



NOTHING

NOTHING

Special Issue 8

1. Introduction

Introduction to Nothing

Necessary Catastrophe & Rebirth

Brian Cox's Dead End

2. The TV Scientists on Nothing

Everything, Yet Nothing Parts I - III

Gravity Again?

3. The New Scientist Special on Nothing

Preface to Out of the Ether

Out of the Ether

Nothing in Mathematics

Something for Nothing?

The Shockley Method & Other Idle Elements

4. Conclusion

Conclusion to Nothing

An Introduction to Nothing!

In a series of articles and TV programmes over the last few years, the new, scientist celebrities” have been selling the wonders of the current Physical Conception of Reality, which is entirely based upon the Copenhagen Interpretation of Quantum Theory. And, perhaps not surprisingly, have been speaking to a ready audience. For their position has been welcomed with open arms by our celebrity cultural leaders.

In Brian Cox’s “*An Evening with the Stars*”, the composition of his invited audience was very revealing, as was their reaction to what he had to say.

For this standpoint is entirely idealist, and not unlike their own view of the World (though with loftier vistas). And rather “philosophically” the position of these scientists seems to have boiled down to dealing with Everything, and simultaneously (and even causally?) also with Nothing!

From a specially commissioned set of contributions in *New Scientist* (May 2008) on *Theories of Everything*, then via a whole sequence of separate TV programmes presented by Jim Al’Khalili (including *Atom*), followed by Brian Cox’s many spectaculars with both *The Wonders of the Solar System* and even *The Wonders of the Universe*, the concentration on **Nothing** as the source of *Everything* proceeded at an ever accelerating rate. Then, a three part TV series *Everything and Nothing* in May 2011, and finally the *New Scientist* “*Nothing Special*” in November of that year, seemed to finally define absolutely Pure Nothing as the total and sole source of Everything in the entire Universe!

And these were only the biggest contributions, for there were hosts of other, lesser efforts seemingly on every possible front. Such recurring and trumpeted “explanations” were clearly missionary efforts to recruit (while entertaining) all who could be persuaded to the current scientific consensus.

Indeed, the frequency of such *final* and confidently expressed, yet necessarily repeated, Explanations could only have been due to the rapidly declining status of this now severely ailing “main route to Truth”!

And so it is!

As more and more contradictory discoveries continue to undermine this consensus in Sub Atomic Physics, so the rhetoric and dazzling spectaculars just had to be jacked up to ever more insistent levels.

But, it is a forlorn hope!

The current Copenhagen position is ever more clearly “dead-in-the-water”, and its supporters are presented with an increasing numbers of things which they have absolutely no hope of coping with within their chosen basis. They fail on all sides at any such explanations, and retreat ever more defensively into their defended Latifundia of purely formal Equations.

But also, outside of this Establishment, here and there across the globe, individual scientists are questioning the Agreed Holy Writ, and demanding alternatives that can cope with the ever-growing number of total failures of the Copenhagen position in addressing new phenomena.

Primarily, they are certain that the abandonment of physical explanation and its replacement by equations alone is wrong! They reject the basing of Concrete Reality on Pure Form alone as Idealism, and increasingly defend all scientific explanation NOT as with the Copenhageners with their Absolute Formal Truths, but as the best, and ever improvable explanations of real scientists. They know that **Objective Content**, though imperfect is incomparably better than Formal Absolutes.

Indeed, this author, is just such a professional scientist, and has, for nearly three years been publishing his papers on *SHAPE Journal* (on the web), and is currently preparing a whole series of major contributions (including a book) in 2012.

This small collection of papers is intended as an introduction to these forthcoming publications.

noth-ing (nuth'ing). [Orig. two words, *no thing*.] **I. n.** No thing, not anything, or naught (as, to see, do, or say *nothing*; “I opened wide the door: Darkness there, and *nothing* more!” Poe’s “Raven”); no part, share, or trace (*of*: as, the place shows *nothing* of its former magnificence; there is *nothing* of his father about him); also, that which is non-existent (as, to create a world out of *nothing*; to reduce something to *nothing*, as by a process of extinction or annihilation); also, something of no importance or significance (as, “Gratiano speaks an infinite deal of *nothing*,” Shakspeare’s “Merchant of Venice,” i. 1. 114; “The defeat itself was *nothing* . . . but the death of the Prince was a blow,” Besant’s “Coligny,” ix.); a trifling action, matter, circumstance, or thing; a trivial remark (as, “In pompous *nothings* on his side, and civil assents on that of his cousins, their time passed”); Jane Austen’s “Pride and Prejudice,” xv.); a person of no importance, or a nobody or nonentity; in *arith.*, that which is without quantity or magnitude; also, a cipher or naught (0).

Jim Schofield

The author of this series of papers is a physicist/mathematician, who became first a teacher in schools, then a lecturer in Further Education, and finally after many years in Higher Education achieved a professorial level post in a London University College.

He, had, during this career, changed course, and even his discipline, several times – via Physics, Mathematics, Geology and Biology, to finally end up in Computing, and via a rapid rise finally became a **Director of Information Technology** in one of the world's best universities. After leaving Further Education, he gained posts in Hong Kong, Glasgow, Bedford and London, and his specialisms ranged from Systems Software to Computers-in-Control - particularly in the allying of computers to scientific research. Perhaps surprisingly, he latterly concentrated upon the delivery and control of video resources for the teaching of Dance, where he and his Dance collaborator Dr. Jacqueline Smith-Autard have produced some 12 multimedia products and demonstration discs, now used in over 80 countries worldwide.

Finally in the last six years he has become a full time writer on both Science and Pedagogy, with an increasing preoccupation with Philosophy, and now runs his own website, SHAPE Journal, with monthly Issues and Specials.

Necessary Catastrophe and Rebirth

For the philosopher, his subject matter is always being jacked up to ever higher levels of abstraction (what Hofstadter termed meta-levels, and which Hegel, when defining his subject, termed “Thinking about Thought”).

There is no avoiding it!

You can either burrow ever downwards towards some ultimate, basic units and laws (as do most physicists), OR, you can tackle the regular self-transforming trajectory of Reality in Development, as it creates Stars, Life and even Consciousness. They are quite different approaches!

The dichotomy is glaringly obvious, for while reductionists (like most scientists) concentrate upon Form, and its encapsulation in Equations, supposedly finally revealed **absolutely** in some final Theory of Everything. Or, you focus instead upon the necessary trajectories of major Qualitative Changes throughout the investigatable History of Reality, and, in particular, concentrate upon the opposites of **Stability** and **Revolution**, which though alternating many times, are **never** remotely like the mechanisms of reductionist science, but can only be described as creative and productive of the wholly NEW.

Clearly, the usual forms of explanation and encapsulation into equations have never delivered, and can never deliver, this crucial process. For each new Level is never predictable from its supposed “prior producing ground” – the preceding Level. And the Event that produced it can only be described as being like “The Phoenix arising from the Flames of Destruction”

For every Stability collapses and dissociates in a mighty all encompassing cataclysm, yet **only** such, and no other event, can deliver the necessary conditions for truly creative and explosive growth into an entirely new form of Order.

Now, astronomers have long known about cataclysmic explosions on a cosmic scale, in the actually observed evidence of Novae and Supernovae, but even the mere cataloguing of all the seemingly totally stable stars in the seen Heavens reveals a pattern (The Hertzsprung-Russell Diagram) that **demand**s a progression of stages for all stars - indeed **recognisable histories**.

And modern atomic and indeed nuclear discoveries have explained the possibilities and cataclysms that must occur in each and every star in its necessary progression of phases.

Now, the situation is certainly overripe for a revolution in the concepts and methodology of Science, if it is to address such questions of development. The principles of **Plurality** and **Formalism**, which form the foundations of current Science, must be dumped as such, and consciously seen for what they really are – simplifying alternations and handy pragmatic techniques: they are NOT the underlying basis of Reality, but are OUR constructs in attempting to tackle it.

The crucial missing element of Qualitative Changes and their trajectories within Emergences must be addressed. And this includes many prohibited areas, such as Social Revolution, the Origin of Life and most impenetratable of all, the appearance of Consciousness.

And, as the Copenhageners follow the logic of their assumptions, believed principles and methods, they have no choice but to chase down “their version of causality” as far as they possibly can. And, instead of a reliable set of fundamental, basic particles and laws, they are increasingly forced to posit the origins of Everything in Pure Nothing!

Brian Cox's Dead End

Yet another TV epic from Brian Cox, this time *The Wonders of the Universe* gave him full vein to wander about the Namibian Skeleton Coast likening its extreme desolation and decay evident in any erection there by Man to an “inevitably” bleak future of our Universe.

To him the most beautiful and even endearing Law of Physics was the ever present **Second Law of Thermodynamics**, which *makes* our Universe move inexorably “downhill” from Order to Chaos, until the whole system will end up “dead as a doornail”.

“But”, he insists, “it dies very slowly and with such incredible wonders!” To him Life is a direct consequence of this Law.

What on earth is he talking about?

“Is Life *less* ordered than the preceding non Life?” Of course not! How can you have *only* have a paramount Law of Decay? Where did the initial Order come from to enable the Second Law to do its “essential” work? And such Order! Complex enough to take many billions of years to finally fall apart?

His position is clearly so insupportable that you have to find reasons for his terminal pessimistic rationalisations.

And several things do emerge on close inspection.

He clearly believes that everything obeys totally disembodied eternal Natural Laws. He cannot conceive of such directors of change to be anything but purely formal. Hence he puts Form so far ahead of Content that the laws are there from the outset directing the playing out of our steadily decomposing Universe.

He also, several times, drops a throwaway hint that as soon as the ideal conditions occurred (entirely by chance of course) Life automatically and inevitably occurred.

What, as a natural consequence of strictly terminal decline?

Indeed, if what he states were true, Life would have occurred, and still would be newly emerging whenever and wherever the ideal conditions happen. But what about the incontestable evidence is that Life appeared only **once**, and was prevented from ever occurring a second time. What does he think brought that prohibition about?

Well, to get answers to all these incomprehensible utterances, you have to be clear that he is most definitely of the Copenhagen type of physicist, who thinks “Theory” is Equations. It isn't!

Equations are succinct and generalised descriptions that we term Form. And Form is not primary! It is generated by Reality – by concrete Content, and not the other way round.

We have here a scientist with a clearly idealist standpoint! That which puts the whole trajectory of the existence *and* the demise of the entire Universe down to pre-existing Law.

Indeed, it makes you think that all he needs to make his position totally complete is some Great Designer, don't you think?

As a physicist, myself, I have never subscribed to the prevailing consensus position, built upon Mathematics, and brought to its final downwards swoop by the victory of the Copenhagenists at Solvay in 1927.

To take such an opposing position put me totally out of step with the vast majority of my colleagues, who were mathematicians **first**, and physicists only second, and who were mostly impressed by Technology – how to use it, rather than by Science – why it is so!

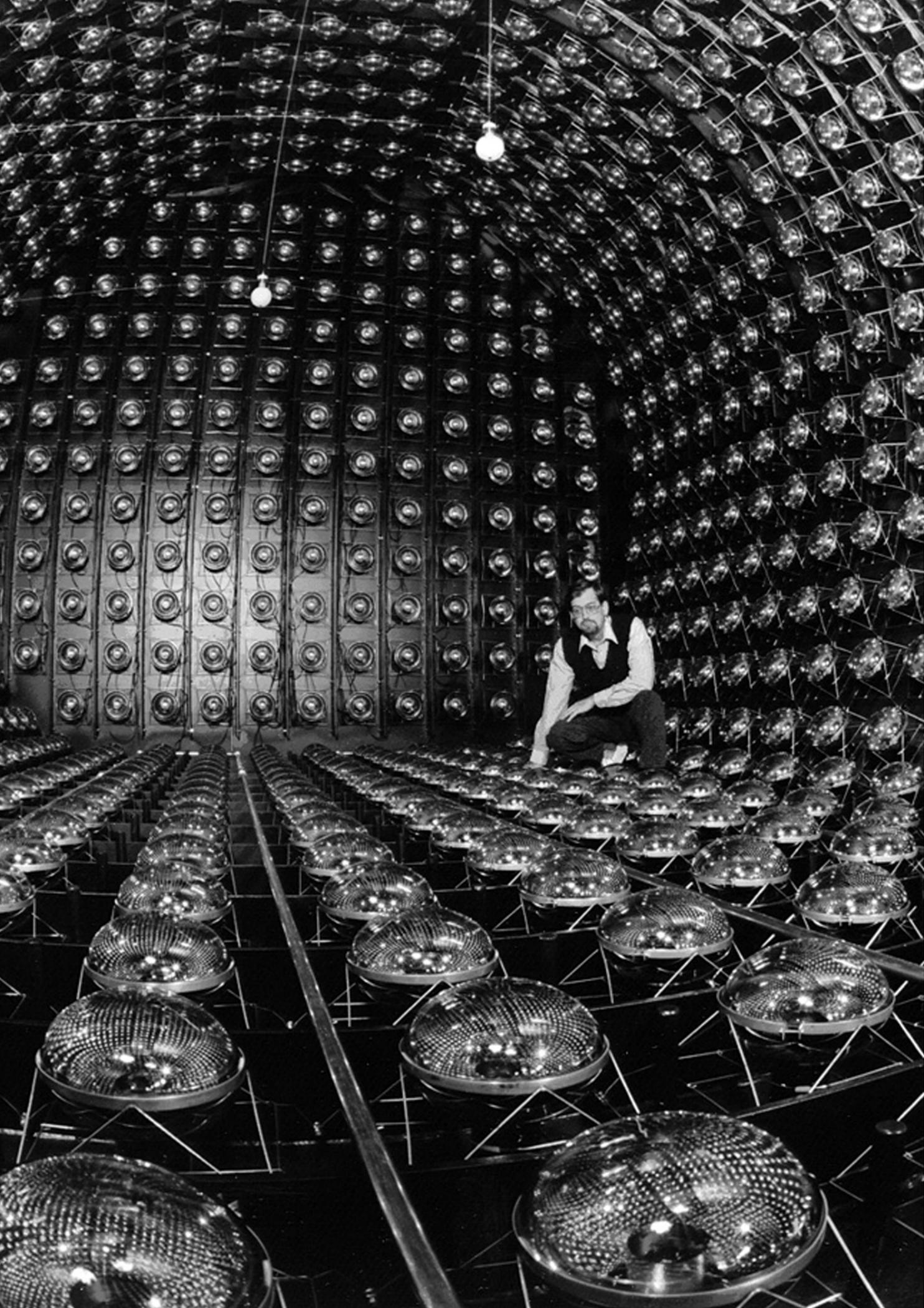
EVERY
1.3373 SECONDS

And in the undeniable success of Technology, and the ever widening view that its tools and techniques delivered, it was hard to counter pose an alternative that was never completely correct compared with a basic discipline, Mathematics, that dealt in formal Absolute Truth, and used the most powerful reasoning devices of Formal Logic to establish their Theorems and Laws.

To rubbish such undoubted success, with an insistence on attempting to know why things were the way that that were, and always at best only giving an incorrect explanation, which had the only virtue of forever approaching Truth, and making Reality ever more coherent and understandable.

The necessary defeat of Copenhagen is undoubtedly the main task for real scientists and philosophers to rescue Mankind's most effective and important standpoint, and approach to tackle the still remaining vast territory of as yet not understood areas.

The myths of Parallel Universes, Physical Singularities, uncaused Big Bangs etc. etc. etc must be defeated, and a return to Understanding as the main purpose of Science re-established.



The
TV
Scientists
on
Nothing

Everything, yet Nothing! (The TV Scientists Try Again!)

Jim Al Khalili, Iain Stewart et al are at it again!

They have to be because in spite of the energy and driving insistence of previous efforts at popularising “The Truth”, nobody as yet understands their “Deep Conceptions of the Way of the World”

But though seemingly heroic and dedicated to the service of Mankind, I am afraid that they will, once more, fail definitively, and the reasons will be the same – they are talking exclusively from the ground of their unquestioned assumptions, and these are NOT, as they think, determined by the Reality of the World, but solely by the history and traditions of their Class, which limits them to doing Science as a purely rational, indeed formal, endeavour.

They are NOT really explaining the concrete World-as-it-is, but revealing themselves and their methodology instead. For, while explanation should involve the clarification and detailed causality of phenomena, they (with the necessary *Bene Gesserit* voice that demands agreement) “explain” their untenable position upon the Nature of All Things. And, even from their flawed ground, it is still a colossal task!

For they attempt to explain the whole, rich, evolving and indeed living World in terms of...wait for it...
Mathematics!

Once again, our hero, well-lit against a black featureless background, struts his stuff, and “*explains* the **inexplicable**”. And what he is talking about is indeed very explicable, but is NOT about Reality!

It is about a particularly odd corner of that World of perfect and pure Form, which is totally within that **separated out native country** of Mathematics – **Ideality!** For **Reality** contains colossally more than can possibly be encapsulated in formal relations alone, while **Ideality** contains *only* the various Forms, known so far, that exist there.

So, Al Khalili delivers his stuff with what he sees as the essential History of Mankind’s efforts to conquer the World of Forms from the Ancient Greeks and Euclidian Geometry right up to the epitome of what these investigations consider to be the crucial (and maybe final?) Experiment – the **Large Hadron Collider!**

Now this TV spectacular was only the first instalment presumably covering “Everything”, and the final episode is due to be delivered in a single hour in one week’s time, when The Team will address the absolute remaining, yet crucial, area of “Nothing!” And I must admit that I am looking forward to that, for when you stuff the whole “Richness of Reality” into the Pure Forms of Ideality, you will *always* end up with the final anomaly, which surely must contain everything else – and that can only be the Nature of Empty Space?

So, almost as a preface the real biggy next week, Jim and Co. felt that they had to explain how they (or more accurately their like-thinking predecessors) had “inadvertently invented” the wherewithall to explain everything when they departed from what they had first conceived of as True Space, into a series of constructed abstract alternatives – the so-called Non-Euclidian Geometries.

The essence of these required the addition of a 4th Dimension – NO, not merely that of the addition of Time à la Einstein, but an extra, hidden totally unobservable Dimension of Space itself.

You needed this extra Dimension to comprehend the new Geometries, because only by having this God-like means of observing 3D Space “from the outside” could the necessary Curvature of Space *mean* anything at all!

Now, you might, with justice, wonder why all this was so important to our intellectual warriors, but it certainly was, and still is, for from a tiny set of incorrect assumptions millennia ago, this group – the Mathematical Idealists, have been attempting the impossible – to “explain” Reality entirely in terms of the disembodied

Forms that it displays – the shadows of Reality is the nearest analogy. They studied Shape and Form *by themselves* - extracted from Reality, and perfected into the purest, formal elements, and then expected (much like the mathematician constructing a geometric Theorem) to explain absolutely Everything!

Now, the (so-called) reasoning involved is certainly NOT what we consider to be that which explains concrete phenomena at all!

On the contrary, it is Mathematical Reasoning only, so from their long commitment to this area of study they **know** that what they deal in is a consistent and coherent whole!

But, of course, it actually isn’t!

They never even mention **Gödel** or **Turing** and the major holes that they revealed in Mathematics, or the abject failure of **Russell** and **Whitehead** to base ALL of Mathematics upon a single sound basis, as was attempted in *Principia Mathematica*. No, for to them, such investigations were irrelevant!

They, on the contrary, **knew a priori** that *their* methods would always deliver.

Yet, as a long time scientist and mathematician myself, I was aware of this important work upon the Philosophy of Mathematics and was therefore amazed at how these later experts danced between the puddles, and stepped around the bottomless gaps without a single word. Their rose-tinted spectacles saw ONLY Form, and any area not yet revealed soon would be, it was only a matter of time, and would indeed be finally revealed when our explorers finally reached the Wondrous City of Oz and beheld the Essence of Everything at the heart of the **Final Collider**.

In marking out the route to that final destination, our Team had to reveal each crucial signpost along the way, and, of course, quite rightly they could not proceed without passing through the crucial country of Einstein and Relativity.

For Einstein more than anyone before him was the genuine **Geographer of Ideality**. He investigated *that* World right down to its very essence - its ground, and in true mathematical ways turned physical Gravity into a Non-Euclidian Geometry.

Instead of a physical Force relating different Masses, he redefined Space itself from Total Emptiness (the Stage on which everything happened) into an entity in itself, which could be distorted by the presence of Mass. All the phenomena of Gravity could be subsumed into this new formalism. BUT, as ever with Form, it was not, and could never be, an **Explanation**.

It could only be an alternative, formally correct, **Description!**

To describe something in a different formal way is the **strength** but also the *weakness* of Mathematics. To take a set of data measurements in Reality, and fit them into a known formal equation is also NEVER an explanation: it is an alternative description ONLY!

It may empower us to use that data as a template (in a more concise and generalised Form) in a much easier way, but it can never explain why it is so! Unless, of course, you consider that the claim “Obeys this equation” is an explanation. For, of course, to say that is pure Idealism: what else could it be when it has a disembodied abstraction driving concrete Reality? It is much closer to an invisible, all-powerful God than an insight into the necessity of Reality.

Any scientist worth his salt would want to know *how* and for *what* reasons Mass can distort Space itself. The prime question hangs there blatantly unanswered – “What is the nature of this crucial “entity” Space? What is it composed of, and by what forces does Mass affect it?”

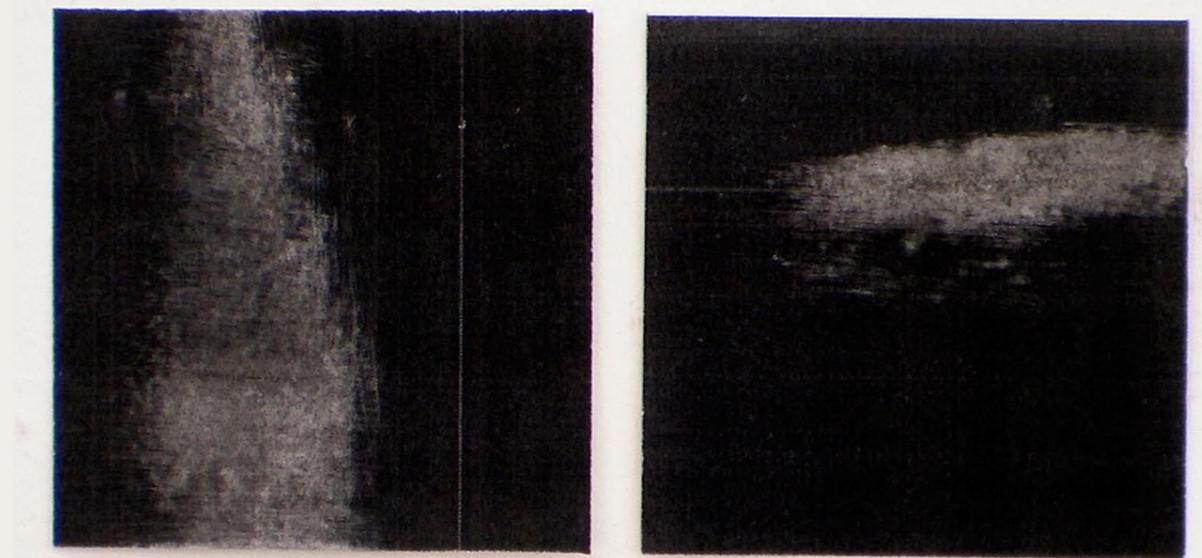
Ever since the Ancient Greeks, the two warring positions have been evident – the **Materialist** and the **Idealist**. And it was never resolved, and could never be resolved, by those who *sat & thought*. The genius could never

reveal anything NEW!

It could only ever reveal its own actual inner necessity – that of Human Thought!
What could be dealt with was Abstraction, and in the limit it could be possible for Mankind to know its own capabilities in Thought alone, and that is NOT the same as knowing Reality at all.
As **thinkers**, Mankind could only ever see Reality as its reflections in **itself**.

Now, I am perfectly well aware that I must not understate the achievements obtained by such methods, and certainly there is resident within even them, the seeds of their own demolition and transcendence, but it could only be when Mankind saw concrete Reality as primary – when he became, and thought through the necessities of being, a **Materialist**.

I look forward to next Monday's tackling of Empty Space!



Everything, yet Nothing II

I have just finished watching Jim Al' Khalili's concluding programme in the *Everything and Nothing* TV series on BBC 4 for a second time, and it has indeed been a revelation!

But it was NOT, I must hasten to add, as perhaps you (and certainly he) might think, but was revealing in a very different way.

For he did **not** reveal the very essence of Reality as he considers what is revealed by Modern Physics in his exposition.

What he did expose very clearly, however, is both his own and indeed the prevailing consensus assumptions and philosophical bases in present day Physics for all to see.

He does not, though, *explain* that view, but he does explain how he and his colleagues **describe** what to them is the actuality of Reality.

I have to emphasize the difference because, no matter who you may be, how intelligent, or even how knowledgeable you are in the area under discussion, you will not be able to explain such things *from what he delivered*.

Using this two-part series, you could, at best, only state the basic assumptions and mathematical equations that were his content, and along with him, *link them up* with **pure speculation**.

That is not Explanation: it is a kind of description of great sophistication, and his repeated insistence that in spite of its hard to believe nature, it was indeed the Truth, confirmed that he hadn't, even in his own terms, delivered an adequate and incontestable explanation. But he had provided a sophisticated enough description to deliver to those who DO need to explain Reality, a vast amount of detailed observation, multiple extracted or even created forms, and a handful of basic assumptions.

And these deliver a great deal, but, *alone*, they do not, and indeed cannot, deliver what he and his colleagues *believe* that they do.

For they are determinists of the old school (which was always termed Laplacian, after the French mathematician, who first overtly described such a position)

Now, all those involved (plus the wide consensus who agree with them) would, of course, vehemently deny this accusation, and with some justice. Laplace was a strict mechanist, who considered Reality to be more like a vastly intricate clock, than these "modern" determinists could ever stomach. So, why do I still insist that they are determinists of the same basic ilk?

It is because they are **reductionists**, as was Laplace, but add the all-delivering, all-embracing "condiment" of **Randomness** to deliver all the evident novelty and development that certainly cannot be denied.

The basic mechanisms were the same, but many and frequent spoonfuls of totally random fluctuations are added, and have been made to fill all the gaps and cracks that have inevitably emerged in a strictly mechanist account.

Now, the reader might well counter this criticism with something like, "Well, what is *your* "superior" alternative then? Are you going to tackle the colossal questions covered in this brief series with something infinitely better?"

Well, "Yes!" and "No!"

Better "Yes!", but infinitely better "No!"

Perhaps I, as they never do, should start with Life and Consciousness?

It is perhaps OK to consider inanimate objects and their inter-relations in a manner not unlike the one that they subscribe to, but if it is correct, should it not also be applicable to the Origin of Life on Earth, its subsequent development in Evolution, and the appearance of Mankind and Human Consciousness?

BUT, it cannot be so applied! Yet, no Godlike intervention is proposed at any point, so, if it is the whole case, then it should also explain these remarkable Events too!

Yet it certainly cannot do so! Indeed, from the perspective of a standpoint that can address these latter and bigger questions, it turns out that the determinist position is also inadequate in ALL the most important turning point Events **even** in the development of totally inanimate Matter.

Whenever some wholly **new** (never occurred before) entity or relation appears, their view merely puts it down to random chance!

You can see why I say that Random Chance papers over all the cracks in their position!

And, in addition, their standpoint is almost totally concerned with an extremely static part of Reality: that which we call **Stability**!

As they always instruct in the School Laboratory, "Mix thoroughly, and wait for Equilibrium before you take any measurements!"

That is the credo of a Science predicated upon Stability ONLY, and when limited correctly to such conditions, it can be both apt and very useful. But, in almost all cases where Mankind can intervene, such Stability is NOT available. It has to be set up and maintained before any experiment can be started. Earthbound experimental Science is predicated upon man-devised and erected Domains of Applicability. And absolutely ALL of the equations that he extracts from Reality are only ever achievable *within* such tightly controlled Domains. One step outwith such a Domain, and its equation will fail utterly!

Now, of course, in this short paper, I cannot put the full case, though I have done it elsewhere in a large series of contributions over the last decade or so.

But, what I have so far explained here is sufficient to query the standpoint of Al' Khalili et al.

And one other aspect must be emphasised.

Most of what he put forward about the Universe and Cosmology is definitely outwith any Domains that he, or anyone else, could erect, control and experiment within.

He takes his earthbound assumptions, techniques and ideas, and applies them without any concessions in a World totally outwith his usually applicable aegis. He and his colleagues believe that they can transcend this difficulty with a vital assumption: that the microscopically small, which can be addressed on Earth, actually *determines* directly and completely what occurs on the Cosmic Scale. They even insist that they do indeed *replicate* the conditions not only in Space *now*, but at all points in its development from the first split second of the Big Bang"

The Large Hadron Collider is claimed to deliver situations so close to the very beginnings of the Universe that they will find the **Higg's Boson**, which their theories claim was crucial in the production of the first Matter that ever existed.

They will finally replace God with a machine!

Is that not very Laplacian?

Now, finally, though I will be returning to further aspects of his TV programme, I must address the role of Mathematics in all the ideas and "theories" that Al' Khalili and his colleagues **use**! They consider the content of such equations, which can only be Pure Form at best, as *driving* Reality. To give this assumption a bit more gravitas, they call these equations "theories" or even "Laws", and those are complete misnomers.

An equation is NOT a Theory, it is merely a *description* in formal terms alone. A real scientific Theory goes well beyond a single formal equation (which is ONLY the data set reformulated), because it has to *explain why* things are the way that they are, and behave in the way that they do. And to do this they must integrate whole swathes of relations into an overall and changing trajectory – a coherent and comprehensive sequence of causes and effects.

To limit Theories to equations is a modern and major error, which was finally decided upon in the **Solvay Conference of 1927**, when Bohr and Heisenberg defeated Einstein, and established the **Copenhagen Interpretation of Quantum Theory** as the ONLY possible methodology and Philosophy.

It was a totally idealist retreat!

By putting abstract "laws" as primary, it was having purely formal abstractions *making* concrete Reality what it is.

What else can you call that but Idealism?

Everything, yet Nothing III

This third paper on Jim Al ‘Khalili’s TV series on BBC 4 is clearly necessary, for though it was only a couple of hours duration, it did cover a whole raft of positions, which form the basis of the current consensus position in Modern Physics and Cosmology.

But, these papers will not, at this stage, represent a coherent and comprehensive alternative, though that is already available elsewhere in the writings of this author.

Perhaps, we should dwell briefly upon the Nature of Empty Space as it was finally described towards the end of this T.V programme.

Instead of merely a total vacuum defined as containing nothing with either Mass or Charge, the fact that E.M radiation could effortlessly pass through it seemed to indicate that it could NOT be totally empty! E-M radiation is, after all, a complex of both electrostatic and magnetic variables, oscillating 90° out of phase. For such an involved energetic system to traverse such an immense volume of supposed Empty Space seemed to infer *something there* to facilitate this. And even within the Atom, among the orbiting electrons, the famous experiment by Lamb seems to prove that those internal Empty Spaces are not empty either, for they, in these experiments, managed to measure the wobbles in the electrons caused by something in that inner space. Of course, the method of argument always employed in such expositions always delivers evidence to refute some assumption without necessarily giving sufficient proof to establish what might actually be causing such phenomena.

The thing brought up to explain such unknown content of the vacuum, was first the mathematical discoveries of Paul Dirac, who produced equations, which “seemed” to infer the presence of an anti-matter companion particle to the electron, which was called the **positron**, and (though this was not explained) could be both produced along with an electron as a so-called Pair Creation out of pure energy alone, and, just as easily annihilated back into energy by coming back together and vanishing as particles. How they got from these “energy or particle” modes to the nature of Empty Space wasn’t made clear, for though they quoted Paul Dirac’s findings and said they indicated that such Pair Creation and Annihilation was likely to be occurring everywhere within any vacuum, they did not find any permanent manifestation of either. The particles came from Energy, and thereafter the energy vanished, while the particles annihilated each other back to energy so the particles vanished. But the average of a positron and an electron was deemed to be **zero** – nothing, so they had these consistent **quantum fluctuations** happening entirely out of nothing! Presumably, as well as matter and anti-matter, which summed to Nothing, the energy must also sum to Nothing too; they didn’t say how! (Apart from the oscillations over time would average out to a zero overall displacement).

The stretching of ideas was clearly demonstrated by the argument that before the Big Bang, there was also **Nothing** (but as this could be in constant *quantum fluctuations*, as described above, it could lead to asymmetries in the Early Universe, and hence the evolution of stars and galaxies, which in a totally symmetric and expanding Big Bang would be impossible.

The term “borrowing Energy from Nothing to allow pair creation more or less typifies this sort of “explanation”.

But, of course, there is more to it than such rubbish reasons.

The whole approach dates back to the Copenhagen Interpretation of Quantum Theory, and the total dependence upon Equations and nothing else, while condemning any attempts at Explanation as self-kid. This meant that the only possible confirmations were in the matching of outcomes with predictions from purely formal Equations. So, if this could happen, then it must be right. It is an old and lazy formalism termed Pragmatism. And as long as all things could be summed to Nothing, you could always get away with it. “But, the equations

say that this would be the result and it was”, will be they ONLY confirmation of correctness, but the exact opposite is the case. You can always find a form to fit anything. That’s what Form is all about. It doesn’t drive Reality. It is our way of turning all repeating phenomena into tidy forms which work, but, not only never explain anything, but indeed deliver such rubbish as we have been saddled with by these mathematicians. As a mathematicians myself, I can say with absolute certainty, never trust a mathematician to explain anything: it isn’t what they do!

Gravity Again?

As Brian Cox explained Gravity in his *Wonders of the Universe* TV series, he did not elicit any positive response from this particular viewer, but instead a whole series of necessary, indeed crucial questions. And, indeed, it is clear that all such Science Communicators are aware of this failure. Otherwise, why are there so many “attempts” on all TV Channels to quieten this growing questioning, and finally put Science “back where it belongs”?

Now, simultaneously with Brian Cox’s poetic visual feast, the BBC are also delivering *Everything and Nothing* by several of the other star communicators, in this case led by Jim Al Khalili. And in their initial episode they also address Gravity, yet promise to deal with “Nothing” in next week’s final instalment.

I will not be holding my breath, for they are well aware, in spite of their committed and knowing deliveries, that their position is packed full of holes.

I get the impression that success or failure will not be measured in any sort of scientific way, with determined and successful attempts at a coherent and comprehensive account, and generating the necessary emerging hypotheses and projected consequent experiments to confirm or deny them.

Instead, there seems to be only ONE such “final arbiter” – the **Large Hadron Collider**.

Perhaps it will be a *sort* of salvation, they certainly seem to believe that it may be just that! But, as a long-standing professional scientist myself, I can see no possible independently confirming result for *their* terminally ailing version of Science. I can envisage no such result, Other than an illegitimate self-confirming revelation, inevitable when what you are looking for, and how you look, is such as to reveal nothing else. You can see what will happen!

They will find “something”, and they will “fit” it into their preconceptions as best as they can.

Not what I call Science!

There can be no doubt that this mighty machine will issue forth a whole cascade of “new evidence”, and precipitate a torrent of even more incomprehensible and maths-led speculation, which may shut up any mounting criticism. But it will at best only be a temporary diversion, and not the means by which true answers will be found.

Returning to Brian Cox’s “exciting” revelations, we are told that Gravity (always initially envisaged as an invisible force, caused by the interaction of separate Masses), could instead be interpreted as a local distortion of Space itself by the presence of Mass, which will then affect other masses as they progress “downhill” in the depression made in the very fabric of Space.

But what fabric is that?

Now, before we, ourselves, take a closer look at this question, we must be clear where Science has got to at the present time, and how, in contrast, it ought to address the *real* World.

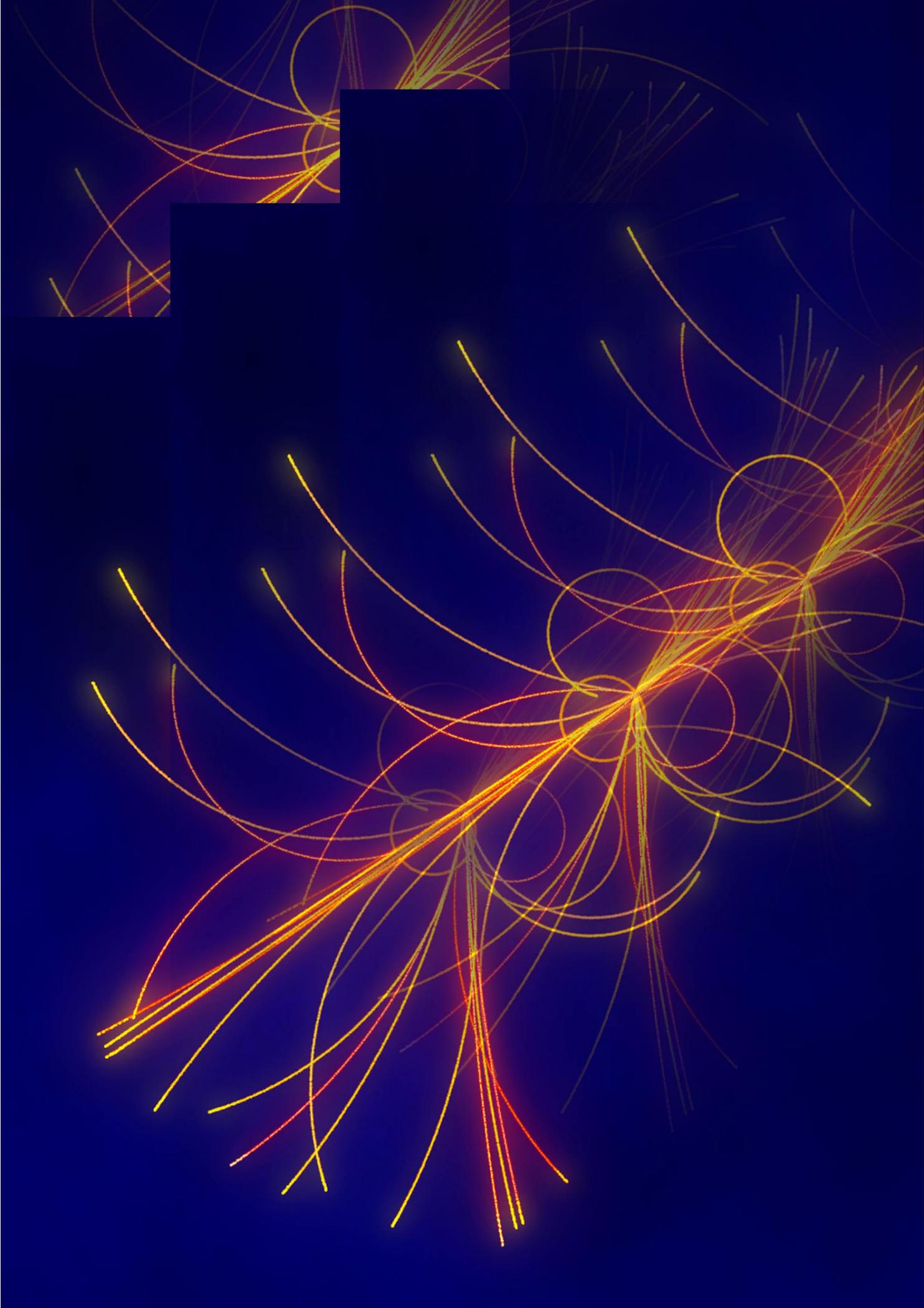
In all earthbound investigation scientists assume **Plurality** – the possibility of analysing everything into a hierarchy of Wholes, and their constituent and entirely *separable* Parts.

And again, with reachable problems on Earth, when they cannot do this, they have learned to *make it so*, by careful and appropriate farming the area of investigation, achieved by controlling the majority of conditions and variables to a considerable extent, so that “Plurality *becomes* True!”

This technique certainly allowed a kind of progress, for so long as these **Domains of Applicability** were maintained, any extracted relations (and consequent equations) could be effectively used to both *predict* outcomes and hence also planned activities would *deliver* their intended products.

But, though pragmatically successful, this method was fraught with significant error for two different reasons. **First** such Domains were not always possible to construct, so that the problem of using entirely pluralist relations in unfettered Reality was a severe, if not insuperable, problem.

Secondly, the approach led to very serious conceptual errors – mainly in the assumptions of complete *separability* of relations, so that such forms extracted within very constrained Domains were expected



to perform unchanged as such in unfettered Reality: Complication alone was assumed instead of *mutual determination* in the unfettered Real World situation. This was a major, and in the end debilitating error, for it made all Qualitative Changes unintelligible: the placeholder that mere complication could produce everything no matter how profoundly different, had to be incorrect! Indeed, the evident blurring of any relation when it was applied in Reality-as-is, was also put down to the mere simultaneous acting of multiple relations, all of which were unchanged *in themselves*.

So, all sorts of techniques were developed to attempt to cope with these complex real world situations by (guess who?), the mathematicians, which culminated in the by now universally employed technique termed **Simulation** (and we must be absolutely clear what this technique involves and assumes). *Simulation* is a *pluralist* attempt to model something in a *holistic* World!

Now, such methods and mathematics were not the everyday weapons of ordinary people, or even, initially, of scientists, but they became increasingly vital in certain difficult and crucial areas.

And (we must ask), what of the possible applications of Science in Space, can we do the same things? Well, certainly, the erection of man-made Domains were there completely impossible, but at the same time, the relations which seemed to pertain *out there* were much closer to pure Plurality than elsewhere, so the developments in early Cosmology were even more maths-based and speculative than anywhere else. [Indeed some of the earliest equations in Science were developed based upon observations in The Heavens from scientists such as Tycho Brahe, Kepler and, of course, Newton]. So when Einstein came along with his mathematical re-interpretation of “Old” Gravity (à la Newton) as a distortion of Space, he not only got away with it (for Space is *nearly* pluralistic), but he also instituted a maths-led approach to Science *in general*.

By the Solvay Conference in 1927 Einstein found that, following his lead, the majority of those present had abandoned what he himself still held dear: they abandoned scientific explanation entirely.

And hence a great gulf arose between these “New Scientists” and the non-specialist Man-in-the-street. Science, and particularly Sub-Atomic Physics, and finally the Cosmology that arose out of the latter, became incomprehensible to him, and slowly but surely the respect for these former heroes began to ebb away. People simply did not know what these scientists were talking about!

So, the need to explain themselves grew, and today the abundance of Science TV programmes and popularising books (not to mention “Explanatory Videos” on the Internet by helpful amateurs) have proliferated to a remarkable degree.

But they are not succeeding!

Instead, the Worlds presented seem totally out of reach, and instead of filling the projected audience with confidence and indeed commitment, they simply seem to *prove* the *inadequacy* of that audience (the amateur attempts to show that they *really do* “understand” prove this conclusively).

For while Space Exploration could indeed woo the general public with a clearly unattainable area of involvement, the esteem of Science was ensured. But, that episode now seems to be in terminal decline. We simply cannot afford such spectacles any more!

So, the young and attractive Brian Cox is given his head. “Wow ‘em in the aisles” he is instructed! And as Cox’s main scientific endeavour is at the present time is in the most important experiment being carried out at the **Large Hadron Collider** at CERN, along with his evidently “northern origin” and clearly originating from ordinary stock, he had to be the ideal person to make Modern Science both exciting (he really does try) and respected among the bulk of the population.

But, in contrast, my reading is that he makes NO inroads into their understanding at all. But when talking to young women however, he seems to be a great “hit”.

All this being said, let us admit that he does not really succeed as required. He is an attractive and intelligent

young man, so he most certainly has his fans, but the increasing number of spoofs on **YouTube** “taking the mick” out of his enthusiastic performance, shows that there are also many with whom he is certainly not succeeding.

Let us see why!

If Mass distorts Space, we have to ask (as scientists rather than mathematicians), “What is Space physically? It cannot be, as we always thought, totally empty and merely *our* construct for the stage on which all things occur, with an adequate set of arbitrary quantifiable directions to allow us to position things with respect to one another.

It must also *be* something!

And this something, we know, certainly communicates Electro-Magnetic radiation of all kinds across the “Gulf”, and when considering Gravity, this too must be communicated across this “something” too”. No matter whether we see it as an attractive influence across Space, or a distortion of Space itself, it still has to reach all Parts of that Space to *affect* it, one way or the other.

Unless we believe in Magic, there must be **something there!** Space must consist of something, it **cannot** be absolutely Nothing!

Now this author was long perplexed by how something as complicated as Electro-Magnetic radiation, which is composed of oscillations of two different qualities – one Electrostatic and one Magnetic, which act in different directions and are also 90° out of phase, yet can be communicated across Space for many billions of years, and covering quite colossal distances.

What could possibly do that?

My suggested hypothesis, was that the “things” which actually made up Space would have to have full E-M properties, and therefore be capable of passing on from one to another any received E-M disturbance *literally forever*.

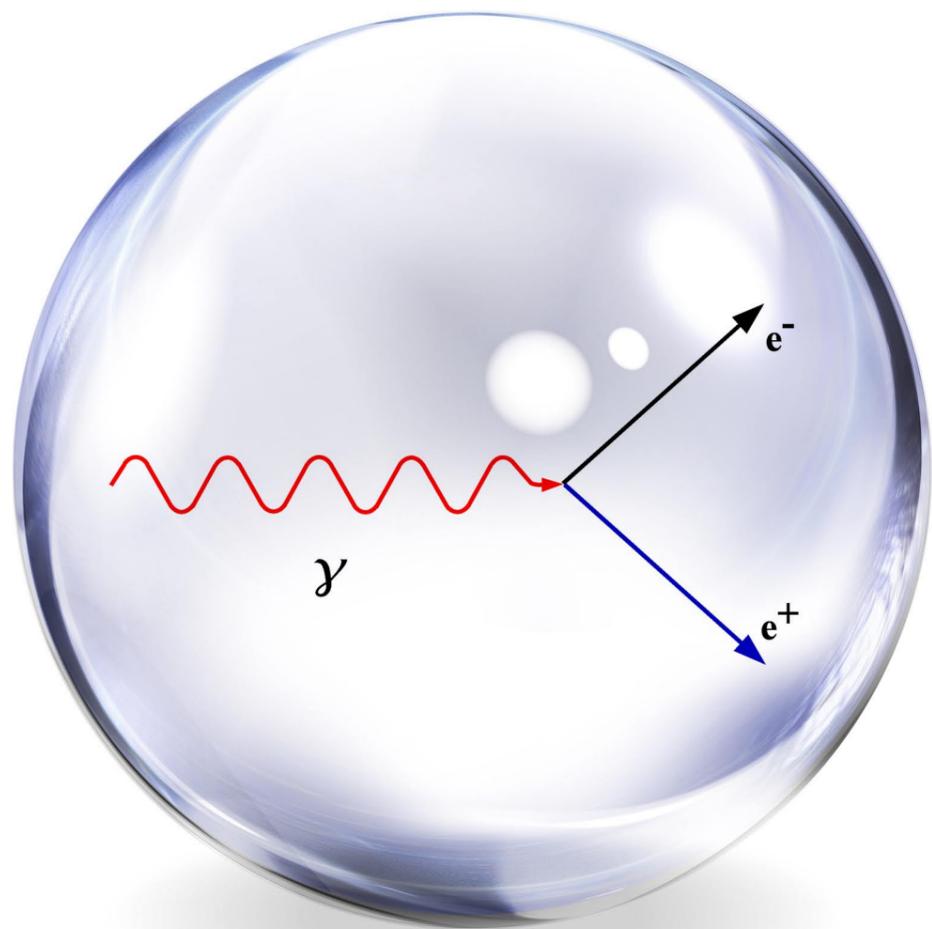
But NO mass or charge could be detected anywhere other than when radiation was passing through. I therefore postulated that the whole of Space within our Universe must be “paved” with **Empty Photons** - the usually agreed receptacle for E-M radiation, but both **empty** and **non-moving!** Now, whether this is entirely correct or not, is NOT as important as the realisation that we cannot continue with the myth of entirely **empty** Space. There must be something there and it must (just to complicate it further), also deal with Gravity!

Now, just as the physical structure of an Empty Photon seems inexplicable, but nonetheless possible as E-M radiation does only contain structured Energy and nothing else, the nature of any “medium” for Gravity must involve Mass and absolutely NO Mass is discernable.

But let us muse a little!

Consider an Empty Photon with the tiniest trace of energy. What would happen if an adjacent Empty Photon were packed with Energy, would it not be immediately induced into our near empty receptacle too? And if there was some sort of receptacle for Gravity, also with the very tiniest trace of “Gravity” – like a Photon for Gravity radiation. Now if such were the case and our “Empty Graviton” was adjacent with another packed with Gravity, would it not also be communicated by induction with the almost empty receptacle?

With a “paving” of such empty receptacles we could at least effectively model propagation of radiation, and of Gravity across Space.



New
Scientist
Special
On
Nothing

Preface to “Out of the Ether?”

(an article by Paul Davies in *New Scientist* 2839)

Before attempting a critique of Paul Davies’s article, I must refresh briefly the **Theory of the Paving of the Universe with Empty Photons**, as the suggested alternative to Davies’s position. For such a standpoint opposes that of Davies (and all the followers of the Copenhagen Interpretation of Quantum Theory), both philosophically and scientifically. Indeed, without simultaneously offering an alternative, it is hard to see how any “review” could be anything more substantial than what he suggests is the Nature of Empty Space.

First, he agrees that Space is not a totally empty void, and he brings up many of the same points as are emphasized in that alternative theory, and in particular taking actual zero measurements taken there NOT as proof of a complete absence of anything, but instead of some sort of contending mix, which overall and overtime will always deliver zero results. But, as to what exactly delivers these features is where we totally disagree. It has to be said that in his brief journey about the Cosmos he includes many different ideas, but he nevertheless rests heavily on what he and his co-thinkers term **Quantum Fluctuations**.

Whatever these are supposed to be, they do give zero results overall, but also allow *momentarily* other things to happen. In his description of Empty Space, he seems to address **Fields** (of several kinds), but you are constantly left asking, “*What is it that is Quantumly Fluctuating?*” Clearly, he hasn’t any **material** things in mind, so it is the Fabric of Empty Space itself that is quantumly fluctuating! Nevertheless, as a scientist, I, along with most other mortals, require *further details* - for to say there is no matter there leaves us without any sort of means to display these properties and to actually *contain* the energy involved.

For example, when a charged particle encounters a field in totally empty space, it is deflected – in other words a force is inflicted upon our particle, we have to ask, “*How?*”

Now, we could suggest that the necessary energy to inflict that deflection could come from the moving particle itself – delivered first to something else, and then returned in such a way as to cause the deflection.

But what exactly received and returned the energy?

In this author’s **Theory of the Double Slit with Electrons**, the moving charged particles set up disturbances in a universal paving of Empty Photons, and these ran well ahead of the causing particles to arrive first at the Double Slit arrangement, pass through BOTH, and then interfere on the other side to establish and maintain an interference pattern. So, when an electron finally arrives and passes through one or the other of the slits, it immediately encounters the interference, and is either deflected or not depending upon its particular path through the pattern.

But for this to work, we had to have the Empty Photon paving, the physical effect of the Double Slit, and the moving particles as both **cause** and *affected participants*.

The explanation is based upon entities! There is even a full description of what an Empty Photon could be, and even how it could have originated in the past history of the Big Bang Universe.

Quantum Fluctuations of Nothing are totally inadequate as an explanation. What is fluctuating and why? Surely, fluctuations about stability involve a balance between opposing forces, which return deviations always back to the stable position, in proportion to their deviation from it.

So, in a following review on this article, an attempt must be made to map all his examples onto the proposed Empty Photon Paving, if only to, by this means, discover what **he** thinks fills the void.



Out of the Ether?

(A response to Paul Davies's article)

In a short historical survey of accounts of the Nature of Empty Space, Paul Davies, in his **New Scientist 2839** article, was able to reveal an almost continuous oscillation in the various notions successively put forward, on this question, but with all versions regularly suggesting some undetectable, ethereal “substance” filling it, which provided a necessary ground for its role in many very different phenomena.

Yet, via a diverse series of suggestions and their inevitable abandonments, he ends up with a surprising position.

There is NO space-filling entity! And though it is not empty “*the will o' the wisp stuff*” it contains is a far cry from what we normally think of as matter.

Yet a simple question reveals a very significant answer,

It is, “Is there any unobscured point anywhere in this Empty Space, where absolutely NO sources of light (or other E-M radiation) is visible or even detectable?”

For the only answer is “No!”, and this means there is not a single point in that Space, which is not oscillating in this complex electromagnetic way. Thus, without any doubt, something must be oscillating everywhere: Empty Space must be totally filled with something capable of such oscillations (**or**, if you insist on a corpuscular view, containing a photon of such radiation).

So, now you know? Of course you don't!

What is it we are assuming?

Davies clearly and overtly insists that force-imposing fields (conceived as quite normal in the void) are totally disembodied!

Still, without any ground for evident Empty Space phenomena, he finds “a solution” in **Quantum Fluctuations**. He finds confirmation(?) in the idea of fluctuations about zero, which overall will deliver NO resulting effect, but moment-by-moment all sorts of diverse, and even contending, effects can have a transitory existence. [Still, I am forced to ask, “Quantum Fluctuations of what?”]

But, temporarily abandoning the case of concretely existing fields, he instead settles on a particular one, which overall, and over time, always sum to zero. [But, let us not forget that there are fields which do NOT oscillate, but deliver steady values at particular points, and will deliver force on any susceptible entities placed in such positions]

You can see where he is heading, even if you cannot see what *delivers* his “field”: Empty Space is supposedly permeated throughout by a universally present field of a zero-sum kind.

It is assumed to vary to and fro at all points, but when it is attempted to be measured, it delivers only its overall effect – zero. It cannot be detected!

Now, here things begin to get interesting(?). Even this zero-effect must contain energy.

As in a taut, vibrating string, there is a zero-sum balance, but energy is certainly involved. This allows such a theorist to use his equations to actually calculate the amount of energy in a unit of volume of Empty Space. But the problem is, using currently accepted theories, that it still turns out to be infinite.

I'm afraid at this point that I cannot refrain from reminding everyone that such happen all the time with formal (mathematical) equations, when they are applied beyond their applicable ranges. Asymptotes and infinities regularly occur in such formulations, because they are NOT representing Reality, but a simplified and purified pattern, which only exists as such in Ideality – the World of Pure Form alone!

And beyond such perfect conditions, all equations bomb out in this way.

“Never mind”, he insists, “we can look at it differently!”

The fields can be seen as **waves**, and waves can be **particles** (in the Copenhagen version of Quantum Theory, of course), so Empty Space now becomes a seething mix of waves, occasionally becoming particles, and then dissolving again back into waves.

But what are they waves of?

All of this is totally disembodied: it involves NO vehicles for the energy, only occasionally turning into particles and then doing particle-like things, before vanishing back into the undetectable fluctuating ether once again.

There is the possibility that these temporary particles would (over time and on average) actually contribute to a summed gravitational force, and even perhaps swamp that due to local concentrations of normal matter in more conventional physical objects.

Now, much more fragmentary stuff is also thrown in, which “touches-all-bases” in current Cosmology, but all of it is descriptive at the worst, and merely encapsulatable in formal equations at best.

None of it really *explains* things, neither do we get from it all a clear conception of the Nature of Empty Space.

So, this author's alternative Theory of Empty Photons, must be brought in to the discussion at the very least to assist in explaining these descriptions and formulations in some understandable form.

The need for a Paving of all Empty Space within the Universe, possessing quite well defined properties is surely absolutely necessary.

Let us see how far we can get!

The initial version of this alternative theory included the possibility that Photons could be emptied, leaving the whole of Space littered with these “husks”.

But, what could possibly deliver entities possessing full E-M properties, so that the propagation of radiation would be entirely possible, yet the receptacles allowing this would be impossible to detect, when not holding significant amounts of radiation?

This could not but lead to a major re-definition of these “Empty Photons” as being actual **Neutritrons** – entities comprised of pairs of mutually orbiting, yet opposite particles. These were proposed to be one negatively charged electron, of ordinary Matter, and one positively charged positron of Anti Matter.

Such an entity would appear to have a net zero charge, and a net zero matter, yet could nevertheless exist in a minimum orbit state (as an “Empty Photon”), but could also carry extra energy via promoted (higher energy level) mutual orbiting, and pass such energy on by induction to any other adjacent entity of the same type.

The usual universally accepted constant Speed of Light, would then be merely the Speed of Induction of single quanta of E-M energy from one such vehicle to another.

Yet, any attempt to explain the origins of such entities solely in terms of present-day entities and conditions would be bound to fail. They would certainly be a product of a much earlier phase in the Evolution of the Big Bang Universe, when such entities would be not only very numerous, but also packed full of very high energy quanta, and careering physically outwards from their origins as particles, shooting out into *really* Empty Space.

The speed of travel of these entities would be much faster than the generally accepted figure for the Speed of Light, which (as described above) could be merely about photon-to-photon induction, and hence this early phase would replace that of the **Inflation** period in the older theories of the Universe.

Via a whole series of Phases, which would include the creation of what we normally consider to be Matter (with Protons and electrons into Atoms), and the vast extension of the Universe as defined by these initially moving Photons, it is assumed that they would then be both:-

1. slowed down to an almost stationary state, and
2. would lose all above their minimal base energy, to become these universally present Empty Photons.

Now, if this were the case these would end up well ahead of the vast majority of much heavier aggregations, and on slowing to rest might then begin a general move back inwards under gravity, until they formed a tightly-packed paving everywhere. Such a paving would produce a clearly defined boundary to the Universe, and with no paving beyond that limit, NO propagation of any other E-M radiation would be possible there. The result, internally, would be that any such radiation approaching the boundary via photon-to-photon induction, would be unable to traverse it, and would effectively be **Totally Internally Reflected** back into the Universe.

Now, clearly, this paper is supposed to be a response to a short article by Paul Davies. It cannot, therefore, do justice to any diametrically opposed alternative to his universally accepted standpoint.

For that, interested readers are recommended to access the large amount of material available both in the **SHAPE Journal's Blog**, and from this author direct.

So, clearly, in this paper the description has only been sufficient to undermine the position that Davies puts forward, for it is both fragmentary and idealist, and of no value to those who study the subject in order to understand it.

“Nothing” in Mathematics?

Paul Davies’s article on the Nature of Empty Space was only one of a series of short pieces in **New Scientist 2839**, gathered together under the generally collective title of “**Nothing!**”

The first two such articles were very different contributions generally taking a purely formalist, mathematical standpoint, and establishing historically the first appearance and use of the zero – “0”, in various aspects of Mathematics.

But, both contributors were very clearly consummate mathematicians, in that they kept everything within a specific World limited to Form and Form alone.

This included Form as it exists in the patterns extracted from concrete Reality, and those man-made formalisms invented to pragmatically assist, what these specialists sought to do with Number (as well as other, similar types of abstraction).

Having been an able mathematician myself all my life, I am aware of this constructed World, and have personally investigated some of its main areas (as well as significant work in some interesting corners), which led, at one stage, to my papers and major Diagram delivering *The Processes and Productions of Abstraction* as published mostly on *SHAPE Journal* in the most recent period.

But I am also a lifelong scientist, and being long involved in work from both standpoints, I am more than usually aware of the many shortcomings consequent on the purely formalist viewpoint, as well as the ever-increasing damage being inflicted upon Science by an exclusively formalist approach.

NOTE: Even that experience may not necessarily equip someone to realise the dangers inherent in formalism, but I am also a sculptor, musician, and an increasingly active philosopher – a fairly unusual combination, which does indeed allow a much more detached and disinterested view than could ever be attained by any strict specialist. Read the amazing stuff written by **Heisenberg** in his book *Physics and Philosophy* to see what I mean.

Indeed, the main danger in Mathematics has always been its regular slipping into out-and-out idealism, when it is seen as accurately reflecting Reality and indeed providing its essences and even causes.

Indeed, for a discipline wholly situated in Abstraction, it never fails to amaze me how little time these practitioners spend on thinking about what Abstraction is, and how it actually relates to totally unfettered Reality, rather than the maximally constrained and maintained researches limited only to very different Domains of Applicability.

The usually mentioned dichotomies, such as those between the Counting Numbers, and the many totally illegitimate extensions to that category, are generally added in without a murmur.

But, I cannot recommend either of these contributions as being either significant or profound in their treatment of the “Number” zero – “0”.

Having worked with one of the very best mathematicians for several years, I was very soon aware that that they “lived” within their very special World of Pure Form alone – Ideality, and did not spend any time at all on the philosophy of their subject. Having asked the question, “How do **iterative equations** access Reality differently from their actual sources in **deterministic equations**?”, many times and over many years, I was never given any satisfactory philosophical answers, and in the end had to tackle and solve the problem for myself.

The reasons for that ubiquitous attitude are obvious: they were in love with the purity and intricacy of that beautiful Abstract World, and were never either scientists or engineers, but true explorers of their pure and entrancing chosen World.

But, of course, you should never let them loose in scientific studies of the Real World, for they will soon have it moving solely to the pulse of their abstractions, for they can only be idealists philosophically, when presented with the concrete World.

For their World of Pure Form is simultaneously very much smaller than Reality, yet is also a great deal wider! It includes multiple Forms that do not exist in concrete Reality – there are sets of Forms and manipulations that are applied beyond their actual occurrences in the real World. And by this statement I am not including Forms that were discovered first in Mathematics, and were **later** shown to be closely related to what can happen in Reality. I am well aware of that remarkable area of Mathematics. I am condemning the areas, which do not and cannot occur in the Real World. Perhaps an example is required.

Many years ago (I told you I was a mathematician) I was researching the tessellation properties of maximally symmetrical re-entrant polygons and polyhedra, and as I was revealing some entirely new features, I thought I should consult the experts. First I went to **H.S.M Coxeter**, who seemed to be researching the same sort of areas. I was amazed to find that all his figures were in more than 3 dimensions and were all convex. There aren’t more than three dimensions in the real World, and by choosing only convex versions, the principle of maximal symmetry also made them a very narrow range, nevertheless. I found nothing approaching what I was doing in his work.

Later, having seen one of **Roger Penrose**’s nearly symmetrical tessellations, which did involve re-entrant forms, I sought out his work, but seemed to be just getting a very small number of forms. I was disappointed. He was not interested in the things I was revealing. And I could add to my list of similar dead ends, but I wont burden the reader. I think my point has been made.

Multiple dimensions are a very clear example.

Only three dimension of actual Space occur, yet the geometric constructs, which frequently facilitate the investigations of Forms are helpfully extended to as many “dimensions” as there are relevant parameters in certain equations, and hence the advantages of representing these graphically (in Coordinate Geometry) can be extended to cover all these cases by extrapolating techniques to multiple “dimensions”, which mean something in such mathematical treatments. Now, such techniques can be legitimately applied in these circumstances, where there are NOT **real** dimensions, but **formalisms** applicable in such relations.

But, clearly, to impose such “dimensions” on Reality as Physical Dimensions is the purest Idealism.

When teaching Mathematics, and, feeling the inadequacy of the usual conception of so-called Complex Numbers, I used to spend some time on the extension of **Number** into **Operators**, such as i - *turn anticlockwise through 90°*, and its formulation, when applied twice as i^2 - *turn anticlockwise through 180°*, sometimes written as the operator **-1** (negate), so that, without a qualm, $i^2 = -1$ - *turn anticlockwise through 180° is the same as negating* was considered as part of Numbers and $\sqrt{-1} = i$. Total rubbish of course – they are NOT Numbers but clearly Operators.

It is all about the formalisms of operators, and “stuck onto” Number as a convenience for unthinking users, and involving certainly NO meaningful explanation.

All in all these special sorts of papers in **New Scientist** have to be condemned as totally **inadequate**, and also **irresponsible** for a reputable Science Magazine, for as the Copenhageners continue to dismantle Science under the guise afforded by formalism, they fail to condemn, and instead publicise such stuff.

Finally, I must add that as a full time writer I now find something important to criticise in every single issue of New Scientist, which it seems has sunk to supplying the material for coffee time discussions rather than serious debates.

P.S. I could not bring myself to write a review of this very thin gruel. It is fine when teaching pupils in school (I have done it myself), as long as you also admit your own formalist ground. But it is hardly a worthy contribution to the currently very important questions posed today about the true Nature of Empty Space.

Though I also disagree with Paul Davies’s article, I certainly had to be responded to, as it was a very clear exposure of just how these things are seen in modern Cosmology.

Something for Nothing?

A few comments on the New Scientist article “*You can pull photons out of empty space*”

Just when my own researches have led inexorably to the question of the nature of Empty Space, **New Scientist (2839)** delivers seven separate pieces on the very same subject, though *there* they are given the overall title of “**Nothing!**”

In this exposé the editors felt it necessary to recruit the talents of Brian Greene, Ian Stewart and Paul Davies to deliver the latest on this apparently crucial area, for most theorists have certainly arrived at the general consensus that, “*The Universe emerged entirely out of Nothing!*”

But, simultaneously with the insistence that the Ether was a totally mistaken concept, there has also emerged this diametrically opposite view that Empty Space isn’t at all “empty”, and that it contains everything needed to deliver our whole Universe, not only in the past, but to sustain it NOW and for the future too. It is presumed to be the ground for all existence.

Now, you would expect, from this “mini compendium”, a series of crucial new factors that have been discovered, which I would be able to use to inform and progress my own studies in this area, especially as it involves such a celebrated group of world famous scientists.

But though some of them admit of “*something out there*”, they all still reside well within the fold of current physical and cosmological Theories.

They are certainly not going to upset the applecart!

The usual bases of Copenhagen and Quantum Mechanics continue to “rule OK!”, and the vast investment in the Large Hadron Collider to (among other things) *find* the mythical Higgs’ Boson, proves that the general direction is still *totally* unchallenged.

But, the long decline theoretically since the Solvay Conference (1927) **must** be halted and reversed. Idealism in Science, as shown in the idea that disembodied laws *drive* Reality has to be dumped and Explanatory Science resurrected, revived and renewed to cope adequately with the contradictions and impasses of today’s clearly inadequate approach.

We must cease worshipping Mathematics and Technology as “Science”, and return to its primary and vital function – to both understand and explain concrete Reality in its own terms.

Now, seven pieces (as were delivered in **New Scientist**) are too many for one person to adequately and individually address simultaneously, so here will be offered a small number of reactions to this apparently monolithic and unchallengeable consensus position.

And possibly the best place to start is with the short piece (500 words) in the THIS WEEK section of the magazine, which is entitled, “*Can you pull photons out of empty space?*”

The answer given is, in short, “Yes, if you are moving close to the Speed of Light!”. But as this and several other points included in this piece resonated with my own work in this area (which comes to quite different conclusions), it seemed a very good place both to criticize the presented joint position and offer the beginnings of an alternative.

We are told that particles pop in and out of existence from Empty Space, and that this is due to the laws of Quantum Mechanics.

“Due to law? “ – that is a funny way to explain any phenomenon. Is that not mere description?

Such formulations may accurately **describe** what we observe, but surely it does nothing to explain it.

“Obeys this law!”, is not an explanation!

There have to be reasons and causes for phenomena, and not just equations.

The piece also mentions the Casimir Effect, and uses it to prove(?) that space must be full of what the writer terms “virtual photons”. But when he says that they regularly and unpredictably change into pairs of real photons, and back again, I realise that we are still well into the mire of Copenhagen Idealism.

In a particularly opaque “explanation” we hear that the sea of virtual photons absorb K.E from the moving metal plate involved in the Casimir Experiment, and this causes the radiative production of real photons.

Now, I suppose that I must explain why I include this piece of hokum in my response? It is because I have developed a theory that also fills Empty Space, not with virtual photons (whatever they are), but with real, physical yet invisible particles, which may (if not explained) be confused with the “virtual” ones.

But they are quite different. They are particles formed by the mutual orbiting of an electron and a positron. The resultant particle has NO charge, nor any detectable matter, due to the combined effects of the constituent components.

But they certainly have energy – in their mutual orbits, and can carry *more* when these are promoted to higher energy levels (as in atoms). And they also contain Mass though involving equal amounts of both Matter and Anti Matter.

And when these invisible but ubiquitous entities are at their minimum base state, I initially called them Empty Photons.

Clearly also when they were holding extra E-M energy, they were then detectable, and became what we usually see as Photons (*filled* Empty Photons).

So, the theories have resonances, but are crucially different. This alternative has been conceived of and developed from an entirely Materialist perspective, NOT and Idealist one. No virtual photons here: they are both real entities – different Phases of the same thing, but with different histories in the evolution of the Universe.

Later on in the article we are informed of experiments when particles(?) are produced in pairs” coming right out of the vacuum”, and this too generates important questions.

“Why pairs?” for example – is there a relation to Pair Production involving an electron and a positron (because there **is** in my alternative)? And in the opposite process of Pair Annihilation, when I have the same components vanishing into the reconstitution of the mutually orbiting pair entity?

Finally, we are told that the virtual photon’s contained energy could explain Dark Energy – but no details are given. Whereas, in the orbiting-pair Photons of the alternative, such vestigial energy is completely evident, and the dissociation of the entity would release it in more usual forms.

In addition, these entities also have evident mass (though hidden), and could amount to the also ubiquitous Dark Matter.

I must apologize for giving this tiny piece in New Scientist so much space in my replies. But it clearly shows scientists addressing the same things as myself, but looking in a very different direction.

Elsewhere in these responses there are several individual pieces addressing the articles on “Nothing” in far greater detail.

The Shockley Method and Other Idle Elements?

In a rather long-winded attempt to shoehorn ideas on semiconductors into *New Scientist's* "Nothing Compendium", Richard Webb in his, Issue **2839**, article, *The Hole Story*, finally settled upon the revolutionary fiction of entirely treating the absence of an electron in such materials (a "hole") as a particle of itself, to allow him to pinch the invention of two of his colleagues, and claim the transistor entirely as *his* own invention. The article was, yet again, merely a "story" with which to spice up your teaching (in a school science lesson perhaps), but it was not anything other than a reporter's juicing up something "to entertain", rather than a significant step towards Truth.

For his "particle" was **not** a positron, or any other proved-to-exist positive particle: it was **still** only the *absence* of an electron in a structure, which "behaved" rather like a particle.

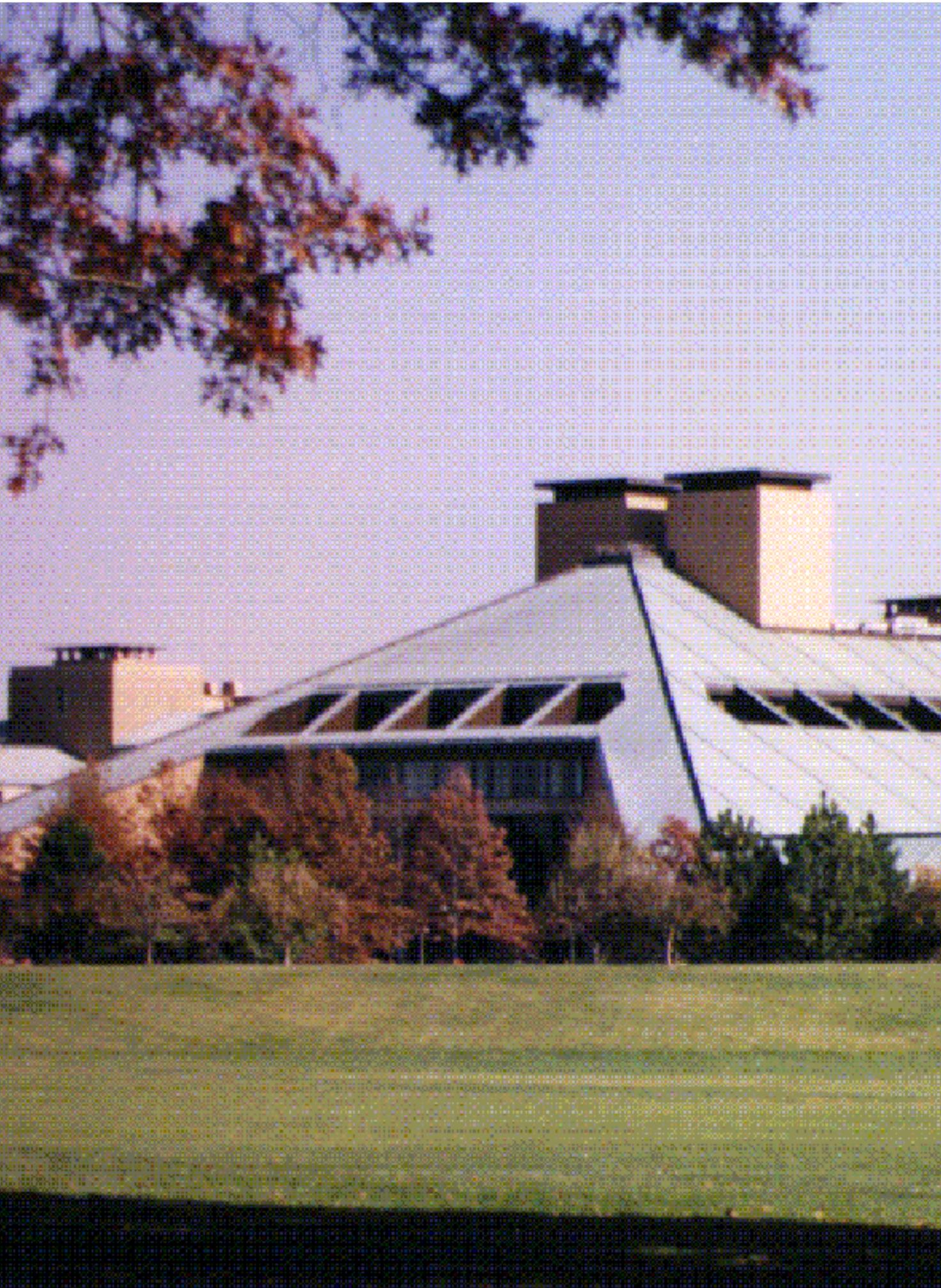
But, as I find I have to reiterate all-the-time, what such people do is **not** Science. It is Technology with an accompanying "pragmatic" narrative. And, as **Bell Laboratories** (Shockley's employer) was only looking for discoveries to commercially exploit, and that was (and had been for many, many decades) the powerhouse principle of American Capitalism, the side purpose of "Research Departments" was to put together exploitable discoveries into highly saleable products. So, with such wholly pragmatic imperatives, the Truth was an unnecessary and profit-reducing luxury, and hence judged as getting in the way of the primary purpose of the whole exercise.

The quicker, and more direct, could be the route from discovery to saleable commodity, the better!

So, if you were expecting this article to provide profound scientific and even philosophical ideas, as part of a serious study of "*Nothing*", you would be disappointed. It was a celebration of pragmatic efficiency and blatant dishonesty.

The Last word?

By the time we reach the final contribution to the magazine's compendium on Nothing, they are really scraping the barrel for any remaining scraps, so, under the title of *Putting the Idle to Work*, we are given a historical account of the role of the Noble Gases in various developments in Science. But, once again, the main content is a kind of entertaining science story, but apart from extolling the virtues of experimental rigor, dedication, and the immaculate control and accuracy required, it actually delivers nothing to add to the very real conundrums associated crucially with what we, and they, often turn to be "absolutely Nothing!"



Nothing: Conclusion

Now, if the readers of this short collection of responses to recent articles and TV programmes, are somewhat dissatisfied, and consider them to be inadequate, they are not alone.

It is also clear to the author of these responses that they, at best, only *point the way* to an alternative without actually delivering it in any adequately coherent and comprehensive way.

But, that has been, I'm afraid, unavoidable, for the author has not been in a position to be able to deal with all the aspects necessary for tackling the issues involved both critically and generally, to finally produce a complete alternative.

Such an agenda is in process, but is certainly not yet complete.

Yet the problem is definitely urgent, and some sort of start must be made **now!** For all the criticised articles and TV programmes represent the current worldwide consensus on these matters, and constitute the position of the vast majority of scientists of all kinds.

The necessary criticisms are not of some *odd corner* where mistakes have been made, but are of an overall, universally agreed consensus, which has exceeded its continuing appropriateness, and has now become a major impediment to further and significant scientific advances.

And in addition, the basis for this position – **The Copenhagen Interpretation of Quantum Theory** had effectively abandoned the usual scientific method of finding an *explanatory* Path towards Truth, and replaced it instead with a *sole* reliance upon **Equations** as the *driving essences* of Reality.

They became **idealists!**

Now, the battle between Idealism and Materialism is as old as Philosophy itself, so there are no final answers available within that discipline either.

To re-route Modern Science there must, **first and foremost**, be an almighty revolution in the Philosophy on which Science is based, for if there is one clearly definable area in which all physicists are complete amateurs, it has to be, most certainly, in the area of Philosophy.

Countless works by scientists like Sir James Jeans and, perhaps worst of all, Werner Heisenberg have established **that** beyond any argument.

Even Henri Poincare and Mach, in spite of their very valuable contributions to Science, were terrible philosophers.

So, this author, in his attempt to tackle the mountainous range of problems, **had** to start with substantial period of work in Philosophy.

Work on Abstraction and Symmetry was followed by a concentration upon those major Events of substantial Qualitative Change termed **Emergences**. And after a long study of the possible nature, trajectory and phases of these Events (based largely upon Social Revolutions and Evolution) a **Theory of Emergences** was finally produced and published in **SHAPE Journal** on the Web.

But that was only a start!

It soon became clear that the most important of all Emergences – **The Origin of Life on Earth** had also to be tackled – starting with Darwin's magnificent contribution on Evolution, and in addition, try as he might, this writer could not avoid the implications for Cosmology and the Big Bang.

So, I must conclude with a genuine apology for the paucity of contributions in this short collection, but at the same time promise that the necessary major work is indeed already well underway – but clearly a truly colossal task!

Jim Schofield January 2012.

