

PERbulletin

ANTI-MATHS No. 2

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A specialist P E R Group
newsletter



This is a bulletin which aims to convey the latest thinking about an eye-opening, new way to understand our physical and bio-physical universe: the emergence of a completely new logos which can plainly be used to model the universe, and which was not supposed to be possible. It offers us an outline way to conceptualise the cosmos (and ourselves) as a self-sufficient operating system which generates its own existence: a philosophy with closure.

The new logos (Anti-Maths) is particularly interesting, because it conceptualises the physical universe as a by-product of some fabulous anti-axioms needed to create human intelligence¹. This is a modern version of Emmanuel Kant's vision which he enunciated in the 18th century, and also an extrapolation of thinking broached by two latter-day far-sighted physicists, Neils Bohr and John Wheeler.

The focus of this second issue of the newsletter is mainly on two breakthroughs. **The first focus** is onto the overall Grand Field which a vast bundle of jumping-random tally tokens necessarily creates. **The second focus** is onto the dimensionality of this field, namely 3. (How can we *explain* the three-dimensionality of physical space? Orthodox physics doesn't attempt to address this conundrum. It is obvious that mathematical thinking does not offer the slightest purchase on this problem.)

The reasoning in this issue pivots mostly on simple mathematical reasoning... thus showing, incidentally, the relation of maths to the new logos. In the 1930s some of philosophers of the Vienna Circle² were absolutely sure that mathematics was the "object language" of the physical universe³, and that the overall picture derived from this, required a meta-language... which would presumably throw

¹The currently over-hyped notion of so-called "artificial intelligence" (AI) is miles away from the best human intelligence because the neural networks it uses lack the biological (blood, enzyme, etc.) environment of human neurons... which can also affect the information environment by new growth..

²Moritz Schlick, Rudolf Carnap, Friedrich Waismann for example.

³This was always a silly notion, because the nouns of mathematics can't define the physical universe. The nouns of mathematics are the names of mathematic objects created by reification of mathematic symbols. They are from the beginning wholly spaceless and timeless. They are, by the nature of the case, determined by regimented static principles. This is quite unlike the diversity, unpredictability and ferocious vitality of physical reality.

light onto the overall landscape of physics. However, no promising development ever emerged from this belief. The exact opposite has turned out to be the case. Anti-maths is needed as the object language: because it mirrors the vast perspective, utter unpredictability and vitality of physical reality ---all features maths cannot begin to handle, display or explain. Mathematics's role is, rather, to be the essential meta-language of anti-mathematics. Mathematics cannot be the object language of physics, because its (maths') objects display a wooden regimentation and timelessness wholly at odds with our experience of physical reality. They also lack substance, because they offer only *outline* analogies for physical phenomena. When maths was first conceived it was like line-drawing... its tally bundles ignored everything except the outline.

To recap the message of issue 1 of this Bulletin, today's consensus scientific approach to explaining the material world is one of *deconstruction* of material objects into their spatial sub-components. In issue 1 it was argued that these sub-components (cells, nuclei, molecules, atoms, etc.) were getting smaller and smaller and their internal modus operandi ("characteristic behaviours") were getting simpler and simpler. In a word, the method of "explaining material phenomena by deconstruction" involves conceptualising a convergency towards some crucial, foundational end-state⁴.

BUT, a massive difficulty arose here, because it appeared to be impossible to say anything logically coherent about this unavoidable end-state⁵. There is simply no way in which this end-state can be conceptualised if we stick to the orthodox notion that "physical reality is mathematical". This end-state has to be consistent with its burden... to ground and explain a huge structure of earlier deconstructions. Maths has ---ever since the mists of time--- deliberately avoided saying anything about the "stuffing" of things: it simply deals with the outlines.

Let's recapitulate.

The aim of this new mode of scientific explanation is to re-conceptualise the components of material objects⁶ ---as a sequence (a "ladder") of levels on which ever tinier components are found--- such that the behaviour of the structure of sub-components (on the level immediately below) has the logical implications which we are trying to explain (on the level we are looking at). It is the postulated behaviour of *chromosomes* which explains the behaviour of *cells*.

Two awkward issues arise. The first is that we are exploring tinier and tinier spatial structures, but it can't be part of the best scientific method lamely to accept

⁴A convergence like this must be convergence towards *something*. This raises the difficult question <<What is this something?>>. This is the residue of materiality propping-up the entire system: it can hardly be left as a which-what-who (=mere hot air) which nobody takes any notice-of.

⁵This is the "stuff" of the universe. It can't be a vacuum. Nor can it go on for ever. "It has to be palpable" which means that if science is to give a credible model of the universe it must offer a palpable, believable, final basis.

⁶On whichever level of the explanatory ladder (=type of sub-components) we are on.

that “space itself is God-given”. Space, and its inherent three-dimensionality, need to be explained⁷.

The second awkward issue is that there must be a **final level** of sub-components of some kind. (But it is extraordinarily difficult to think of the “kind of things” these could possibly be.) Thin air is not sufficient. The ladder of established deconstructions must rest on something with *reality, substance*.and *exceptionality*.) To simply forget this implication, is to show a complete lack of the classic scientific explanation-curiosity which we try to practise, and which has produced modern civilisation. On the face of it, the final level of sub-components on the deconstructive ladder harbours a nightmare, an apparently hopelessly insoluble problem. Something as “final”, “crucial” and “supportive” as this, can’t just be treated as “just hot air”. It needs, urgently, to be conceptualised.

Now, if it is to explain the penultimate level of sub-components⁸ ---which it must of course--- the sub-components on the final level must have some sort of very simple “behaviour”. But if so, they **can’t be** the final level of components, because this “very simple behaviour” also needs to be explained. This means that yet another rung of the ladder will be needed.

This is a contradiction of the greatest significance: because there must be a solution of some kind ---if we are to keep faith with a commitment to try to explain things, and the wonderful classic explanation-seeking resolve of our predecessors.

At this point we are either thrown into the deepest despair, implying that scientific method can NEVER arrive at closure, OR we are willing to contemplate an assumption which sounds quite “anthropomorphic”, namely, that the human mind itself is, to a degree, involved in determining what we treat as the roots of the physical universe⁹.

So let’s remember that the top rung on the ladder of increasingly tiny sub-components --- which we are trying to understand--- is the human brain ---the most amazing, unlikely --- unbelievably elusive--- thing which a material universe has brought about by quasi-automatic evolution. This human brain could *impose* structures onto the final level of sub-components, thus empowering them to explain the behaviours encountered on the penultimate level. (This would be like Clerk-Maxwell’s idea that a demon could allow energised particles of a gas to enter a chamber (while disallowing slow particles) and thus raising the temperature of the chamber’s gas by demonlike intervention.)

Anthropomorphic thinking is naïve, because it foolishly projects familiar human expectations onto obviously physically autonomous systems... which are governed by sophisticated laws. But no one seriously doubts that our “take” on the physical world in general must be the end-result of a process of perception which we barely understand. It was already a truism for the empiricist

⁷If “God Given” is accepted as valid, there is no need for science. The heart of the idea of science is that we are deeply curious about every kind of pattern which the cosmos presents to us, e.g. the circulation of blood in the human body. The near-Euclidean quality and three dimensionality of physical space stand out as enormous classic mysteries of the kind anyone sincerely interested in science must long to explain.

⁸This is the level of the Explanatory Ladder immediately above the bottom level.

⁹The limits of the accusation “anthropomorphic” as a put-down are discussed below.

philosophers Locke, Berkeley and Hume that “sugar, itself, is not sweet: the word ‘sweet’ signalling the feeling (taste) we receive from the sugar impacting onto our taste-buds”¹⁰

So a brain *can be* involved in our “take” on the ultimate sub-components of the universe, and what’s more, it *has to be*, if we are to maintain the momentum of the scientific quest. (This classic appetite for understanding the physical world used to be strong, healthy and widely recognised, and as a by-product, it gave ordinary living a reason to strive. Most of our most difficult socio-political problems today arise from a sad loss of much of this previous appetite and striving.)

The ultimate sub-components (bits) of matter may be called ‘ubits’. Recognising that there must be ubits is essential, if our deconstructive approach to scientific explanation is to enjoy minimal credibility... not to mention thriving, and an ability to go for closure. The final level of the explanatory ladder may be several levels below quarks¹¹. It may be called the ‘U-level’.

What is at stake here is a struggle which involves breaking away from the post-medieval piecemeal approach to science which ousted Aristotelianism at the Renaissance. Orthodox opinion seems to be still sticking perversely to this intrinsically bitty, in-grained, ad hoc, maximally “humble”¹² approach in science... even though science has long since ushered-in end-game type scenarios like space-travel, DNA, nuclear annihilation, and demoralised religion. It has also wholly transformed the average person’s way of living.

We have actually been in the landscape-of, and surrounded-by, the unmistakable dilemmas of the end-game in physics, for quite a long time. But the intense conceptual conservatism of modern science has insisted on pretending that a piecemeal mode of thinking is still good enough.

The U-level and the ubits on it

The ubits, the deconstructive objects on the final level of the explanatory ladder, can be conceptualised ---as broached in BULLETIN 1--- as real equivalents to jumping-random sequences of four different tally-types.¹³ Each sequence has a backlog. The first question which needs to be addressed is the length of the total backlog of these “jumps” (=moments when the tally-type changed). We have already seen that our normal perception of reality may unwittingly involve the human mind imposing judgments onto what is observed. So the length of the track-records of these ubits will be determined by the actual capacity of the human mind to “take on board and respond to” the *very slightest bits* of information. Alan Turing faced this dilemma at Bletchley Park, and he postulated that there was a minimum

¹⁰This was probably the prompt which set Kant thinking. We know that it was David Hume who, he claimed, awakened him from his “dogmatic slumbers”..

¹¹It might be only one level below the level of quarks, but “two or three levels below quarks” seems more likely.

¹²Scientific knowledge now underpins everything, including keeping us fit and alive. The “humility” which made very good sense at the time of the Renaissance is no longer appropriate in any shape or form.

¹³In other words, a ubit is the simplest kind of “physical indication” we can conceptualise as forming the final level of materiality. The ubits themselves are “out there” in physical reality. The jumping-random sequences of jumps which we can use in our modelling reflect their reality, but it is not the same thing as their “out-there-ness”.

portion of information (“a Ban”¹⁴) which the human mind could just about manage to take up and conceptualise.

The Ban may therefore be invoked to effectually determine the length of each ubit’s track record. Rough estimates can vary a lot, but it is likely that the length of the track record (=the total number of successive jumps) of these ubits is at least 300¹⁵. The significance of this number is that there might be earlier old “jumps”¹⁶, but the imperfect human mind would find them too slight to be entertained.

The ubits have two major features (a) they are wholly unpredictable, and (b) this unpredictability arises from constant changes, which add-up to a very basic kind of “raw, diverse energy”.

The ubits on which the material content of the universe is built are not, of course, literally tallies: but they ARE *representable* by endless jumping tally sequences. This means that what “jumps” is a physical change of the smallest experienceable¹⁷ kind, and that four distinctive smallest-experienceable states are active. Most of the physical events we experience as human beings are highly complicated, structured, simultaneously happening content. The changes which can be conceptualised as ubit jumps are the tiniest, physically minimal, Ban-like indications... of what is “happening out there”.

These ubits are at the very edge of knowability.

If the human mind can react to track records of 300 jumps¹⁸ the total number of ubits in the universe as a whole is 3^{300} , which is 1369×10^{140} . It may be much more.

It is important to bear in mind that such minimal physical objects are not being conceptualised as having positions in space or time. If every ubit had a tag saying *where* it was jumping and *when* this was happening... they would be miles away from the minimal effects we are talking about. We can only conceptualise them as minimal autonomous jumping-random sequences outside time and outside space as we know it.

But these ubits are being conceptualised as the final level of physical reality, and physical reality at the macroscopic level includes human brains. So our brains can, in principle, impose a metric which can sort such a wholly unrelated conglomeration of ubits into a kind of “space”.

The simplest metric which can be imposed (in principle) by an human observer is that which attaches the factor $(1/2)^m$ to each tally token m places back from the “Now” moment. (Here $\frac{1}{2}$ is the “jumper number”.)

If we add all the | tokens (each with a power of $(1/2)$) we may call the number obtained ‘x’.

If we add all the / tokens (each with a power of $(1/2)$) we may call the number obtained ‘y’.

If we add all the -- tokens (each with a power of $(1/2)$) we may call the number obtained ‘z’.

If we add all the \ tokens (each with a power of $(1/2)$) we may call the number obtained ‘u’.

¹⁴This was an abbreviation of ‘Banbury’, from where the special sheets of paper ---used to collect information picked-up by eavesdropping on Nazi radio communications--- came from.

¹⁵Eventually it may be possible to conduct empirical (psychological) trials to obtain an official limit here. The ‘Ban’ as assumed by Alan Turing was only an intuitional estimate.

¹⁶These would be unknowable, so whether they “exist” or not is a non-question.

¹⁷“Experiences” coming from “out there”, not ones incubated by introspection.

¹⁸This being the limit of what the brain can handle (something about which we know very little at the present time). We are here taking a realistic, naturalistic concept of the human mind for granted. Our minds are not infinitely perceptive... they have their inherent limits.

So each ubit will be associated with four coordinates (u,y,z,u) . But since all the coordinates taken together must add up to 1, this will signify a three dimensional space¹⁹.

Such coordinates may appear to be very small (fractions less than 1) but of course the yardstick involved is arbitrary, and all these coordinate numbers can be replaced by 1369×10^{140} times the raw figure.

Alternatively a much smaller jumper number, say $1/1000000$ may be used to calculate the raw coordinates (x, y, z) . If $(1/2)$ is used, the effect is to turn the current jump of the ubits into a very large jump, relative to past jumps. So it looks as if a relatively tiny jumper number will be needed to reflect the quantum jumps of established physics.

Another possibility is that instead of steadily increasing powers of a jumper number, a function $f(m)$ might take the form of a Poisson Distribution or a still more sophisticated Distribution, which, like Poisson, starts low, moves towards an early summit, and then gradually fades away.

The most likely metric for defining spatial relationships between ubits is a reverse Poisson weighting, where the weight attached to each tally-type has its peak near the far end of the sequence of jumps²⁰. This will be discussed in more detail in BULLETIN 3.

What is the rationale behind *four* types of tally tokens?

Well it is obvious that a *two* token jumping random sequence would take the form *|||||... offering no room for randomisation whatever.*

A *three* token jumping random sequence would allow randomisation, like this:

$\backslash \vee \vee \vee \vee \vee \vee \vee \dots$ but the stuffing carried by this randomness is limited, because there are only two possible “next viable tokens” after any given token²¹. This means that that a sequence like that shown above can be replaced by a mixture of 1s and 0s, e.g. 11100111...

Now such a representation is equivalent to a bimal, in other words, a wholly *linear* representation. It hardly needs to be said that it is very unlikely that a full scale anti-mathematic model of the universe we inhabit could consist of a mere line of numbers.

So a four token system turns out to be the simplest system with the kind of diversity evidently needed... *and also* the relative simplicity of a small number of different token types, thus helping the imperfect human brain to cope with the complexity.

What difference does the establishment of a “space of ubits” make compared with “loose” rootless ubits?

The effect of having a “metric formula” for the distance between two ubits is that it “clubs together” this vast field of ubits which are timeless and lack any kind of spatial status. So what emerges is a “space” in which the spatial relationship of each ubit to each other ubit is defined, and is three dimensional. This is a considerable step forward, because it has always been assumed that a chaotic (random) substratum can’t ---by definition--- offer any kind of basis for structure. Here is a “spatial structure” created merely by the application of a definite metric. It means that *if there are minds at work*

¹⁹The total ---which is the sum of $x+y+z+u$ --- is $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$ etc. This means that u can be replaced by $1 - (x+y+z)$ and that only three coordinates are actually needed..

²⁰In other words the oldest jumps are treated as having the greatest weights, and the most recent, the least.

²¹If we put the three tally-types | / _ at the vertices of an equilateral triangle, the “room” that is available for the next jump ---which must differ from the last--- either amounts to a shift clockwise or anti-clockwise.. two possibilities.

*somewhere in the system*²² they can in principle impose this kind of spatial structure onto the whole. (The structure which is most conducive to the emergence of minds ---at a later stage--- might take the form of course of many different metrics. We might not know which metric is most mind-conducive until much later.)

Having the structure provided by a spatial metric is the first step, and it soon becomes a crucial de facto doorway through which further structure can emerge (using reification). Here we are researching hitherto unregarded possibilities.

It is the first sign that we can impose transient structures onto a field of strictly random ubits, though it can be associated nominally with a very large range of potentially different spatial, stable structures. The common presumption has always been that nothing remotely like “stable structure” can be found-in, or based-on, a field of 100% random chaos.

This has turned out to be wrong. There *is* a way to impose transient, relatively stable, structure onto randomness.

So there are essentially two kinds of Anti-Maths modelling science. There is basic Open Anti-Maths, within which we can investigate a vast range of overall effects, arising from many different metrics. But there is also *Canonic Anti-Maths* which can be part of a very special postulated programme which can, in principle, impose the necessary transient stable structures capable of underpinning creative mind-like beings (us). Now each “imposition” of structure will depend on something somewhat like a possible metric²³. This may be called an “imposed axiom”. There is much to learn about imposed axioms in general, but there is also, of course, the \$64 question <<What are the imposed axioms which will be necessary to bring about the existence of transient sentient bodies empowered with creativity?>>.

This is the \$64 question. It is these “Special imposed axioms” which are at the heart of Total Epistemology: because getting a system to impose the very structures which allow it to eventually impose mindlike initiatives is the major name of the game. At a stroke it solves the apparently insoluble problem of how we and the universe have come to exist.²⁴

The culture shock involved here is huge. For more than a century the Official Wisdom has been that the human brain cannot ever hope to understand reality. It was supposed to trash the thinking of Newton, and empower the thinking of Albert Einstein... perverse implications, because Newton showed the

²²The intelligence of the objects at the top of the ladder (human beings) allows this intelligent willpower possessed by the humans to impose stable structures on all levels of the ladder. Darwin described his vision of evolution as driven by “the survival of the fittest”. The more nuanced approach suggested by Anti-Maths research is that it has been <<the survival of the most intelligent>>.

²³This is the equivalent of the reification of much-used symbols which gives us the timeless objects of maths. (They are “much used” in the business of mathematical activity which we can now see, contrary to Plato, is about modelling ---and thereby illuminating--- massive social projects and scientific theories.)

²⁴This might sound like a minor gain, but actually it has far-reaching implications across a huge field of ethics, politics, education, etc.

Anglophone countries know how to do maths *while keeping your feet on the ground*. Einstein offered a solution to the Michelson-Morely discovery of relativity. It was, however, a poisoned chalice, because it implied that time was a dimension. But a “dimension” is equivalent to a *degree of freedom*, something we absolutely lack in relation to time. We are stuck in the “Now”. There is no way in which we can move about in time. (We can get faint impressions of things past and things future ---through reading history books and sci-fi--- but we can’t transfer our metabolisms to those points in time.) Spacetime reduces the whole drama of human creativity, sensibility and development to a standstill. If the future were *already there*, could be no credible motivation for anyone to go to great lengths to do anything... to change things for the better.

This should never have been accepted by lay observers in the demoralised 1920s. It was, if accepted, a recipe for the collapse of civilisation.

This feral negativity has implied a metaphorical slap in the face for determined past pioneers like Descartes, Newton, Darwin, Mendel, etc... They were thoroughly of the opinion that the world could make sense... if sufficient energy and determination were invested in the quest.

So none of their famous break-throughs would have happened if these geniuses had been afflicted by the feral negativity of today’s deeply demoralised thinkers. By abandoning this core, classic, disposition ---i.e. faith in the ever-present possibility of genuine enlightenment--- the fudgers of the 1920s have condemned the human race to a supposedly endlessly pessimistic, downbeat vision of the future. Although only a few far-sighted creative seers were fully involved (e.g. the four mentioned above), their message was ---up to 1900--- strongly life-affirmative and widely recognised as such. Enlightenment ---when it was still alive and well--- illuminated and warmed the human condition in a 1001 different ways, including relationships, family moods, political stability, law and order, fiction, drama, poetry, and creativity generally. Getting expectations back onto the healthy levels which were demolished by our disappointed predecessors of 100 years ago won’t be easy.

FOOTNOTE The author has written more than twenty essays in the free online journal The New English Review, published in Nashville, Tennessee. Most of them are apposite to the issues raised in this BULLETIN. The P E R Group was founded in 1993 (and is now in its 32nd year) by the present author and Eric Blaire. Its original remit was and is to establish philosophical thinking which will be conducive to a renewal of genuine, positive education.

NOTE These BULLETINS can be found on-line at PERTinence.co.uk NEWS

PER BULLETIN No. 2 Summer 2025 (A quarterly P E R publication) Editor Chris Ormell, The PER Group, Box 16916, London SE3 7WS. Tel: 020 8858 3364 email: per4group@gmail.com.
Websites: PERTinence.co.uk philosophyforrenewingreason.com mathsforrenewingreason.com
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