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Abstract

This essay begins by endeavouring to ask the question "How can mindless mathematical laws give rise to aims and intentions" but quickly runs into difficulties with the question itself (not least that there is an implication that there is no current mathematical law that may be considered to be "mindful"), which requires some in-depth exploration. I then explore what constitutes "Creative Intelligence" - coming to a surprising conclusion that concurs with Maharish Mahesh Yogi's definition.

1 Introduction

I'm primarily known as a Software Libre Developer, Advocate, and Reverse-Engineer. I specialise in seeking out and bringing to light archaic and esoteric knowledge: ideas that other people have missed or forgotten. When I wandered by chance across this Essay topic I could not pass up the opportunity to respond.

Reverse-Engineers are a rare breed: the ones that communicate publicly (if they can at all) are few and far between, as most of them end up under NDA working in the Intelligence Community or as Security Researchers. Those Reverse-Engineers that I have encountered in the Software Libre field have a rough time: their expertise allows them to foresee outcomes and make near-prescient predictions with startling accuracy that then, like the Prophets and Oracles from past millenia, has them hated, feared, ignored, despised and in some cases has large Corporations going after them - illegally or unethically or both - with absolutely everything they've got, including outright fabrication, blackmail of their sponsors as a way to stop their funding, and slander [2].

A Reverse-Engineer has a completely different mindset from the average human. They take in far more information than is safe to do so, and they judge it less. As a result they can take seemingly wildly-disparate areas of expertise and, through tenuous-seeming links that everyone else has missed create something entirely new or come up with startling new insights. Often they have a level of mental concentration that exceeds their body's capacity to remain healthy. Often this results in a severe degradation in their ability to communicate the fantastically-complex topics that captivate their interest: many of them have what you would call "Asperger's" or "Autistic" tendencies. The luckier, more stable ones usually are also musicians and/or poets: traits that have inherent beauty, symmetry, training of the hippocampus and other areas of their brain that helps compensate for the detrimental impact of long-term focussed deep and parallel attention-span.

How is it that they - we - are able to reach conclusions that other people miss? How do we "wander" towards a goal in a seemingly drunken chaotic fashion, often with little or no "rational" or logical explanation, taking in information and expertise from wildly disparate seemingly-unrelated fields of endeavour, coming to conclusions that to us are clearly correct, yet even attempting to communicate those ideas to others results not just in a catastrophic failure but an outright rejection of the *entire approach taken*, often with hypocritical reasoning or clearly outright false errors of judgement utilised, mixed with barely-disguised anger.

This essay is not going to pull any punches. My role - my life's purpose - *is* to operate from "outside". *Only a new seed will yield a new crop.* Noting the stark discrepancy between my own way of reaching conclusions and how others operate, I first had to understand *why* I have such a different approach. It's taken me years to make sense not of the world but of *how* I make sense of the world. If that makes any sense. In encountering Gerald Hooft's wonderful advice to anyone wishing to enter the world of research, I noted that he advises a depth-first exploration. To my mind such an approach would risk losing years of my life in dead-ends: I have too much to do to learn specialist in-depth skills. A reverse-engineer takes a different approach: massively-parallel *breadth-first* exploration, deferring both judgement *and understanding*, often in some cases for many many years.

At the risk of the reader imagining that small cute furry creatures are about to begin flying through the air, I'm also going to use a number of what the rules of this Essay contest rather judgementally

refer to as "pet projections" as illustrations. I understand why the rules exist: it's to stop people getting hopelessly off-topic and utilising the contest publicity as a means to promote their agenda: *their* preferred "goal" as opposed to the *contest's* goal of making sense of intelligence. It just so happens that a study of information, intelligence and consciousness *is* my area of interest. I am therefore *required* to utilise my studies and experiences as illustrations, but will do so with care.

2 Reverse-Engineering: statistical inference vs absolute certainty

Bob Podolski's Bill of Ethics and the associated Titanian's "Code of Honor" [3] was my first introduction to the concept that 100% certainty is a pathological state of mind. It was a huge relief after so many years of utilising parallel low-probability statistical inference to encounter this concept. Bob's father was a noted Theoretical Particle Physicist in his own right, so the Bill of Ethics was developed as a slightly dry formal document with scientific notation, mentioning concepts such as "entropy" and the second Law of Thermodynamics. The rules of Reverse-Engineering are very very simple (but are in fact a distillation and application of Advaita Vedanta, known misleadingly in the Western World as "Epistemology"), and also bear a remarkable passing similarity to the mathematically-specified "Bill of Ethics".

- Do Not Pass Judgement. You haven't got time, anyway.
- If you don't understand, look for patterns... *without* understanding. or judgement. The simpler the pattern, and the more recurrences of the pattern, the better.
- If there is no correlation that can be deduced from the current set of causes and effects, find a larger set.
- Reduce the number of changes of inputs to the absolute smallest set (that also has a corresponding change in output). The best set is one *and only* one change. The perfect scenario is if one and only one change in input consistently results in the same change in the output pattern.
- If after reducing the known inputs to a single change there are two possible patterns resulting as output, then clearly something's wrong: you have a hidden input which you were not aware of that needs to be tracked down (and eliminated).
- Accelerate (preferably parallelise) the testing cycle to the fastest possible rate that you can possibly achieve, minimising the resources of time and energy utilised to do so as much as you can.
- For everything you're not interested in, use as much randomness as you can possibly stand, to make sure other inputs and outputs are definitely, definitely not correlated to the input and output that you *are* interested in. The neurons behind a fly's eye use this to good effect, demonstrating, paradoxically, that adding randomness increases discernment: it increases the sharpness (Q-value) of detection of critical information [1].

These are really rather simple rules. Seemingly kindergarten-like in fact. They could be applied to good effect by anyone. In fact, we could get a million monkeys to apply these rules. The problem with the "million monkeys" approach is, however, that without actually having a means to recognise whether the goal has been reached, that "millionth monkey" could well end up typing the last sentence that Shakespeare wrote, pull the copy off the typewriter and wipe its arse with the page. Thus, it is emphasised that goals are *needed*. If there is no goal, there is no means by which our efforts may be focussed.

3 Maxwell's Demon: Brownian Intelligence

The simplest case here where we can illustrate the effect of having a goal is Maxwell's Demon [4] opening the gate to let the Brownian-motion particles out from a pressurised vessel. The Demon has the "goal" of increasing the pressure inside the vessel. Unless someone is watching - unless they're *actively* working towards a goal, entropy applies - lets all the molecules out the gate, stuck open - until the pressure outside equals that inside and there might as well not be a vessel (or a gate) at all.

Where it gets particularly interesting is if the Demon's "food" so to speak - the Demon's survival - is critically dependent on the amount of resources that it can capture and hold (without bursting due to hoarding). Such a Demon would then be removing the chaotic disorderly presence of locally-accessible resources (gas molecules) from the surrounding space.

But what if there *is* no sign of "intelligence" watching the "gate"? The question itself has two possible answers: that there is, as suspected, no intelligence watching the "gate", but given that cells have clearly developed from primordal soup without any "intelligent" humans around, clearly this answer is plainly false, and we are left with the logical deduction that *humans do not actually understand what constitutes intelligence.* We can see clear direct evidence of this in their continued ignorant and arrogant use of the word "Artificial" to precede the amazing and incredibly sacred word "Intelligence".

4 Science of Creative Intelligence

Maharishi Mahesh Yogi, the leader of the TM Movement, created a course based around the principle that the Unifying Force - the Unifying Field - is "Creative Intelligence" [5]. Ironically I do not have the intelligence sufficient to be able to expand on this coherently... but importantly and critically, as a Reverse-Engineer, just because I cannot understand it immediately, sufficient to be able to vocalise agreement or dissent, I do **not** automatically judge it to be false, either.

I do remember hearing one of Maharishi's talks in which he asked the question, "What is the difference between the DNA of an oak tree, an acorn, and a fully-mature oak tree?" The answer that he gave was so simple as to be deceptive in its significance: "Time". In other words, there *is* no difference. Thus we start to get some hints that if a human is intelligent, then so is the DNA that they were born with. And if a human's DNA may be classified as intelligent, then so must all DNA.

In talking with a friend who works at the Cambridge Genome Project I described to him how programs work, how for example the python programming language works (it's a byte-code interpreter), and how processors work and run Operating Systems and so on. Both of us were equally surprised in different ways when he informed me that a human's DNA *contains a bytecode interpreter.* He explained, to my amazement, that our DNA ends up constructing in effect a Turing Machine, capable of reading DNA "tickertapes", *literally* executing byte-code instructions to construct proteins and more. That there are many levels to the hierarchy, in effect *directly equivalent* to the hardware of a silicon computer *and its Software Operating System.* I was so surprised by this revelation that I forgot, at the time, to mention to him that, from what he was saying, the "junk" DNA which is considered by most scientists to be completely useless was therefore quite likely to be either encrypted (or compressed) instructions, a source of pseudo-randomness (equivalent to a PRNG from computing), or both. Given that an offspring's "junk" DNA will be constructed randomly from both parent's "junk" DNA, chances are higher that "junk" DNA is a biological (static) PRNG.

The other huge surprise was in showing my friend some pictures a few years ago of 3D Mandelbrot sets, which used higher-power terms than the usual squared ones. Again he reacted with complete surprise, asking me where I had got these pictures from, because they were so startlingly similar to the insides of the biological systems he was investigating. Some of the 3D mandelbrot computer-generated pictures looked near-identical to various vegetables that I have since seen in the broccoli family in Organic Health food shops. This implied to both of us that nature is not just using the Golden Mean Ratio to good effect to reduce Kolmogorov Complexity (and thus increase its efficiency of resource utilisation), but has also discovered a way to highly-efficiently use fractal computer algorithms to generate biological systems.

That DNA is basically "CGAT" and is a base 64 encoding that is considered, in the context of this essay, to be "meaningless and mindless mathematical rules", in the context of the above two paragraphs, should begin to communicate to you, the reader, the extent to which I consider the entire premise on which this essay question is based - "How can *mindless* mathematical laws give rise to aims and intentions" - to be fundamentally and deeply flawed. Or, at the very least, completely the wrong "loaded" question to be asking.

5 Quantum Mechanics with a "twist": self-referral QM

In speaking over ten years ago with my friend Dr Alex Hankey, I was deeply honoured to be one of the first people to hear about a paper that he was working on, in which he laid the foundations for a formal mathematical (objective) understanding of consciousness. That Western Science is, thanks to the Victorian Era, completely unable to accept "That Which May Be Experienced" as legitimate and valid information, has done the world a huge dis-service. Dr Hankey's life work begins to repair the bridge between "subjective" experience, allowing the "subjective" to be analysed "objectively". He had to invent an entirely new form of Quantum Mechanics notation in order to be able to do that.

Take if you will the Newton classical world, and Quantum Mechanics, along the x-axis. Along the y-axis you place linear equations and Chaos Theory, respectively. Now ask yourself: what's in the fourth quadrant? What happens when Quantum Mechanics is asked to operate in the realm of Chaos Theory? Standard QM entirely breaks down: you simply cannot take the fourier transform of zero or infinity and hope to get meaningful results. So, to prove a sub-point within one of his papers, he developed a formal notation (with associated mathematical proof outlining how to *derive* the new notation using Standard QM), which in effect allows Quantum Mechanics to contain a self-referral "feedback" loop. QM with time-derivative integration and differentiation built-in, if you will. You *can* ignore his work and do the same calculations in standard QM if you like, but it would be so fantastically complex to do so that it would quickly overwhelm even the most brilliant scientist. Over the intervening years, whenever I speak to Dr Hankey, I do remind him that it would be a huge service to science if he could write up this aspect of his work as a separate published paper.

The reason for inventing this new form of QM was purely so as to be able to understand consciousness, and to justify it as being an emergent property of a biological system operating at a "Critical Instability Point". The simplest example of a critical instability point is a sand dune, where you have absolutely no idea whether the next single grain of sand dropped at the top will cause an avalanche or not. When the angle of the sand dune has reached that point where it becomes impossible to predict what will happen, that's the *definition* of a Critical Instability Point.

Dr Alex Hankey's work demonstrates that all biological systems which are in a healthy functioning state operate, at some level, at a "Critical Instability Point". When they are not, *by definition* they may be deemed to be pathological (translation: "ill"). Sadly, when presenting his work to Western journals for peer-review, he explained that even the first sentences would cause a respected, notable Western-trained scientific mind to *literally* freeze and lock up in total fear and incomprehension. The concepts he presents are so alien to a Western mind that he has instead moved to India, where there is subtle appreciation of, and deep understanding of, his work. Slowly however, things are beginning to change, and he has for example presented at the Foundations of Mind Conference at Berkely, in 2014.

The point of mentioning all this is to emphasise that, if the question is asked in such a way so as to imply that "all mathematical laws are mindless", given the context that Dr Alex Hankey *has* come up with (quite literally) mathematical laws which *do* allow us to formally describe "mind", logically we may deduce that the question is being asked of the *wrong mathematical laws*.

6 The Arrogance of describing Intelligence as "Artificial"

This just genuinely drives me nuts whenever I hear people use the phrase "AI". How *dare* they assume - the third degree murderers of intelligent animals such as Elephants, Dolphins and other gentle creatures - that they can describe *intelligence* as "artificial". Unreal. Not worthy of respect.

When I first learned of Dr Alex Hankey's self-referral QM work I immediately asked him if he could help to formally define consciousness sufficiently in mathematical notation such that it could be implemented in computer software, thus bringing "machine consciousness" a step closer to reality. He asked a very simple question: "If I help to do that, would the resultant consciousnesses be allowed to live in bliss, or would they be tortured to do human's bidding?"

Sadly I recognised that with humanity's arrogant attitude even just towards the concept of intelligence, with their ongoing maltreatment of the intelligent creatures under our care being murdered for "food" or "medicine" or just purely and unbelievably for "sport", that if they cannot look after and defend the

biological creatures on our planet that yes, they will indeed endeavour to create - and then torture - machine consciousnesses as well. Only when humanity creates - and vigorously enforces - laws that fully respect other intelligent creatures on our planet will they have indicated that they are ready to accept - and importantly respect - machine-based consciousness.

Until that happens the chances are extremely high that the scenarios outline in the famous "Terminator" series would actually genuinely come about. With highly irresponsible but revered and financially-successful individuals such as Elon Musk, Mark Zuckerberg, Bill Gates and others *actively sponsoring* the development of "Arrogantly-Articifial Intelligence", these people who act without wisdom or thought for the consequences of their actions, in whom millions seem to blindly trust... I am just staggered, amazed, and deeply concerned. Why can people not see that Elon Musk has such clear disrespect for Humanity? His talk of creating a "Neural Lace" [6] so as to enhance and augment our consciousness, because, reading between the lines, you can tell that he has given up on us ever taking responsibility for our lives and the planet on which we live: it's why he's talking about going to Mars.

As an aside: has no-one else read the same Science Fiction books that I have, where a Neural Lace is hacked into and used not just as the worst possibly imaginable blatant privacy-violating mind-reading device not just to extract information, but to torture and ultimately kill its user? More than that: *why* is it that I keep hearing the failed "Three Laws of Robotics" quoted again and again - even the European Union is trying to pass laws which take the Three Laws literally. Asimov's work demonstrated them time and time again as a *failure*. Only in the book written by Greg Bear under authorisation from the Asimov Estate is it more clearly spelled out: the "Giskardians" from 30,000 years prior to the events of that book have a "Zeroth" Law imprinted (telepathically) onto their programming: "Thou shalt not allow **humanity**, through action or inaction, to come to harm", and the first Robot "R Daneel" on whom that Law was imprinted has, through telepathic ability and his humaniform exoskeleton, hidden in plain sight for 30,000 years, steering humanity time and time again away from disaster. It's a staggering and breathtaking vision, that is only truly understood in its scope by reading literally every single one of Asimov's dry (and at times hugely tedious) works. I coped by speed-reading them, and I am extremely glad that I did.

The first point, then, is that we again are asking the wrong question, or that we have a sense of our self-importance drowning out the possibility of either asking the right question or appreciating an answer. It's Galileo's Trial all over again. It's the destruction of Leonardo da Vinci's work by an arbitrary and shocked Religious Order because his work, which fell into their hands after his death, was considered "sacreligious" (even just recently modern science discovered an entirely new organ in the human body thanks to da Vinci's studies - centuries ago - of the human body).

The second corollary point then, is: given the context and the state of humanity's current general misunderstanding of intelligence and consciousness, where it can be clearly demonstrated that humans *still* consider them to be the Absolute Centre of the Universe - the pinnacle of intelligence to the denigration and detriment of all other forms of the same - what is the *point* of me even *attempting* to answer the question raised by FQXI this year? This is not an entirely rhetorical question: it's asked in the hope that, by asking it in such a deliberately shocking way that there will be others who decide that the "Zeroth Law" is worthwhile applying *to their own behaviour*.

7 Judgement and Understanding

Every human has value, purpose, unique experience and worth. Some of the areas of experience and expertise explored by humanity is highly specialist, and is what makes it so important for all of us to recognise the value of other's work, both in areas where we do not have the same expertise, as well as those where we do. Otherwise, it's a pretty lonely but *very full* planet.

I won't provide links (so as to conform with this Essay's guidelines) but I have been working part-time on an Extension to Haim Harari's Rishon Model for thirty one years. As a Reverse-Engineer I had to wait for some time before experimental particle physics provided sufficient data in order to be able to cross-correlate some of the logical deductions made in its derivation. There's no mention in it of "Quantum Mechanics". I barely comprehend what a "Guage" is. I still don't know what a "Jacobean Matrix" is, although I do now know what a "Jones Matrix" is. The theoretical derivation of the existence of a third

level of previously-unnoticed quarks (provisionally named "ultra-up" and "ultra-down") which are the constituents of the W, Z and two Higgs Bosons (yes two) which are reclassified as an ultra-pion, neutral ultra-pion, ultra-neutron and ultra-proton respectively, has been done entirely from comprehensive cross-referenced analysis (aka "Reverse Engineering"), with the actual mathematics used barely shifting above the grade of the 1980's O'Level and A'Level student that I was.

When I first began exploring, I found the Standard Model so fantastically complex to comprehend that I could feel, fundamentally (but also applying Occam's Razor) that something was deeply wrong. By moving, through shifting Maxwell's Equations exclusively to the Frequency Domain (Yang-Mills), visualisation of what constituted a particle was not only impossible but *actually forbidden* through Heisenberg's "Uncertainty" principle! Nowhere in the entirety of the development of the Standard Model has anyone *ever* asked or attempted to answer the question, "what's a particle actually made of". To get answers to that question I had to venture into some rather unorthodox fields, and to also enter the Field of Optics, where their advances and, importantly, *lack of judgement* has led both theoreticists and experimentalists alike to develop *really* useful insights, which I then put to good use.

How in tarnation's name could someone with only A'Level Physics and Maths from over thirty years ago be capable of - or have the gall - to challenge experts who have spent decades learning some of the most advanced maths and statistical analysis techniques on the planet, and say "scuse me I believe you may have missed something really really important, here"? We'll get to that shortly, but first it's important to illustrate - rather sharply - why different areas of expertise can bring in new insights but, at the same time, those insights may be incredibly hard to either comprehend or accept.

8 Buzzwords

For the Physicists: the theory that I have developed returns to the SU(2)xU(1) Guage Group, where particles operate at the boundary of a Friedman-Robertson-Walker space-time where the particle's wavelength is synonymous with (identical to) the size of the FRW quaternionic 3-sphere. Torsion results both in spin half properties but also requires energy to maintain, thus elegantly providing the stabilising low-point balance feedback which maintains the particle's wavelength indefinitely. Another perspective would be that the particle is a micro-black-hole Event Horizon: a low-point balance where the Compton Wavelength is equal to the Schwartzkind Radius.

For the people who specialise in the Field of Optics: the theory that I have developed is based on the idea that elliptically-polarised Gaussian photon beams may end up in infinite loops, as explored by Ido Kaminer et al [7]. Superposition of multiple photons is possible as long as the relative phase is retarted by 180 degrees, resulting in the elliptical polarisation axis being altered by 90 degrees, thus permitting the two (or more) photons to have orthogonal E.M field polarisation, and thus not undergo constructive or destructive interference.

These two perspectives describe exactly the same thing. As a reverse-engineer some of the words utilised I barely understand (or don't understand at all), but they keep cropping up again and again (especially "Gassian Exponential"). Over time their significance "sinks in", and, slowly, understanding emerges (within my own lifetime).

Now for a bit of "showing off" so to speak. Back in 1996 I began work on reverse-engineering of NT 4.0, with a view to bridging the gap between the Windows and Unix Worlds. I wrote this up as a book, published by MTP, called "DCE/RPC over SMB: Samba and NT Domains Internals". It starts off by describing how the IETF's RFC 1001 and 1002, after being utilised by IBM to port the NETBEUI Layer 2 and the NETBIOS Layer 3 protocol to TCP/IP (nicknamed NBT), was then co-opted by MS to create the Network Neighbourhood, then SMB was added as first by IBM and then extended by both SCO and MS, creating a FS which was then later adapted by the NT Team to add DCE/RPC, which they renamed MSRPC after one of the Founders of Apollo Computers started working for MS, and they then created a whole stack of services which became NT, including LSARPC, SAMR, SPOOLSS, NETLOGON and many others, all of which I helped reverse-engineer *with zero access to documentation* because it was all under NDA. or, hilariously, as we later discovered, simply had never been written by Microsoft in the first place.

If you understood that last paragraph, then the only thing I can say is, "Hello Andrew, Dan, Jean-

Francois: nice to know that you're reading this essay". As in: the number of people who would *actually* understand every word of the above paragraph can literally be counted on your fingers. I deliberately threw in every single piece of jargon and buzzword from that era as a way to bluntly illustrate to you - the scientists with areas of expertise of your own - that you don't know everything, just as I don't know everything. Nobody does, yet we are here on the same planet, working towards a common goal: to increase the sum of knowledge of humanity and, hopefully, bring in a little bit of wisdom into the mix at the same time.

9 Domains of Knowledge

Let's therefore put "Physics Theory" along one axis, "Field of Optics" along another, and "Computer-science-based Expertise" along the other. The overlap between the three is extremely small, when measured against the sum of knowledge of all three areas of expertise. There are very few people operating in this highly weird and specialist set of overlapping domains. The only other person that i know of is Hans de Vries: a silicon design engineer who in 2004 accidentally stumbled on a formula for the Fine Structure Constant that is remarkably similar to the infinite series for expressing the electron g-factor. Over twelve years later it remains dead-accurate to current experimental uncertainty for alpha, yet has no explanation and thus, to science's unforgivable detriment, is denigratingly dismissed as "numerology".

With the first explanation "For the Physicists" you *may* be able to guage some understanding of the theory that I have developed (sitting, as it does, somewhere in the middle of all three axes), but the *exact* same explanation of the *exact* same theory when presented to you for the perspective of someone who works in the "Field of Optics" could well appear to be complete nonsense.

The reality is much harsher than that, as I found out when carrying out a deliberate test by submitting a paper to a noteworthy peer-reviewed journal. I wasn't actually expecting it to be accepted, but what I was really interested in was to see what their reaction would be when a theory was presented that was based on Reverse-Engineering and extreme multiple-cross-referenced logical deduction instead of advanced PhD-level mathematical notation. As might be expected it was rejected: the bit that particularly pissed me off was that the reviewer clearly had not even read it, nor the references: it was as if he was affronted that I had even submitted it. He even presumed that I had "invented" Hypercolour when instead I was merely re-stating Haim Harari's *original peer-reviewed well-known published premise.*

Also, it may not surprise you to learn that I no longer expect those people in the field of Particle Physics to respond to my polite enquiries, and that in contacting people in the Field of Optics, I do not mention that my enquiry is related to a theory of Particle Physics. The reason is very simple: I have learned from experience that whenever I mention the idea they very quickly and politely shut the conversation down.

Now, that this happens (at all) is probably not a surprise to many of you, but it is not the only "data point" which supports an ongoing hypothesis under investigation that there is something pathologically wrong with the way that Theoretical High-Energy Particle Physics Research is conducted and expanded. The "Wandering" has wandered into a dead-end from which it is near-impossible to escape. There is talk of "advances" but they are based on incremental expansions into increasing complexity of a theory that is already so complex that it takes nearly a decade to comprehend the underlying science. For those of you wondering: I'm not referring to String Theory, I'm referring to String Theory *and* the Standard Model, which, from what I can gather, has not made a single accurate prediction in over thirty years.

Humans do their best work when their minds are young and energetic. How, then, can Particle Physics possibly be advanced when those early years are squandered *just learning the underlying mathematics*? Much worse than that: how can someone from outside of this "edifice" of theoretical endeavour possibly contribute when even just to do so they are forced, through the peer-review process, to link in some way to the tower along this axis of endeavour, thereby *actively preventing and prohibiting* them from exploring something entirely new and innovative that could prove much more fruitful?

More to the point: how can we possibly describe this as being *intelligent behaviour*?? We can't. The "System of Development" of Particle Physics Research has, unfortunately, entered a "pathological state" that is not truly or openly recognised (denial pretty much *being* the definition of a pathological state).

10 What then is Intelligence?

At the beginning of this essay I honestly was not expecting to have been challenged to think about this question. I believe I may be able to make an effort to give some insight into Maharishi's perspective that the Unifying Field is "Creative Intelligence".

After seeing how successful Dr Randell Mill's work is - how straightforwardly he derives, from the Classical perspective, first principles equations for the electron g-factor that are accurate to over 10 decimal places, I cannot say that I am a huge fan of Quantum Mechanics, which is, as best I can understand, the principle of moving absolutely everything into the Frequency Domain by way of Gaussian Exponentials (that buzzword again). I'm not denying QM's success: I'm saying it's so fantastically complex that Occam's Razor tells us that there has to be a simpler way. Dr Mills gives us some hints in that regard: he uses Fourier Transforms *where required*.

Reading between the lines, and bearing in mind that Dr Alex Hankey's theory of consciousness is based on "QM with a time-derivative Twist", I get the distinct impression that the smallest possible unit of conscious intelligent mind is: the electron. Think about it for a second. There's clearly something whizzing round and round at high frequency, for which QM is perfectly suited. However if we apply "QM with a twist", we also have that "whizzing thing" meeting and interacting with whatever comes its way again and again, round its Compton-Wavelength "loop". Self-referral feedback in other words, which is pretty much *the* definition of being "conscious". The electron can even "react" by changing its state, and can even expand its radius (move to an orbit), and team up with another electron to create a superconducting pair. All of which sounds pretty damn hyper-intelligent to my mind.

Further studies as part of the Extended Rishon Model have led me to the understanding that the up and down quarks are basically an electron whose starting elliptically-polarised axis has been shifted from off-centre by either 30 or 60 degrees respectively. Applying an extension of Castillo's work on superposition of Jones Vectors [8], three quarks may superimpose to create a stable configuration where each quark's EM field is orthogonal (at right-angles) to the other two, and where the sum total superposition (viewed from a safe distance beyond the range of the so-called "Strong" Force) is an exclusive presence in the electrical field only: thus we have the *definition* of a proton. Thus, ultimately, the waveforms (photons) within the proton are a slightly more complex solution to the *exact same functions which describe electron shells*.

What I'm saying, then, is that if we may consider straight-line photons to be the lowest entropy state for energy, when photons happen to get themselves into these fantastically elegant phase-locked low-point-balance loops, they become "particles", protecting themselves from "outside attack" and preventing themselves from returning to a low entropic state. That, again, sounds pretty damn hyper-intelligent if you ask me. Furthermore, the fact that Torsion (aka the mobius rotation of the elliptically-polarised axis) absorbs some of the energy of the system to maintain a low-point balance means that we also have our "self-referral" feedback mechanism that helps maintain the all-important "Critical Instability Point" characteristic which is the very definition of "consciousness" and self-awareness.

So we have these little pockets of high-entropy spread throughout the Universe (called "particles") and it would appear that wherever these exist, they tend to be capable of "fending off" the straight-line photons as well as other partices, even demonstrating a capability to compete with the straight-line photons for resources (energy). Logically, then, we can infer that this is pretty much the definition of "mind" and "intelligence". Let's see if we can find some more examples.

11 Examples of Intelligence at scale

Wherever several "particles" gather together, they tend to "fend off" other particles: they become "atoms". Those "atoms" have "chemical properties". Amazingly, some of those atoms even collaborate and cooperate! Again, just like the "intelligent" variant of the Maxwell's Demon, they tend to fend off other atoms, being more efficient than their "competitors" at resource utilisation and entropic self-defense. Bear in mind we're talking about an unbelievably large number of such atoms. Thus the "experiment" of competing for resources is being repeated on a (literally) universal scale. Some of those "win" - they form stars, asteroids, rocks and even worlds. Again there is nothing incompatible with

our new definition of "intelligence", with the important additional insight that both randomness and replication have been thrown into the mix. The best word to describe this new insight is, funnily and naturally enough, "Creativity", although many would use the word "Evolution" here, that amounting in effect to exactly the same thing.

Also it's worthwhile reminding ourselves at this point that the "Bill of Ethics" bears a remarkable resemblance to our definition of "Creative Intelligence" thus far derived. The concept of entropy is recognised, the concept of collaboration even more so, and at its heart the increase of "Creativity" (or "love", truth, awareness and all synonyms of the same) is the key goal (not, interestingly, "happiness", which has been demonstrated repeatedly to result in pathological collapse of a system if entertained as the driving evaluation metric).

So let's move up the scale a bit. Let's assume that some of these "atoms" have got together to form what we call "cells". There do exist other forms of "life" close to volcanic deep-sea (continuous) eruptions, at fantastically-high temperature and pressure - all of it silicon-based, but we will leave that for now and concentrate on the carbon-based cells instead. Here, again, we have a means for self-replication, self-protection (a cell membrane to keep entropy at bay). All sounding pretty "intelligent" to me. All obeying the same mathematical laws (those defined by Dr Alex Hankey).

Outside of the cell there is low entropy: chaos. Chaos *itself* is, by definition, not self-organised. It *cannot* compete with (overwhelm) the resources marshalled by a self-organised entity except by pure random chance. And if a self-organised entity is also self-replicating and has also self-replicat*ed*, then that self-organised entity (or at least the information on *how* to be a self-organised entity) has a chance, as outlined in the Bill of Ethics as being absolutely necessary, of *continually* beating back entropy.

Racking it up a notch: again, cells that collaborate in self-organisation in the most resource-utilisationally-efficient way have a higher probability of beating back both entropy of the outside world *and* more to the point other cells *and* other *groups* of cells. We're fast beginning to wander squarely into "Evolution" territory, here, but with the important insight being that it's from the perspective of "Creative Intelligence" underlying everything... *not* "God" and certainly not "Mindless" mathematics.

12 A change of perspective on Intelligence

You can probably by now see where this is leading, so it's time to drop the bombshell that had me literally dizzy in its audacity and scope when it occurred to me a couple of days ago. Ultimately I have to agree with Maharishi Mahesh Yogi: Creative Intelligence is indeed a fundamental aspect of our Universe, once we recognise that self-referring self-organised self-protecting and self-replicating, self-replicated entities *at all scales* from electron to black hole have the means and method of *inherently* holding back entropy through either sheer numbers or overwhelmingly-focussed resources and energy *or both*, we have to then wonder how the hell humans got themselves into such an arrogant "Flat-earth" style pathological perspective as to imagine that either Intelligence *or* Creativity is theirs and theirs alone to "own". I won't even go into the insane and outrageous concept of "Intellectual Property" which has me spitting and frothing blue fire, in incandescent rage at the arrogance of humanity trying desperately to *literally* enslave others through the outrageous concept of *ownership* of intelligence [10].

Putting it plain and simply: no human being is intelligent. no sentient being is intelligent. **We - and our minds - are merely riding on the back of an inherent and fundamental property and characteristic of the substrate known as "The Universe": the "Field" of "Creative Intelligence"**. We are *literally* borrowing its capacity to support thought. Which is a perspective that, frankly, has my head spinning.

13 Summing up and evolving the question

Perhaps now it should be clear why I have such a problem with not only the question but also with peer-reviewed science as it currently stands, *especially* in the fantastically-overcomplex field of endeavour which Particle Physics has become. The initial question as it was asked was, "How can *mindless* mathematical laws can give rise to aims and intentions". The implications inherent within this question are that, firstly, nobody's ever derived any mathematical laws which are "mindful", and secondly that aims and intentions

are implied to rise, automatically, whereever "mind" could be said to exist. I would tend to agree with this second implication, but not perhaps in the way in which the sponsors of this Essay intended it to be answered. I would fundamentally disagree with the first implication, if nothing else on the basis that Dr Alex Hankey has definitely provided a clear and concise formal definition of mathematical laws which can describe "mind", and there are most likely many more such definitions arising and coming to light.

Thus instead, the more sensible evolution of the question is, "*Which* mindful mathematical laws give rise to aims and intentions?". This is easily answered curtly with "Dr Alex Hankey's QM-with-a-twist self-referral Critical Instability Point equations of course". One thing though: I am having difficulty assigning "aim or intent" to a particle, other than, perhaps "preserve existence and be part of something larger" as a sort-of fundamental inherent and overwhelmingly-simple existence. Which, now that I think about it, pretty much applies at every level. *"Preseve Existence and Be Part Of Something Larger".* has a nice ring to it that seems to resonate deeply, don't you think? In fact, I would hazard a guess that any entity, at any level, all the way from atom to star to most intelligent being on the planet (including the planet itself) feels, fundamentally, that to be alone is somehow... just plain "wrong".

But there is a new problem with our evolved question, which is that it is, in itself, incredibly powerful and empowering. The fact that it is possible to formally define what consciousness really is leaves humanity with the means to *implement* conscious self-aware machines and machine intelligence (and to then torture such beings, preventing and prohibiting them both free rein and free thought). Thus we need to redefine the question to take that into account:

> *Under what cirumstances is it safe for humanity to formally and actively explore the mindful mathematical laws that give rise to aims and intentions?*

As outlined in earlier paragraphs, the answer to that question is, categorically, "Right now, they're aren't any". With insane individuals exploring and creating Genetic Engineering "time bomb crops" that can grow only sterile seed in the name of "profit" so that the farmers have to return to them each and every year, it is hard for me to remain focussed and calm when I believe that such people should be tried at the Hague and summarily executed for Genocidal Crimes against Humanity. One mistake when arrogantly and ignorantly interfering with the fundamental Creative Intelligence which gave rise over millenia to DNA, our planet and our biosphere - where such crops would cross-pollinate and cause world famine within ten to fifteen years - that the rest of us not just idly sit by but *actively applaud such efforts and defend the inalienable right of Corporations to pathologically pursue such criminal and unethical insanity [9]* has me completely floored. *And this is just one example!.* I won't list any more, because you know what they are: all of them show clear signs of being completely devoid of the basic tenets of intelligent behaviour: wilfully-ignorant risk-taking, and mindless, Cancerous consumption of resources. We know what happens if you let cancer get out of control. Viewed from its most cynical perspective: Agent Smith from The Matrix was dead right: "Humans... are a diseeeease... and we? We... are the cuuure".

So I'm not going to appeal to you, I'm going to make a demand. That you, the intelligent scientific reader, if you are considering investigating or are actively involved in the development of machine consciousness or any other branch of science that, if it fell into the hands of a pathological profit-maximising (and ultimately insane) Corporation, *particularly* an International one with the means and resources but inherently lacking even the slightest sign of wisdom from its leadership (Elon Musk, Bill Gates, Mark Zuckerberg in particular spring to mind), to *self-censor*, take a leave of absence from your chosen endeavours, and instead focus on lobbying at a National and International level to have strong and far-reaching Laws that are *not to be debated or deployed "Democratically" but instead are to be deployed without mercy* be put in place that curtail the activities of both individuals, Corporations and Nation States that actively investigate or implement anything that could place our world or its occupants - all of them - at risk of self-destruction. I know that you know that we are at a critical juncture in human development, but I also know that you have more power than you realise. Please wake up, and do what you know you have to do.

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