



Theory

Jim Schofield



©2012 Jim Schofield
Words Jim Schofield
Design Mick Schofield

www.e-journal.org.uk/shape

Shape Journal
Bild Art
11a Woodlands Road, Lepton
West Yorkshire. HD8 0HX UK

Shape Journal

Theory

Special Issue 11

1. Editorial
2. What is Description?
3. There are “Laws” and Laws
4. Formal Speculation
5. Idealism and Materialism
6. Pseudo-Emergence?
7. The Development of Theory
8. Which Speculation Do You Choose?

Editorial Theory



Welcome to the 12th Special Issue of the **SHAPE Journal**.

Perhaps this edition is long overdue, for it addresses the crucial topic of Theory, both in the sciences and in other disciplines, where revealing explanations of phenomena is required as both the coherent and comprehensive accounts of all answers to the perennial question, "Why?"

It is not merely a cumulative pile-up of individual contributions, which together "make sense", but rather a close look at how Theory can make discoveries and extracted equations into something more basically understandable and less abstract.

For no Theory is ever the very last word, and hence we cannot see the stages within it as merely new steps up the obvious and single ladder to Absolute Truth.

Indeed, all theories have their drawbacks as well as their apparent conquests, and the trajectory towards some conceived-of Absolute Truth is always indirect, including many detours, false paths and occasional dead ends.

Yet, the march of Theory is certainly not arbitrary: there can be progress of a very real kind. And perhaps the crucial area is when a well-established banker position is finally overturned and the possibilities of a new path become increasingly evident.

Certain crucial questions needed to be both clarified and then addressed, such as the differences between Description and Explanation, and the diametrically opposed conceptions of Natural Laws as the 'drivers' of reality, or conversely as the consequences of reality.

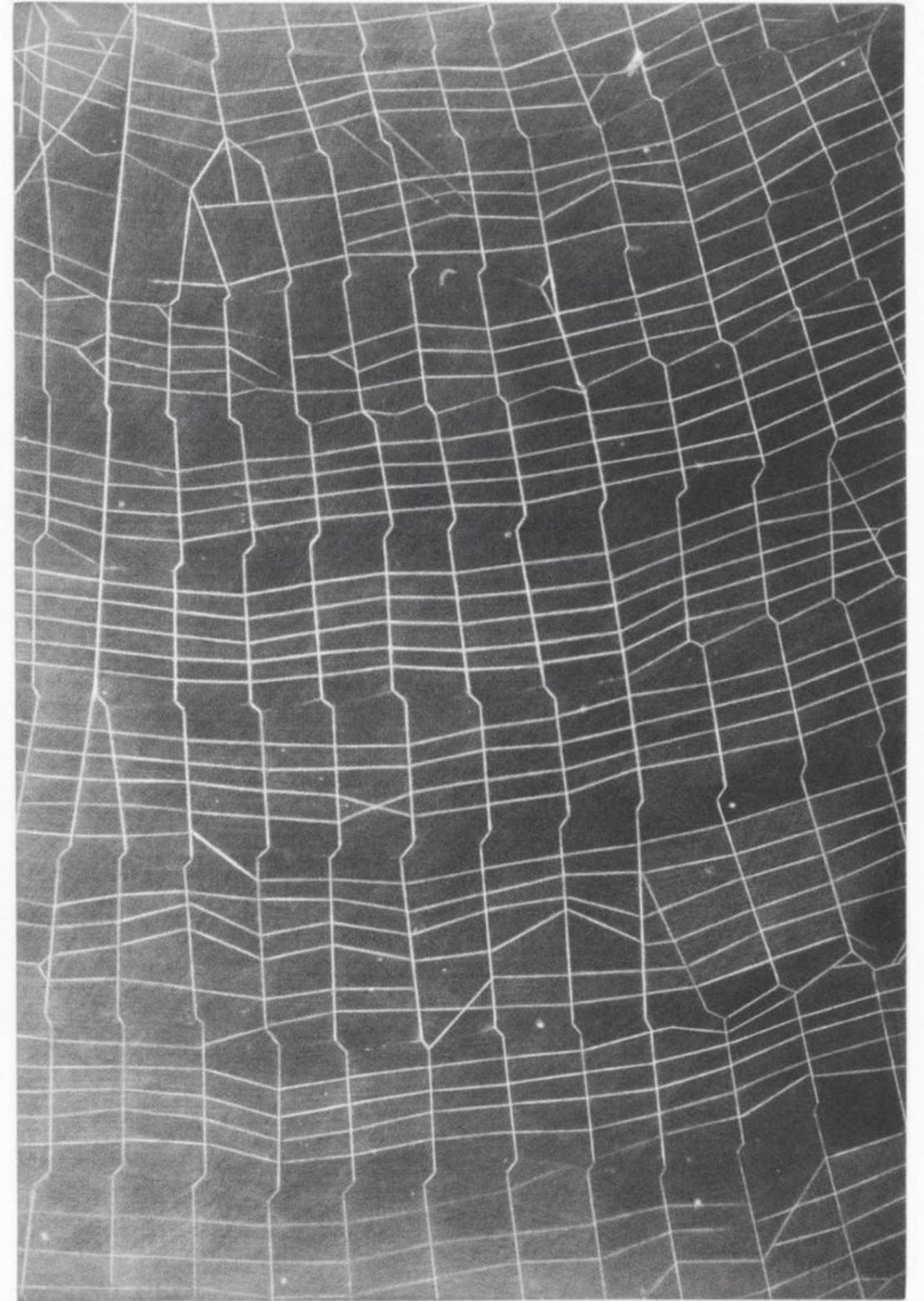
Perhaps the main area where robust criticism is required is in the approach we call Formalism, wherein Form, Shape, Pattern and Relation are seen as the causes of certain phenomena (by mathematicians), and the encapsulation of such patterns and relations into formal equations is frequently seen as the ultimate and even the 'complete' definition of why a phenomena is the way that it is.

Finally, there is a very strong emphasis upon the approach described as Emergence, wherein all Laws arise out of the resolution of a major system-wide crisis, always resulting in the wholly new - the most significant example of which being The Origin of Life on Earth.

And such a journey would not be complete without a diversion into the thorny, but sometimes unavoidable, subject of Speculation as a part of the process.

Enjoy!

Jim Schofield August 2012



AP 1/10

V. Celmins

'Web Ladder'

Vija Celmins

2010



What is Description?

And why is it often seen as Explanation

Though I still correctly insist that an equation attached to a given phenomenon is purely a form of description, and certainly not an explanation, it is also very clear that such a succinct and useable description is very different from describing something as “a red house” or even “John Smith”. So, it is clear that the label “description” requires dividing into several crucial sub-categories.

The reason that this is important is that alternative descriptive methods lead to a bifurcation in the following processes that we apply, and ultimately lead to quite opposite philosophical standpoints.

Exactly what these divisions should be is not yet perfectly clear, though words such as form and pattern are clearly associated with one approach, whereas function and ancestry are definitely about another.

I would even say that Formalism leads both to Mathematics and Idealism, while Functionalism leads to Science and Materialism, so these are important characteristics, though to simply attach such labels takes too little account of how these alternatives can, and frequently have, fed each other in highly fruitful ways.

It seems “inconsistent” to mix these alternatives in an eclectic way, but to make such a criticism requires a very lofty (and maybe self-elevated) perch, which Mankind in general has never managed (as yet) to occupy, and vigorous criticisms on such matters never reveals The True Path, but instead the unavoidable route that Mankind has had no choice but to pursue. Indeed, all our categorisations and methods can never be absolute.

We observe Reality from within it (and as part of it), and not from some heavenly, detached position. So all our gains are partial and temporary, and, as such, will always require not only constant correction and improvement, but also will demand significant philosophical repositioning from one extreme to the other as unavoidably correctional swings.

Perhaps surprisingly, we need both standpoints to reveal our simplified (and hence necessarily) aberrant paths, so the only means by which Mankind lifts himself up by his own bootlaces is by constantly correcting zigzags in our basic conceptions.

In other words most alternatives are mistakenly seen as pairs of mutual exclusives, which always demonstrate that

we are asking the wrong questions, and that both positions are usually significantly flawed in the way we currently conceive of them.

Now, at such a point, I must emphasize that this is not a plea for what is usually called Post Modernism, where all gains are kept whether inconsistent or not, for such eclecticism guarantees the end of all progress in our conceptions. It is a return to a very early stage in Mankind’s development: all specialisms and skills become not only inexplicable by their practitioners and proponents, but also meaningless to everyone else.

NOTE: Indeed, such at once proves my main point! All “True Paths” are bound to mislead, and their essential overturning will never be by a “really true path”, but invariably by a critical, contesting set of evidence and/or ideas, which reveal clear, consequent mistakes. Even the bifurcation between Art and Science is both unavoidable and vitally necessary.

Now, quite clearly, this is not a book on Philosophy, but merely a paper initiating ideas about Description, so it cannot deliver final answers. But it can, I hope, ask the relevant questions, and from ever better ground than that of the “chosen few”, who know The Truth a priori.

Let us commence with the most evidently different types of description.

These may be categorised as Analogistic and Formal. Mankind in its history soon noticed significant analogies between very different phenomena in Reality, and these were assumed to be because similar sequences of processes were involved. They could take an example from their own multiple, and clearly grasped, experiences, and posit them upon other clearly similar systems, and by matching Part-to-Part, this could help in “seeing more clearly” what could be happening in the new situation too. This was invaluable, and focussed our critical faculties onto similarity of function.

We looked for similarly acting causes and phases within different systems.

On quite a different slant, we would notice Shapes and Patterns as being the same or very closely similar, and in this way of relating different things, we could attempt to extract only these types of relations irrespective of both functions and causes.

We then concentrated upon Form as disembodied Pattern. And we also found that by quantitative measuring of easily identifiable features, we could discover common and indeed useable relations. We could predict outcomes if we knew the Pattern involved, and some concrete values!

Indeed, the study of such Forms, totally disengaged from the concrete situation, we call Mathematics.

Now, these two most evident forms of description led in quite different directions. The master of Forms soon began to consider his extracted relations, which quite evidently occurred in many, many different circumstances as Driving Essences, and could “explain” Reality as being due to inevitably following these primal and “essential” relations. The “description” had been converted into a “cause”!

With such a move, the believer was thereafter bound to end up as an idealist. And this was confirmed by the solidity of his discoveries. He could logically extend what he knew to ever more consequent areas, and could, by such means, prove things Absolutely.

In the world of Pure Form alone, there could be Absolute Truth. The only trouble is that it is only about perfect, unsullied, and definitely totally disembodied Form, and NOT, as was assumed, about Reality-as-is.

And occasionally, these masters of Form could indeed be ahead of the functionalists, and claim a truth that was indeed found later in a certain well-defined and constrained area of Reality. The exclusive path had been clearly delineated, and many chose it (including myself in my youth) as the only path to Truth.

Yet the alternative was not defeated. Though it could never deliver Absolute Truth, and all its gains were temporary and conditional, they were always improvable! Indeed there is also a requirement that all scientific theories must also be disprovable too, otherwise they would correctly be designated as speculation. For this guaranteed that all theories were open to rejection or improvement, and it was not removed entirely into a different and wholly abstract World, as were all Pure Form patterns. For this alternative is Science!

But, even this method could not take on Reality head-on. It was unable to discover things directly in Reality-as-is. It had to “farm” Reality, and this involved the total isolation of sections of Reality, and only within such Domains (with many helpful constraints and controls), could there be revealed the only previously glimpsed relations.

By experience, these experimenters were able to construct the best possible situations in which such relations were both very clearly evident, and could also be extracted by sequences of measurements.

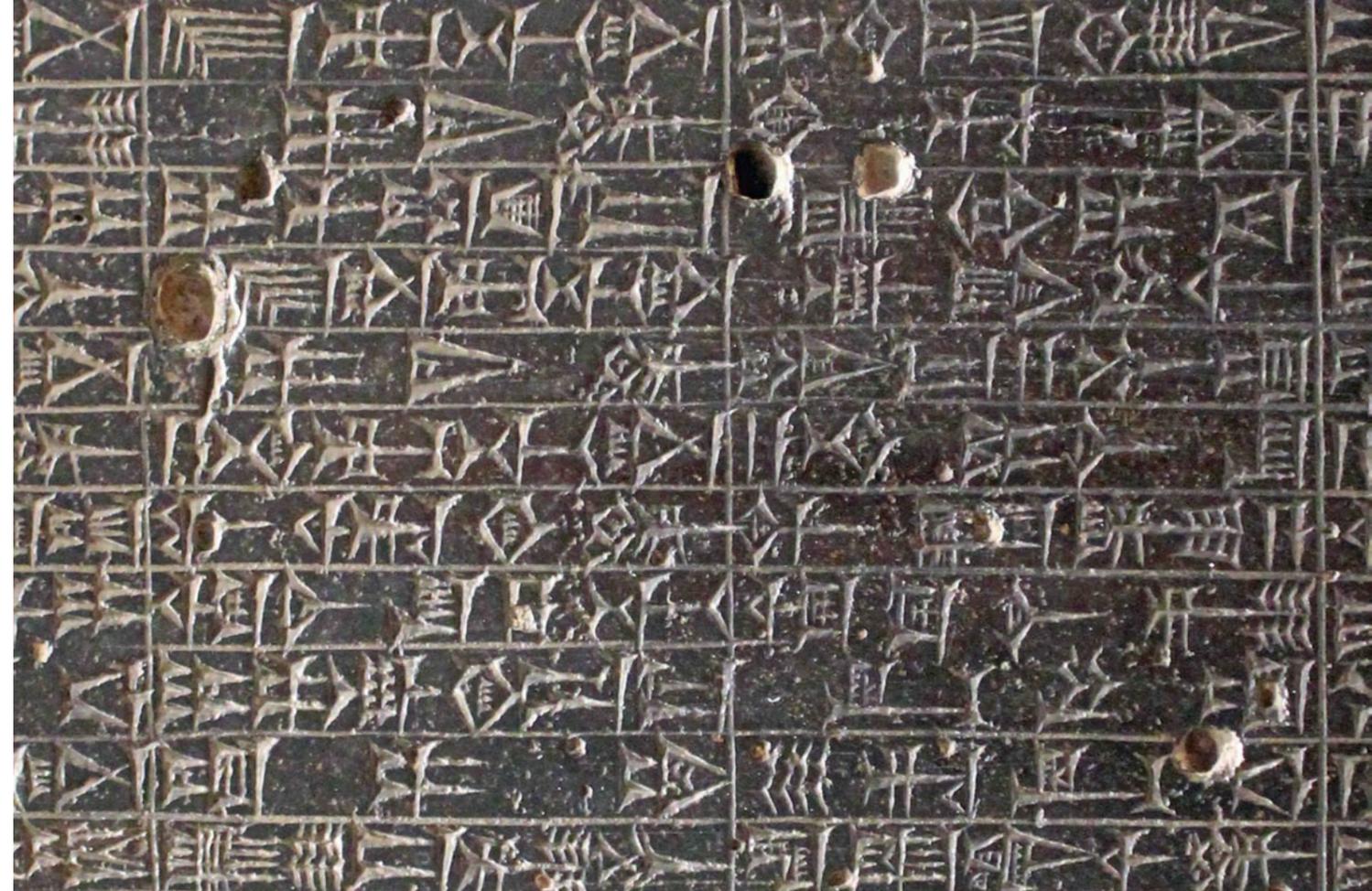
At this point, a remarkable cross-fertilisation with Mathematics did indeed occur, with significant consequences. The extractions by these scientists delivered sets of data, which could be fitted to already known Pure Forms that the mathematicians had discovered and collected in abundance. The two sides met productively!

Of course, it was because they were both standing upon closely related, and indeed ideal, grounds. For though the mathematicians were indeed standing in their chosen World of Pure Form alone, the scientists had purposely erected the ideal Domains, which, as long as they were actively maintained, could deliver relations close to the ideal forms of the mathematicians.

The amalgam worked!

Of course, it meant that for practical purposes, where the relations involved were to be used to some required outcome – to be productively used, the implementers of these gains (termed technologists or engineers) could achieve their objectives, as long as they erected and maintained the absolutely vital Domains. Only within these areas would the relations hold: outside of these, the extracted “laws” did not work!

But this requirement was generally eminently achievable, and forests of related and necessary Domains (called factories) appeared everywhere to use the discoveries to deliver products for use.



There are “Laws” and Laws

How do Laws of Form & laws pertaining to Reality Differ, and what are they anyway?

The concept of a “Law” can cover a whole host of very different things.

For example, the fact that when drawn upon a totally flat plane, with lines of zero thickness, the angles of a triangle will always +add up to 180 degrees. That is indeed indisputable, but is it a Law of Nature? The answer is a perhaps surprising, for it is “No!”

It is what we term a Formal Law, true only within the ideal scope of Euclidian Geometry, yet though idealised it is nevertheless very useful within Reality, where many spatial situations conform well enough to that idealised World.

In contrast, let us look now at the Law of the Conservation of Energy, which allows energy to be neither created nor destroyed, but it can be, and regularly is, converted from one Form to another without any loss.

This, in most situations, is an invaluable Principle, and as long as we have the conversion of units cracked, can be used very profitably in many circumstances.

Energy can therefore be used as a “common currency” in a variety of very different situations, and this greatly added power to Mankind’s elbow in many situations, which required Energy to be transferred between very different systems. But, though we use conversion rules to make these transfers, the Law itself isn’t exactly quantitative is it? $X = X$ isn’t much of a Law!

For example, when we perform an experiment, and take great pains to adequately control the situation, while we take our very accurate measurements, and manage to find a relation between measured parameters – that is also said to be a Law, but it is quite different, is it not?

For, the scope is colossally different, and, indeed, a crucial part of what we deliver. Such a Law has a necessary Domain of Applicability, and if we transgress the boundaries of that Domain, our law will invariably fail!

The aforementioned Law of the Conservation of Energy is in contrast entirely global, quite distinct from the constrained applicability of the ordinary scientific Law. And both are different to the Geometric Law stated above, which is entirely a Law about Form, and is really only true in Ideality – the World of Pure Form alone, though we cleverly have learned how to use it and when we cannot!

So, all three of these are very different and cannot be categorised as being in the same set (except in a discussion of the use of words).

And, if you do not limit yourself to such areas and allow Biology too, we then have to consider Darwin's Natural Selection. What is its scope?

It is certainly NOT universally applicable to everything that exists, is it? And, this author has spent some time finding the "sister law" in non-living processes [see Truly Natural Selection in SHAPE Journal], which was crucial when attempting to address The Origin of Life on Earth.

Indeed, this philosopher of Science would never claim that all the laws of all the different types of Science are actually "Laws", at least not within the context of the principles of Plurality and Reductionism. For the pluralist idea of Wholes and Parts, allows analysis via a division into Parts, to be then repeated, Level below Level, until the most basic final entities and laws are encountered.

And, the reason for this lack of categorisation, is that they are both local and indeed temporary – governed by their context – their Domain of Applicability, so that they are not eternal, but in the end determined by these conditions. So whatever any basic law might be, it is never available due to the pluralist methodology used in extracting them. Only the modified particular and well-constrained instances are ever revealed!

And the lauded Laws of Form – mathematical theorems etc. are also not "laws as determinators": they certainly do not make Reality obey them. They are merely formal descriptions: NO causes are involved at all.

So, whole vast sections of what scientists actually extract, are not Natural Laws at all, and certainly do not get "obeyed" either locally or generally. The worship of such laws is both pragmatic and even idealist, and leads nowhere, as is repeatedly proved by modern Sub Atomic Physics.

Now, to get to the bottom of all these "Laws", we have to start in a perhaps surprising place.

We have to study philosophy, and in particular, Epistemology – how Mankind attempts to understand this World.

For a Law was originally about the appropriate behaviours of human beings in Society – what we might call "rules" (or even commandments – usually 10, but sometimes many more) which are given as having come directly from God. And even when they were no longer religious imperatives, they were still about "Right" and "Wrong" – Moral Philosophy indeed!

Long before Mankind turned his attentions to the Natural World, they had developed a rich and complex set of rules of acceptable behaviour. And when the God in Heaven's star began to wane, an earthbound maker and imposer of such "laws" was evidently not only possible, but sometimes preferable. Kings came into prominence – Hammurabi and his Laws ruled a sizeable piece of the ancient civilised World.

So, we know what such Laws were, and why they were essential in the social life of Mankind. But, when investigators began to study the Natural World in detail, they also began to glimpse "relations" that were not about Man or his behaviour to his fellows, but about Reality itself!

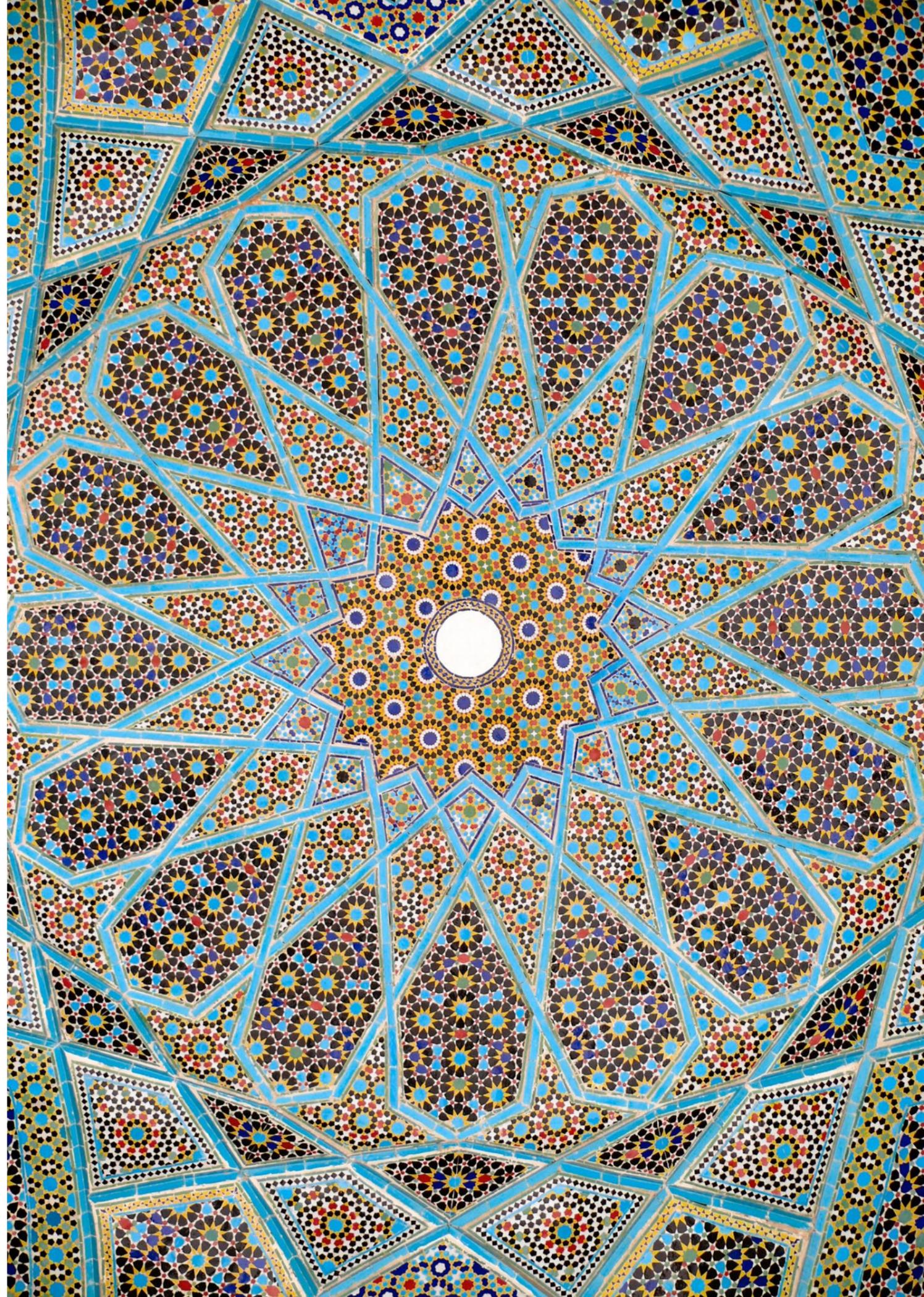
We frequently uncovered Material Laws, though they were at first almost impossible to rely upon. They sometimes worked very well, while at other times they failed miserably for no apparent reason.

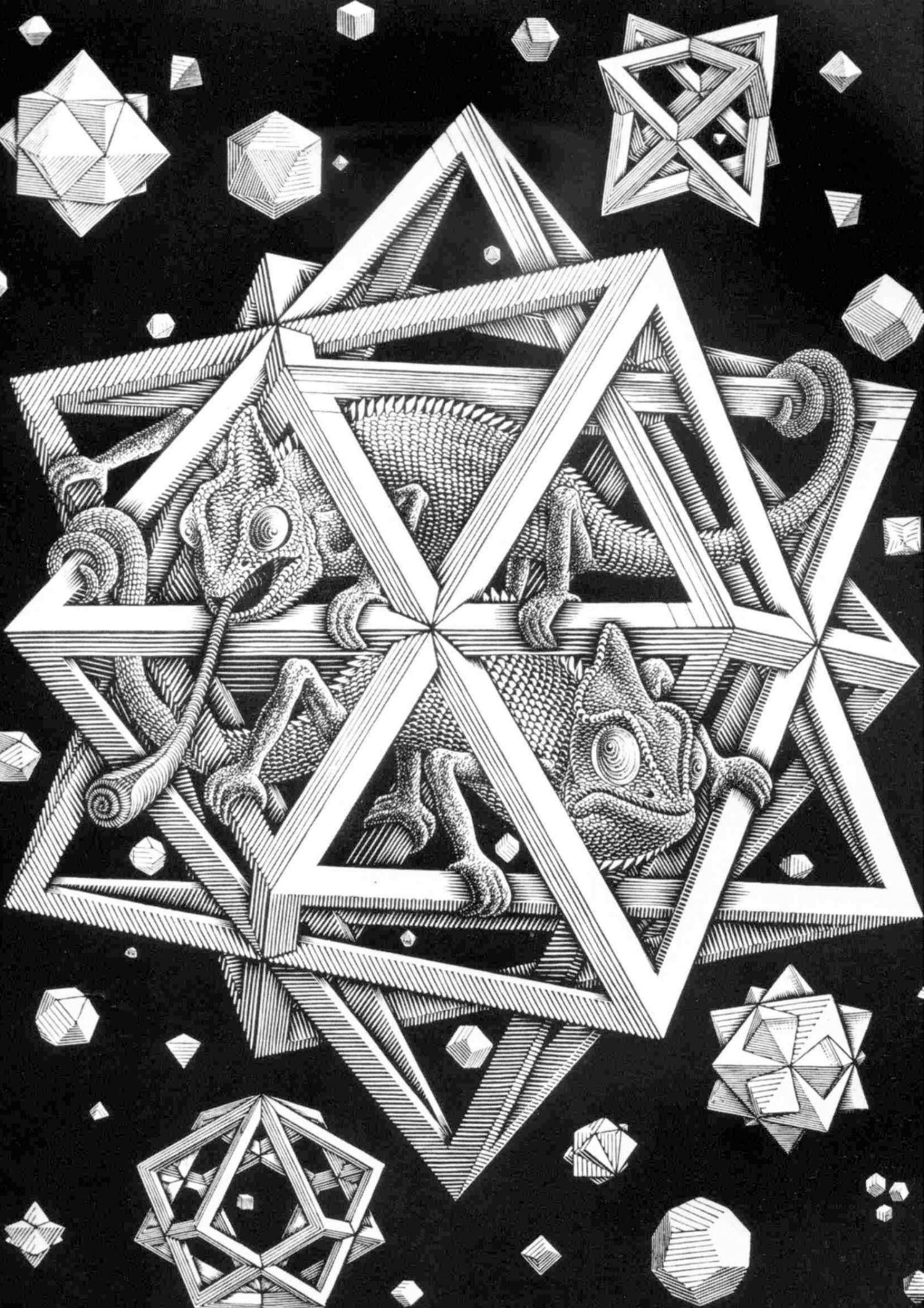
But a remarkable avenue of study was gradually realised, in which extractable relations could be totally reliable, and, what is more, eminently useable!

The trick was to radically simplify what was being studied until only its pattern remained, and these were then considered, as such, and idealised down to their simple Form, without losing their essential properties. This totally transformed the way we studied things from an all-bells-and-whistles imperative, to the purest of Formal Relations.

And the breakthrough was when these were all to do with Line and Space. We came to call this purely formal study Mathematics, and from the outset it had two distinct sides. At its simplest the most abstract side was Number Theory – about Arithmetic and Prime Numbers and similar things. The other side was what became Geometry, and it was in this latter area that truly amazing gains were initially made.

While the Number Theorists concerned themselves with the magic and mysteries of numbers themselves, the Geometers did a remarkable thing.





They reduced all the elements of their spatial studies to seemingly impossible extremes. Lines were considered to be of zero thickness, and dots of zero extension, and the purest of such elements were investigated and extended until a self-consistent and seemingly comprehensive set were uncovered.

It was found that in such an Ideal World, consequent truths could be established by Theorems, and a whole system – Euclidian Geometry finally defined.

It was a remarkable entity!

For though it could be used in the Real World to solve many problems, it nowhere existed exactly as it had been devised: it consisted only of the very Purest Form. But things could be established within it without question. In such an Ideal World Absolute Truth was possible! And the elements of this Geometry were called “Laws” too.

The other mathematical tendency struggled on to find Laws concerned with Number alone (and still do: it was only a few years ago that Wiles finally cracked Fermat’s Last Theorem.

Now, at this point, the purpose of this paper should be evident. The general idea of Law covers a whole range of idealised entities, relations and Forms in widely different areas, but the discoveries of the Geometer were the most beguiling and exciting. Only recently two Indian mathematicians wrote a novel, in which the theme was just how relevant were such methods when applied to Life and Human Society.

So clearly, this strand presented what became the sought for perfect discipline – with absolute, unchanging laws, which might deliver the whole of Reality when finally conquered.

An idealised idea of what made Reality what it is, began to come to the fore. Indeed, these sought-for Laws were more and more considered as Essences, which actually drove inert matter into its innumerable shapes and behaviours. Idealism was born within its avowed enemy Materialism.

Now, initially in History, this position did not reign long. Too often such idealised forms did not continue to apply and predictions regularly failed. So, a different kind of investigation gradually came into prominence, in which a section of Reality was successively and increasingly constrained to deliver much more reliable behaviours and consequently, laws too.

Experimental Science gradually developed, and as it matured, and Man’s ability to control became ever more effective and maintainable, the Domains of Applicability so produced, did allow totally reliable replication of phenomena, and extraction of crucial, reliable relations.

But, with the History outlined above, such achievements were measured against the “ruler” of the effectiveness of Euclidian Geometry, and the relations obtained also seen as Laws.

Now, this was an important conceptual redirection, because these were seen as being the cause of the investigated phenomenon.

The Laws pre-existed any given situation and made it happen. We were thus impelled upon the reductionist search for final and absolute essences.

Formal Speculation

It is interesting how “ruinously subjective” explanatory speculation is judged, while equation-based speculation is considered to be entirely “objective”, and indeed reliable! Einstein’s work on Relativity, particularly with respect to Space-Time and Gravity, was certainly speculative, but it presented that heady mix of from-the-outset idealist (indeed disembodied) rules with useable formulae, which has always been the greatest love of the mathematically minded.

Certainly, the traditional scientific view was that that Theory beyond mere equations was essential, and that was regularly undermined by the temporary nature of all such theories, but that was surely an unavoidable condition of the current development of Mankind rather than of the most productive investigative methods.

Of course, all theories would, necessarily, be incomplete and even inadequate, but to judge them therefore as disposable in total, as a methodology, was a classic example of throwing out the baby with the bathwater. Such absolute judgements of Theory are missing its crucial and productive point.

Scientists have always known that their theories would never be the final word, but they knew that, without them, not even the first step could be taken. Theories (because they arose in the minds of Men) could not be absolute, but they could contain crucial Objective Content, and that was the basis on which they should be judged.

The mathematicians, on the other hand, who, it must be remembered, came first, did indeed find absolutes! But, they found them in totally disembodied Form, and not in concrete Reality. And, they were also the first to concatenate their found absolutes into logical proofs (Theorems), and thus be in a position to extend their extractions to ever-wider areas of Form.

They, from a very early time in history, believed that their formal elements drove Reality. Such able thinkers were never enamoured of those who attempted to explain things causally, though such things could underpin their Jewels of Truth, by embedding them in some sort of overall view. But, they were regarded as dreamers, and the paramount “cause” – obeys this equation was sought for everything, everywhere, and it was assumed that at some point all these equations would link together in some sort of universal and exhaustive Fabric of Truths.

NOTE: Wiles’ remarkable proof of Fermat’s Last Theorem demonstrates this belief. He used forms extracted from multiple areas of Reality and wove them into a sound and complete proof.

But what was it about?

It was about Number, the most abstract thing there is, and one where such methods could indeed be legitimately employed. When investigating Form itself, formal methods are, of course, completely valid.

Now, the criticisms of theories are always valid, if they indicate exactly where the ideas need improvement, but to condemn theorists for theorising is always wrong. And this has to be the case, if the basis for such criticism is that only a study of Forms will reveal the true essences of Reality, then that is surely the much greater error.

Now, there is also always a case for a critique of methods, for the theorists are always presented with pulling themselves up by their own bootlaces (always a difficult task). So, classically they always commenced, not with an explanation, but with an analogy. And this involves a method involving the noticed resonances between very different phenomena, which nevertheless display very noticeably similar sequences and patterns of phases in the processes involved.

Now, though not yet Explanation, such thinking is extremely valuable, and must have been the only available and reliable method, when pluralist experiments and their data extractions were not yet possible. Indeed, such methods are applicable in all areas of complex systems, where simple equations cannot deliver, for such overall methods notice sequences occurring at a higher level, and almost intuitively begin to grasp their meaning, even if they cannot yet analyse, as the pluralists do, into separable equations. They are focussed on Systems from the outset, and not on extracting the various quantitative relations in particular individual processes.

But, let us take these methods a little further.

When analogies were made, they not only recognised very closely similar sequences in different areas, but also elicited a seeking of mappings between the elements involved across the two systems. This inevitably revealed elements that were not immediately obvious in the new area, but were well known in the familiar area, and gradually Man began to see that reasons (whether sound or not) could be carried over from one to the other, by using what we already knew to throw light upon what we were investigating for the first time. General inferences began to be made.

The towering example of such reasoning is, without doubt, that employed by Charles Darwin in his Origin of Species, and his idea of Natural Selection. Indeed, such Science was of a different order to that which ended up guiding production in a factory. It was, after all, about the

Evolution of Life itself.

Now, it may be a mere passing comment, until we see why the equation-based speculation of today’s Sub Atomic Physics was given credence, while literally all explanatory speculations were actually condemned as myths and self kid by this same group. There is, of course, an important reason!

Though the Copenhagenists of that school were, and still are, scientists and hence seem to be the opposite of religionists and other idealists: that isn’t true, and indeed, never was.

Within Science there has always been the idea that Reality is the way that it is, because it is driven by eternal laws. Though scientists cannot avoid dealing with Reality, and indeed, doing experiments, they quickly found that to get extractable results they had to significantly constrain some section of Reality to cause it to display some evidently acting relation very clearly.

They considered that the revelation of these were normally obscured by complexity, so that a set of carefully chosen constraints could be imposed in order to suppress, or even remove, some of the confusing contributions, while holding others steady, so that their changes could not affect the measured results.

The method worked, and this form of experiment rapidly became the norm. with what was then so easily extracted and formulated as equations could then be considered to be the actually acting natural relations. And though very different constructed Domains were required to reveal more and more such relations one-at-a-time, these necessary different in context set-ups were merely the means to an end. And a consistent reapplication of such methods would ultimately put all relevant relations into our hands.

The method of use of these relations was crucial. All applications of these formulae demanded the exact same Domain set-ups as were used for their original extraction, and when this was done, sequences of appropriate Domains each with its allied process could be orchestrated to produce desired items of all kinds.

But, that isn’t Science: it is Engineering or Technology. Science is about understanding Reality, and that meant what was going on in, not specially prepared Domains, but in Reality-as-is! Now, as no one used these relations in totally unfettered Reality, as they always failed in such situations, they had assumptions ONLY about what was really going on in the unfettered World, yet never had to put them to the test. All uses were Domain-based.

But they assumed that the relations extracted in their specially tailored Domains were exactly the same when acted out in totally unfettered Reality: it was merely

confused by complication with many other simultaneously acting relations.

But what made these relations what they were? Now, the usual causes were given within the extracted relation. “If X was doubled Y was halved”, was a typical explanation, but, of course, it wasn’t an explanation: it was a description.

If you kept on asking, “Why?”, the users would keep on giving you more equations, which underlay the given relation, and conceptually (though never concretely) a reductionist sequence all the way down to elementary entities and eternal laws was inferred.

But, perhaps the most misleading of all was the belief that the extractions were acting totally unchanged in all possible complex mixes in unfettered Reality. They were considered wholly separable relations, independent in their acting form, no matter what the context was, like the components in a recipe. They just gave different effects as part of different mixes. This separability made their extracted relations into “Laws”, and the then given causality was, “acts in accordance with this Law” And this is clearly Idealism!

So, returning to where we started in this paper, we have to admit that speculation is always flawed, but we often have no other choice. For, to have a choice, you must already know things that are currently unknown. So what else can we do when addressing new phenomena? We can only do what we always have done, and start by seeking analogies within our current knowledge, and then speculating from there.

But, what kind of speculation is crucial.

Should it be the simplifying idealist sort, which “builds the World” out of extracted laws, or should it be the kind that finds causes and reasons within the nature of Reality as it is?

Surely, the correct choice is obvious (unless you are a mathematician, of course)!



Idealism and Materialism Beyond the usual Dichotomies?

Yesterday, I listened to an audio lecture by Rodney Smith on Buddhism, and though I am no idealist, I do hold that giant intellect, the Buddha, in the highest possible regard, as I also do with that other consummate idealist Frederick Hegel. For it is clear to me that though I am certainly a materialist, to present Materialism v. Idealism as a never-the-twain-shall-meet dichotomy is totally valueless.

This must be the case as it forces a choice between two opposing alternatives, whereas the very occurrence of such dichotomies, should tell us that the two options must be, at the same time, both inadequate, yet full of valid contributions. It isn't really a choice, though historically such choices can turn out to be eminently preferable at a certain stage in our development. Though the regular recurrence of the dichotomy is a certain indication that we have, as yet, not transcended it, even if our earlier decision did indeed allow some progress to be made.

We must remember who we are, and also where we have got to as the first conscious and intelligent organisms (as far as we can tell) in the entire Universe. We were not always as we are now!

We have, with great difficulty, pulled ourselves up by our own bootlaces, as the only and unavoidable route to, in any way at all, reveal the Nature of the World we both inhabit and are a part of.

This necessarily means that we are never in possession of Absolute Truth about anything. Every gain we make is both conditional, and indeed, temporary – in the sense that it can, and will, be improved upon, and always be by some means only a vehicle for a measure of Objective Content, and certainly never the detailed whole of what we are considering.

And, history has proved that by far the most important engine for our conceptual gains, has always been the zigzag between forms of Idealism and of Materialism, for neither of these, whatever their then current form, could deliver exactly what we sought, and if ossified into principles would ultimately and undoubtedly lead us astray.

We require both ideal-ends and diametrically opposed alternatives to give us the wherewithall to actually transcend the regular cul de sacs into which the logic of our current positions always takes us.

We mistakenly always position ourselves outside the "action" seeing everything in full like a God, but, of

course, all progress must be on two fronts – ONE: the Reality outside of ourselves

and – TWO: an increasingly accurate understanding of ourselves.

Yet, our seeing these two standpoints of Idealism and Materialism as mutually exclusive opposites keeps them, and our methods based upon them, both flawed and inadequate.

Idealism, as its name implies, extracts what seem to be the purest essences of Reality, and formulates from these a structure of scintillating Beauty, which its practitioners are absolutely certain is the Absolute Truth.

While most Materialists believe in Analysis based upon Plurality, where every discernable Whole can be divided up into separable component Parts, and further expect that this process will also ultimately reveal Absolute Truth in the form of irreducible fundamental entities and Laws.

Whereas, in fact, both approaches, for different reasons, miss the most important fact about Mankind's only possible path in attempting to understand a World of which they themselves are an integral part.

Clearly, the philosopher, being aware of this unavoidable restriction, must not attempt to seek Absolute Truth, but instead consciously extract only available Objective Content, and know what they actually have.

So what is Objective Content?

It is composed of aspects, fragments or merely views of the way things are, which must have enough Reality within them, to both allow their use in appropriate contexts, while at the same time leaving them open to further improvement.

[The true seeker for Truth will always be greatly excited by new evidence, which demolishes current ideas. If, on the contrary, a discoverer is devastated by the demolishing of his contribution, then he cannot be trusted with such important tasks.] But to merely state such principles doesn't really help.

For with the currently present and hostile camps, the consequent routes are unavoidable: we cannot step out of our forming conditions!

What the philosopher must do is both face the weaknesses of his own positions, and see the value in those on the other side of this divide.

Rodney Smith is certainly both a Buddhist and an Idealist, but a profoundly intelligent one, and his lecture revealed what the Buddha was about, and made (to me at least) very clear where such allegiances find their sources in his works.

Though it makes Meditation central, and hence does not deliver the conceptual equipment required for a doer, it certainly opens practitioners up to the power of the Mind.

I am forced to compare such a position with Hegel, who knew that his materialist contemporaries were missing the real dynamic trajectories of Qualitative Change with their rigidly pluralist conceptions and techniques, and in searching for a study area in which this crucial, difficult and indeed NEW aspect could be addressed, settled upon his own Thoughts as the only route he could conceivably take.

Naturally, the materialists condemned such a policy as wholly subjective and hence useless, but that position was certainly mistaken. By choosing that route for his studies Hegel had correctly realised that just about the only area in Reality wherein major Qualitative Changes were regularly occurring, within his lifespan and available to him was clearly what happened in his own Thinking. So, in spite of the shortcomings and the total lack of appropriate and available techniques of study, he was not only able to make prodigious gains, but in an area where the materialist just used the most unsupportable speculation. He was right and they were wrong!

And it soon became clear, especially to such a commendable thinker as Hegel, that he really was addressing Qualitative Change, and his methods could be developed to even both inform and even revolutionise the methodology of the scientists.

Sometimes just opening the door on a presumed abysmal drop could be what was needed to make the necessary changes. For most philosophers were incredibly blinkered, though only along safe and well-used routes.

To reveal the dynamics of Thinking, not only in its gains, but also in its errors and false routes was too disturbing for many. Even modern day disciples of Hegel often miss the point. But in his own time the group who styled themselves The Young Hegelians, did see what he was talking about, and surprisingly the majority of this group changed sides” and took the Dialectics of Hegel into Materialism.

You may have heard of some of them – Marx, Engels and Feuerbach are perhaps the most famous, but also the most condemned by the rest of their discipline and

all ruling cliques in the so called “advanced economies” of that time. For this group did not conform to what was expected of philosophers, indeed, they because political activists suggesting that revolutionary Social Change was necessary.

Now, to show why this paper has something important to say, I must draw the reader’s attention to where the disagreement can lead.

It became popular to raise the question of “God or Science?”, and a recent BBC TV programme on this very topic showed how useless are the current discussions. It could only be described as entirely missing the point.

“God or Science?”, is an old, old battle, which has little meaning today. Rodney Smith never mentioned God, for he doesn’t appear in Buddhism.

The Buddha did not go in for God, he was intent upon Man. But as was evident from the work of Hegel, the time is again ripe for a major intervention from the “left field”, not as you may think on religion, but on Holism.

For many strands in current Science are reaching regular and impassable barriers due to their erroneous principles, such as Plurality, and Formalism, and believe it or not, the solution (or, of course, more accurately, the next step) will surely lie in Holist Science.



Pseudo-Emergence?

In an article entitled Squishybots (New Scientist 2838) of November 2011, Justin Mullins pulls together another series of what he terms “emergent behaviours” in specially designed robot devices. These involve a particular mixture of simple mechanisms with a surprising range of behaviours, and he is keen to associate the “emerging potentialities” of these with a different kind of “intelligence”.

[There are also surely resonances here with creatures such as “social insects” (like ants for example), where the individual elements (the ants?) do not seem entirely capable, yet, as members of a co-operating social system, they can be very effective indeed.]

But, we must deal critically with yet another “idea of emergence”, which is certainly markedly different to the Revolutionary Episodes usually termed Emergences, which have appeared, as necessary revolutions, at all Levels of Order in an evolving Reality.

For these are always ultimately established by the inter-relations of certain mutually conducive constructive processes, on the one hand, and wholly deleterious, destructive processes on the other, such that quite opposite tendencies pressing simultaneously towards both Order and Chaos, impose first a remarkable oscillation of such systems between Stability on the one hand, and creative revolutionary changes on the other, until a final, stable resolution is achieved.

This true kind of Emergence as embodied in this author’s *Theory of Emergences* [SHAPE Special 2010], is entirely different from the “Squishyrobot” kind described in this article. And these “possible additions” must not be allowed to also acquire anything of the status achieved by the transformations of those truly important episodes in Creative Development of Reality.

They are not of the same order at all, and to append the term “Intelligence” to them is even more reprehensible. To, in any way, bracket these techniques together with the true Emergence of Intelligence in the very highest of living creatures is untenable, even as an add-on.

For the kind described in this article is certainly NOT about evolutionary processes, nor about cataclysmic overturns in development, but merely about Design.

The true Emergence is both “independent” and “self-contained”, requiring NO outside assistance, while the other does involve quite prodigious intelligence, but clearly resident in the human designer!

Such researchers notice things, which normal evolutionary developments have produced, but are uninterested in that crucial producing process, and in an uninformed way map the profound onto the trivial. Whatever these new additions are, they are absolutely nothing to do with Emergence, and should not be appended the verb “emerges” at all.

For, they isolate a certain structure and its “potentialities” from Reality, and hope thereby to produce, via their use, a robot employing these features to maximum effect. Clearly, such robots won’t emerge all by themselves.

Instead, our researchers will consider, and then design, appropriate controlling algorithms, which will direct these simple, but “potential-filled” appendages as necessary. You can see the attraction!

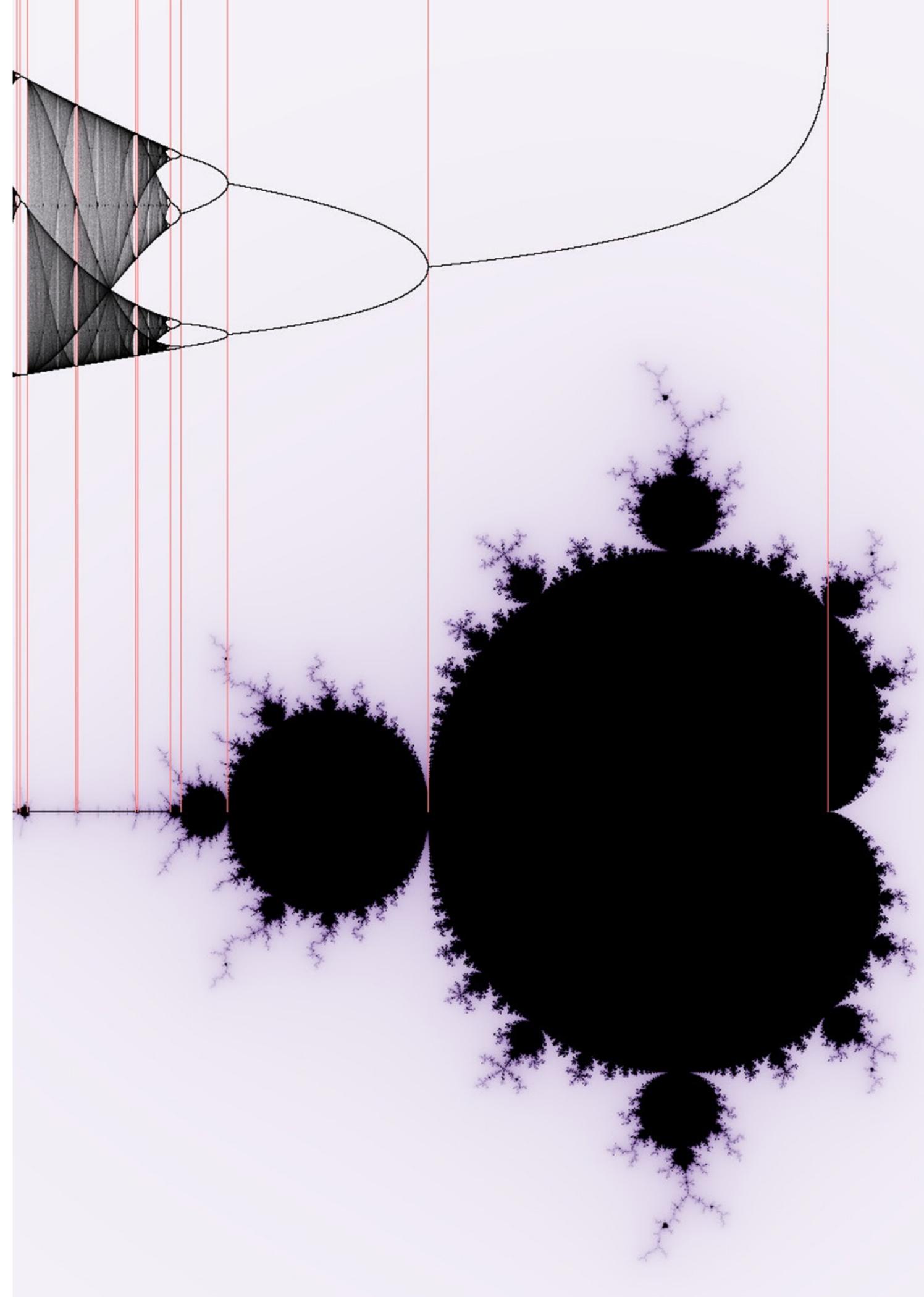
Instead of having to investigate actual Emergences with their unavoidable cataclysms of destruction and remarkable “seeking” oscillations to real, creative development, they can instead develop totally non-emergent, and incremental sequences of non revolutionary development, which will never require any really self-generated and sophisticated control systems, and hence be easily applicable in all sorts of problem areas much more quickly, than waiting for a handy genius to suddenly make the necessary break through in his remarkable head.

It is an unusual and surprising feature of the modern World, where researchers turn their backs on real understanding, to settle for the quick and easy uses of merely technological innovations.

In another, but related, development, now relatively long-in-the-tooth, the collected intellectual giants of the Santa Fe Institute in New Mexico USA, also turned the “proposed” study of true Emergences into something very different and inferior. And their diversion is most clearly exemplified by the researcher (based there for a time), who considered that such “studies” might well be crucial in conquering the problems involved in playing the market and other business difficulties.

Instead of discovering what a real Emergence Event was, he (and his colleagues for that matter) went for a study of how certain seemingly “new” behaviours could automatically (and indeed incrementally) emerge from the playing out of particular algorithms, most particularly in areas of behaviour termed (rather loosely) as Chaos.

With certain iterative forms of deterministic equations (particularly if they were what is usually termed non-linear), these researchers were able to produce computer programs that displayed behaviours, which they, before



they were observed, they were totally unable to predict. Those involved would crowd around their consoles waiting for new and surprising behaviours to appear (even though it was these watchers who had actually written the programs).

Now, as unpredictability is a characteristic feature of the effects of a true Emergence Event, these researchers were convinced they were replicating such episodes upon their computers, because they also had this same characteristic. But, NO cataclysmic deleterious avalanche of a prior Stability was involved, and NO collapse to a Nadir of Disassociation. Nor was there a violent alternation between construction (Order) and dissolution towards Chaos. The superficial “unpredictability” was considered sufficient. It isn't!

This, yet again, was absolutely nothing to do with Emergence Events, but was merely an incremental way of exploring rarely encountered yet entirely possible areas, close to, but not at or indeed beyond, the edges of Stability. But even then, these explorations of the very

limits of stability were only regularly possible via these iterative forms. By this technical means, they were able to push deterministic forms close to the boundaries, without permanently transgressing them totally. And interestingly, but NOT profoundly forms arose which were very different from those delivered by the pure deterministic versions.

The “newness” was caused by the importation of beyond the limit noises. And as this researcher has shown these can be very revealing in a holistic approach to Science, but mean nothing within the universally applied pluralistic Science we are discussing here.





The Development of Theory Specialisms and Generality

When considering the advance of Knowledge and Understanding of Reality in Mankind throughout its history, we must be very clear what we are talking about.

For example, only the other day, the BBC TV programme University Challenge was broadcast, in which university students competed against one another. But what was it that was actually being tested? It was entirely Knowledge! And the appearance of actual Understanding was, remarkably, totally undetectable.

Indeed, it was even worse than that. For the rapid-fire delivery of questions and times for answering were so short that mere one-word answers were the norm throughout. What?

Now, such a structure assumes that what was worthy of measurement could be adequately tested in this way, for at the best it involved knowing the names for things, while at the worst it assumed that all that were being asked about were already known: all questions would already have “correct answers”, and be available. The capacity for remembering what you have been told was crucially what was being measured.

But, when it comes to Understanding, such a methodology is far from appropriate. Almost every important question would require a question back to the questioner to clarify exactly what was being addressed and under what circumstances (for otherwise we might be mistaken into thinking that the answers were “eternally fixed”).

Remarkably, quotes from centuries old poetry were given expecting both the names of the poet and the poem involved, and occasionally even the person to whom the piece was addressed might well be asked for. Very revealing!

Clearly, knowing such things and considering them important was the crucial thing being measured. The true searchers for Understanding never clutter their minds with such stories, they address all their attention to grasping the meaning (understanding) of what is going on, and they also know, from the outset that whatever they arrive at will always only be a step towards the Truth.

To be sidetracked into remembering masses of such appended “words” could not be allowed to occupy their brains. What knowledge they would have would be a crucial part of their understanding, and subservient to that understanding.

To glorify Knowledge alone, reminds you of the character in a Dickens’ novel, who insisted that all that mattered were “The Facts, and only the facts!”

What an incredibly static way of comprehending the World! It is based on the Identity Relation – $A = A$, and can never address development, and certainly not Evolution.

Now, apart from this built-in disability, there are other vital aspects of Reality, which are usually absent from serious studies: they are to do with Width! The undeviated-from imperative is always to seek depth-first knowledge from which explanations may be extracted. You have to be a specialist to get anywhere!

Of course, there is some truth in this imperative, for without detailed investigations, no explanations will ever be reliably extracted. But, at the same time, it can, and does, stop researchers from drawing on the width of human experiences of the World to inform their ideas in their specialism. They very quickly speak their own language, which in fact makes such general inferences difficult if not impossible to include. The same word means very different things even in closely related specialisms, never mind different subjects (Chaos and Plurality being excellent examples).

So, the dedicated specialists may well have a depth of Knowledge, and even Understanding, within their particular areas of study, but such individuals will not necessarily be at all well equipped in a significant variety of other specialisms.

NOTE: I cannot leave this point without mentioning the irony of the dedication to Mathematics in ALL such specialisms in Science. For the universality of Forms, which is the most important feature of Mathematics, means that relations extracted in one areas of study, become available as Forms, for use anywhere else. But, this generality is only allowed in such totally disembodied extractions.

Just occasionally, there are resonances between widely separated disciplines, and an expert in one area can suggest something in a quite different realm that will be important or even transforming.

But generally, that is not the case. Indeed, the very opposite is the norm. Experts when “visiting” another very different area to their own, can be tempted to force-fit what they see there, especially if the local specialists are having difficulties, into metaphors from their own well-

known area of study. And, if they are scientists called in to help in subjects very different to their own, can make contributions, which if taken on as given, can even prove to be wholly detrimental.

Indeed, it is almost a rule that a successful researcher in a given and important area will, almost invariably, attempt to generalise from that specialism to much wider areas, and even make it the basis for an all-embracing World View. And it is not only mediocrities that do such things. Scientists of deserved global respect also do it too.

When you think about it, such behaviour is easy to understand. For, the more important are your own discoveries and contributions, the more you are tempted to extrapolate to ever-greater ranges of application. World-class physicists, for example, are often abysmal philosophers of Science, yet they steadfastly insist on giving us their view in this area. [May I suggest Physics and Philosophy by Heisenberg to prove my point?]

And, it has been made clear that there is another reason for this surprising anomaly, apart from over-specialisation. What subscribe to, and perhaps even define, this inadequacy are a couple of basic assumptions, which have been universally adhered to by most scientists for several centuries.

This writer [Jim Schofield] who is a physicist, mathematician, biologist and philosopher in addition to being a Director of Information Technology in one of the major Universities in the World, has identified both Plurality and Formalism as basic common assumptions, which also guarantee such narrowness in even the very best researchers.

Plurality sees all identified Wholes as composed of entirely separable Parts, while Formalism puts prediction well ahead of explanation, and hence sees extracted formulae as the driving essences of everything we study in Reality.

Clearly, such basic philosophical elements make those who subscribe to them seek primarily for equations – formalised relations, as being the essential drivers of all phenomena, and this being the case, they will notice the similarity of Forms across very different disciplines as proof of common causes(?), or, at the very least, a dependable commonality of many determining relations. This, along with only a depth-first Knowledge and Understanding, is bound, therefore, to bias the effectiveness of researchers when carrying that expertise across specialism (or even subject) boundaries.

Now this may be dismissed as merely a prejudice of my own, but I can claim a very unusual education and subsequent career. For being an all-rounder at school, I went to University where I obtained a Physics Degree. I was already a painter by that time, and later became a sculptor too. I also began to be a musician and composer.

But my main employment has always been as an educator and a researcher. From teaching Physics in a Middle School, I went on to delivering first Mathematics and then Biology, before moving via period in a Grammar School, until I finally found my best area in Computing, which also allowed my changing direction into Higher Education, where via posts in Hong Kong, Glasgow, Bedford and London I finally ended up as a Director of Information Technology in London University.

Indeed, in one five year period I became the first port of call for researchers who required computer control of their experimental equipment - ranging from a Gas-Liquid Chromatograph to an engineering test rig using robotics. The final result of this expertise was a major project with a colleague Jacqueline Smith-Autard, in which we produced Multimedia Video resources to aid teachers of Contemporary Dance. And in 1989, our Dance Disc won us a BIVA award. Though it took some time to get the necessary funding we finally persuaded first the Lottery to fund equipment and later a series of other funders to help us create several new titles, which took us to the position of our materials being in the hands of teachers on all five continents in 80 different countries. Even after 21 years producing such resources, we are still the leading producer in the field.

Now, as this brief history shows, it has been a very unusual range of disciplines in which the author has been involved. And, in addition, in the latter period my expertise in Computers in Control did lead to working in a truly large number of very different disciplines, and with some success.

After a long career in Education at all levels, and with the evident width of areas in which I was able to make contributions, it latterly became clear, that this could only result in becoming a writer full-time on Philosophy, Science and Education. Yet also this has led to significant contributions to scientific theory, not only in Sub Atomic Physics, but also Cosmology, Philosophy and Teaching.

Clearly, all this is to make the point that specialisms blinker scientific ideas to a remarkable extent, and that pure “tourism” beyond a scientist’s specialism would most likely do more harm than good. So, rather than the very common “missionary work” beyond the limits of their own areas, real progress (even within their own areas) is much more likely if the travels into new unknown areas is to seek new ideas and approaches rather than merely find new outlets for what you do already (as both Jacob Bronowski and Aubrey Manning have shown). To give a remarkable example, my migration into Dance, enabled me to design a special Movement Camera, for the study and analysis of complex movements, and a whole range of entirely new techniques that Dance Teachers could call upon to give unparalleled extra access and control in their video teaching resources.

Science steps into art



● Demonstration: Jacqueline Smith, project director, and Jim Schofield.

DANCE teachers in Bedford are stepping out ahead of the crowd in developing classroom computer technology. Members of Bedford College have come up with an interactive video disc that Government inspectors say is a leader in the field. The disc allows a teacher to show her pupils different perspectives of a dancer such as overhead shots and close-ups of feet or hands.

Freeze

Slow-motion, freeze frames and looping the tape can all be used to bring out teaching points. The disc is especially useful for the GCSE exam in dance.

Research director Jacqueline Smith, who helped create the disc with computer director Jim Schofield, said: "It gives the opportunity to take a professional dancer into the classroom."



Which Speculation Do You Choose?

Must all be rejected out of hand?

Now, just as with the Ether [or is it the Aether?] – an infinite continuous, massless and charge-less medium (which was obviously undetectable, and for a very long time debunked as being pure unfounded (invented) speculation, any new, but similar, suggestion will always get the same short shrift. Or, to be more accurate, would always be discounted as unsubstantiated speculation.

But we must not throw out the baby with the bathwater. At many, many times in its history Mankind has had to suggest speculative and even invisible things in order to put together some sort of coherent “explanation”. Now, we could lump all such things together as mere rationalisation: clever and consistent, but not necessarily representing Reality at all. Yet to do that would certainly be incorrect!

We say that we invent Didactic Models or create ideas with Objective Content, which though not provable, are meant to allow (even encourage) progress towards what we seek. Pure invention, no matter how clever the added reasoning will never do that! So, this special kind of invention is sometimes called well-informed speculation – quite distinct from pure imaginative creation!

We cannot just dismiss the ancient Greeks suggestion of atoms, for example, as pure hokum, or the Paradoxes of Zeno as mere clever spoiling. Mankind didn’t come into the World already endowed with all he needed to understand it. On the contrary, he was initially inadequately endowed for such a task. Even the need to understand, came after the first appearance of Man and could only have done so at a particular stage in his development.

So, when addressing speculation, particularly concerning intractable areas of Reality at a given stage in his development, we must differentiate between such pure imaginative invention and an attempt to construct something that fits! In other words, we must not dismiss, out of hand, all speculation. We must determine its conceptual value, and if it does make a more coherent whole with other dependable elements, we must, for the time being, keep it, though labelled as “speculative” and disposable when something better comes along.

Now, the above preamble was necessary in order to consider what is currently being said about the Nature of Empty Space – the Content of Nothing! Though this author’s suggestion of a paving of all our Universe’s Empty Space with E-M capable entities, called variously Empty Photons, neutritons, or even positroniums, it is not alone in pushing out the speculative boat into the void.

Current consensus positions in sub atomic Physics do nothing less.

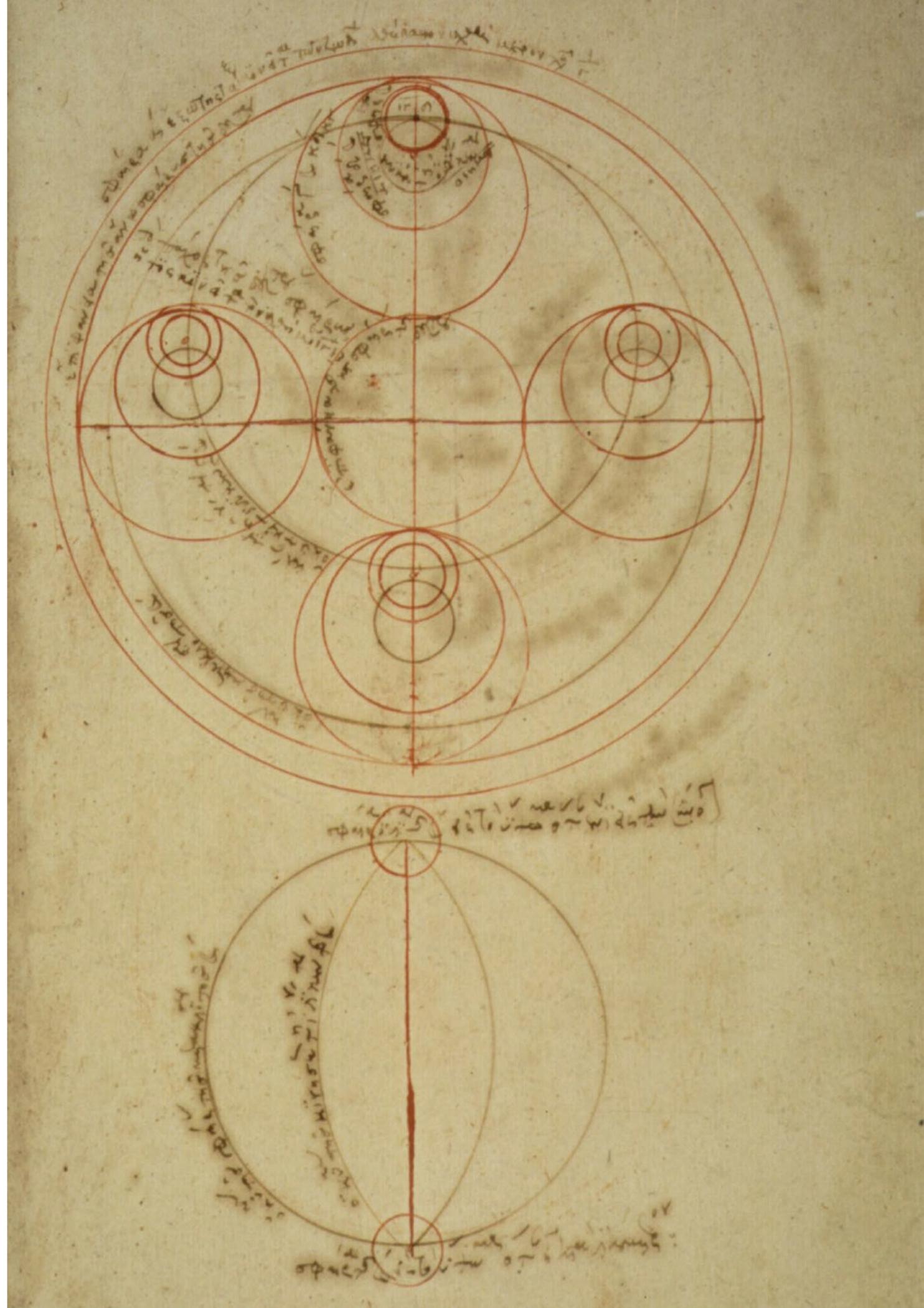
Elsewhere, this author has responded to various articles, special magazine issues, and even TV programmes, which purport to address Nothing as the Source of Everything! Initially, they had Pair Productions (of an electron and a positron) out of Pure Energy. But then they had Empty Space itself both producing and annihilating such pairs incessantly. Even the current preoccupation with finding the Higgs’ Boson, assumes a Universe-wide Higgs’ Field, which endowed all “entities” with “mass-by-fraction(?)” So, we have to deal with these and decide which “have legs”, and which are “lazy place-fillers”.

There are criteria that can help! For example when theorists insist that Nothing can dissociate into +ve and –ve they are talking Pure Formalism. They are treating Form as Substance, and you can safely bin such rubbish, for they are not talking about concrete Reality, but about Pure Abstract Form only.

But when phenomena such as the Double Slit Experiment with Electrons has to be explained, it is clear that the usual elements we have at our disposal are inadequate to the actually observed phenomenon. Merely applying Mathematical forms, which give predictions, is completely insufficient. For thereby, we are making a succinct description into a supposed explanation, which is surely nonsense.

But, if a speculation such as the paving of the space of our Universe with E-M capable minimal entities does explain phenomena in the usually accepted scientific way, it MUST be given leave to exist, at least until something more true comes along. We, as physicists, do not deal in Absolute Truth – that only exists at all within Ideality – the World of Pure Form alone – the realm of Mathematics.

We cannot confuse appearances and forms with causes and concrete reasons for things being as they undoubtedly are. We must chase the often illusory and always elusive and distant Truth as a journey – a correct (as far as we can make it) path towards that objective.



S H A P E JOURNAL **E**

www.e-journal.org.uk