, within different Phases of the whole System, but there was no way of dealing with such a complex set of mutually affecting processes simultaneously. So, he too severely restricted and limited Volume 1 to Production only, Volume 2 just to Realisation, and Volume 3 to Distribution. And, not only did things affect one another causally, but also recursively too. And, as his overall schema was necessarily

cyclic, the inter-relationships were not only within individual Phases, or even between them, but also were between different cycles, cumulatively delivering varying controlling emphases, at various different historical junctures at varying times in the repeated cycles of the overall scheme.

So, in attempting to apply a similar technique to Science, a severe initial restriction to a single area would also be essential, and considering my extensive researches over the last period, a couple of areas suggest themselves as the places where a start could well be made.

They are the Copenhagen Interpretation of Quantum Theory in Sub Atomic Physics, and the whole area of a suggested Undetectable Universal Substrate, in so-called Empty Space.

Now, Marx had the advantage of the overall Cycle of Capital in Motion, but I will get my causal complications from what appears to be Hierarchies of superimposed situations on Reality - all the way from the lowest levels of Substrate, not only upwards, in both sizes and situations, but also in physical Environments, and even delivered by wholly new Emergences such as those involving Life and even Consciousness.

Now, of course, though the Greeks' assumption of Plurality, was, in consequence, guaranteed to cause fundamental problems and precipitate a host of different Crises, all of which were never attended-to for literally millennia, because they became a misleading permanent restriction, which just had to somehow be transcended, for all situations outside the limited set in which Plurality works - unchanging Ideality!

Yet, it also survived for so long because, unintentionally, it actually WAS a very useful, simplifying restriction that enabled its version of Science to be effectively used in given stable situations. Indeed, it became the general means by which the prior long-established methods of production (as in primitive tool making) to be consequently empowered over a truly vast range of contexts, and became also the established experimental methods (illegitimately), in all of Physics!

In a sense, it behaved like one of Marx's conscious and on-purpose restrictions, in how he dealt with the different Phases occurring within the General Cycle of Capital in Motion, as they appeared in Capitalist Economics in the

individual Volumes of Das Kapital. Before, as he went through his analysis, correcting things as encountered where other phases in the Cycle clearly modified his initial simplifications.

One of the more exciting discoveries by Harvey, occurs when Marx's theoretical updates, which at times, in the past, appeared incorrect, have been long after Marx's death, confirmed as true!

Indeed, Marx's insistence in his dialectical method upon first, a general conclusion, later changed by particular modifications, until finally terminated by what he termed *singularities!*

POSTSCRIPT:

Perhaps a place to start in the task I have set myself, is to treat the Pluralist Laws as initial General Relations - then in its given non-stable context unearth modifying *Particularities*, and show how they change situations, and then ultimately explain how the appropriate *Singularity* can terminate things, and finally lead things elsewhere!



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