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Review Article

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Reintroducing the Sanity of Gaussian Number Theory

BMJC Bieżanek*

Natural Philosopher from Church Stretton, Shropshire, UK

***Corresponding Author**
Benedykt Michal Josef Campbell-Biezanek, Natural Philosopher from Church Stretton, Shropshire, UK.

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"Mathematics" *The idea of having a professional and political body that dictates the nature of numbers to scientists, engineers and even to nature herself, is so comical that even King Canute himself could not have made up the joke.*
The author; 28th July 2026.

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1. Introduction

About 2000 years ago, a very talented engineer and inventor called Hero of Alexandria discovered, or just pointed out to everybody, that he could solve every quadratic equation if you allowed him a new kind of number that today we call i. This i operator works like an additional pair of polarities. Instead of just two polarities, Hero pointed out that we need four polarities in total. Today, on the mathematician's complex numerical plane, we find those four polarities as +, +i, - and -i. By about 1889, the followers of the sadly recently departed James Clerk Maxwell found a second interpretation of i as the rotational operator. This is very simple, instead of an orthogonal counting system we use a polar system of numbers with every AC electrical number containing the properties of magnitude and relative phase rotation. Unfortunately for modern students of electrical engineering, this rotational interpretation of i has become suppressed by theoretical mathematicians who have no interest in any interpretation of i that relegates i to the role of a mere rotational operator. For them, i must be a number in it's own right. The great confusion here was set off 300 years ago by the most prolific algebraist of all time, Leonhard Euler. Euler thought that $e^{i\pi}$ was the same as -1, we call this the Euler Identity, this employs the numerical interpretation of i and it turns out to be utter nonsense, but the reason for this was too subtle for everybody, including Euler himself of course.

2. To help you think this through, I will break down the Euler Identity

With the electrical engineer's interpretation, the symbol i means "a polarity rotation of", so iπ on its own means a polarity rotation of π radians, but with no magnitude. Correcting this nonsense is so trivial that for 60 years I lived in disbelief that my correction of this absurdity was private to me, I just assumed that everybody knew this. The flat or finger-counting magnitude of -1 is 1 and to move that into the natural exponential form it becomes zero. Therefore; $e^{(0 + i\pi)} = -1$. That is the proper or correct universal number identity that Euler completely misunderstood. For the next 300 years, Euler's false identity statement subsequently confused and misled everybody.

Proof; $e^{(0 + i\pi)}$ means e^0 times $e^{i\pi}$. The evaluation of this is $e^0 = 1$ times $e^{i\pi}$, and that is just iπ. The reason that $e^{i\pi}$ is the same as iπ is that the rotational polarity is indifferent to the numerical form employed to express the magnitude. This can be using the flat earth arithmetic of childish finger counting or the natural exponential form required in the real world of gravity and rotating spherical planets. So $e^{(0 + i\pi)}$ means the same as just 1.iπ, which means one times a polarity rotation of π radians or inverse one (-1).

3. What on Earth is a Real Negative Banana?

There is no such number (of real bananas for instance) as minus one (or take away one) because it is impossible to take away a real banana from a bunch containing no more bananas at all. This number (-1) needs a new name, in 1831 Gauss advised us to call it inverse-one because it is the rotational inverse of one.

The very definition of inverse one (-1) is 1.iπ in radian units or 1.i2 in quadrant units. 1.i2 means one times a polarity rotation of two quadrants. We might say that 3 is the inverse of 1/3 (instead of using the reciprocal word) but that is a numerical magnitude inversion, we can call -1 the inverse of one and that is a rotational polarity inversion on the flat rotational plane.

For some hilarious reason that probably only God could explain, Euler was induced to express iπ (a rotation of π radians) in exponential form as $e^{i\pi}$ without even notic-ing that $e^{i\pi}$ and iπ were identical or that both terms related only to polarity with no magnitude term. Euler actually needed $e^{(0 + i\pi)}$ or 1.iπ, both of which are identical to inverse-one (-1). Note that $e^{(0 + i\pi)}$ means the antilogarithm, or I would say the re-verse exponential transform, of the natural exponential number (0 + iπ). We must think of taking the natural logarithm as being the same as passing through the natural exponential transform. The process name of taking the natural logarithm is archaic and should become superseded with my proposed new process name of the natural exponential transform, and then suddenly a lot of people would wake up and under-stand the higher arithmetic of nature a lot better than they do at present. To under-stand this one needs to realise that the terms "logarithmic" and "exponential" mean precisely the same arithmetical thing. They call themselves mathematicians but their understanding of the language of basic higher arithmetic seems to be virtually non-existent.

4. What! - The Natural Logarithm of a Negative Number?

In my arithmetical world we can have the natural logarithm of a negative number or even any complex number at all. In the crazy dysfunctional so-called "mathematical" world that you were indoctrinated into, there can be no logarithm of a negative number. As explained above, the natural logarithm of inverse-one (-1) is (0 + iπ). This ability to express polarised numbers in exponential form only applies with the natural logarithm or as I prefer to put it, with the nature of numbers transformed into nature's natural exponential numerical form.

Whatsoever absurd arithmetical world our so-called mathematicians describe, it has absolutely nothing to do with nature. Albert Einstein and myself are in complete agree ment about that. Exactly how such a smart young lad as Albert Einstein was in 1905, missed the pathetically obvious logic expressed in my section 8 here, is almost impossible for me to understand. I mean, most people are extremely narrow-minded and as rigid as two planks, but that definitely did not apply to my posthumous colleague.

We must think of the number (0 + iπ) in radians or (0 + i2) in quadrants, as being a member of the natural exponential numerical domain that maps down onto 1.iπ in radians (or 1.i2 in quadrants) on the subordinated flat rotational plane using the reverse natural exponential transform to decrypt the natural exponential number (0 + iπ). The reverse natural exponential transform comes from John Napier in the late 16th century, it is just e^y, where y is the natural exponential number that we want to transform back from the exponential form into the flat (finger counting) form. Our number here is (0 + iπ) and so we find that $e^{(0 + i\pi)}$, 1.iπ and inverse-one (-1) are all three of them identical.

5. The Electrical Engineer's Interpretation of i As the Rotational Operator

Pure mathematicians are the most impossibly impractical coves that any practical person could ever have to deal with. In 1969, I was very pleased to learn from serious teachers of applied mathematics that electrical engineers must treat i as the rotational operator. The polarity of an alternating electrical voltage or current is rotating in time and this can be summed up in the exponential solution for Maxwell's field equations in any polarity term, which is always of the form $e^{j\omega t}$, where ω is the phase velocity in radians per second and j is Maxwell's code for i because Maxwell reserves i for referring to the instantaneous current.

Exactly why Maxwell retained the use of radians as a nonsensical measure of rotation instead of the much more obvious quadrant rotational units, rather escaped me, but the units of rotational angle are in this case irrelevant. However, the double frequency reactive energy vector lies in rotational quadrature with the double frequency real work energy vector and so radians are a blind, nature clearly uses the quadrant as her natural rotational unit. There is nothing whatsoever imaginary about reactive (zero half cycle net work) energy of course. The radian as a rotational unit is just an element of some form of finite human hubris about circles drawn onto flat 2D planes, but that has nothing at all to do with polarising angles in infinite universal electrical space-time.

It seems that just like Euler, James Clerk Maxwell did not notice that $e^{j\omega t}$ refers only to a rotational polarity but with no magnitude term. This is utter nonsense and it is very easy to correct, if we adjust this expression to $e^{(0 + j\omega t)}$, then it makes perfect sense. Maxwell is then referring to a unit vector rotating in time at ω radians per second.

6. Explaining Why i Can Work on Its Own as If It Were A Number?

The natural unit of rotation is the quadrant. Think of i placed after a number as a polarity marker as being a shorthand for .i1, or i on its own as being a shorthand for 1.i1. We can miss off all the ones, but never forget that they are there. The attraction of natural numerical reality with her polarity rotation in quadrant units is that it makes easy sense and we can see where these strange seeming numbers come from, now we have no more arithmetical mysteries. For example $(3.i1)^2$ = 9.i2 = inverse nine (-9). The simple additive nature of vector angular multiplication only means something on the polar plane in a daft world where time does not exist. However, multiplying the voltage space-time vector and the current space-time vector to form the product energy flow space-time vector must throw up a product vector singing one octave higher than the fundamental of voltage and current. For a trigonometrical abstraction of the electrical energy space-time dynamics here one can just compare the sine and the sine squared functions.

7. Why Are Applied Mathematicians A Taboo for Pure Mathematicians?

I tried long and hard to find a professional applied mathematician to help me in writing this paper or more hopefully take over the entire issue from me completely, but they are now no longer to be found. The pure mathematicians have made life impossible for anybody who wishes to help scientists with applying mathematics in science. They do this by insisting that only their interpretation of i as a magic number can be countenanced and that anybody who challenges them with the rotational operator interpretation is an imbecile who must not be published or allowed to teach anything. You thought that there could be no politics in mathematics, but I am afraid that that is wrong. Professional pure mathematics is more full of dodgy political claptrap and absurd fake religious dogma than a ripe chicken egg is full of meat.

The reason that this imbecilic situation never gets corrected is because of the professional (money earning and bread winning career) nature of mathematics. Anybody who sees through the nonsense must keep his mouth shut and at least pretend not to be a heretic. See, what I have explained in my paper is that the higher arithmetic that they have been teaching in "mathematics" for the last 300 years is complete nonsense. It is like a company, say Enron Corp, that has been running a giant fraudulent Ponzi scheme and getting away with it for a very long time. Nobody inside the firm can see anything wrong, but in fact everything is wrong and only an outside whistle blower, such as myself in this case, can get the nonsense corrected.

Governments provide huge funding for all this nonsense and what comes of it? More confused students and innumerate dunces than the job market can bear. The underlying fraud is financial of course, what proportion of global GDP is spent on fraudulent-M STEM education? Who taught the blacksmith (Michael Faraday) electrical science?

If a professional mathematician were ever foolish enough to become a heretic and declare this obvious fraud, he would find himself out on the street with no way to pay his mortgage because there is no demand for professionally disgraced former mathematicians in the real world. The idea of having a professional and political body that dictates the nature of numbers to scientists, engineers and even to nature herself, is so comical that even King Canute himself could not have made up the joke. Nearly all the really useful material came from amateurs and hobbyists in the 15th to the early 19th centuries and the i operator itself was introduced in about 33 AD by an engineer and inventor by the name of Hero of Alexandria.

Everybody does need to be taught their higher arithmetical logic properly of course, instead of the utter piffle that mainly serves to confuse them today. The real progress since Carl Friedrich Gauss sent in his excellent last paragraph [24][i] at the end of his letter about this subject to the Royal Society in 1831, has been nothing at all. The Gaussian breakthrough was ignored, Gauss became their first and last heretic.

8. The Pinch[ii]; The Electrical Engineer's Model of Space-Time.

In 1980, the CIPM finally adopted the perfect space-time model by defining the metre as 3.335.. nanoseconds, well, they say 1/c seconds, but that means exactly the same thing. The units of space are measured in seconds. If not so sure about that, just ask any radar engineer. But the units of time are also measured in seconds, so space and time share the same units, even though space and time seem to ordinary human minds to be very different. The answer is very simple, the units of historical depth are measured by how far the rotating electric clock has rotated, including the sum of all the completed rotations, during the time that the radiation took to reach our observation from the emission point. The so-called "speed of light" is i, or more strictly one unit of space per unit of (imagined) historic depth since emission, this is 1/-1.i1 and that is identical to 1.i1, or in the deeply unhinged maths-speak, just i.

[c], the so-called "speed of light", has the value i (meaning 1.i1) and $c^2 = i^2 = -1$.

A mathematician once said that mathematicians determine or discover the laws of the Universe that even God can't change. In the meantime, my guess is that God must have nearly split his sides laughing over that crystal clear expression of the exquisite epitome of all human hubris. All this was found in 1963 by a bored child because he refused to go along with the nonsense embedded into Euler's so-called identity.

For contacting the author with comments or questions about this Gaussian model of higher arithmetic, one can use the contacts feature at
https://www.gnqr.co.uk
gnqr stands for Gauss Newton quantum-relativity

Technical Appendices; Confirming and Extending the Electrical Engineer's Basic Space-Time Model

Appendix 1
Confirming the Electrical Engineer's Space-Time Model with Classical Mechanics

When Newton gave us the classics, if one heard his whole argument, he mentioned that time can be regarded as history moving backwards and that treating time as the present moving forwards was merely a convention he used in his work and must not be taken for granted. Williams, my really excellent mathematics teacher explained this to the super-stream maths class of 11 pupils in early 1963 (myself aged nearly 13), such fabulous teachers of classical mechanics as Williams are impossible to imagine within the catastrophically degraded state of STEM education today.

Now, let there be a massive iron arrow spinning through deep intergalactic (almost gravity-free) space in such a way that the tip of the arrow points through an entire rotation every one second. Let us call the plane that the arrow rotates in "the plane of the arrow's time clock". Also let us imagine that the arrow's rotational clock plane is rock steady, there is no gyroscopic precession. Let the arrow centre be departing from our galaxy at say 0.001 light-years per year or what you would call 300 km per second.

We can describe the arrow as consisting of two clocks, a linear spatial clock and a rotational time clock. The arrow is measuring spatial depth as its time of flight with its position along the line of motion as a one dimensional section of the three dimensions of its space and it is measuring the time since it was shot off from our galaxy with the number of times (seconds) it has spun a full rotation of its rotational clock plane.

Now this simple model of the arrow's linear space clock and rotational time clock cannot resolve the issue of whether time is moving forward from the present or that the present is falling backwards into the past, but Newton warned us to be ambivalent on that question and who are we to know better than Newton?

This issue of whether the present is moving forward or the past is falling backwards was resolved in 1972 by two extraordinary Californian quantum physicists by the names of Clauser and Freedman. The past is definitely falling backwards. As expected, nobody wanted to know that, so everybody falls back upon every fake intellectual's excuse, they declare the experiment to be incomprehensible, ignore the evidence and just carry on as if nothing had changed.

Despite this detail from quantum mechanics, classical mechanics confirms that the relationship between a one dimensional section of 3d space and 1d time is rotational. Space in units of time is a linear measure in units of time and historic depth is a rotational measure in units of time. The ratio between space and time is rotational or the two numbers of space and time must remain in numerical quadrature. This requires a two dimensional view of the numbers that are driven by numerical magnitudes and by their rotational polarity.

The mechanical model confirming the electrical model was so encouraging for me that for the next four and a half decades (after 1963), I thought in vain that "any decade now they will get it, and I will be off the hook". I mean off the hook and never feel obliged to help them, because this is all so mind numbingly simple that surely they will get it all on their own, without any help from me? From 2008 onwards, all I did was to broadcast clues for the next 11 years, but nobody wanted any clues because by then they were no longer even aware that there was even a puzzle to be solved.

Appendix 2
Extending the Electrical Engineer's Space-Time Model with The Known Time-Mechanics of Entangled Quanta

When an atomic mass frame or a connected group of frames (any emitting aerial) emits a lump of energy, the lump can under cerain circumstances consist of an entangled pair, the relationship between the two elements of the pair must be fixed, they are not independent of each other. Niels Bohr was of the opinion that any quanta of energy, including two entangled quanta of energy, do not even exist (inside our finite space-time) until there is an interaction within another mass frame somewhere, that is the receiving mass frame or the receiving aerial. At the point of detection, the quanta from the pair that was detected absolutely ceases to exist anywhere at all, but what it contained is felt by the aerial and can be resolved by special measures. What Clauser and Freedman were able to show is that at the point in time that one of the quanta is resolved by detection, the other member of the pair instantly ceases to be uncertain in its state and instantly acquires a fixed state. Well, the "proof" is only statistical, but the statistical mechanics given by John Bell are logically immaculate.

In order to understand this we need to see the two entangled quanta and the historic emitter as all three being entangled, I call this historic emitter entanglement. The classical concept of magic bullets of energy flying through free-space at 300 million metres per second is just comfortable nonsense. The system state of the historic emitter and both of the entangled quanta is resolved or determined instantly upon detection of one of the members of the entangled pair at what I call the event-horizon or the observation-horizon of time-now. The present is entangled with the past and the entangled system state jumps to a new state upon detection and possible quantum action within the detecting mass frame.

The only possible way to see time in this understanding is to regard the past as falling backwards in time from the present observation horizon, I call this the event-horizon of time-now. While those two entangled quanta were undetermined, they both lay beyond the eventhorizon within an infinite singularity that Maxwell called the Luminiferous Aether, other electrical engineers call the superconductive waveguide of free-space, and I call the quantum-domain. The quantum-domain is an infinite singularity that lies outside our finite spacetime, intimately beyond the event-horizon of time-now.

It rather escaped me exactly how quantum physicists failed to notice that what came in 1972 was a complete confirmation of Niels Bohr's so called Copenhagen Interpretation. How many are aware that (at my last count) there were 13 deranged interpretations of quantum mechanics plus the perfect original interpretation from Niels Bohr and his Copenhagen School?

The following two additional technical appendices to this foundational treatise will be published later.

Appendix 3.
Extending the electrical engineer's space-time model with Einstein's General Theory and the quantum mechanics of atoms.

Appendix 4.
The exponential arithmetic of historical-time and the exponential polar manifold.

i. I refer to the second letter of Carl Friedrich Gauss to the Royal Society, item C, paragraph 24. This letter is in Latin, it was hand written and is only available to highly qualified forensic archrival researchers. The only place to read this in an English translation is inside William Ewald's book. A source book in the foundations of mathematics. From Kant to Hilbert, volume 1, page 313 of the paperback version, last paragraph [24] of Ewald's chapter seven on Gauss. ISBN 0 19 850535 3. This is not available with OUP on-line at https://academic.oup.com/book/54445 because OUP on-line only remembers vol 2 and no longer links, or never linked vol 1. But volume one is still available here. This one paragraph reference [24] is the point where Gauss left off at, 195 years ago and where my forensic investigation picked up from in 1959, 128 years later. This forensic investigation has taken 67 years so far. As the book is very rare and is £152 from Amazon, I will repeat Ewald's translation work on the paragraph [24] fragment here.

[24] We have believed that we were doing the friends of mathematics a favour by this account of the principal parts of a new theory of the so-called imaginary quantities. If one formerly contemplated this subject from a false point of view and therefore found a mystery darkness, this is in large part attributable to clumsy terminology. Had one not called +1, -1, √-1, positive, negative, or imaginary (or even impossible) units, but instead say direct, inverse and lateral units, then there could scarcely have been talk of such darkness. The author has reserved the right to treat this subject, which in the present treatise is only occasionality touched upon, at greater length later. Then too the question will be answered, why things that form a manifold of more than two dimensions cannot supply yet another type of number that is admissible in higher arithmetic.

Notice Gauss' very polite insult to the mathematicians (who did not like him). Rather than calling them mathematicians he refers to them as the friends of mathematics. Utterly brilliant, but that was Gauss to a tee, in every field of natural philosophy.

ii. I refer in jest to the fictional EMP device that the character Basher Tarr steals and uses to black out the Las Vegas strip in the entertaining comedy/drama film Ocean's Eleven (2001).