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Forget Imaginary Numbers; the Real-Arithmetic of Rotation.

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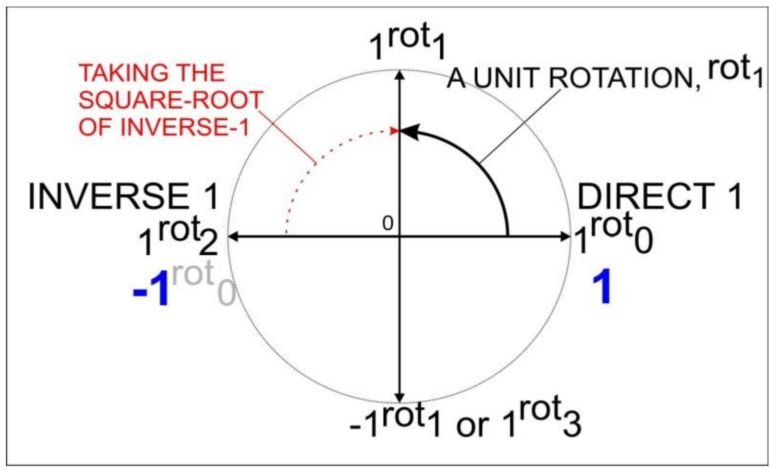
Preamble

Imagine that you are walking into town making direct steps towards the centre of town. Then, you remember that you left your umbrella at home and it is going to rain soon. So, although you have already walked 1,267 steps towards town, you bite the bullet, stop, rotate through 180 degrees and start making direct steps back towards your home. However, with respect to walking directly into town, you are now taking inverse steps towards town. As Carl Friedrich Gauss pointed out in *para. #24* of his *2nd* letter to the Royal Society (1831), calling our numbers positive and negative is very silly, we should rather call them direct and inverse. So, perhaps there is no such number as minus one (take away one), but there really is such a number as inverse-one, the rotational inverse of direct-one?

The Arithmetic of Rotation

Let $\alpha^{rot}\omega$ be taken to mean a magnitude of α rotated by the angle ω. Let the value of *+1* be assigned to the value $1^{rot}0$. Now, if the natural whole units of rotation are such that there are four whole quadrant units of rotation per completed rotation, then the value of inverse-one (-1) is $1^{rot}2$ and the square-root of that, which pure mathematicians call *i*, has a value of $1^{rot}1$.



The value which the pure mathematicians call *-i* has the value of $-1^{rot}1$, which could also be described as $1^{rot}3$. However, as we can also describe -1 as $1^{rot}(-2)$, the square root of inverse-one (-1) has two values, those are $1^{rot}1$ and $1^{rot}(-1)$, alternatively, just to try and humor the pure mathematicians for tiny bit longer, I could write *i* and *-i*. Clearly, our present understanding of *i* and *-i* leaves a lot to be desired. My symbol ^{rot}, as employed above, meaning "*times a rotation of*", is what the poor, sorry pure, mathematicians heavily abuse as *i*. The character *i* represents the **rotational-operator**, it must always be followed by the angle to rotate by. When anybody writes *i*, they ought to be writing 1*i*1. Pure mathematicians think that *I* means the square-root of minus-one, an impossible number. Of course, if a person thinks that the vital rotational-operator of the real Universe that he actually lives in is actually an impossible number, then he will think many deeply deranged thoughts and end up professing to a lot of mathematical nonsense.

The Arithmetic of Rotation in Exponential Units

Fortunately, in exponential counting units, the apparently questionable nature of the orthogonal complex-numerical-plane simply vanishes. Any valid number must be able to be assigned to a natural exponential value of $(\alpha + i\omega)$. Here, we no longer need to worry about $-i$ as that is taken care of by the polarity of ω. As I can describe counting on the (natural, e-based) **exponential-rotational-manifold** as counting in the actual exponential ratios of nature, then I need a new name for the natural antilogarithm of that manifold. I will call the resultant antilogarithmic counting device, the flat-rotational-plane.

The flat-rotational-plane

In order to interpret what is meant by the exponential number $(\alpha + i\omega)$, when moved on to the flat-rotational-plane, we need to take the natural antilogarithm of $(\alpha + i\omega)$.

That is found as $e^{(\alpha + i\omega)}$. For myself, I would be far too troubled by the evaluation of $_e(\alpha + i\omega)$ when stated in that formal and correct form. Fortunately, I can break the evaluation down into two parts by stating that –

$$_e(\alpha + i\omega) = {_e(\alpha)}.{_e(i\omega)}$$

and it is axiomatic that –

$$_e(i\omega) = i\omega$$

This is because the exponential-rotational-manifold and the flat-rotational-plane share the same units of rotation. In other words, the **rotational-polarity** of the number is unaffected by being stated in exponential or flat numerical form.

Exponential form only impacts the magnitude component of the number. Therefore, the evaluation of the exponential number $(0 + i\omega)$ is very simple.

$$_e(0 + i\omega) = 1.i\omega$$

This is the fundamental mathematical identity of the Universe - **the circle of unity**. So, for our interpretation of the existing (flat and invalid) complex-numerical-plane onto the circle of unity, I can state the following identity transcriptions;

+1 to 1i0, i to 1i1, -1 to 1i2 (i.e. -1i0) and -i to 1i3, except that 1i3 is identical to -1i1.

This interpretation ignores reverse rotation and so although it is interesting and very useful to us, this interpretation of the circle of unity is only half of the story, the other, reverse rotational interpretation, gives us a perfect mirror image of the first. With reversed rotation, the two numbers 1i1 and -1i1 simply flip their identities.

The number zero on the flat rotational plane

When counting upon the exponential-rotational-manifold, we must express the flat number zero as $(-\infty + i\omega)$. We can evaluate zero on the flat-rotational-plane as $_e(-\infty + i\omega)$ and so upon the flat-rotational-plane, regarding zero as if it were a finite number must be regarded as a non-starter. That is just as well because zero is the rotational fulcrum of the flat-rotational-plane.

The assignment of revised polarity labels for the flat-rotational-plane

Fortunately for myself, this polarity label reassignment task has already been done for us by Carl Friedrich Gauss in paragraph #24 of his second letter to the Royal Society. In 1831, Gauss suggested that in place of our existing polarity labels of positive, negative and imaginary, we might employ the superior polarity names of **direct**, **inverse** and **lateral**. I have always found those Gaussian names to be highly appropriate and most helpful to me.

As far as I can tell, the only reason that Gauss did not write this note as para. #25 etc. in 1831, and thereby save me the trouble of adding this footnote, 192-years later, is that he became stuck, like a rabbit in the headlights, by the absurd and grossly unhelpful radian unit of rotation. There are four natural units or quadrants of rotation in a completed rotation; stating that there are 2π units is something to do with the length of an imaginary arc, but what has that got to do with real polarity rotation on the flat rotational plane? There is not the faintest connection.

All Pure Numbers are Imaginary, only ratios (for instance; e, π etc) have real meaning.

The designation of the number one as being real is absurd. If I say “one carrot”, then that might mean “one real carrot”, but please show me a negative carrot. If I take away all real units, then what is real about the number one? That number (1i0) means unity, times an imaginary unit, times a rotation of zero. The flat numbers 1i0 (1), 1i1, 1i2 (-1i0) and 1i3 (-1i1) are all equally imaginary. This not because of rotation, rotation is real, it is because the number one refers to one imaginary unit.

Leonhard Euler's little misunderstanding

All numbers can be expressed in the natural exponential form as (α + iω). Euler's Identity, in the form that he originally stated it, is invalid. That is very polite of me, "complete nonsense" would be a far better description. Euler stated that:

$$\mathbf{e^{i\pi} + 1 = 0}$$

This is nonsense because iπ is not in the proper exponential number form of (α + iω).

On its own like that, iπ is not even a valid exponential number at all. Let us now convert the nonsense of an orphaned iπ into a valid exponential number by the simple expedient of converting iπ into the valid natural exponential number (0 + iπ).

So, now I can convert from Euler's original and understandable confusion into a valid and meaningful identity by stating that:

$$\mathbf{{}_e(0 + i\pi) + 1 = 0}$$

Note that e(0 + iπ) is not an exponential number but rather its antilogarithm, that antilogarithm is a flat number. The exponential number there is just (0 + iπ). This identity can be manipulated into a more comprehensible form as follows:

$$\mathbf{{}_e0.{}_ei\pi = -1}$$

The above identity is much easier to understand (in radian rotational units) as -

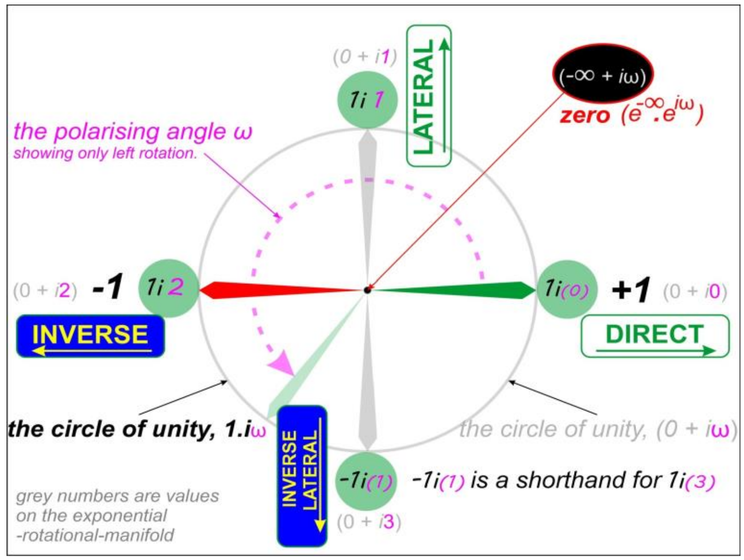
$$\mathbf{{}_e0.{}_ei\pi = 1.i\pi}$$

Note that taking the natural logarithm, or the natural antilogarithm of iπ, rotate by π radians, makes no change to the rotation, i.e. no change to the rotational-polarity of the number. Interpreting 1. iπ is easy, that just means direct-one times a rotation of π radians to inverse-one. Choosing a symbol for the **rotational-operator** to be *i* is the most comical thing that human-beings have ever done. What on Earth is there about the rotation of say the Earth that is in the slightest way imaginary?

The great confusion for the so-called "*mathematicians"* of flat and rotationally-rigid so-called "*number-theory*" and all of their poor students over the last 2000-years, lies not only in thinking that *i*, the vital rotational-operator of the Universe, is a number (the square-root of minus-one) but also in thinking that the radian is the natural unit of rotational angle.

We can now glance at the Flat-Rotational-Plane in graphical form

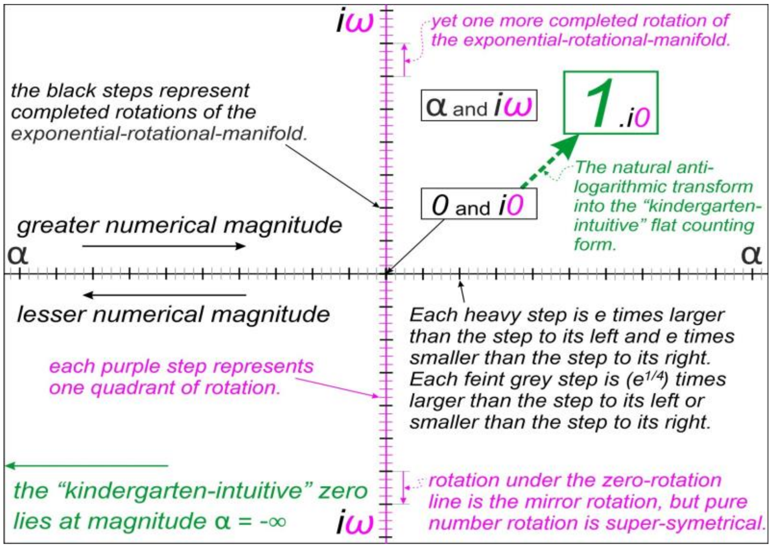
Our Natural Universe actually works with exponential ratios, so, showing a reconciliation between any kindergarten-arithmetic or flat-earth-arithmetic, and the actual exponential-rotational-manifold of Nature, must always be an imperative.



Assigning a polarity of positive or negative to rotation is nonsense as rotation has two senses, right and left, aka clockwise and anticlockwise; but rotation is relativistic; for clockwise or right to mean anything, we also have to define the relativistic perspective, that is from in front of or from behind the clock face. Both rotational directions have utterly equal validity.

The author finds a gravitational solution for universal space-time with the conventional direction of rotation, as shown above, which also works perfectly in the mirror rotation. However, unless one wishes to go the way of Gregor Cantor (deep terrifying insanity, leading to his death), do not try to make these two mutual mirror image solutions of Universal gravitational space-time work with both rotational directions simultaneously.

The Arithmetic of any Clock's History is *(quite naturally)* **exponential**



The ***complex numerical plane*** *shown above reveals all the flat numbers between 0.000,002,75.. and 36,315.. together with zero to 33 Q-rotations, or 8.25 completed rotations, in both mirror image directions from a relativistically arbitrary ω0.*

Within quantum-relativity, the future quite simply does not even exist, but we can imagine a frozen moment of now slipping out into the endless voids of the past. In the above diagram, we can interpret ω as the two binary historic-clock-phase images relative to the current phase. Look in the above sketch at the MOD4 rotational harmonics of clock-relative-history. Time-now is always and everywhere defined by ω = 0. What is the time? It is now; and it is 13 hours and 47 minutes back to last midnight. It is last midnight that is moving away from us, right here it is always now.

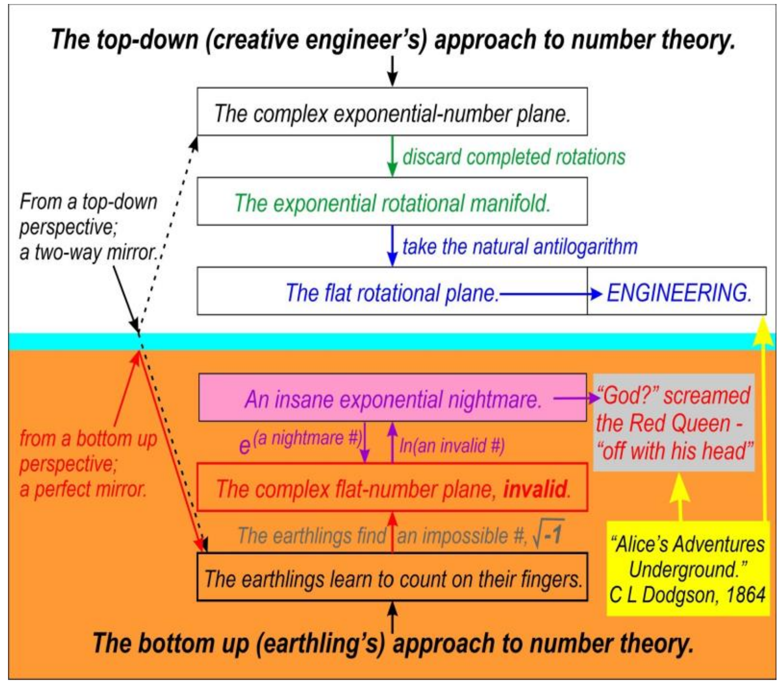
But, at least I "know" what happened; well, good luck with that.

Time is an illusion of imaginary history in units of i-time. This includes all the atomic and molecular quantum clocks inside our own nerves and flesh. If you can understand what I have explained in this note, then you will have the intellectual tools that you will need for understanding the tough subject of Quantum-Relativity.

The code that you will need for the website is: HISTORY-MOVES-INTO-iSPACE

An overview of the Arithmetic of Clocks.

After corresponding with a mathematician about this paper, I decided to produce a mind map of where I stand and where the orthodoxy of mathematics stands, so that the reader can obtain a method of judging between what I explain in this paper and what they have been teaching you and your grandfathers for the last 2000-years.



Charles Lutwidge Dodgson was a Cambridge mathematician, also known as Lewis Carroll. In 1865,the name of the book was changed to "Alice's Adventures in Wonderland" by his publisher.

Footnote 1)

The History of the above-shown Mathematical Discovery.

In 1964, the author of this note, then aged 14, showed the following simplemathematical logic to his mathematics teacher and friend, Mr Williams:

Let there be a number y such that x = ln(y).

$$e^{\ln(y)} = e^{x} = y$$

Therefore; I must do my simple arithmetic in units of y because xmust be an exponential number. I cannot find e^{y} because that would be the natural antilogarithm of a simple arithmetical number and no such antilogarithm can exist.

Williams completely agreed with my decision not to follow Dodgson back into that insane underworld also known as Cambridge University Mathematics Department.

References:

JCF Gauss, 2nd letter to the Royal Society, 1831, paragraph 24 (first part only).

[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 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 *and the* square-root of -1, positive, negative *and* imaginary (or even impossible) *counting* units but instead, say direct, inverse *and* lateral *counting* units, then there could scarcely have been talk of such darkness.