

SPECIAL ISSUE 74 AUG 21

SHAPE JOURNAL

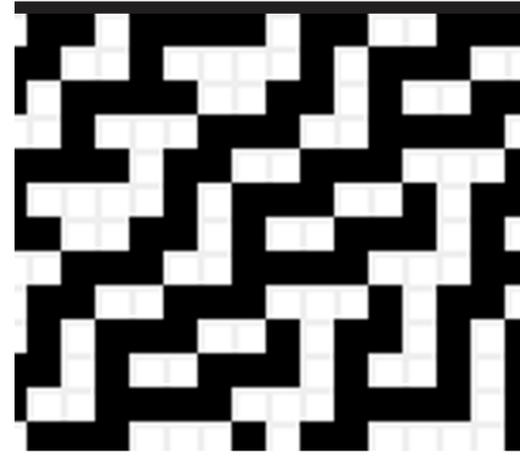
A CRITIQUE OF
AND ALTERNATIVE TO
STEPHEN WOLFRAM'S
REAL BASIS OF PHYSICS

THE MISGUIDED BASICS
OF RATIONALITY

SYSTEM LOGIC AND MATHEMATICS

FLAWED LOGIC

JIM SCHOFIELD



©2021 Jim Schofield

Words Jim Schofield
Editing & Design Mick Schofield

www.e-journal.org.uk/shape

Special Issue 74 / August 2021

- 4. The Misguided Basics of Rationality
in both the Sciences & Reasoning
- 8. A Critique of and Alternative to
Stephen Wolfram's
Real Basis of Physics
- 20. Systems Logic & Mathematics I
- 26. Systems Logic & Mathematics II



The Misguided Basics of

Rationality in both the
Sciences & Reasoning

by

Jim Schofield

As I have long argued, in prior publications, the principle flaw in the Sciences resides within Physics, as is most certainly revealed in the total subservience of its Theories to Mathematics.

Mathematics became involved, through the achievements of the Ancient Greeks, in their brilliant Intellectual Revolution, via their invention of a wholly new kind of Abstraction - both possible, and indeed necessary, in involving Relations to rationally develop the first-ever consistent, coherent and comprehensive Intellectual Discipline in History.

For, it was an epoch-changing invention, because it delivered the first Complete Rationality - enabling the sound establishment of, first, Euclidian Geometry, and, thereafter, Mathematics in general! But, this was wholly legitimately achieved, ONLY because mathematical relations were always & forever FIXED: they absolutely never changed qualitatively, into something else.

So, what was achieved, was only a Purely Mathematical Rationality, which was fairly quickly derived and extensively and correctly used, to ultimately build the Whole Discipline. But what was found was only-ever-true for Mathematics, but NOT for either the Sciences or more General Reasoning - for in all of those important Disciplines - as in all Life itself - things have Evolved: they had to be changed qualitatively, and hence purely Mathematical Reasoning could NOT ever be legitimately related in that way.

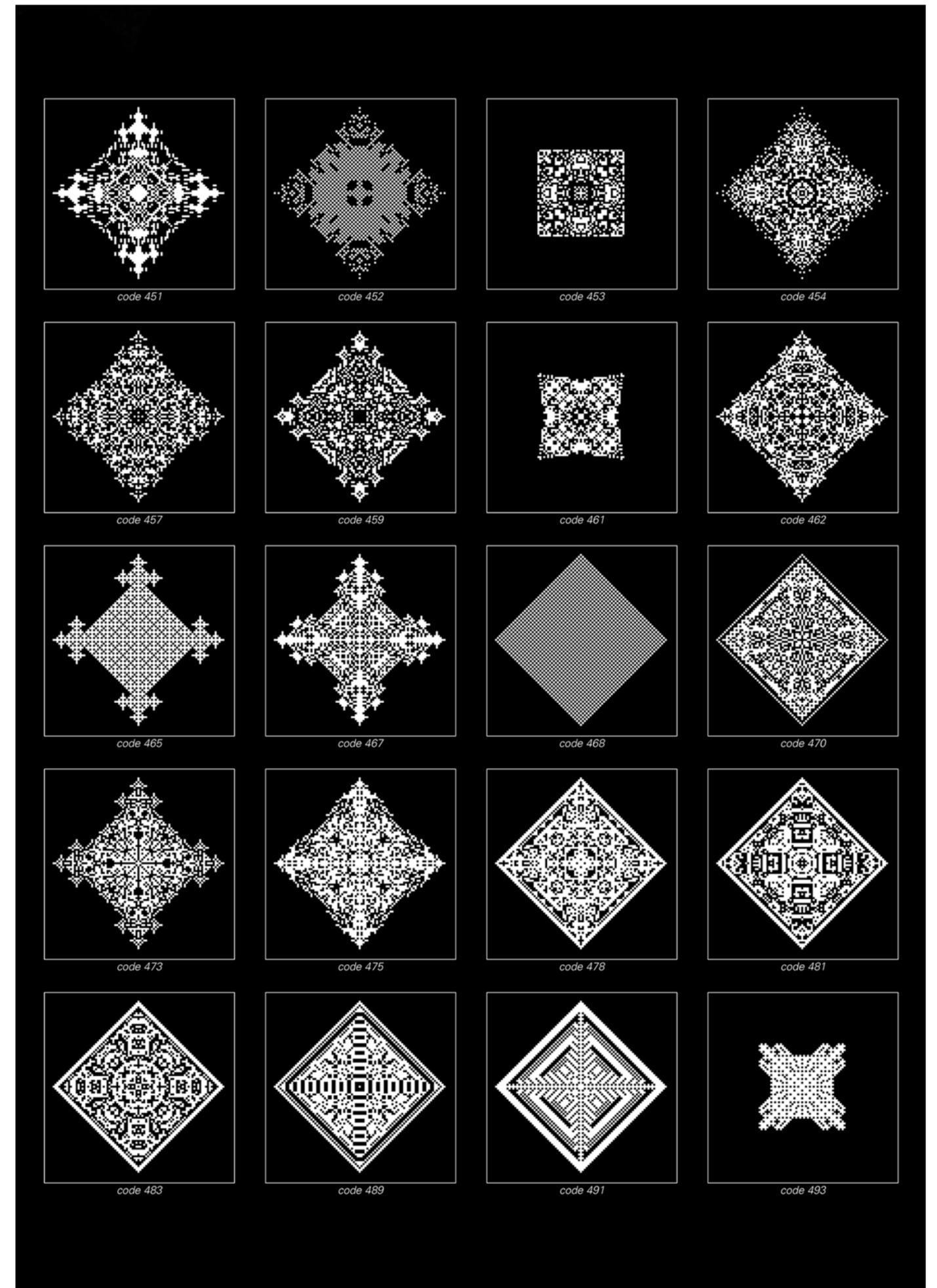
Nevertheless, The Greeks, justifiably enamoured with their New Logic, illegitimately applied it to everything else too! And, that was soon literally extended universally throughout all of Mankind. Indeed, its basic Defining Principles, particularly those within Geometry-and-Symmetry, were re-classified universally as *Beauty*.

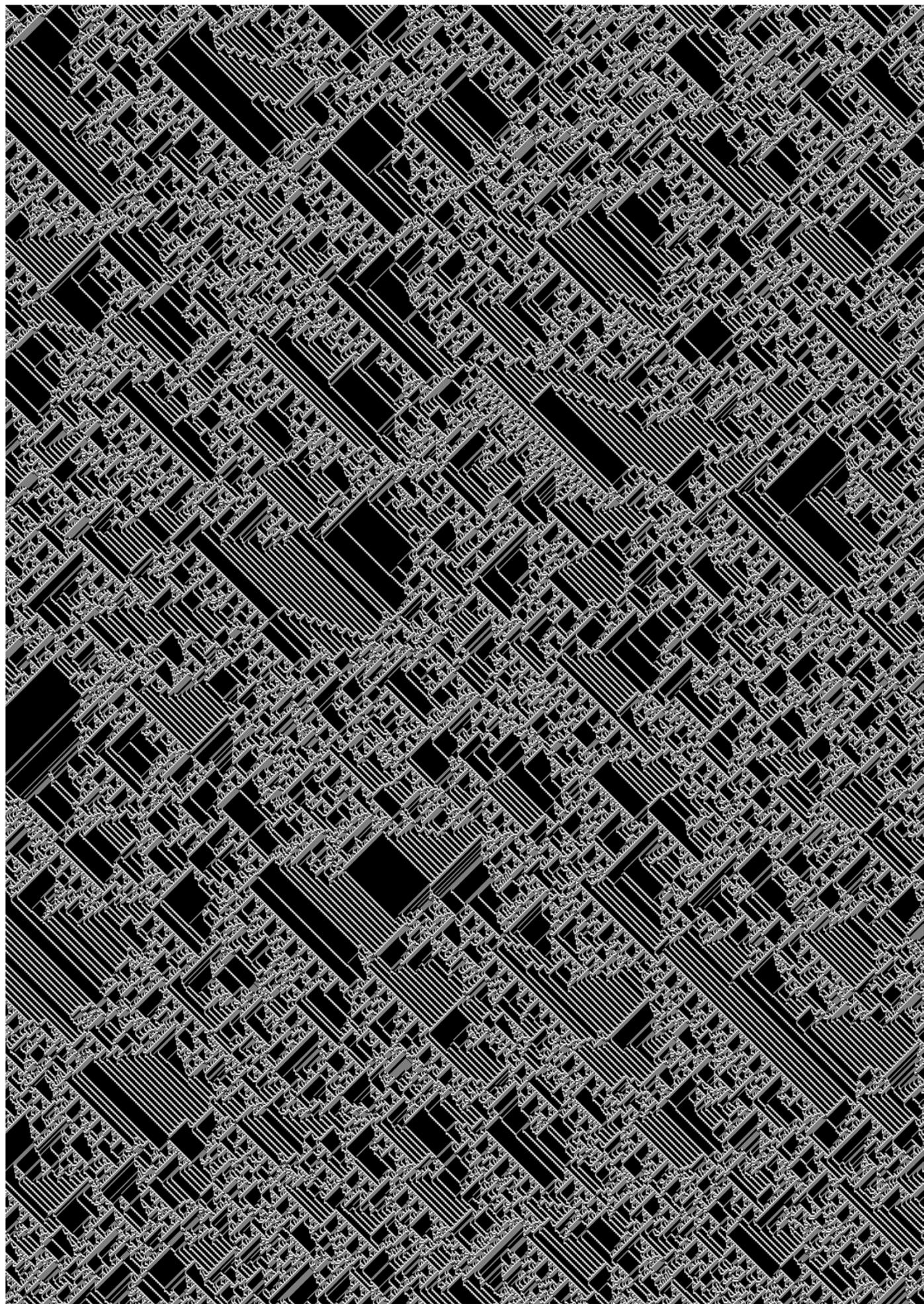
The aesthetics of form and principals of simplicity, purity and symmetry - fundamentally idealisms - were then applied to absolutely Everything, via Mathematics, as Everywhere-applicable Principles.

Now, I have just finished watching a YouTube Video, by the theoretical physicist and writer, Sabine Hossenfelder, who was severely criticising the preponderance of Beauty, when used in judging the values of new Theories in Physics: her criticisms were certainly wholly valid and refreshing to see, BUT they must be of all Mathematical Rationality, and NOT just of Beauty!

Indeed, the mistake of the Greeks was never realised, and Mathematics has wrongly and damagingly become a veritable-yet-wholly incorrect Ground, in All Rationality. And, this is now so embedded in these Disciplines, that no-one can conceive of their Discipline without it!

For example, in the Sciences - such as Physics - ALL Investigative Experiments, and ALL Productive Processes, are ALWAYS and necessarily carried out in rigidly Pluralist (i.e. conforming to that mathematical rationality) situations, absolutely essential to make their





“Laws” work! Indeed, by such means Physics, in those areas, has ceased to exist, and has been pragmatically replaced by its older relation, namely Technology, and theoretically converted to Idealism as a result!

And, “to compound the felony”, it is ONLY those illegitimate Pluralist Equations that are exclusively and illegitimately used within so-called Theory: thus making the consequent construction of an overall Discipline via substitutions between those Equations, totally illegitimate, for all those Pluralist Equations, each and every one, are about Different Situations!

Indeed, it is now very clear that to resolve this problem permanently, it will undoubtedly require the extensive establishment of a completely new and entirely Holist Approach to the Sciences, and, of course, particularly in the most distorted of those by Mathematical Logic: Physics!

This is already underway in this journal, but, as the size of the task is ever more clearly indicated, just how far Physics, in particular, its straying into Idealism and Plurality, has become ever-more evident!

So, the Solution will involve something very different to the artificially achieved, wholly Pluralist constraints upon both Experiments, Productions - and especially Theory!

Instead, a wholly new form of study simply MUST be revealed to effectively deal with the Subject, wholly within Reality-as-is - otherwise, there can be no consistent, coherent and comprehensive system - on which to inter-relate the Holistic Real World versions of the Laws, and hence, for the first time ever, be capable of producing a real Intellectual Discipline for the Understanding of Nature.

A Critique of, and Alternative to,

Stephen Wolfram's

“Real Basis” of Physics

With his Computer Software Products of the last 30 years - solely based upon *Cellular Automata* - Stephen Wolfram builds, by very simple rules, certain surprisingly complex patterns.

He compares them with Binary 1s and 0s in Computing Machine Code, where they are used to emulate the whole range of complex systems that he and the Computing community have developed to a remarkable degree! But here, involving only Black and White identical squares, via the “Wolfram Language”, he has now suggested a further, “more basic-and-abstract” set of Software developments, which, he insists, transcends ALL the anomalies-and-contradictions of the two currently dominant theories in Physics, such as those delivered by both Relativity Theories on the one hand, and Quantum Theories on the other! A bold claim.

For, in this remarkably reductionist new theory, he insists that the far-more-basic study of all the results involved in his new kind of simple abstracted elements, are very different from those currently subscribed-to in those “Fundamental Theories” mentioned above. And, to that same end, he has also produced a “Wolfram-based” piece of software, incorporating, in addition, an extensive Knowledge Base, and possible direct access to its solutions, when posed with obviously relevant questions typed into it.

BUT, (and this is most important) he nowhere in his “New Science” addresses any of the causes inherent in those usually Subscribed-to-Areas of Theory and Knowledge, which have always been wholly dependant, ever since the Greek Intellectual Revolution, absolutely solely upon the artificial Rationality of Mathematics.

Now, such a basis, (the very first, in the History of Mankind) was only possible due entirely to the Greeks' then recent revelation of a wholly new way of thinking:

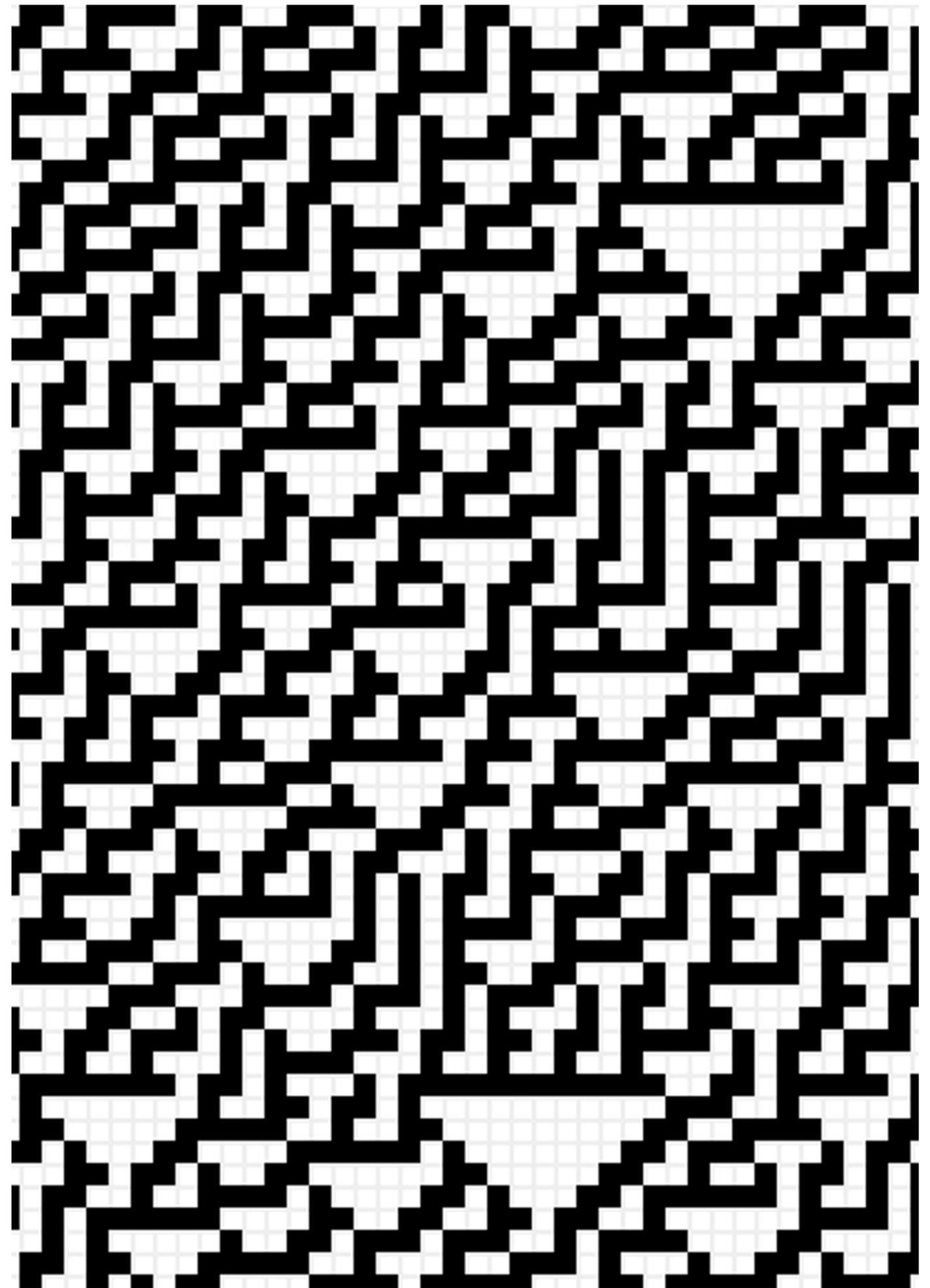
Simplified Relational Abstractions

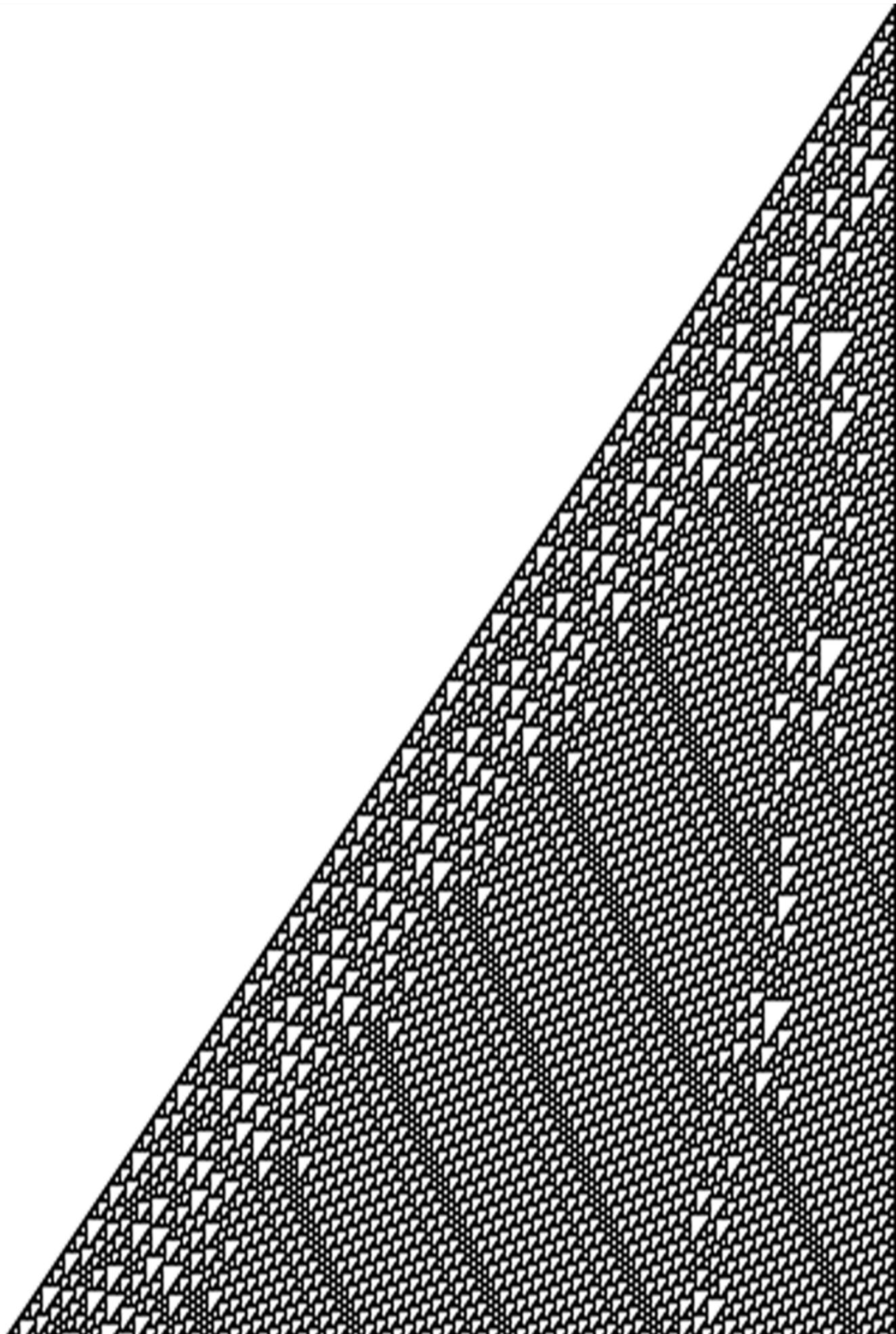
These abstractions were very effective, and have been used everywhere ever since, but they are true only in the relationships between Fixed Pure Forms, that always exist only in Forever Fixed Relations to one another (Laws or Rules), and therefore could alone be used, via Theorems and their Proofs, using that unique Mathematical Rationality, which, in order to work at all, just had to conform exactly to The Principle of Plurality.

Plurality is true in Mathematics ONLY, because the Forms involved are so fixed. But, Plurality was not and never could be true of literally all other Reasoning.

Reasoning must instead conform to the very different Principle of Holism, in which all Laws ultimately vary. Qualitative changes have to be available to all other Rationalities, used in dealing with Reality directly. The fixed and purely Quantitative Changes of Mathematics can never deal with such dynamic areas - and this definitely includes both General Reasoning, and ALL of The Sciences too!

Now, though Plurality can-and-will approximate to Reality within Effectively Stabilised Situations, they are never, as is usually assumed - The Natural Norm of Reality. They are instead actually only ever temporary, if occasionally very long-lasting interludes, which will always terminate as the nexus of mutually-supporting-factors, are ultimately always and naturally successfully





challenged. All Real Qualitative Development simply MUST, and indeed WILL, only conform to Holism.

However, at the very same time as the Ancient Greeks were settling upon Plurality, for those very same areas of study, in India, majorly influenced by The Buddha, they were settling, instead, upon Holism, as the rational Basis of all Reasoning, AND crucially all Development too!m But, of course, both of these conceptions were, at that time, inadequately defined, as Mankind, in both cases, was breaking wholly new ground, and as with all such “Incomplete Understanding”, it will always turn out to be less-than-sufficient, at that early conception, to include all the relevant factors involved.

Indeed, a crucial tenet, of Modern 21st Century Holism, soundly stresses the unavoidable multifarious basis of all Reality-as-is, as being inevitably composed of many different-yet-simultaneous factors - all of which do NOT just SUM to give us Reality - BUT actually affect-and-change one-another continually, in complex and dynamic systems.

Wolfram’s New Science is not so radical. Causality within Fixed-Law Plurality - and hence also in Wolfram’s identically philosophically-based Stance - is greatly simplified and abstracted - all such Laws are either ON or OFF - as in a simple binary system - and can only Quantitatively SUM, when acting simultaneously with other Pluralist Laws!

But, in Holistic Reality, a variety of different interactions are possible - all of which change-each-other in various ways. While overall - taking all of them together, actually produce a Whole Range of diverse, consequent Phases, depending initially upon their weights, but also crucially in the kinds, of the influences involved.

The crucial thing about Plurality, is that the Laws are Forever-Fixed, and, as such, remain exactly so, no matter what the containing circumstances are.

But, the same cases, within Holism, because of their mutually modifying Effects, infer an almost continuous variation in how they all act: including, once changed, how they then react-back-upon what changed them, and, indeed, change it too in consequence! You are bound, therefore, to get both Recursion, and even the ultimate appearance of the Wholly New: where it WILL, in such circumstances, also produce the Emergence of

total Novelty - real Qualitative Development is therefore be inevitable.

Now, additionally, there will also unavoidably be actual Contention - indeed sometimes all the way to processes producing the Direct Opposites of other preceding processes! And the amount of such opposition, will vary, in different ways from effectively Ignorable in one direction, all the way to Total Cancellation, with neither process having any effect, on to the Total Dominance of one over the other (and all states in between these distinctive Phases).

And Recursion will also guarantee that the many modifying Effects will “in sum” create constant consequent variations in literally everything, though itself will be adjusted by the relative sizes of the differently-acting Opposites.

Now, in such a melée, it seems inevitable that very long-lasting Stabilities could, and occasionally would, be totally impossible - but that turns out to be totally incorrect!

Indeed, when the above relations, all acting together, work themselves out, a kind of Balanced Stability is achieved, with the diametrically opposite processes controlling various groups of situations into constantly varying, yet, overall, effectively “constant” results, by a built-in entirely controlling effect, into a “Negating Balance of Opposites”, which whenever any unbalancing effect commences, quite mechanistically, also varies what will change it back in the opposite direction: though all such operations occur over very short time-spans,

Interestingly, these “Balanced Stabilities” are NEVER permanent, and in rare Crisis Situations, can and indeed do, carry on into overall avalanches of collapses of all the Balanced Stabilities into a total Dissolution of the overall System of them, into what appears to be Total Chaos! The name usually applied to these situations when we observe them in society, is a Revolution, but similar patterns are observable in natural development too - and its following resolution into a New System of balanced stabilities, if such occurs, is termed philosophically, an Emergence.

None of this is visible in Pluralist systems.

Now, all of these vital flaws and criticisms of Plurality,

apply equally well to Wolfram's alternative Science, so his ideas are certainly not a solution to the myriad problems associated with Modern Physics, and its well-beloved mathematical view.

So, to really tackle the problems, we must somehow begin to adequately equip a New Holism, as the ancient historical version is, as yet, completely ill-equipped for the necessary task!

A Detour into Circles, Spirals and Helices

Now, both the problems, and the virtues, of the Holist Stance arise from its total Variability! For, without any Stable Waystations being available within its Logic, all Explanations get turned into different seemingly Unavoidably Infinite Regressions...

So, there have to be both Processes and consequent achievable Waystation States, wherein reasonably "long-lasting" Interludes of Relative Stability are achievable, and where, in some cases at least, the old Pluralist methods could still be used, knowingly and acknowledging their many limitations, within the achieved Temporary Stabilities. BUT: it could never extend to predicting those States' guaranteed terminations, and, crucially, what they would then be replaced by. Indeed, ALL Qualitative Changes are totally beyond Plurality's grasp!

So, even in the best of circumstances, the actual trajectory of all Development is always unavoidably due to a kind of ever-present *Blind* Holism - it can never describe exactly what you will get in such Holistic Changes.

But, Reality is never in such a single Universe-wide State!

It is inevitably structured as a Hierarchy of Levels, and within those Levels involving yet further separate Localities - all ruled both individually and collectively by Holism, yet everywhere attaining Temporary Interludes of Stability - both achieved, maintained and ultimately terminated, along with their temporarily "stable states".

Let us begin to investigate just how these are achieved and transcended!

The title of this part of the paper, is "Circles, Spirals and Helices" because it is never merely in Single Instances that just qualitatively changed its Composition, and, thereby, caused flips to alternate States: it can

actually happen within what appear to be Constantly Repeated and identical Cycles of Processes, but which, somehow, entirely alone, can over-time, dramatically change composition, and hence ultimately precipitate significantly New Outcomes.

Indeed, such changes, initially, have negligible effects: but, nevertheless, they will be affecting many different simultaneous processes - to different degrees, until the whole system can flip-over into a whole series of different, and indeed wholly new modes, each of which, either settle into a self-adjusted, relatively stable state, or precipitate an overall major collapse, into a major Qualitative Change.

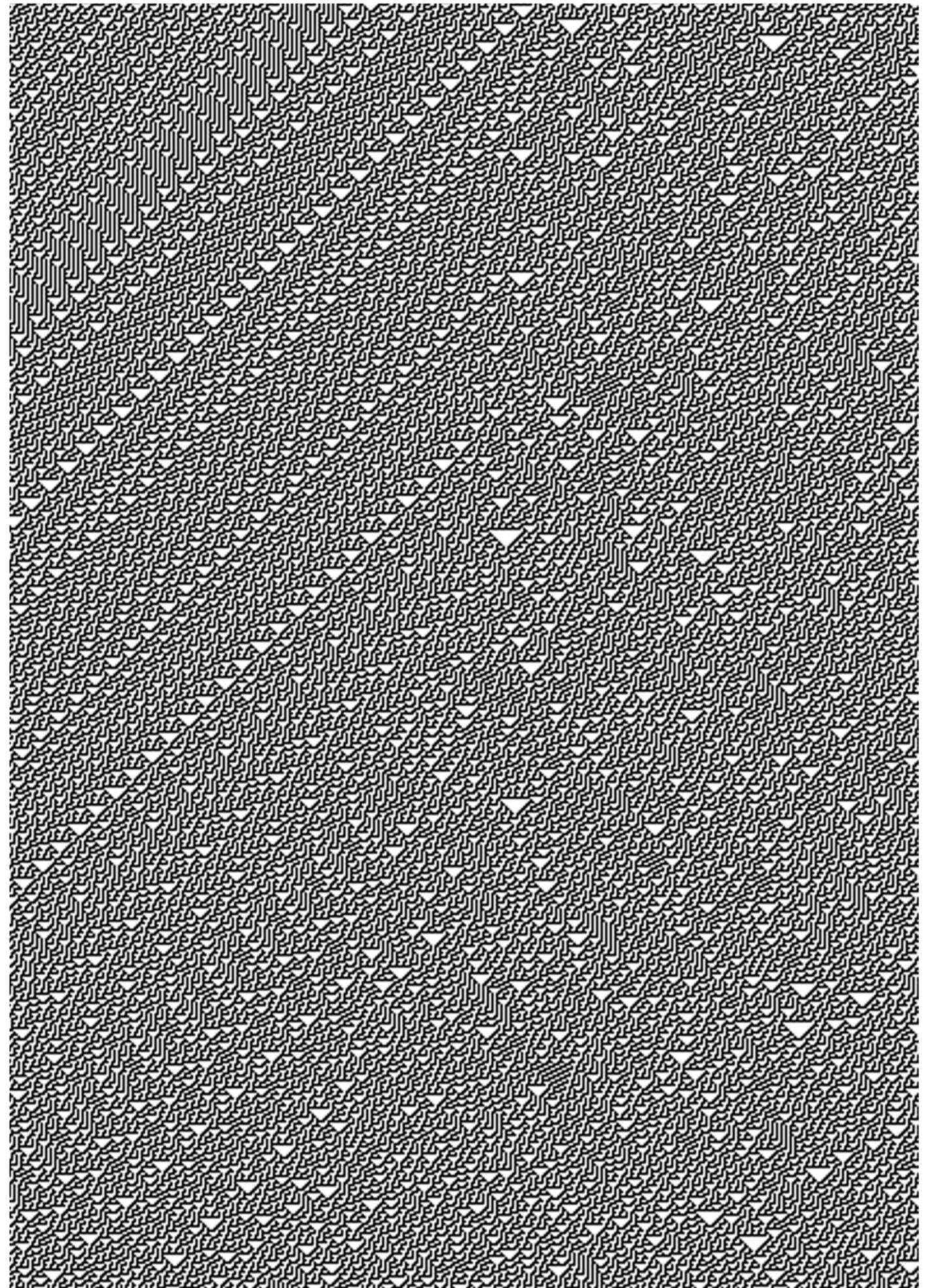
The Cyclic Nature of such a System, both "steadies the boat", in one sense, by briefly-yet-constantly returning to previous conditions. But also ensures Cumulative Build-Ups, that can take the System into Wholly New Circumstances! The multi-factor nature of these Cyclic Systems, is governed by the always-present, multiple simultaneous interactions, which can both steady things down, or alternatively build-up to destructive proportions!

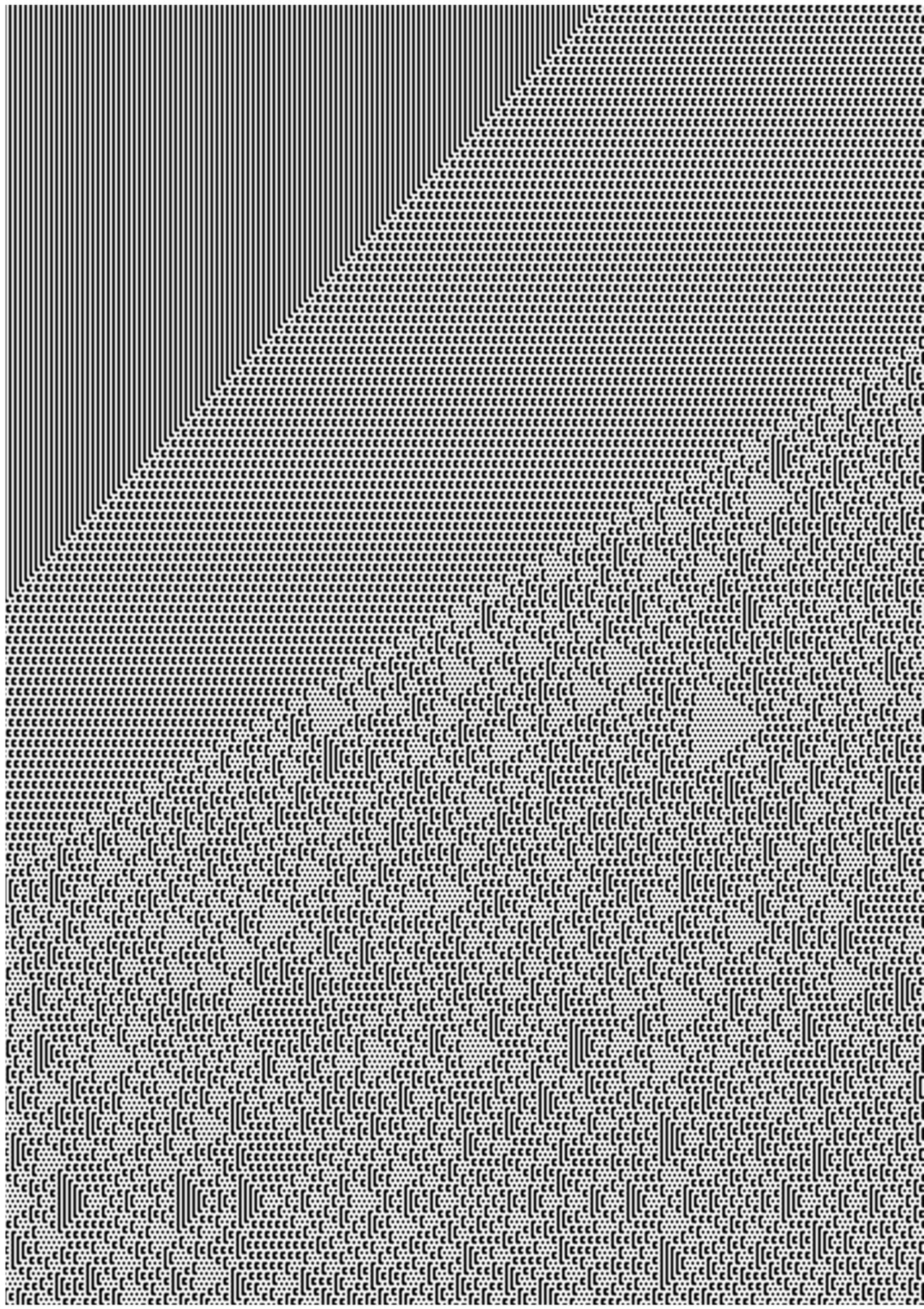
Indeed, it is the former of these two alternatives that usually dominates, and ensures that the situation remains the same, most of the time. And, this often boils down to the unavoidable Causal Dominance of Diametrical Opposites - for ONLY these can directly oppose their opposites, and thereby entirely cancel their effects, and maybe even precipitate their individual domination or even their demise.

Now, these latter paragraphs reflect the very different Nature of Holistic interactions! They not only differ from the usual Pluralistic Causality, but can actually take different consequent and even diametrically opposite paths. So, there is a great deal more to it, than I have inferred here.

Holistic Rationality and Logic is still in its infancy, and that also means that currently Holistic Science (especially in subjects like Physics), is practically non-existent!

Holistic Materialism of this kind was developed initially by Karl Marx, both in his study of Social History and in his analysis of Capitalist Economics, But, that task took him the rest of his life, AND, even in those specific areas of research it has had to be constantly updated -





due to the fact that Holistic Reality constantly evolves - its features and rules are NOT Fixed, like they are Mathematics.

ASIDE:

I cannot let this important passage pass, without describing its relationship to "Balanced Stabilities" in History.

For these are the Holistic Equivalents of all the Supposedly Basic, and potentially-permanent Stabilities that appear within Pluralist Science as Laws.

But, of course, they are, in fact, the very Opposite of Basic, and are, somehow, actively-maintained as Stable Systems (presumably via the cumulative effects of processes within Regularly-Repeating Cycles of various kinds, at various levels of existence), which usually effectively eliminate all destructive interlopers, perhaps by the ever increasing successes of Pairs of Diametrical Opposites, in Cycles, which, over time, not only Selectively Eliminate all stray interlopers, but also, settle into whole persisting sets of Balanced Pairs of Opposites, acting as self-adjusting maintainers of the achieved Overall Stability!

[NOTE: The above is by NO means the Full Truth, for both opposite results are selectively chosen with the same set of processes, so the above, for now, is a temporary simplification, which will in time be corrected - this was also how Marx had to often work]

Now, the switches, from absolutely NO causally-explained Qualitative Changes, as in the Pluralist Sciences, are still not universally accepted, as a misleading trick, as most scientists actually recognise such changes, but either totally fail to explain what causes them, using their usual methods, and/or instead just signal-and-describe, rather than *explain*, the occurrence of such changes, by merely noting-when the exceeding of a previously observed, and thereafter known Threshold, actually occurs, and is implemented by the consequent switching of the action to a different behaviour then happens, without any causal explanation for that change.

But clearly, that is NOT any kind of Science, as it offers no answers the questions of why happens things happen - : but such was long the established norm, with the various behaviours considered to be "completely adequately" described purely by mathematical equations - that have

been fitted-up to measured values from experiments, and both dominated by, and hence assumed to be sufficient for, Effective Pragmatic Use (or Technmology). But often, with little or no Explanatory Theory (or Real Science).

The "use-tail" therefore always wagged the "explanatory-dog"! And with the dexterity possible once in Human Hands, along with Tool making and the development of Intelligence, even that had been sufficient to transform their World and Human Lives significantly... But, it should be emphasized that Causal Explanations had been set aside for Mathematical Prediction, as sole determinant: and that was a major and mistaken Retreat!

And then, with the Flawed-Gains of the Greek Intellectual Revolution, they would continue to do so for still more forthcoming millennia! But a New Approach (as yet undefined) was, even then, already clamouring-at-the-Door! It was the need for deeper Understanding, and therefore for Explanation of Reality.

Now, there had been many failed attempts to do this, via Magic, Chance, Religion or even the Plans of Great or Wise Leaders - but what was already becoming possible were the emerging means of investigating aspects of Reality, directly - in order to Understamd them - NOT just in the creation of useable Technology, but gaining insights into how the Natural World came to be.

But, the Greeks' steadfast commitment to Plurality was already deflecting attention, into only Fixed Natural Laws, necessarily limited to steadfastly-constrained contexts: yet the vast majority of Causal Systems were not Pluralistic in nature at all! So, what instead began to be discovered, were individual Laws, applicable ONLY within rigidly-maintained and wholly artificial circumstances, but never how those limitations and their necessarily Fixed Laws could be transcended - this was still causally unknown!

Thousands of years ago, The Buddha had begun to develop an alternative Approach to Reality, which later became known as Holism: and slowly, at least some of the Dynamics of Qualitative Change began to attempt to be addressed. But, still not yet via a developed System of proven ideas, though, initially, at least, by continuing re-assessments, observations of change and occasional profound Thought - and, thereafter, they were always available for improvement, though never established, as such, within a prodigiously-growing productive set

of Disciplines. But, in Science, that approach was only minimally developed, because of the Pluralist Myth that absolutely Everything can be adequately addressed by methodically revealing the fixed Laws of Nature.

They most certainly cannot. For a start, those “Laws” are never fixed. And secondly, our methods of revelation rarely reveal how they work in their natural state. And, what is almost entirely undeveloped in Physics, for example, are the Dynamical Emergences of Qualitative Changes, as causally explained phenomena.

Yet that is absolutely imperative, if Science is to form a basis for most Reliable Understanding; and we must, surely start with how they work within recurring processes - as in Cycles of a circular nature - the Orbits and Spins that we can detect in the smallest pieces of matter.

With the usually-assumed, one-off occurrence of an effect, Qualitative Changes are likely, with such a basis, to be small, and soon swamped by a cascade of other very different ones, from outside! But, in constantly repeated, seemingly-identical Cycles, such changes can, and indeed often DO, *accumulate* into a growing Effect, which can ultimately become dominant, and flip the whole situation into a different Causal Mode!

Now,, such things can literally never happen with Fixed Pluralist singly-happening Laws: but, with collections of multiple, different and simultaneous Holistic Sets of Laws - particularly in repeated Cycles - they could be very likely indeed!

But, such changes, within an Holistic set of Laws, can do several very different things! They can establish Temporary Stabilities - sometimes over extremely long periods - giving us explanations for how Physical Laws evolve and maintain themselves materially. How Remaining Aberrations can cause the total collapse of such a Stability! And how Cycles can Selectively Eliminate aberrations in such Systems! They can allow Qualitative Changes in Real Development never ever allowed at all within wholly Pluralist Systems.

And, as the commonest form of “Stability” within a Holistic World, it is only ever temporarily delivered within a Balanced Stability of many Laws - linked Laws primarily in sets - organised by Balanced Pairs of Diametrical Opposites, though such aberrations,

similarly ineffectual singly, are, on the contrary, within constantly repeated Cycles, highly likely to grow, for though normally singly eliminated by the self-adusting Pairs, which can usually overcome a single aberration - they will here, on the contrary, be highly susceptible, within constantly repeated identical Cycles, to enable such aberrations, instead being then able to accumulate over many repeats, which could, in some circumstances, even precipitate a Complete Dissolution of that level of Reality - not only of single Balanced Pairs, but could, along with others, dissociate a vast Balanced Stability as a whole...

In an Holistic situation, Formal Logic doesn't hold!

But things are still *Causal!*

And many simultaneous causes contend!

But you have to reveal *The Whole Mix!*

Pluralist reductionism and Formal Logic can't do this.

Notice that, because any diametrical opposites will mutually-cancel, they will not be easily totally eliminated: while, on the other hand, less related and thereby balanced-and-maintained components, will instead be selectively-eliminated, over the constant, successive repeats of the ongoing Cycles - to leave only the more retainable content over time.

The Nature of Modern Holism, not appreciated until very recently, now involves very different dynamic scenarios to those involved in the usual Pluralist Stance, because the simultaneous interactions of multiple contending and modifying factors, are now seen to involve a whole range of different outcomes, that were wholly inconceivable previously within Pluralist Philosophy and Logic.

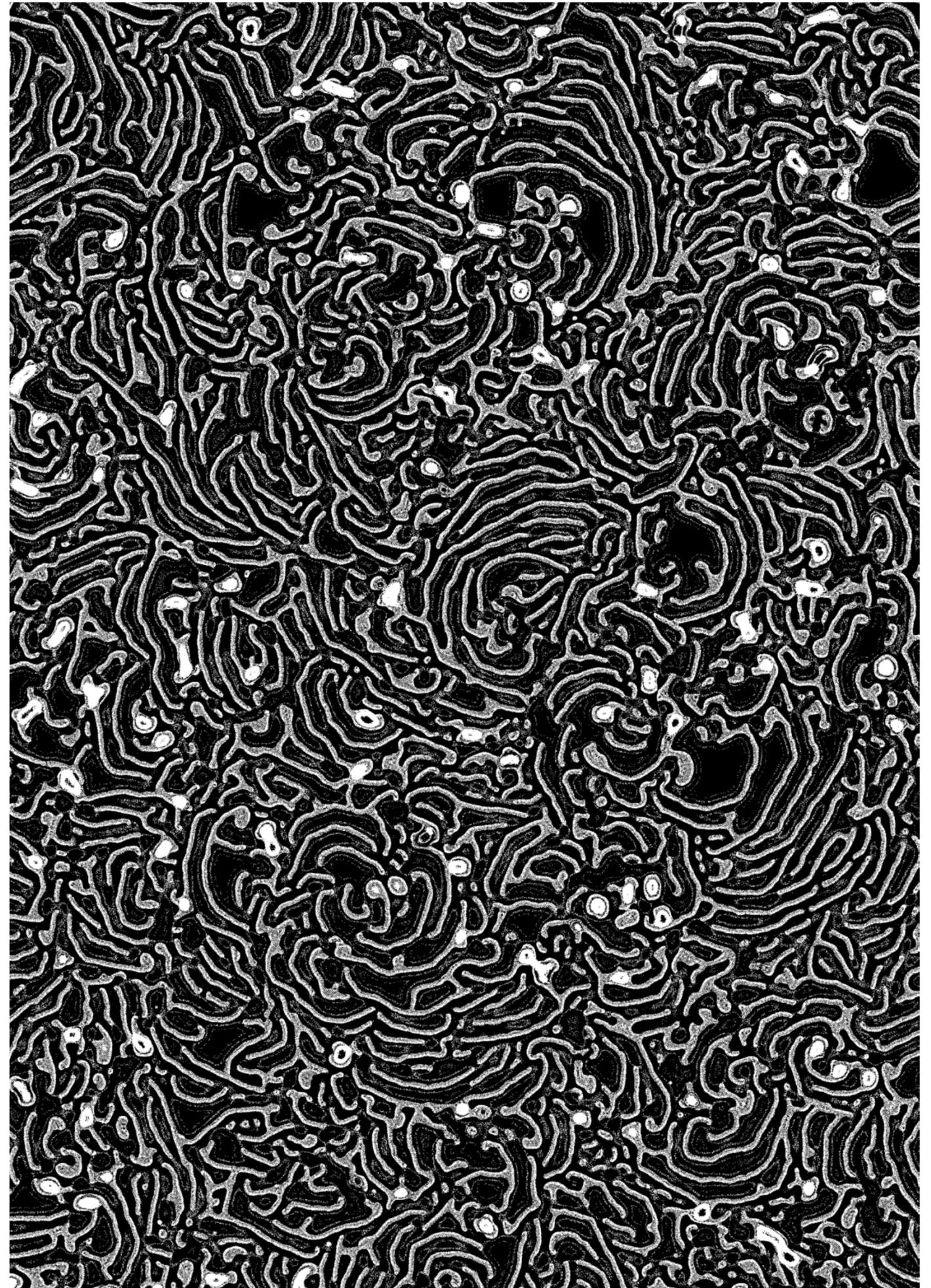
Indeed, even The ancient *Tetralemma* Logic is being revealed, as mentioned in the writings of many Buddhist Philosophers, that listed the 4 conceivable judgements, that cover all the possible applicalities of such ideas - indeed that they can be:

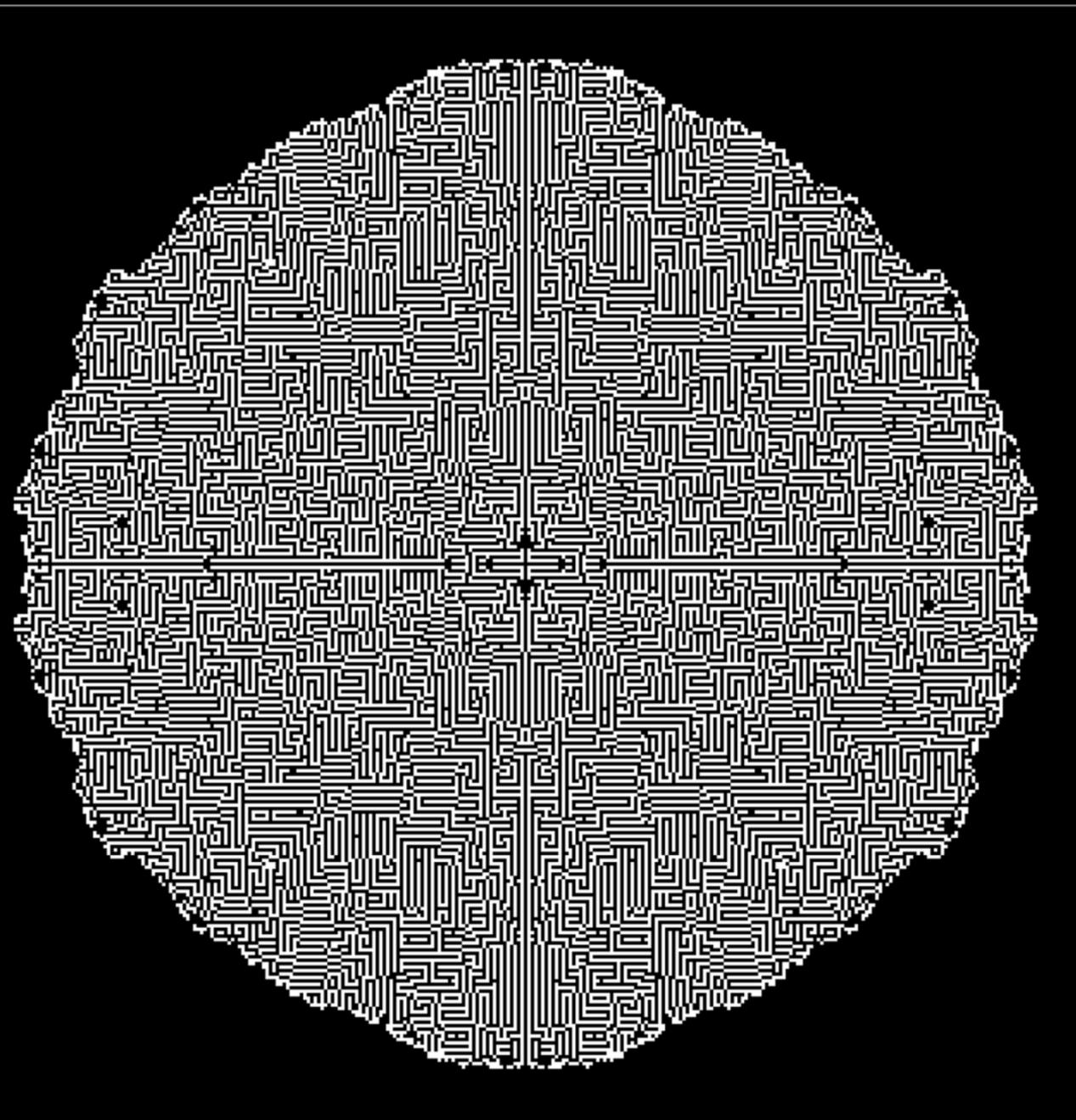
True or Untrue,

both True & Untrue,

or neither True or Untrue

- but instead of being only absolutely unexplained descriptions, each are now capable of being covered by a series of rational explanations for the first time.





And the initial places that these began to become possible, were in changing the mixes and weights of the contents, and ultimately the outcomes of constantly repeated Cycles.

Now, this development has already precipitated an alternative to the usual Pluralist Theories dominating current Cosmology: as they have led to a rejection of the usual ideas, particularly concerned with the Origin and Subsequent Development of the Whole Universe. Indeed, all sorts of extensions to Reality are referred-to, in compiling current explanations in this significant area of ideas, actually, taking most of them well beyond Material Reality and Deep into the heart of Ideality!

Yet, the sort of possibilities now being revealed in Holistic Physics, concerning Natural Electricity and Magnetism, are not only providing a fully-explicable "Non-Big-Bang" Beginning-and-Development to Everything, but, thereby, providing an alternative initial Electromagnetic Origin - and also delivering the best chance, today, for a Nuclear Fusion means of providing sustainable Electricity in the near Future, with the efforts of Eric Lerner and his Fusion Focus team in New Jersey, USA.

So, a major New Intellectual Revolution is at least nigh, if not already underway, which will change literally Every Aspect of our Philosophy and Culture, if carried-through to completion - or our ultimate demise if not!

Now, this paper commenced with the proposed alternative deep mathematical abstractions of Stephen Wolfram - but in taking the alternative Holistic Route to Understanding these same questions, has expounded the real Way Forwards, while also demonstrating the truly vast - indeed Infinite extent of Ideality - that certainly seduces with its beauty and detail, but nevertheless leads Mankind only into the Swamps of Idealist Myth!

Systems Logic and Mathematics

Part I

Having studied several key contributors, who have been active over recent millennia, upon the areas of Logic and Mathematics, I have finally had to reject literally every single one of their claimed, and supposedly Epoch-Making solutions, and have been forced to achieve it from a very different standpoint to all of them.

Instead, I have positioned the problem exactly where it had originally emerged historically, in the 5th century BC, within alternative, almost simultaneously-exposed stances, revealed at that time by the Ancient Greeks, on the one hand, and the approach of the Buddha, on the other, with their differently-chosen opposing Bases, for establishing the Real Truths of Reality, which they situated in either Plurality or Holism.

Amazingly, literally no intellectual researchers, since then, have ever done the same. Indeed, such Determining Principles are usually nowadays wholly dismissed as being just the mere defining tenets of Populist, and even as Hippy-type "Philosophies", rather than actual serious attempts to get a real developable grip upon an Understanding of Reality-as-is. And, thereafter have almost exclusively built their "Serious Alternatives" solely upon the achievements of the Greek Intellectual Revolution of that time - almost two and a half millennia ago.

But in this skating over that Naturally-emerging and important Dichotomy, they never realised what had been involved, at that time, and leading to such diverse Foundational Bases for both investigating and Interpreting Reality-as-is. For, indeed, both approaches had real-and-important, if also seemingly conflicting merits in revealing genuine determining aspects of Reality,

which are certainly NOT uniformly interpretable just one way or the other. Reality is essentially contradictory: which is precisely why it can evolve!

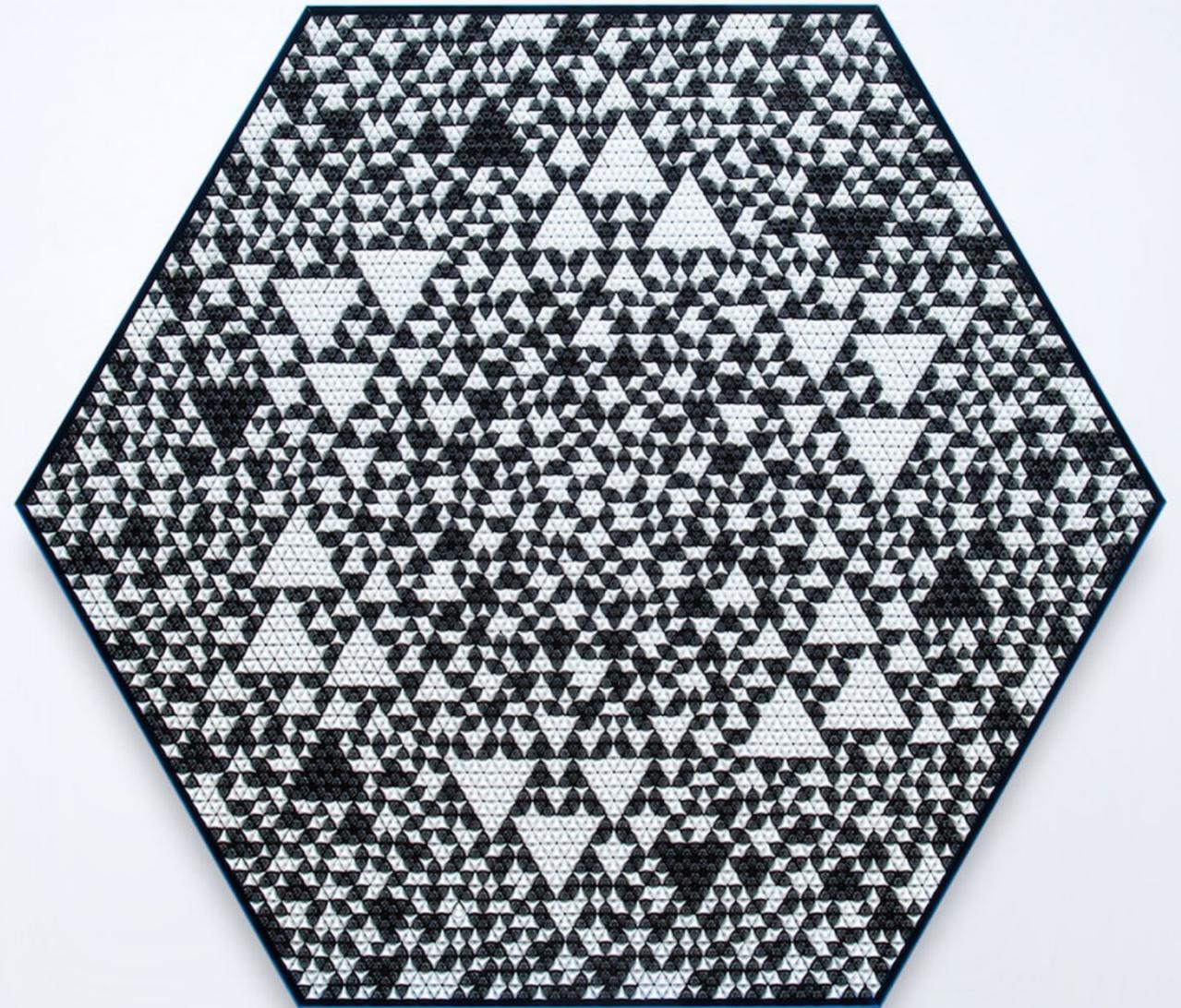
Though upon many shorter timespans with a different focus, it usually appears constant and directly interpretable, in terms of what appear to be Fixed Laws. In fact, this latter view was so strong everywhere, that in the attempts to formalise Geometry, the Ancient Greeks were originally stymied by the seeming impossibility of relating evident Forms. For though these were easily abstracted from Reality, they could NOT be directly related one to another in the usual ways.

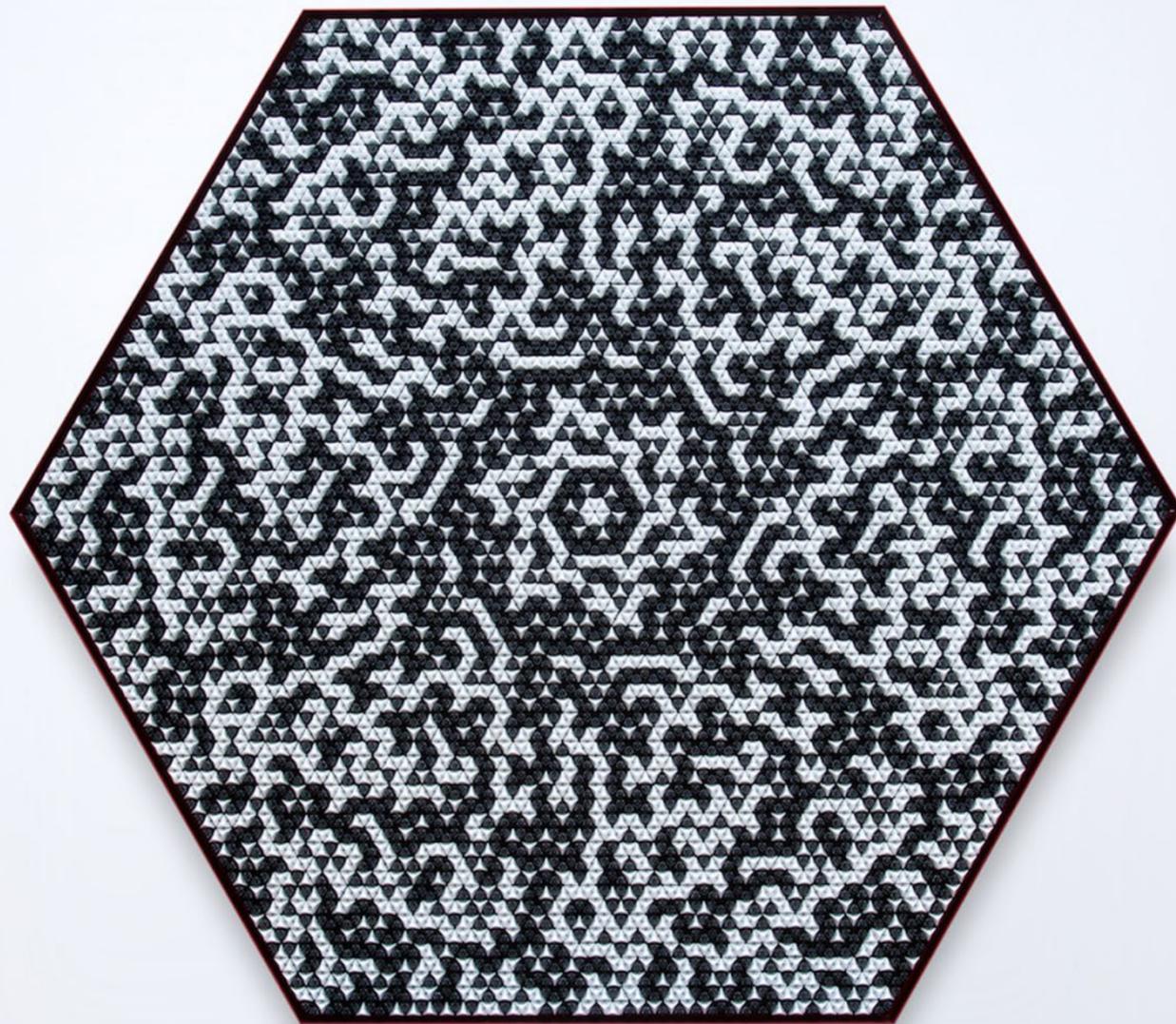
For example, how can you relate A Point - defined only by its position, and absolutely nothing else - to another such Point, thereby defining A Line, which was nothing but the relation to those Points, with a Line of zero thickness, and nothing else?

We do it without thinking about it now, but it took the Greeks' invention of a wholly new kind of Relation to do it. For they invented the *Formal Relating of Abstractions* which, not only enabled them to do such things, but thereby successfully enabled the construction of a wholly consistent and comprehensive Euclidian Geometry solely upon that basis alone!

But why was it possible within a Reality capable of evolutionary changes? It was because Mankind could deal with things that didn't qualitatively change, and had developed Fixed Abstractions, in their Language to enable effective developments in such areas.

And Mathematics was such an area!





However, the abandonment of any deeper and necessary investigations into these questions, also damaged terminally, any on-going and essentially-revealing critique of these basic developments, significantly biasing all the Rationality involved in such Reasoning, to the wholly Pluralist Form developed initially solely for Mathematics. Indeed, the rationality henceforward assumed to be generally applicable to both General Reasoning and ALL of the then-known Sciences, was totally-uncritically applied throughout Human Understanding!

What was usually considered to be a Totally Reliable Logic, was invariably only what should have been termed as Mathematical Reasoning (or Pluralist Logic) and hence criticisms based solely upon that, now generally applied Reasoning, were often and wholly wrongly said to be on the basis of an "Absolute Logic" - though, of course, they never actually were!

The sort of Reasoning required in attempting to Understand Evolving Material Reality turns out to be absolutely nothing like Mathematical Reasoning - for that necessarily deals only with Disciplines in which the terms used are always Qualitatively Fixed, and all relations involved will take the form of totally Fixed Laws. And hence, as soon as Holistic situations are encountered by investigators, the usual way of carrying out any required Reasoning, having the same qualitatively straight-jacketed Rules as Mathematics - with always Single Results will no longer be valid! For, as soon as Holistic situations are encountered the usual Single Event Processes NO LONGER APPLY, and the whole undertaking has to be approached as involving many simultaneous contributing components, all causing different effects - and what is even more devastating - each and every one affecting the others.

It converts radically into requiring a very different "Logic", covering whole Systems of simultaneous and often contending Processes.

Now, upon my first realisation of this fact, the possibility of such a necessarily all-embracing Logic, seemed to be totally impossible! But, though a good first step, that conclusion turns out to be, partly at least, mistaken.

Instead of the dominating Permanent Stabilities of Pluralist, Mathematical Logic, all discovered Stabilities, within Holism must be considered Temporary.

But, these Stabilities do indeed exist, and can be extremely long-lasting - perhaps even seeming to last forever from the perspective of Human timescales.

And, as we will see, these Natural Stabilities can play an important, if essentially temporary role, in enabling helpful predictions to be undertaken.

But, of course, any Logical System employed, will NOT be manipulating *certainties*, as in the Fixed Rules of a Pluralist Game - but, on the contrary, relating many different, and even contending, simultaneous contributions, usually within a Temporary Stable System, and moving the presently apparently stable situation towards possible Crises, and even a total Collapse of the overall System!

Now, before immersing ourselves into this guaranteed melee, we must first go in the opposite direction, and investigate the many new features of this complex world that can confusingly drive both towards many, sometimes very different, temporary Stabilities. For, in truly Holistic situations, the many involved same-direction contributions can, like an army, move things mostly in a particular direction, but also, on the contrary, in many different contributory directions, with the result that some will usually be more dominant than others, and hence influence the resulting direction more than all the other contributing factors. Also, contending factors will slow down even the dominant drift, and thereby extend the persisting time-period of the ensuing Temporary Stability.

BUT NOTE: with changing circumstances, different factors can become dominant, and, if allowed to, eventually develop to a different conclusive result, and can indeed do, deliver a whole range of very different conclusive resolutions!

Because of this, any totally uncontrolled complex mix of factors can also change its overall environment - and if left to itself will naturally go through a series of Temporary Stabilities, each one terminated in a general Collapse, but just as certainly, followed by another long-lasting Temporary Stability - established by what is termed an Emergence or Revolution.

All natural Trajectories of Qualitative Changes in Reality-as-is take these forms, BUT, these are NOT wholly contained within a Single Level!

Indeed, there are very many levels, both spatially and hierarchically, which are also causally linked, making an overall System extremely difficult to actually be aware of: and include in all our analyses and predictions, especially as, ever since the Emergence of Man, causality can effectively go upwards, devastatingly too!

Now, also, as the scope of involvements has so dramatically been extended by taking a Holistic view of interactions, the usual basis of causality as merely single independent processes, has had to change radically, not only to include all the now necessary multiple, simultaneously co-existing and mutually affecting wider range of causes. But also, and more significantly, both the repeatedly happening simultaneous identical processes, but also the repeating Cycles of sequences of causally-linked Series of Processes - as all of these DO NOT STAY exactly the same throughout.

Now, of course, that last paragraph poses many more questions than it presents answers, and, consequently, just lists the detailed explanations required from the next paper in this series...



Systems Logic and Mathematics

Part II

To continue the analyses of the prior paper to this one, we should start by making absolutely clear exactly what a *True Systems Logic* must essentially involve - as distinct from the usually applied Pluralist or Mathematical Logic.

And this alternative does not attempt to build The Truth merely out of separate, individual and eternally Fixed units, along with their unchanging Laws - for they merely add together like Lego Pieces: and, instead, takes a wholly Holistic View of variable components, that can, in appropriate circumstances, completely qualitatively Change what is going on, due to such interactions. Everything within reach of them having an Effect actually does so. But, obviously what occurs will be due to *Everything* involved, via a wholly necessary Systems Logic!

But, it will never be represented by a simple *Average* - for such a conception is yet another left-over workaround from a flawed Pluralist Logic, which can consider ONLY quantitative contributions, which always merely Add! Now, that prior approach also sees contributions as being only of the "Common Coin" of Quantity - so averages are considered perfectly possible.

But, in a qualitatively different Holistic World, things can't merely add. Indeed, both qualities are present, but ONLY the most Dominant will be evident, until, that is, the balance of contributions passes a key threshold and the evident dominance Flips! And, in addition, several simultaneous influences will always continue to be contributing to the Changing Situation, and these, in turn, will have introduced other effects,

Indeed, contending contributions could act against the current dominance, to radically slow down its resultant growth.

And this finally brings in what turns out to be crucial in Systems Logic - The Role of Diametrical Opposites!

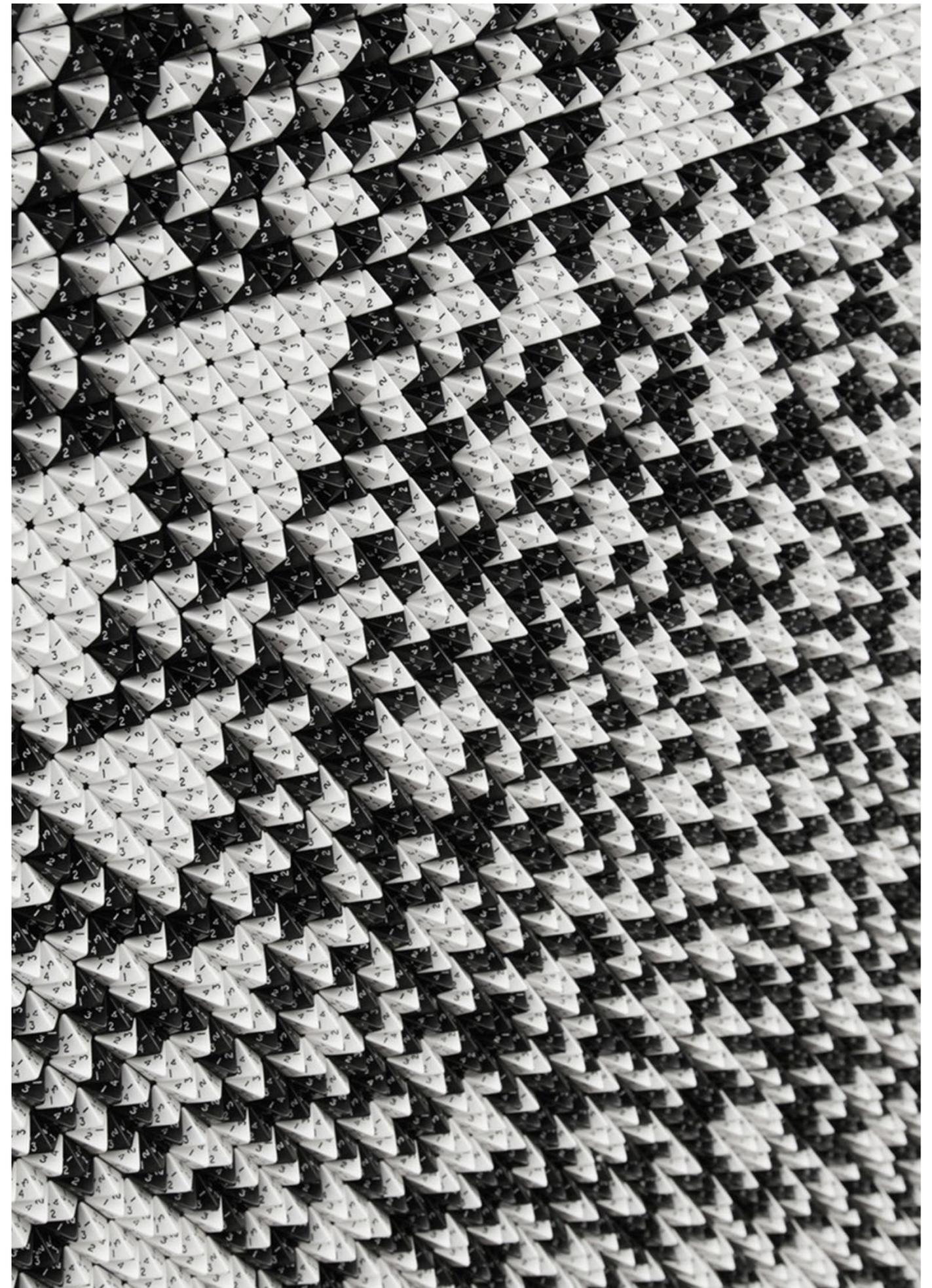
Now, you would think that such diametrically opposed properties would be exceedingly rare: but, that turns out to be far from the truth. Indeed, such Opposites play absolutely vital roles within the processes of Systems Logic! For, they alone deliver both the switchings between alternative modes, and even the terminations of established sequences of processes, involved in key necessary changes of direction.

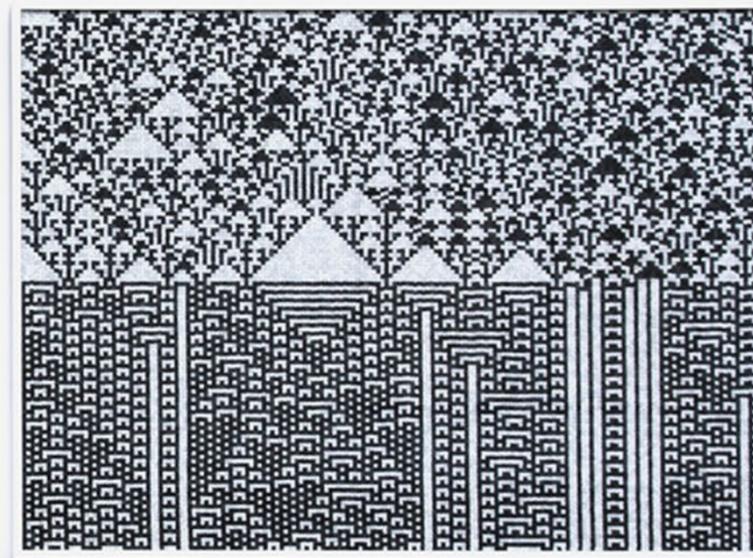
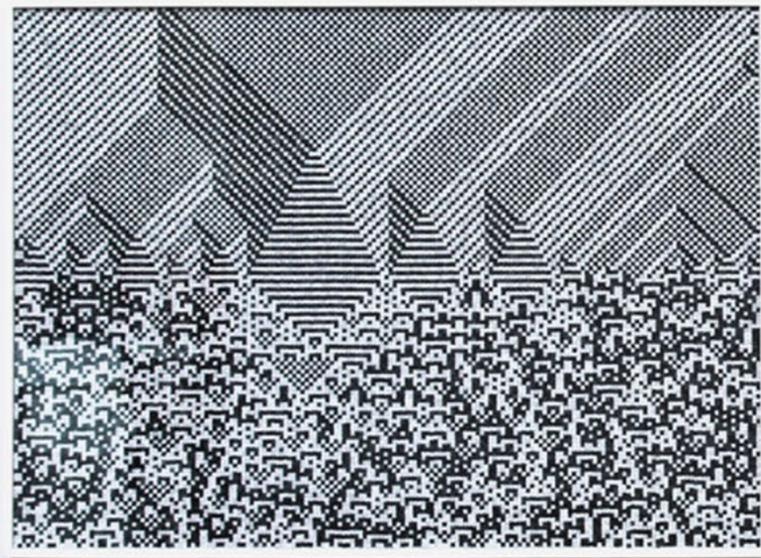
The tip of this "iceberg" is only clearly evident in the actions of "if...then" clauses within both Logic, and Computer Programming.

But, in Systems Logic, it can also terminate a sequence of causally-linked processes, just precisely when exactly equal-likelihoods of both options Cancel each other Out, and the sequence is immediately terminated.

It can then also result in a kind of "Full Stop", and the consequent termination of sequences contained within this route, which can, and indeed do, bring in New Dominances that have absolutely Nothing to do with the prior two usually alternating dominances!

The uniquely Systems-Effects, that characterise this kind of Logic, are due, First, to the unavoidable mutual effects between simultaneous processes, AND Second, due to the swamping by dominant processes of the odd





dissimilar interlopers introduced from elsewhere! Both of these unavoidably ADD Population-caused-Processes, which change the nature of the overall mass Processes.

Let us consider the last mentioned one first, because it causes what I have termed *Selective Elimination* of such interlopers by a surprising and indirect sequence of sub-processes.

The multiple simultaneous contributions to a single-role collection of identical processes, is NOT without its problems, for interloping aberrations, and even the terminations due to diametrical opposites, can also halt an individual process.

But, within a population of many other identical processes, they will all be at different stages of the very same set of developments, and instead of termination the halted process, will instead find what it needs somewhere else in the mix, and hence carry on from there instead!

Indeed, it would be more accurate to see the whole collection as a co-operatively-acting System, cross-linking all the time in different places, BUT resulting in exactly the same overall situation, as if all had remained separate-continuous-operations.

BUT, the above analysis of what happens within a population of identical Processes, CANNOT occur with an isolated interloper present - so it must be Selectively Eliminated, with absolutely NO alternative! So, over time, such situations will be successively cleansed of interlopers, and are likely to persist for much longer periods of time, without any possible means of change being available.

And, having revealed one reason for such persistence, let us add in another - this time crucial in perpetuating what we termed "Temporary" Stabilities, which turn out to be vital in a Holist World! For this constitutes a possible conversion of Linear Sequences of Processes INTO Repeating Cycles!

Now, these have always possible, if at some stage in a Sequence, the very same Output is produced that actually initiated the whole Sequence - FOR this could initiate the sequence AGAIN, at the end delivering a repeating Loop or Cycle. Now, all the processes described as perpetuating Populations of the Same Sequences of Processes, will also apply to Cycles, only more so...

ARTWORKS MADE USING CELLULAR AUTOMATA BY THE TROIKA COLLECTIVE

So, Cycles too, will be self-regulating as well as mutually-maintainable within populations!

Indeed, as Life, itself, is also a product of the very same features, and it will be no surprise that every aspect of all Living Things and, of course, their on-going Survival, Development and Evolution are everywhere shot-through with both Sequences and particularly with Cycles, which also very clearly display ALL of the many significant Developments too! For, in Life, above all, we must also attempt to grasp the wholly contradictory Maintenance AND Development, as quite different, but essential products of the very SAME underlying elemental Processes, which show themselves as occurring at very different Tempos and Intensities.

Now, these may seem to constitute a totally impossible requirement, considering most of the explanations delivered thus far! BUT, though that might well be the case within a Pluralist World: it is NOT within a truly Holist one - for directly opposing changes, happening at two dramatically different rates actually show themselves as described above, but always with a superimposed, very much smaller drift in the Opposite Direction - so that all the evident products of the faster processes, will be delivered apparently alone, until the slow drift in the opposite direction passes its threshold to enable its

consequent Qualitative Flip! Indeed, it is these alone, that constitute the Real Engines of Development, that when they occur for the First Time are NEVER predictable: they necessarily establish *Wholly New Ground!*

NOTE: In the prior solely Mathematical Logic, NO explanation is ever possible, prior to the first occurrence of the wholly NEW! The Change is ONLY merely signalled by the passing of a previously-observed quantitative Threshold: it is never explained - it can't be from that position!

But, the Wholly New is always arising in the Evolution of Reality. And Life is the proof! It was NOT always there, just waiting for its opportunity to emerge. It was an entirely NEW system.

Yet it, better and more profoundly than anything else, demonstrates the wholly contradictory, yet extending, contributions to development more profusely and profoundly than anything else! And, even builds into that trajectory, the clear advantages of Death: for the Old is then more easily replaced by the New, in a Natural Way. Yet, it also adds to the usual explanatory Causality of Individual Laws, with the crucial and different Systems Causality, that I am attempting to reveal here!

But, of course, I have begun with the essential extension and complication of Causality: yet without, as yet, also considering a possible Hierarchy of Levels of organisation, which cannot but also restrict certain things, to only some of these Levels, while being wholly absent in others. For, if this is the case, there will also be the absence of some causalities as well as the exclusive presence of some others, at various different Levels!

If this turns out to be the case, there will be a relative independence to such Levels: as well as the seemingly contradictory possibility of causes in one level producing their effects within another Level.

And these could occur both upwards to higher levels and downwards to lower Levels.

The more Obvious Cases of major differences would be within so-called Empty Space and in the Centres of Stars.

But, in addition, things could be small enough to exist within the mostly Empty space within all individual atoms.

And, since the significant contributions of Jannes Alven in 1970 (in his Nobel Prize winning contribution) and thereafter, there has arisen a wholly new Area in

Cosmology, bringing in the Roles of Electrical Plasmas, and their consequent production of Magnetic Effects, sometimes far outweighing those of Gravity in that Discipline.

Indeed, the long-standing splits between Engineers and Scientists have since hardened into a theoretical Split too, with an emerging totally alternative Cosmology, which, in spite of its dearly-held Myths, certainly has something to offer...

Indeed, the present state of Consensus Cosmology, because of its Pluralist Base, and total absence of detailed Experimentation, has settled into a Totally Speculative Form, while among Alven and the Electric Universe Group, the Scale-Invariance of the properties of Plasmas, has, for the very first time, allowed Experiments carried out in Laboratories on Earth to ALSO be directly applicable to processes occurring in so-called Empty Space.

