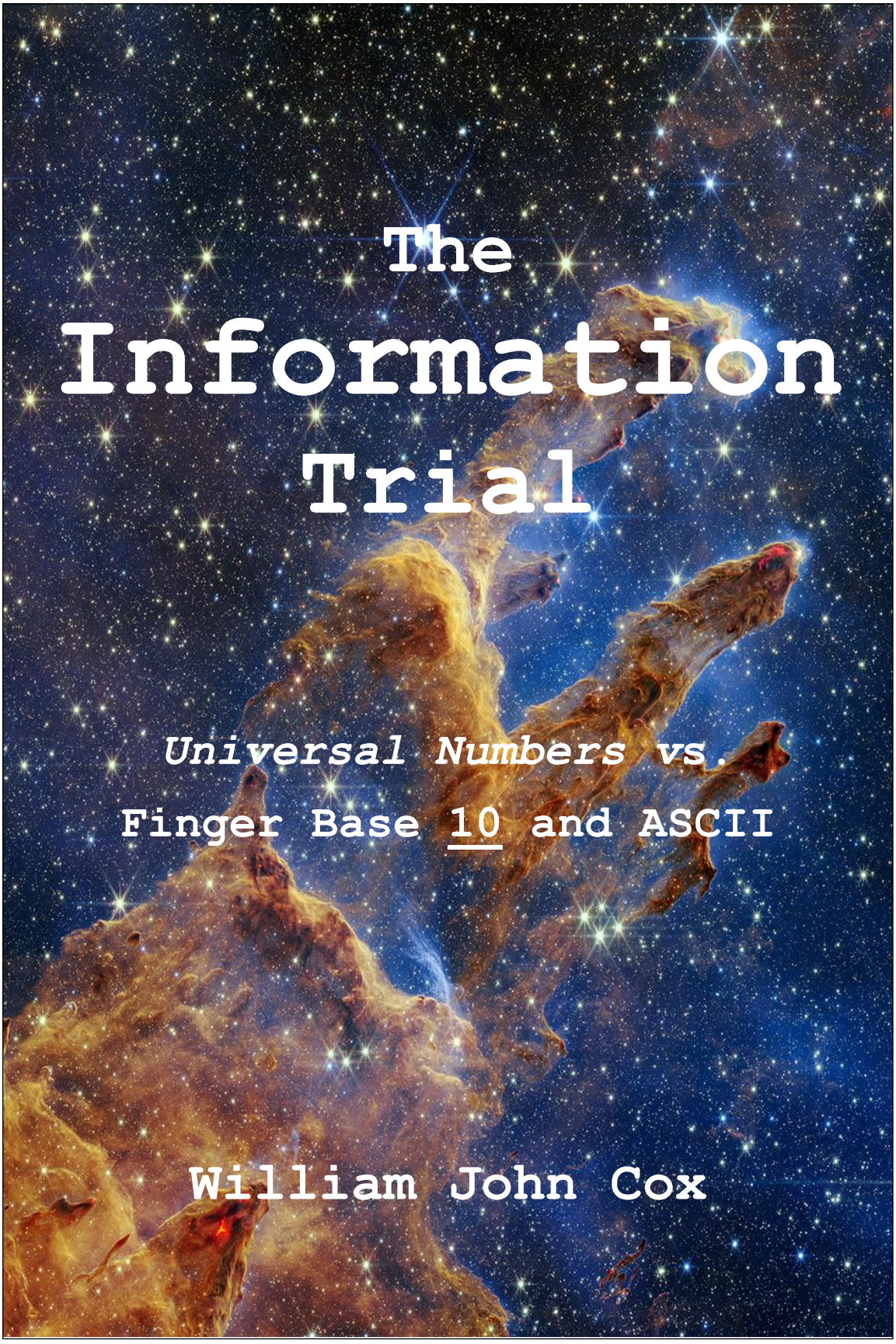
The
Information
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Universal Numbers vs.
Finger Base 10 and ASCII
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Finger Base 10 and ASCII

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Published October 17, 2022

Revised May 14, 2024

A free *Universal Numbers* calculator by Brian Norberto Gonzalez, who also programmed the computer-generated models of *Universal Geometry*, can be accessed at https://williamjohncox.com/UNCalculator.txt. Operation requires a free download of Python Software and renaming the downloaded file extension from "txt" to "pyw."

Cover photograph of The Pillars of Creation by NASA and the Webb Space Telescope.

WilliamJohnCox.com
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The Perfect Number Calculus:
of the Negative Matrices of Mind

Contents

Dedication

To graft the gifts of truth and the wings of reality

Onto the dreams of joyous and curious children, everywhere,

Freeing them to fly throughout the stars,

Before it's too late. ~wjc

Initial Evidence Provided by the Webb Space Telescope
Exposes an Infinite, Nonexpanding Universe of Light,
Evolving Dynamically, as it Electromagnetically Spawns
Mother Galaxies of Life and Mind in an Eternal Dark
Plasma—Like Our Own Ancient Milky Way—*but*
No Big Bang.

Universal Mathematics provides a structural framework to contain and describe the observable portion of our infinite universe.

Introduction

During the isolation of early deadly COVID in the spring of 2020, I was gifted by a friend with an application on my computer that allowed me to electronically calculate *Universal Mathematics* for the first time–all previous efforts over the past 40 years having been by hand with pencil and paper, conversion tables, and multiplication and addition matrices. Commencing on *Pi* Day, March 14, 2020, I began a new composition book to calculate the inner workings and matrices of *Universal Numbers*[1]and to discover how truly lovely the new symbols of *U*s, *N*s, and *Stars* are, as their two-power subsets organize numbers.

Working alone in my study and garden, long days without weekends, throughout the summer of death and chaos, I withdrew from the outside world, as I immersed myself in the novelty of being able to calculate entire tables in hours where it once would have taken all day to do one or two problems in *Universal Numbers*. Having survived for 80 years, I found I was still able to hold enough diverse information in my mind, to synthesize it, and to make connections as well as ever; however, I also found I could easily forget that I had made them. I once quite proudly worked out a difficult set of problems and looking back through my workbook I found the same solutions several weeks before. Much of my mind for that time is only contained in those notes and the books that have flowed from that effort of concentrated thinking and lucid dreaming.

I completed a summary of the existing physics of an expanding universe and wrapped it within a more fully developed *Universal* geometric and mathematical model

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[1] All elements of *Universal Mathematics* (*UN*), including its *Geometry* and *Numbers* and its applications, are copyrighted © 2022 by William John Cox as expressed herein and previously in: *The Perfect Number Calculus of the Negative Matrices of Mind* (2022); *The Work: A Geometrical Structure for an Infinite, Living, Static Universe of Electricity and Plasma, as Defined by Universal Numbers* (SECOND EDITION 2022); *The Rejuvenation of Tired Light: The Adventures of Lucky the Plucky Photon (2022); Universal Quantum Numbers: An Introduction* (2020); *The Choices of Mind: Extinction or Evolution?* (2020); *Mind & Its Languages of Reason* (2019); *The Book of Mindkind: A Philosophy for the New Millennium* (2015); and *Millennial Math & Physics* (2015).

to encompass it for observation. *The Work* was published in 2020, and I began to circulate it to university professors who might find *Universal Mathematics* useful in their research.

In late 2020, I was invited by Dr. Louis Marmet, Professor of Astrophysics at York University in Toronto, Canada to participate in the discussion forum at A Cosmology Group about the origins of the universe. A few months later, I was asked to contribute a paper to a conference of the International Society for the Study of Information (IS4SI). Once my abstract was approved, I prepared a paper titled "The Accumulation, Transmission, & Analysis of Information" that compared base-10 and ASCII numbers to hexadecimal *Universal Numbers* (*1,2,3,U – 4,5,6,N – 7,8,9,S – C,X,W,10*) in five areas: the geometric powers of two; prime numbers; fractional negative numbers; perfect numbers; and the constant numbers of *pi, phi*, and *e*.

In every inquiry, base-10 and ASCII numbers were found to be inherently flawed for scientific purposes, and *Universal Numbers* offered alternative symbolism that is better suited for mathematical problem solving and research purposes, while demonstrating the ratios and quantification of numbers in their natural array.

Following the IS4SI Summit, I was notified that the conference editors had recommended publication of my paper by MDPI in *Fundamental Problems of Information Studies*. As the paper was being finalized, it was observed that when displayed in *Universal*, a demonstrable correlation of prime numbers visually appears, revealing their seminal mathematical structure. (*See* Table 4 below.)

I submitted the updated paper for peer review; however, none of the three reviewers responded to the paper's content, critiquing instead its organization and writing style. I made a few changes but replied saying unless the mathematical findings were to be reviewed, I would be withdrawing the paper from publication. Shortly thereafter I received an email saying the academic journal editor had found that my paper was "not suitable" for inclusion in the Information Studies publication.

With no other effective way to share my language of *Universal Mathematics* and associated principles of cosmology, and continuing to seek qualified reviews, I decided to publish the rejected paper as *The Information Trial* in this little color eBook (particularly since some of the color tables are too large for print books but display nicely on a computer screen, and color printing is expensive). A further decision was to evaluate

the application of *Universal Numbers* by calculus as an additional sixth area of inquiry in *The Information Trial.* (*See* Section 7 below.)

As I was working on the information paper, I continued to monitor the discussion forum at A Cosmology Group (ACG) and the efforts of this group of dedicated astrophysicists and cosmologists, and others to study and expose the failures of the Big Bang gravitational theory to live up to observational findings, and the mainstream theoretical illusions of imaginary inflation, black holes, and dark matter.[2] ACG "does not endorse any cosmological model," instead "its role is to foster a scientific discussion that will allow a systematic exploration of the universe."[3]

Along with Professor Marmet, one of ACG's founders was Eric Lerner, a student of Hannes Alfvén, who received the 1970 Nobel Prize in physics for his study of electromagnetism and plasma to describe the physics of stars and galaxies, rather than gravity, and who wrote *Cosmic Plasma*. An astrophysicist by training, Learner built upon an enlightened understanding of plasma fusion, which he combined with other disciplines to become a popular science writer, producing hundreds of serious articles. Lerner wrapped everything together in 1991 with his thoroughly documented and scientifically heretical book, *The Big Bang Never Happened: A Startling Refutation of the Dominate Theory of the Origin of the Universe.*

Since then, for more than 30 years, Lerner has continued to develop plasma fusion energy, to demonstrate the falsity of the Big Bang, and to discuss alternatives to the standard model of an expanding universe. Last year, I saw a zoom talk by Lerner, and I began to purchase and read his book and others, primarily by Anthony L. Peratt, author of *Physics of the Plasma Universe*, Halton Arp who identified the truth about redshifts, and criticized academic science, electrical engineering professor Donald E. Scott, who combined his own beautiful telescopic photography with a commonsense description of electric stars and galaxies, and Hilton Ratcliffe who described the static universe. (*See* References.)

Having accepted the Big Bang theory as settled science in my earlier writing, I became convinced of its error by the totality of the evidence, and I withdrew several of

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[2] Dissident professors who challenge accepted science are denied tenure, publication, and observation time, and they are ridiculed by mainstream professionals and ignored by the media.

[3] (http://cosmology.info/)

my books from publication that had mentioned or relied on the demonstrably false gravitational theory. I quickly revised and republished these books, including a *SECOND EDITION* of *The Work*, earlier this year.

Inasmuch as my previous efforts in *Universal Geometry* and *Numbers* were to describe a flexible mathematical structure inflating just outside an expanding Big Bang universe, it was easy, upon reflection, to reimagine the same *Universal Mathematical* structure always existing just beyond the range of our best telescope. Centered at the core of the Milky Way galaxy, the coordinate tips of the *Universal* geometric and mathematical framework exist as a practical limit on the infinity of a static, non-expanding universe of light and galaxies *and* upon the eternal dark plasma within which they are electromagnetically born, spin, and die.

First with the Hubble, now the Webb Space Telescope, and looking even farther in the future across the spectra of light, the next generations will update billions more living and dying galaxies onto our Mother Milky Way's Galactic Coordinate and Distance Reference Chart of Relative Galaxies.[4]

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[4] The eternal dark plasma in which mother galaxies of light are born and spin out their lives is vast in comparison to the infinite existence of galaxies. There are massive distances between galaxies, and the photons of their light can travel for tens of billions of light years without encountering another galaxy.

The intergalactic space, however, is not empty because it exists as a plasma composed of about one lone hydrogen atom per cubic meter plus one negative free electron and one positive naked proton every three cubic meters. Overall neutral, the plasma is a good conductor of electricity, and occasionally, it concentrates itself into the birth of a spinning galaxy and her stars, acting as electromagnetic dynamos generating the power we perceive as sun light.

The galaxies and their stars spin like massive magnets, dragging the denser plasma surrounding them, generating energy and mass–and broadcasting photons in every direction. A galaxy is alive in the dark plasma, and each is as huge as its light can be seen, and thus intertwined with the light of all other galaxies unto infinity, the universe is illuminated by the waves and photons of its light.

The free electrons in the intergalactic plasma may oscillate in a mutually repellent geometric crystal matrix with other unattached electrons, and a photon traveling through the plasma at about 300,000,000 meters per second may be attracted to an occasional negative free electron, which absorbs the photon and instantly reemits it on a straight path, but with a slightly reduced frequency and consequently a longer wavelength. (*See* References, Ashmore.)

The photon's loss of energy from emission to observation (irrespective of causation) results in the shift in its red spectrum. This has been interpreted by gravitational theorists as proof of accelerating expansion; more realistically, however, the amount of red shift simply presents an accurate measure of the distance traveled by an observed photon and its reduction in energy along the way.

Universal Mathematics imposes quantified working limits on the constants of *pi, phi*, and *e*, and on the concepts of infinity and eternity, as they always exist "plus one" just outside the quantified *Universal* structure, and the limits of observation.

The following transcript and exhibits from *The Information Trial* evaluate the finger base 10 numbers presently being used by science to process and describe the infrared digital data gathered by the Webb Space Telescope. Based on the evidence, the verdict proves a better use could be made of that information–if it were organized and analyzed in *Universal Numbers*, a mathematics of the mind and imagination, instead of the self-limiting digits of our nimble fingers.

The Information Content of Alternative Numbers

1. The Evolution and Challenges of Symbolic Information

Arising from our origins as clever apes, we humans began to communicate information to others by symbolically using our fingers and words to create images in the minds of others that accurately reflected the creator's thinking. First signed by our dexterous fingers, then spoken, words came to represent not only the elements relating to survival, such as water, food, and shelter, but numbers began to chart the seasons and cycles of life, marking the abstract passage and creation of time. Connected through our minds, we began to count the things that mattered, first using our fingers to count to ten, and then creating symbols to represent greater sums, we shared the information of our discoveries as we explored our earthly garden and came to share a common perception of time.

Commencing about 50,000 years ago, enduring the Ice Age, and flourishing with the warming, as exploring tribal groups walked and sailed around the world and traded goods and commodities with others, the sophistication of counting and calculation increased. Watching individuals with no common spoken language communicate numerical information rapidly by their fingers must have been fascinating. About 7,000 years ago, using the three knuckles of the four fingers of one hand, counted as an abacus by the five fingers of the other, the ancient Sumerians employed a complex system of fractions to solve complicated equations, such as the square root of two. Equally clever,

the contemporary Egyptians demonstrated their command of the constant and perfect numbers in building the Great Pyramid to geometric perfection.

With the adoption of Arabic numbers by the West, and the discovery of logarithms, algebraic coordinates, and the calculus, an enlightened human society emerged from the religious ignorance and intolerance of the "Dark Ages" with the ability to process the large numbers required to harness the power of steam and to develop the sciences of industrialization. Learning to produce electricity from spinning magnets led to the invention of the telegraph with its on-off pulses of electrical current used as a "Morse" code to transmit information over metal wires for long distances. Unfortunately, the speed of communication was limited by the time frequency between "dots" and "dashes," and by errors resulting from the "noise" of transmission lines and the electric current.

1.1 Information Theory.

World War II not only funded the science required to produce nuclear weapons and rockets, the emergency compelled improvements in all forms of communication, including telephones and wireless radios, with their problems of bandwidth and signal-to-noise. In 1948, Claude Shannon published his seminal paper, "A Mathematical Theory of Communication" that established a qualitative and quantitative model of communication based on a statistical process that supports a theory of information.[5] He established the fundamental problem of communication to be reproducing at one point, either exactly or approximately, a message selected at another point.

The critical battles of the Second World War did not necessarily occur in the streets of Stalingrad, in the sky above Britain, or in the ocean off Midway Island; they were also fought in secret as Alan Turing created the first digital computer allowing the English to crack the German Enigma code, and when the United States used IBM punch-card machines and complex mathematical analysis to quickly decipher the Japanese Naval code following the attack on Pearl Harbor, and to lay the carrier ambush at Midway.

[5] Shannon, Claude E., A Mathematical Theory of Communication," *The Bell System Technical Journal* (Vol. 27, pp 379-423, 623-656, July, October 1948).

As the electronics evolved from the dots and dashes of the Steam Age to the bits and bytes of the Computer Age, the transmission of the "bits" of coded information continued to be governed by Shannon's "noisy-channel coding theorem" regarding the limits of multiple-channel uses in which the asymptotically achievable information rate is equal to the channel capacity–that depends on the statistics of the channel over which the messages are sent. In other words, having entered the Age of Information, size matters, and the overall mathematical framework, and its matrices, define the amount of information that can be successfully managed and transmitted, bit, by bit, error free.

With the records of all governments, banks, and corporations now stored on the "clouds" of massive banks of computers, and with the widespread distribution of computers in businesses and professions, combined with the personal use of laptops, smart phones, and tablets to engage in social media, visit the Internet, or exchange email, the total number of single yes-no binary operations, every second, worldwide, challenges comprehension.

Increases in the ability to transmit information depend upon machine hardware, which depends upon programming, which depends upon language to translate the numbers of stored data through programming into binary for processing, and to translate the result from binary to basic numbers for analysis, and to standard numbers for compression and storage.

It is increasingly clear that the shared information of human civilization is not only defined and conveyed by numbers, but that we, the observers, and our minds that created them, have become numbers, as these words you are reading were created by minds and reproduced by numbers. Numbers are a language created by minds to communicate truths, and *minds are an essential element in the transmission and analysis of information*. The transfer of information from one mind to another allows minds to merge and to focus the power of their concentration on the cascade of crises currently threatening the extinction of humanity by the end of this century.

1.2 The Structural Flaw of Current Base Number Systems.

As handy as finger counting may be for daily needs, our base-10 number system is retarded for scientific purposes because it places the odd prime number five as half of even ten, with odd quarters and three quarters, and because ten is not a geometric power

of two. For these reasons, among others, the decimal number system endlessly produces indecipherable garbage when accumulating, storing, and displaying large numbers.

Recognizing the advantages of a hexadecimal base-16 system for computer communication, ASCII[6] was created by adding the first six alphabetical symbols A,B,C,D,E, and F to the existing nine finger numbers.[7] It does not matter to binary computers that mindlessly accept data and report results in any base instructed, but it does make a difference when we seek to analyze the display of large numbers in the search for patterns, ratios, and relationships–when trying to make sense of the mathematically irrational in the effort to formulate more accurate predictions of their probabilities. The product of any computation expressed in ASCII is incomprehensible nonsense, while the 2,4,8,16,32, and 64-bit programming languages strain to translate these bases using ASCII symbols.

1.3 *Universal Numbers.*

Converting ASCII to a more logical hexadecimal language, a simple *Universal* "app" inserts the special geometric symbols of *U, N*, and *Star* as the powers and sets of *two* into the comfortable numbers, 1–9, and adds the geometric symbols *C,X*, and *W* to the series before *10*.[8] The result, (*1,2,3,U – 4,5,6,N – 7,8,9,Star – C,X,W,10*) is a natural description of the disposition of all numbers allowing the optimum transmission, display, and storage of data.[9]

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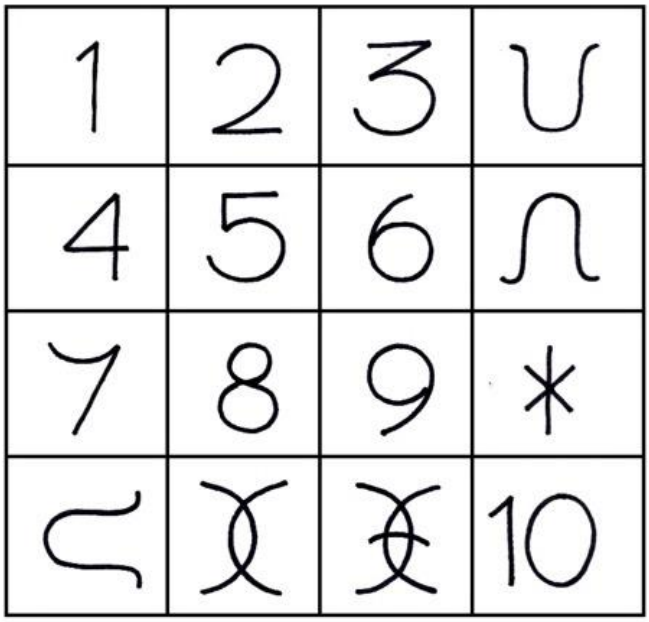
[6] American Standard Code for Information Interchange

[7] We will never know what difference it might have made during the past 50 years if ASCII had been written more logically as 1,2,3,A – 4,5,6,B – 7,8,9,C – D,E,F,10, assigning new symbols for the natural powers and multiples of two.

[8] The new symbols are based on the elemental curves of *Universal Geometry*. (*See* Figure 4.)

[9] Except for pagination and exhibits, base-10 numbers are underlined, and *Universal Numbers* are UPPERCASE and *italicized*. *Universal* thousands are separated by semicolons (except in several older tables with the earlier use of colons and unitalicized *Universal Numbers*).

Table 1. Basic *10 Universal Numbers* in Cursive



The amount of information that is abundant in the universe awaiting our discovery equates with our ability to use numbers to accumulate, process, display, and transmit information. So long as we continue to self-impose a restriction on the flow of data by applying ancient and defective systems, we will deprive ourselves of the presently incomprehensible amount of information awaiting our access all around us within this infinite living universe we occupy.[10] All this we measure with numbers, looking outward and across the spiral of our Mother Milky Way galaxy upon which we spin about, and the massive pregnant bulge of her electromagnetic plasmoid, as she continues to generate stars from the plasma along her spiral filaments.[11]

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[10] Imagine the amount of knowledge and wisdom accumulated during an infinity by a universal mind who finds and watches the rare gardens of earth and water where organic life sprouts and minds grow to create new and different things. All to the wonderment of visitors who watch without interference, and who surely observe most of us to have become good, loving, and cooperative; however, seeing others who are still driven by latent brainstem intolerance to injustice, violence, and wars.

[11] Inasmuch as galaxies are not the product of gravity and are not related gravitationally, they may just drift about spinning within a cocoon of denser plasma until they bump into another galaxy, much like the Milky Way's collection of 59 "dwarf" galaxies. The age of our mother galaxy, and all others, could be measured in the trillions, rather than billions of years, making a galactic map of lasting value and interest.

1.4 Areas of Inquiry in *The Information Trial*.

Evidence of information content provided by these competing numbering systems were judged by evaluating *Universal Numbers* vis-à-vis base 10 and ASCII in *five* (six) areas of inquiry: the geometric powers of *two*, prime numbers, fractional negative numbers, perfect numbers, the constant numbers of *pi, phi*, and *e*, and the calculus.

2. Twin *Ones* Become a *Two* to Grow a Framework of Numbers

Many children in every culture learn their numbers and alphabet using sets of wooden blocks, from which they can readily see that one block can be combined with three others into a square, and four more into a larger cube composed of eight blocks. Thus, we "square" *two*, 2^2 for *U* (four), and "cube" it, 2^3 for *N* (eight). If we continue with the geometric "powers" of *two*, we get progressively larger numbers in the squares of blocks*, 1, 2, U* (4), *N* (8), *10* (16), *20* (32), *U0* (64), *N0* (128), *100* (256).

All by itself, the number *one* is simply the identification of something like a toy block, a brick, an apple, or finger; mathematically, *one* cannot be multiplied by itself, or squared, as *one* times *one* remains *one*. *One* can, however, twin with another *one* to become a twice-as-large *two*, which *can* grow geometrically into large enough numbers to count any problem.

The geometric powers of *two* (*U*-(4), *N*-(8), *10*-(16), *20*-(32), *U0*-(64), *N0*-(132), *100*-(256), etc. can expand, without limit, to accommodate the need for large numbers. Included within this geometric *two*-power framework are all the other multiples and powers of *two*. In the following Table 2, the evidence speaks for itself as we observe how quickly logical *Universal Numbers* become disorganized when expressed in finger base 10.

Table 2. The Powers of *Two* in Finger Base 10 and *Universal Numbers*

Powers	Base 10	UN
2^1	2	2
2^2	4	U
2^3	8	N
2^U	16	10
2^4	32	20
2^5	64	U0
2^6	128	N0
2^N	256	100
2^7	512	200
2^8	1,024	U00
2^9	2,048	N00
2^S	4,096	1;000
2^C	8,192	2;000
2^X	16,384	U;000
2^W	32,768	N;000
2^{10}	65,536	10;000
2^{11}	131,072	20;000
2^{12}	262,144	U0;000
2^{13}	524,288	N0;000
2^{1U}	1,048,576	100;000
2^{14}	2,097,152	200;000
2^{15}	4,194,304	U00;000
2^{16}	8,388,608	N00;000
2^{1N}	16,777,216	1;000;000
2^{17}	33,554,432	2;000;000
2^{18}	67,108,864	U;000;000
2^{19}	134,217,728	N;000;000
2^{1S}	268,435,456	10;000;000
2^{1C}	536,870,912	20;000;000
2^{1X}	1,073,741,824	U0;000;000
2^{1W}	2,147,483,648	N0;000;000
2^{20}	4,294,967,296	100;000;000

To reverse the multiplication of *one* and its *two*, and to divide a single *one*, the numbers following *one* provide the denominators of endless fractions allowing for ever

smaller divisions of *one* starting with its *two* (½, ⅓ etc.). Ultimately, there is a limit when calculating the percentages, fractions, or divisions of *one*, which is expressed by the mathematically irrational number "*e"* whenever interest on loans is compounded, or the decay of atomic elements is calculated. This naturally occurring constant number is calculated in *UN* at *2.96X14152N*, as it continues to serve as the basis of scientific logarithms.

To examine exceedingly small things, we can, in our imagination, physically divide the child's "one" block into a *billion* tiny blocks, by slicing it a *thousand* times in every direction, giving each a value of *0.000000001*. At the top corner of a stack of these tiny cubes, at its very tip, the last minuscule little block can be delicately set in place. Representing it mathematically, the infinitesimally small number–the "*one plus*" (1+), or *eit* (e-it)–is the *billionth* counting element of the Positive One (+1) in *Universal Numbers*. It is the "decimal fraction" representation of *one* divided by *one billion*.[12]

There is an unlimited abundance of *Universal Numbers* in the powers of *two* and the fractions of *one* to forever count the very large and the very small, unto infinity, plus one.

3. Generating *NU* Prime Numbers to Fill the Gaps Between *Twos*

We can imagine all the "*two*" numbers in Table 2 above as constituting a massive structure of steel girders of a high-rise building awaiting installation of the floors, walls, and windows of prime numbers. Or, we can see all *Universal Numbers* on a string from *one* to infinity, with blank gaps between the "*two*" numbers awaiting prime numbers and their progeny.

Even though *two* is a prime number (which can only be divided by *one* and itself), its multiples and powers are not prime since these even numbers are always divisible by *two*. Once *two* was created, it ensured that half of all future gaps would be filled by even-minded relatives, instead of odd-ball primes.

Following *two*, we encounter a gap that is filled by prime *three*, and the next number is *U*, which can be divided by *two* and is therefore not prime. Following is *four*, which is prime because it can only be divided by *one* and itself. The next *UN* number is *five*, which

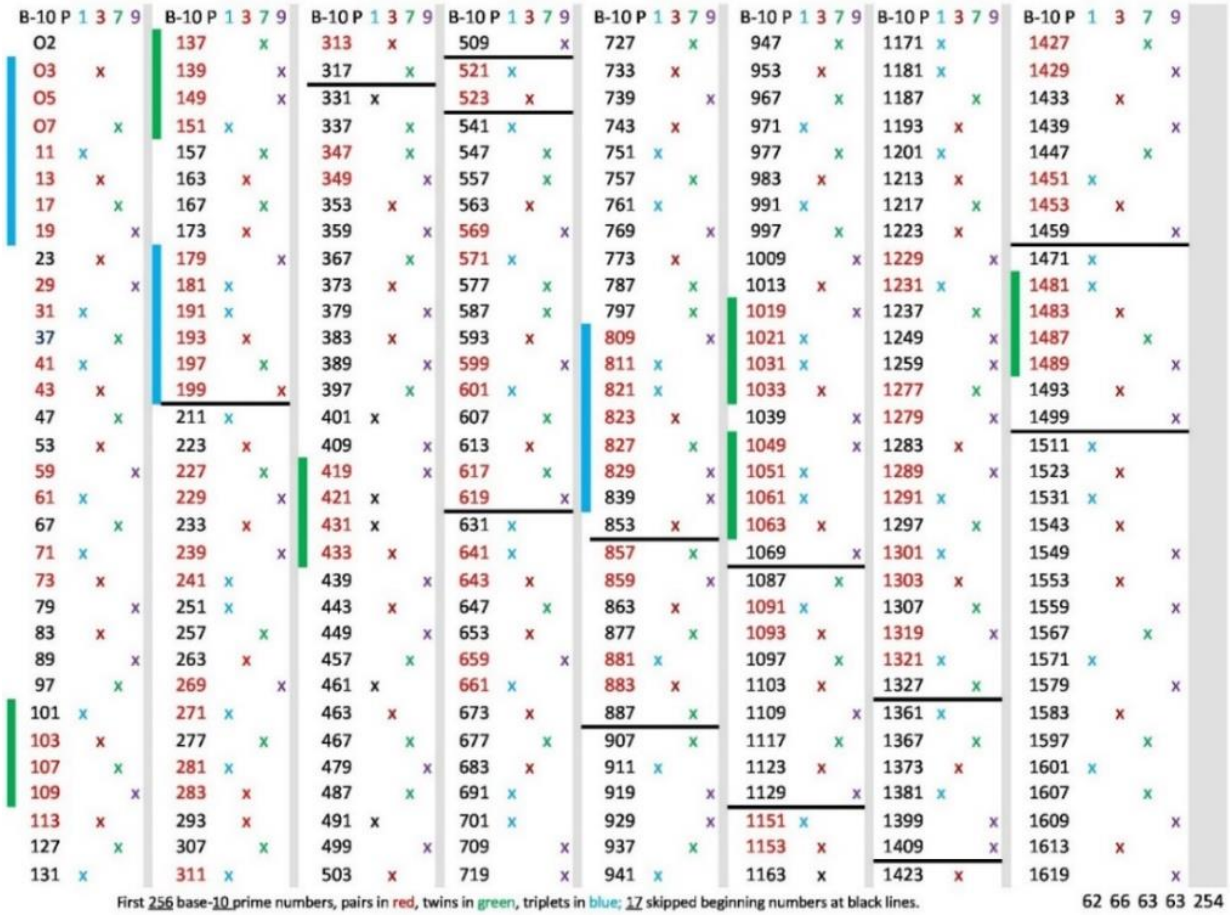
[12] *1:000:000:000* = 68,719,476,736; thus *.000000001* = .000000000000000455191522836.

is *two* times *three* and not prime, but the next number, *six* is prime. *N* is not prime as a product of *two*, and following is *seven*, which is *three* times *three* and not prime. Next is *eight* which is *two* times *four* and not prime. *Nine* is prime, but *Star* is *three* times *U*. *C* is prime, while *two* times *six* equals *X*, and *three* times *four* equals *W*. After *ten*, *11*, *13*, *1C*, and *1W* are prime, as the gaps in between were occupied by the relatives of previous prime numbers.

In essence, prime numbers are the only real new (*NU*) numbers, as all others encountered in the line of numbers among the *twos* are the progeny of previous prime numbers. Unto infinity, so long as *twos* continue to produce powers, we can expect to find *NU* prime numbers appearing in the orphan gaps where there are no living relatives of a previous prime number. An unresolved question is whether these gaps appear randomly or if they can be predicted.

Assuming prime numbers remain the same in all base languages, let us create a table of the first *100* (256) base-10 prime numbers. We can see that the numbers consist of sequential beginning numbers, and they all end with one of four numbers, 1,3,7,9. The number three appears more frequently than the other ending numbers, which appear with similar frequencies. A total of 17 sequential beginning numbers are skipped at the 13 bold black lines in the table. Twin primes are shown in red, with doubles in green and triplets in blue.

Table 3. The First *100* (256) Finger Base 10 Prime Numbers



B-10 P	1	3	7	9	B-10 P	1	3	7	9	B-10 P	1	3	7	9	B-10 P	1	3	7	9	B-10 P	1	3	7	9	B-10 P	1	3	7	9	B-10 P	1	3	7	9
02					137			x		313		x			509				x	727			x		947			x		1171	x				1427			x	
03		x			139				x	317			x		521	x				733		x			953		x			1181	x				1429				x
05					149				x	331	x				523		x			739			x		967			x		1187			x		1433		x		
07			x		151	x				337			x		541	x				743		x			971	x				1193		x			1439				x
11	x				157			x		347			x		547			x		751	x				977			x		1201	x				1447			x	
13		x			163		x			349				x	557			x		757			x		983		x			1213		x			1451	x			
17			x		167			x		353		x			563		x			761	x				991	x				1217			x		1453		x		
19				x	173		x			359				x	569				x	769				x	997			x		1223		x			1459				x
23		x			179				x	367			x		571	x				773		x			1009				x	1229				x	1471	x			
29			x		181	x				373		x			577			x		787			x		1013		x			1231	x				1481	x			
31	x				191	x				379				x	587			x		797			x		1019				x	1237			x		1483		x		
37			x		193		x			383		x			593		x			809				x	1021	x				1249				x	1487			x	
41	x				197			x		389				x	599				x	811	x				1031	x				1259				x	1489				x
43		x			199				x	397			x		601	x				821	x				1033		x			1277			x		1493		x		
47			x		211	x				401	x				607			x		823		x			1039				x	1279				x	1499				x
53		x			223		x			409				x	613		x			827			x		1049				x	1283		x			1511	x			
59				x	227			x		419				x	617			x		829				x	1051	x				1289				x	1523		x		
61	x				229				x	421	x				619				x	839				x	1061	x				1291	x				1531	x			
67			x		233		x			431	x				631	x				853		x			1063		x			1297			x		1543		x		
71	x				239			x		433		x			641	x				857			x		1069				x	1301	x				1549				x
73		x			241	x				439				x	643		x			859				x	1087			x		1303		x			1553		x		
79				x	251	x				443		x			647			x		863		x			1091	x				1307			x		1559				x
83		x			257			x		449				x	653		x			877			x		1093		x			1319				x	1567			x	
89			x		263		x			457			x		659				x	881	x				1097			x		1321	x				1571	x			
97			x		269				x	461	x				661	x				883		x			1103		x			1327			x		1579				x
101	x				271	x				463		x			673		x			887			x		1109				x	1361	x				1583		x		
103		x			277			x		467			x		677			x		907			x		1117			x		1367			x		1597			x	
107			x		281	x				479				x	683		x			911	x				1123		x			1373		x			1601	x			
109				x	283		x			487			x		691	x				919				x	1129				x	1381	x				1607			x	
113		x			293		x			491	x				701	x				929				x	1151	x				1399				x	1609				x
127			x		307			x		499				x	709				x	937			x		1153		x			1409				x	1613		x		
131	x				311	x				503		x			719				x	941	x				1163		x			1423		x			1619				x
																																					62	66	63	63	254

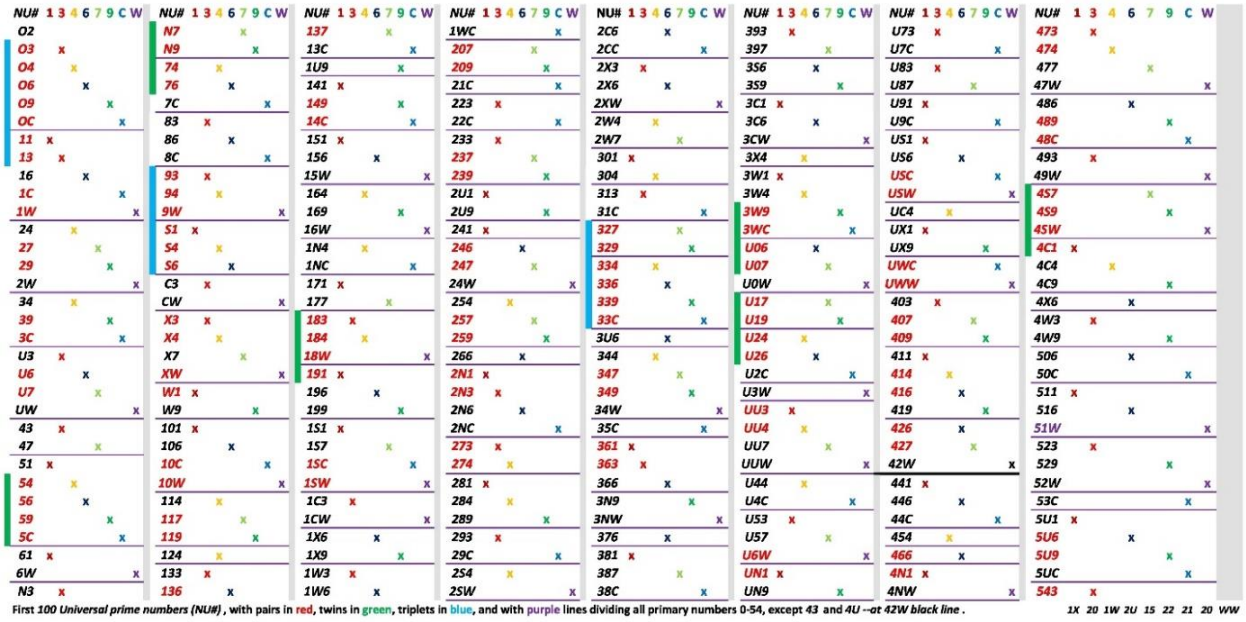
First 256 base-10 prime numbers, pairs in red, twins in green, triplets in blue; 17 skipped beginning numbers at black lines.

A study of the probability distribution of the gap size between two consecutive base-10 prime numbers exposes them as "pseudo-random" numbers, in that prime numbers near to each other appear to avoid repeating their last digits, which would be contrary to random behavior. Using base-10 numbers, a review of the first billion prime numbers found that a one was followed by a one 18% of the time, by a three or a seven each 30% of the time, and by a nine 22% of the time. The bias towards one number or another diminished over the course of numbers, tending toward randomness.[13]

Let us see what happens when we chart the same prime numbers using the natural symbolism of *Universal Numbers*.

[13] Lemke Oliver, Robert J. and Soundarajan, Kannan, "Unexpected Biases in the Distribution of Consecutive Primes," (PNAS, Vol. 113, No. 31, July 14, 2016).

Table 4. The First *100 Universal* Prime Numbers



We immediately see there are now twice as many prime endings, and that the beginning numbers are almost entirely sequential with only *one* break with *two* skipped beginning numbers in the first *100* numbers (instead of 13 breaks with 17 skipped numbers in base 10). The color notation demonstrates that *none* of the ending numbers repeat in the first *100* numbers, and that they are always sequential following their shared beginning number. The *UN* prime numbers are not only not random, but they become correlated in their periodic simplicity–when properly displayed for analysis.

Significantly, the missing "5" prime number of finger base 10 now becomes the *UN* prime number *4*. If nothing else, this fact demonstrates the structural failure of base 10 when divided in half by 5, a prime number, which generates disorder throughout the set. Quarters, halves, and three-quarters of *ten* in *Universal Numbers* are represented by *U, N*, and *Star*, as basic elements of the *two*-power structure of numbers.

Demonstrated at the end of Table 4 are the nontrivial differences in the percentage frequency of appearance of prime ending numbers: *1* = .*1X1X*%, *3* = .*2020*%, *4* = .*1W1W*%, *6* = .*2U2U*%, *7* = .*1515*%, *9* = .*2222*%, C = .*2121*%, and *W* = .*2020*%. There are significant differences between the frequency of *1*s, and the *3*s, *4*s, and *6*s that follow having similar but different frequencies. And there are significant differences between the frequency of *7*s, and the following *9*s, *C*s, and *W*s that also have similar, but different frequencies.

The difference between the other endings may fade into randomness in the distance, but the basic ratios of *ones* and *sevens* to the other ending numbers are beyond random, and these two nonprime ending numbers should provide standard periodic markers allowing reliable predictions of prime numbers to extend toward infinity without limit, as the geometrical *two* framework extends eternally.

Depending on whether these relative ratios will hold true in the billions of numbers enroute to infinity, they may be useful in predicting the approximate point in the spiral of *NU* numbers where the next orphan prime number gap will appear. Like *pi*, it may be that prime numbers simply evolve, each from the previous, making it difficult to predict where a gap may appear far down the line before the *two* framework expands beyond that point.

We should be able to calculate the chances of the next *NU* prime number; first that the beginning number will remain the same, and if so, which ending is most likely. If a new beginning number, then what is its most likely ending? We can quickly check predictions by squaring and cubing them to verify *their ending numbers*. All *UN* prime squares appear to end with either a *one* or *seven* with approximately the same frequency (*See* Matrix 1 below), and all prime cubes appear to share the same original *N* (8) endings numbers.

A basic chemistry experiment directs x-rays through substances onto film to determine their atomic composition. In a liquid, with a random movement of atoms, no pattern is refracted; however, when shown through a quasicrystal with an ordered, but non periodic structure, the x-rays reveal a pattern referred to as "Bragg-like peaks." In a study that compared the refraction pattern of prime numbers to these peaks, the distribution pattern was found to be similar. The conclusion was that "the primes are appreciably more correlated than anyone has previously conceived," and that when considered as a physical system, prime numbers constitute a new category of structures.[14]

[14] S. Torquato, G. Zhang, and M. de Courcy-Ireland, Hidden Multiscale Order in the Primes, Journal of Physics A: Mathematical and Theoretical, 52 135002 (2019).

4. A Calculus of Prime Numbers

Prime numbers may be a seminal mathematical language underlying all other methods of counting and bases, which becomes apparent when displayed in *Universal Numbers*.

The prime numbers can be imagined as their own number system, and the following multiplication matrix of the first *ten NU* prime numbers demonstrates their prime squares on the diagonal. As noted above, the squares of prime numbers appear to end with either a *one* or *seven*, except for $2^2 = U$. In addition, except for the multiples of *two*, the multiples of all other prime numbers in the matrix appear to end with one of the same *N* (eight) prime numbers.

Matrix 1. Multiplication of the First *10 Universal* Prime Numbers

1	2	3	4	6	9	C	11	13	16	1C	1W	24	27	29	2W	34
2	U	5	8	X	15	18	22	25	2X	38	3X	U8	42	45	4X	58
3	5	7	W	14	21	26	33	37	U4	46	4C	54	69	N1	NC	74
4	8	W	17	23	36	U1	44	4W	63	71	79	97	SC	C6	X9	107
6	X	14	23	31	UC	49	66	N4	81	S9	C7	103	11W	12C	1U7	163
9	15	21	36	UC	67	NW	99	C1	WC	13W	144	176	1S3	1C7	204	2U6
C	18	26	U1	49	NW	87	CC	W6	129	167	173	1X1	214	22W	253	291
11	22	33	44	66	99	CC	121	1U3	1N6	1XC	20W	264	297	2C9	31W	3N4
13	25	37	4W	N4	C1	W6	1U3	157	194	226	2UC	29W	309	331	36C	3XW
16	2X	U4	63	81	WC	129	1N6	194	211	279	2S7	343	38W	3CC	U37	US3
1C	38	46	71	S9	13W	167	1XC	226	279	3U7	3N3	U31	U84	UCW	443	501
1W	3X	4C	79	C7	144	173	20W	2UC	2S7	3N3	3S1	U69	UW6	434	491	559
24	U8	5W	97	103	176	1X1	264	29W	343	U31	U69	447	4XC	536	5S9	687
27	42	69	SC	11W	1S3	214	297	309	38W	U84	UW6	4XC	571	5X3	6N6	N6C
29	45	N1	C6	12C	1C7	22W	2C9	331	3CC	UCW	434	536	5X3	637	6X4	NX6
2W	4X	NC	X9	1U7	204	253	31W	36C	U37	443	491	5S9	6N6	6X4	N81	799
34	58	7W	107	163	2U6	291	3N4	3XW	US3	501	559	687	N6C	NX6	799	8W7

Base *UN-10 Prime* Multiplication Matrix, with prime squares underlined

There is a quantum shorthand lesson to be learned from multiplying prime numbers on the matrix.[15] If we imagine the lines between any *two* prime numbers and their product as *two* legs of a right-angle triangle, the length of their hypotenuse can be measured by the square root of their combined squares. That number can serve to unite all *three* numbers of the calculation. For example, *three* times *three* is *seven*, and *three* plus *three* is *five*, and the *UN* square root of *five* is *2.62X*, which entangles and represents the *two* prime *threes* and their product in a quantum sense.

It is difficult, if not impossible to conceive of a straight line of numbers extending outward into infinity, as would occur if the *two* perpendicular lines of prime numbers in the above *NU* multiplication matrix were to continually expand. This is especially true if we imagine superseding matrices composed of prime squares and prime cubes. The pattern of common endings endures without *two*s.

Instead of angling off into infinity from the matrices in *two* directions, we can imagine the *NU* prime number line starting with *two* on an Archimedean spiral, divided by *ten* (16) radial lines from the center, upon which the dots of all *Universal* numbers fall, as they circle off into the distance of infinity.

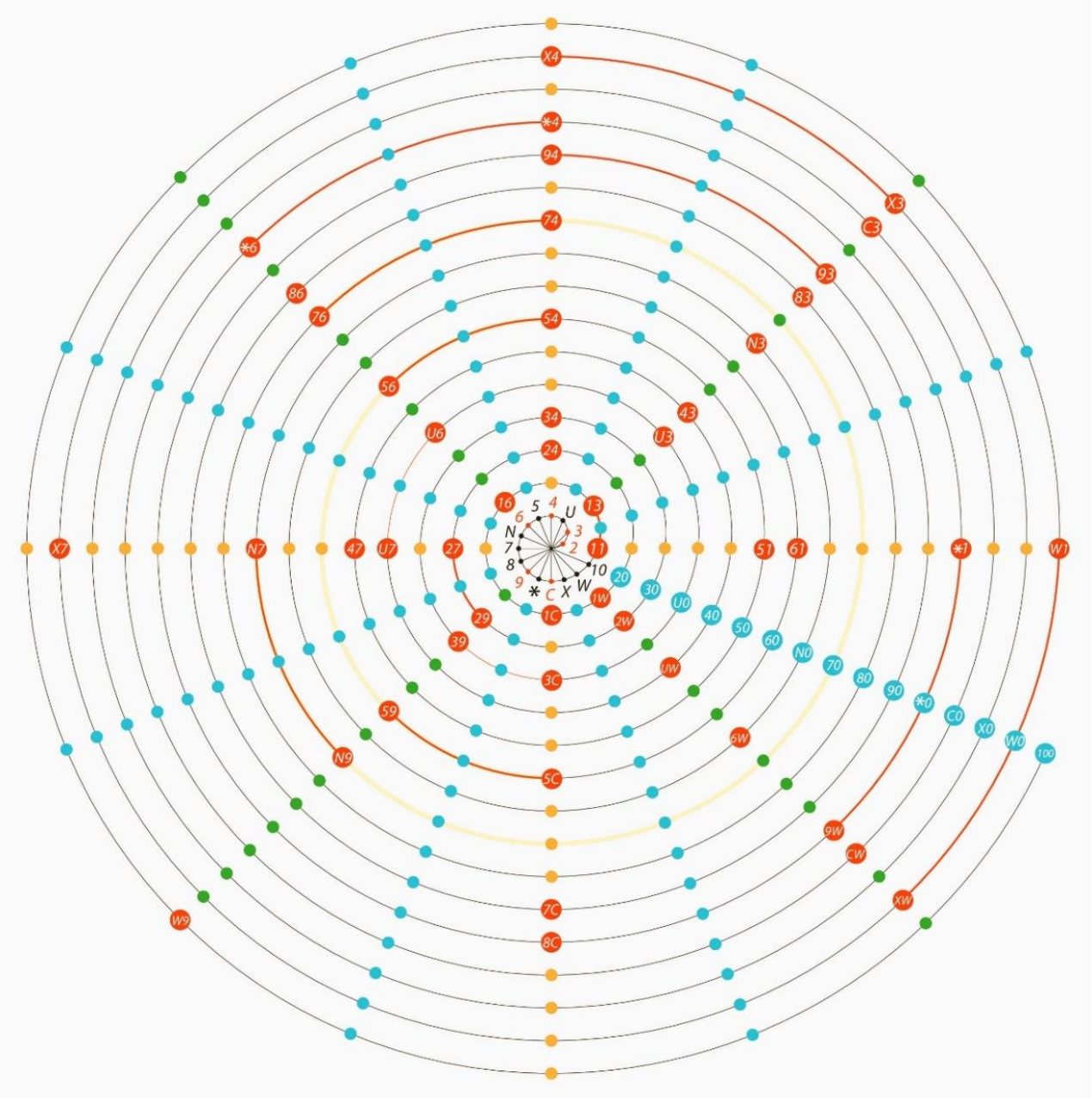
In the following figure, the *N* (8) dotted blue radial lines are the *two* numbers; the *U* dotted gold radials illuminate the prime numbers ending in *1,4,7*, and *C*; and the *U* green dotted radials display the *3,6,9*, and *W* ending numbers. The spiral between twin numbers is red, and double twin primes are connected by yellow.

A spiral of billions of these colored dots of *Universal Numbers* from a great distance should display interesting patterns resulting from the natural geometric growth of the supporting framework of *two* power numbers, and the related periodic progression of prime numbers.[16]

[15] Indeed, for the multiplication and entanglement of all numbers.

[16] Computer graphics of the *NU* prime number spiral and "The Device" (*See* Figure 2 below.) are by Steven D. Cox.

Figure 1. The Spiral of *Universal Prime Numbers*



5. The Universal Geometric Fractional Counting Language of the Negative One

The value of *one* in the *Universal* Positive One (+1) is established by the tiny little *eit* ("e-it"), *0.000000001*, a *billionth* of *one*, quantified as the "*one plus*" (1+). The *eit* serves as a base "decimal" fraction to correlate *UN* with the mathematical tools used in existing base-10 calculus, including the exponent and logarithmic systems.

Inverse of the logarithmic progression of the *twos* of Positive One (+1), are the fractional roots of the Negative One (—1), quantified and limited as *0.WWWWWWWWW* (being equal to the Positive One less its tiny *one plus eit*).

We could attempt calculation of the Negative One as a "negative" decimal fraction and confront the calculus problems requiring Euler's imaginary "*i*", or we could try to geometrically break down the Negative One, using reducing fractions, *1/2, 1/3, 1/U*, etc., such as used by the ancient Sumerians to estimate the square root of two. To do so would demonstrate the nonsense of continuing to use our fingers to calculate scientific problems.

As evidence, we can compare a series of progressive fractions involved in the energy levels of protons in the formula E = *h* x *f* (energy equals Planck's number times the frequency of an electromagnetic wave). These natural fractions are 9/8, 5/4, 4/3, 3/2, 7/4, 15/8, and they clearly demonstrate the basic flaw of having the double of an odd prime as a base number, and the inherent logic of *Universal Numbers*. The base-10 fractions are translated to *UN* in the following table.

Table 5. A Comparison of Proton Energy Level Fractions

9/8 = 1.125	7/N = 1.2
5/4 = 1.25	4/U = 1.U
4/3 = 1.3333	U/3 = 1.4444
3/2 = 1.5	3/2 = 1.N
7/4 = 1.75	6/U = 1.S
15/8 = 1.875	W/N = 1.X

There is, however, a way to reduce the Negative One by taking advantage of a series of *U* (4)-place factional counters that naturally arise from *Universal Geometry*. These digital fractions appear when *one* is divided by *six* (seven) producing *.2U72U7*, which results in the geometric *pi* value of *3.2U72U7*.

These fractional geometric counters are all composed of the little *Universal* elemental counter *0.010U*, which adds up *WS* (252) times to .*WWW0*–the *Universal* basic Negative One.[17] This logical series of counters is the foundation of a symbolic *UN* numeric language for demonstrating the fractional and quantum elements of the Negative One. Let us designate the counter *.010U* as an *iit* (i-it), or "*one minus*" (1-). These counters are demonstrated in the following Table 6 as organized by *six* and *seven* and can be imagined as the inverse negative representation of the first *100* (256) Universal positive numbers.

Table 6. The Basic *Universal* Geometric Fractional Counters of the Negative One

7							• 1.0U00
6	• .2U70	• .U720	• .5C90	• .72U0	• .95C0	• .C950	• .WWW0
	• .23NS	• .UN1S	• .5S8S	• .713S	• .94SS	• .C84S	• .WXWS
	• .22NN	• .U61N	• .598N	• .703N	• .9USN	• .C74N	• .WCWN
	• .21NU	• .U51U	• .588U	• .NW3U	• .93SU	• .CN4U	• .WSWU
	• .20N0	• .U410	• .5780	• .NX30	• .92S0	• .C640	• .W9X0
	• .1W6S	• .UU0S	• .5N7S	• .NC2S	• .919S	• .C5US	• .W8CS
	• .1X6N	• .U30N	• .567N	• .NS2N	• .909N	• .C4UN	• .W7CN
	• .1C6U	• .U20U	• .557U	• .N92U	• .8W9U	• .CUUU	• .WNCU
	• .1S60	• .U100	• .5470	• .N820	• .8X90	• .C3U0	• .W6C0
	• .195S	• .3WWS	• .5UNS	• .N71S	• .8C8S	• .C23S	• .W5SS
	• .185N	• .3XWN	• .53NN	• .NN1N	• .8S8N	• .C13N	• .W4SN
	• .175U	• .3CWU	• .52NU	• .N61U	• .898U	• .C03U	• .WUSU
	• .1N50	• .3SW0	• .51N0	• .N510	• .8880	• .SW30	• .W3S0
	• .164S	• .39XS	• .506S	• .N40S	• .877S	• .SX2S	• .W29S
	• .154N	• .38XN	• .4W6N	• .NU0N	• .8N7N	• .SC2N	• .W19N
	• .144U	• .37XU	• .4X6U	• .N30U	• .867U	• .SS2U	• .W09U
	• .1U40	• .3NX0	• .4C60	• .N200	• .8570	• .S920	• .XW90
	• .13US	• .36CS	• .4S5S	• .N0WS	• .84NS	• .S81S	• .XX8S
	• .12UN	• .35CN	• .495N	• .6WWN	• .8UNN	• .S71N	• .XC8N
	• .11UU	• .34CU	• .485U	• .6XWU	• .83NU	• .SN1U	• .XS8U
	• .10U0	• .3UC0	• .4750	• .6CW0	• .82N0	• .S610	• .X980
	• .0W3S	• .33SS	• .4N4S	• .6SXS	• .826S	• .S50S	• .X87S
	• .0X3N	• .32SN	• .464N	• .69XN	• .806N	• .S40N	• .X77N
	• .0C3U	• .31SU	• .454U	• .68XU	• .7W6U	• .SU0U	• .XN7U
	• .0S30	• .30S0	• .4440	• .67X0	• .7X60	• .S300	• .X670
	• .092S	• .2W9S	• .4UUS	• .6NCX	• .7C5S	• .S1WS	• .X5NS
	• .082N	• .2X9N	• .43UN	• .66CN	• .7S5N	• .S0WN	• .X4NN
	• .072U	• .2C9U	• .42UU	• .65CU	• .795U	• .9WWU	• .XUNU
	• .0N20	• .2S90	• .41U0	• .64C0	• .7850	• .9XW0	• .X3N0
	• .061S	• .298S	• .403S	• .6USS	• .774S	• .9CXS	• .X26S
	• .051N	• .288N	• .UW3N	• .63SN	• .7N4N	• .9SXN	• .X16N
	• .041U	• .278U	• .UX3U	• .62SU	• .764U	• .99XU	• .X06U
	• .0U10	• .2N80	• .UC30	• .61S0	• .7540	• .98X0	• .CW60
	• .030S	• .267S	• .US2S	• .609S	• .74US	• .97CS	• .CX5S
	• .020N	• .257N	• .U92N	• .5W9N	• .7UUN	• .9NCN	• .CC5N
iit	• .010U (1-)	• .247U	• .U82U	• .5X9U	• .73UU	• .96CU	• .CS5U

[17] The *Universal* Negative One increases from .*WWW*) at Basic *10* (16), progressing one decimal place for each two-power base to .*WWWWWWW*, the Standard *UN* base *100* (256) Negative One, and to the limit at the Quantified Negative One for *UN* base *U00* (1,024), the .*WWWWWWWWW*, which only requires a tiny *eit 0.000000001* to become a whole one.

The multiplication of the "*one minus*," *iit*, *.010U* by *12* (18) produces the elegant little fractional counter *.12UN*, and when *iit* is multiplied by *2U* (36), the answer is the geometric *pi* number *.2U7*.[18]

The *U*-place series provides rational symbols for counting the fractional negative elements by arranging themselves into two columns. The *one minus .010U* progresses sequentially by single digits in the left column, and the right column advances by *U*'s: *.010U, .020N, .030S, .0U10, .041U, .051N, .061S, .0N20*, etc.). Each time the *U*'s in the right column reach *100*, one sequential digit is carried to the left column. A total of *WS* (252) counters add up to *.WWW0*, the *Universal* base-*10* Negative One.

To summarize, there are a total of *WS* (252) counting elements symbolically represented by a series of evenly-divided, *U*-place counters, in which the right *two* elements progress by *U*'s, carrying over into the left column, all of which adds up to *.WWW0*. Essentially, every whole *one* is divided into *W:X01* (65,025) assignable elements.

Using these *U*-place fractional numbers as counters, we discover that progressing by *U*'s in the right column allows for the hidden expression of a set of symbolic elements in each counter (e.g. *.0101, .0102, .0103* within *.010U*) that may be useful for calculating *and* coding. These unique "quantum" elements exist within *.010U* and in each succeeding counter. For now, let us designate these quantum elements as Qx, Qy, and Qz.

Each *smart* counter contains *three* quantum (Q) elements, *and* the alternative combinations of the negative, positive, and neutral aspects of Qx, Qy, and Qz produce *N* (8) quantum elements of the *one minus .010U* and each succeeding counter. In addition to its *WW* (252) assignable right column elements, each counter is composed of *N* quantum alternatives.

The following table demonstrates the alternatives within each fractional counter as it relates to its binary (red) number.

[18] *.010U* = .0039, *.12UN* = .0714, and *2U7* = .1428.

Table 7. The Elemental *Universal* Quantum Numbers

0101	0102	0103	
Q^1	Q^2	Q^3	000
Q^1	Q^2	Q^{*3}	001
Q^1	Q^{*2}	Q^3	010
Q^1	Q^{*2}	Q^{*3}	011
Q^{*1}	Q^2	Q^3	100
Q^{*1}	Q^2	Q^{*3}	101
Q^{*1}	Q^{*2}	Q^3	110
Q^{*1}	Q^{*2}	Q^{*3}	111

These *U*-place *smart* counters can be added and subtracted, and they can be multiplied and divided by whole numbers. As geometric placeholders, the counters are multiplied or divided symbolically within the matrix, rather than mathematically. The *.010U iit* is also composed of its fractional elements (*.00U1, .00N2, .00S3, .010U*); however, the actual multiplication and division of *U* (four)-place *UN* "decimal" numbers produce unwieldy results with *N* (eight) places. Moreover, when multiplying by fractions, a division results, such as .N x *.N* = *.U* (one half of one half).

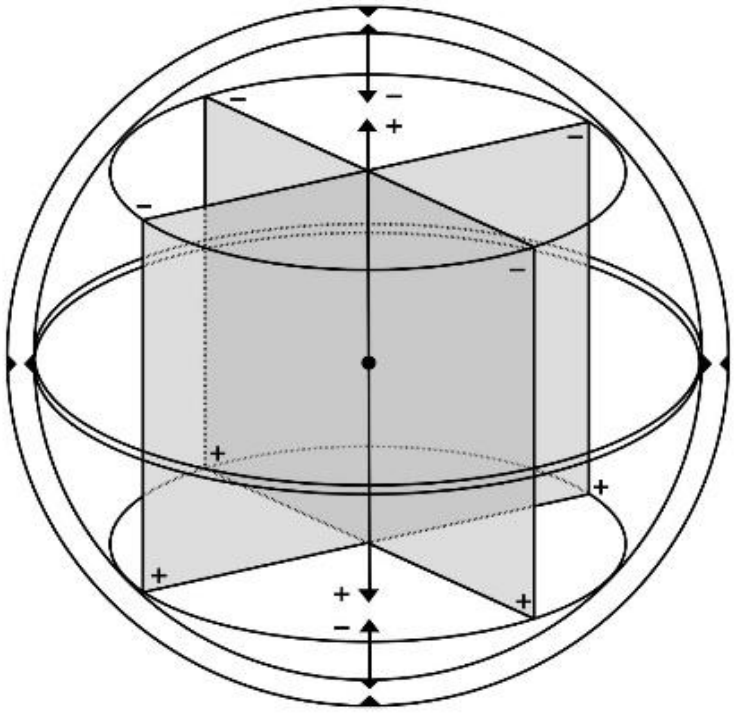
Digging deeper into the proportional roots of the Negative One, we find that *one* divided by *10:000* (2^{10}) produces the "decimal" fraction, *0.0001*, which when twinned becomes *.0002*, or the "*itty-bit*." Its geometric square is *.000U*, its cube is *.000N*, and its *N*th power is the initial counter *.0100,* of which the *Qbits* of *.0101, .0102, .0103,* and the *one minus*, *.010U,* are among its first identifiable elements.[19]

[19] Among the first *little bits* of *.0100* is *Alpha*, the fine state constant, 137.03599920611, expressed in *UN* as *N7.0736X6UXS8548XSX359*, which when divided into *one*, produces *0.01CX3CU278S2UWW267U3*. Fractionally, *1/N7* becomes *.01CX*, the quantified *alpha,* (*.0100, ….010U, … .01CX, ….0200* etc.). *Alpha* is a pure natural number combining the speed of light, the electric charge of an electron, and the length of a single light wave. It measures the ratios between the strong force and the weak electro-magnetic interaction, and the strength of gravitation.

6. Artificial Intelligence Unifies Negative and Positive Matrices Within "The Device"

What our minds can conceive of as an actual positive-negative calculating device cannot be presently constructed, but it may be created and operated by artificial intelligence (AI) within every computer applying *Universal Mathematics*. AI can spin balanced *UN* positive and negative matrices to project and entangle the light of every conceivable positive probable number with its reflected negative proximate counter. Magnetically suspended, the imaginary twin metal matrices spin together in a vacuum within a counter-rotating metal sphere, which is magnetically suspended in a vacuum within a small sphere we can hold in the palms of our hands.

Figure 2. The Device: An Imaginary Calculator of Negative and Positive Matrices



The positive matrices within the device derive from the geometric powers of *two* as demonstrated in Table 2. Using the "tens" as base numbers, demonstrated here is the *Universal Standard* base *100* (256) matrix.

Matrix 2. The *Universal* Standard Positive Number Matrix

	10	20	30	U0	40	50	60	N0	70	80	90	S0	C0	X0	W0	100
10	100	200	300	U00	400	500	600	N00	700	800	900	S00	C00	X00	W00	1;000
20	200	U00	500	N00	800	500	X00	1;000	1;200	1;U00	1;500	1;N00	1;800	1;S00	1;X00	2;000
30	300	500	700	S00	W00	1;200	1;400	1;N00	1;900	1;X00	2;100	2;U00	2;600	2;800	2;C00	3;000
U0	U00	N00	500	1;000	1;U00	1;N00	1;S00	2;000	2;U00	2;N00	2;S00	3;000	3;U00	3;N00	3;S00	U;000
40	400	800	W00	1;U00	1;700	1;X00	2;300	2;N00	2;C00	3;200	3;600	3;S00	U;100	U;500	U;900	4;000
50	500	S00	1;200	1;N00	1;X00	2;U00	2;800	3;000	3;500	3;S00	U;200	U;N00	U;X00	4;U00	4;800	5;000
60	600	X00	1;400	1;S00	2;300	2;800	3;100	3;N00	3;W00	U;500	U;C00	4;U00	4;900	5;200	5;700	6;000
N0	N00	1;000	1;N00	2;000	2;N00	3;000	3;N00	U;000	U;N00	4;000	4;N00	5;000	5;N000	6;000	6;N00	N;000
70	700	1;200	1;900	2;U00	2;C00	3;500	3;WOO	U;N00	4;100	4;800	5;300	5;S00	6;400	6;X00	N;600	7;000
80	800	1;U00	1;X00	2;N00	3;200	3;S00	U;500	4;000	4;800	5;U00	5;X00	6;N00	N;200	N;S00	7;500	8;000
90	900	1;500	2;100	2;S00	3;600	U;200	U;C00	4;N00	5;300	5;X00	6;700	N;U00	N;W00	7;800	8;400	9;000
S0	S00	1;N00	W;U00	3;000	3;S00	U;N00	4;U00	5;000	5;S00	6;N00	N;U00	7;000	7;S00	8;N00	9;U00	S;000
C0	C00	1;800	2;600	3;U00	U;100	U;X00	4;900	5;N00	6;400	N;200	N;W00	7;S00	8;700	9;500	S;300	C;000
X0	X00	1;S00	2;800	3;N00	U;500	4;U00	5;200	6;000	6;X00	N;S00	7;800	8;N00	9;500	S;U00	C;200	X;000
W0	W00	1;X00	2;C00	2;S00	U;900	4;800	5;700	6;N00	N;600	7;500	8;400	9;U00	5;300	C;200	X;100	W;000
100	1;000	2;000	3;000	U;000	4;000	5;000	6;000	N;000	7;000	8;000	9;000	S;000	C;000	X;000	W;000	10;000

The negative fractional counters are organized into the *Universal* Standard Negative Counter Matrix, based on the geometric cube of the *one minus iit* ($.010U^3 = .10U0$). Using *.10U0* as a base number, its multiples: *.20N0, .30S0, .U100* etc. can be used to display their *proportions* and *squares*. (These are the blue numbers seen in Table 6 above.) The roots of the Negative One have been demonstrated, starting with *iit*, *.010U* all the way up through a nonimaginary Negative One (and the imaginary zero) to the positive *1.0U00* anchor.

Matrix 3. The *Universal* Standard Negative Counter Matrix

	.10U0	.20N0	.30S0	.U100	.41U0	.51N0	.61S0	.N200	.72U0	.82N0	.92S0	.S300	.C3U0	.X3N0	.W3S0	1.0U00
.10U0	(.01N1)	N	0.4444	0.U	0.3333	0.2888	0.2U72	0.2	0.1S61	0.1777	0.16U4	0.1444	0.1391	0.12U7	0.1111	0.1
.20N0	2	(.0U20U)	0.8888	0.N	0.5555	0.4444	0.U72U	0.U	0.3NX3	0.3333	0.2XN9	0.2888	0.2652	0.2U72	0.2222	0.2
.30S0	3	1.N	(.07UN7)	0.S	0.7777	0.N	0.5C95	0.5	0.4444	0.USSS	0.U461	0.U	0.3913	0.35C9	0.3333	0.3
.U100	U	2	1.4444	(.10N1)	0.SSSS	0.8888	0.72U7	0.N	0.61S6	0.5555	0.4C16	0.4444	0.UXSU	0.U72U	0.UUUU	0.U
.41U0	4	2.N	1.8888	1.U	(.17S77)	0.C444	0.95C9	0.8	0.NX3N	0.N	0.6U4C	0.5888	0.5265	0.495C	0.4444	0.4
.51N0	5	3	2	1.N	1.3333	(.U1N2U)	0.C95C	0.S	0.8888	0.7777	0.N982	0.N	0.6526	0.5C95	0.5555	0.5
.61S0	6	3.N	2.4444	1.S	1.5555	1.2888	(.32N91)	0.X	0.S61S	0.9333	0.82XN	0.7444	0.N7CN	0.N	0.6666	0.6
.N200	N	U	2.8888	2	1.7777	1.4444	1.2U72U	(.U20U)	0.X3NX	0.SSSS	0.982X	0.8888	0.7CN7	0.72U7	0.NNNN	0.N
.72U0	7	U.N	3	2.U	1.SSSS	1.N	1.U72U7	1.2	(.43NC1)	0.X555	0.C16U	0.S	0.9139	0.8U72	0.7777	0.7
.82N0	8	4	3.4444	2.N	2	1.8888	1.5C95C	1.U	1.S61S	(.5625U)	0.XN98	0.C444	0.SUXS	0.95C9	0.8888	0.8
.92S0	9	4.N	3.8888	2.S	2.3333	1.C444	1.72U72	1.5	1.3NX3N	1.1777	(.6SSW7)	0.X888	0.CN7C	0.S72U	0.9999	0.9
.S300	S	5	U	3	2.5555	2	1.95C95	1.N	1.4444	1.3333	1.16U4C	(.7UN7)	0.XSUX	0.C95C	0.SSSS	0.S
.C3U0	C	5.N	U.4444	3.U	2.7777	2.2888	1.C95C9	1.8	1.61S61	1.USSS	1.2XN98	1.1444	(.8X427)	0.XC95	0.CCCC	0.C
.X3N0	X	6	U.8888	3.N	2.SSSS	2.4444	2	1.S	1.NX3NX	1.5555	1.U4C16	1.2888	1.3913	(.S82SU)	0.XXXX	0.X
.W3S0	W	6.N	4	3.S	3	2.N	2.2U72U	1.X	1.8888	1.N	1.4C16U	1.U	1.26526	1.12U72	(.XN151)	0.W
1.0U00	10	N	4.4444	U	3.3333	2.8888	2.U72U7	2	1.S61S6	1.7777	1.6U4C1	1.4444	1.39139	1.2U72U	1.1111	(1.0N1)

Quantified negatively by geometric *smart* counters based on the *iit* of *.010U*, a *2bit* of *.12UN*, a *Ubit* of *.2U7*, a *Nbit* of *.U72*, a *buck* of *.WWW*s, and the *whole shebang* at *1.0U00*, a negative and a positive mathematical language and method of calculation can

coincide at the *zero portal*. The twinning of matrices by artificial intelligence (AI) allows them to process the same data, simultaneously, and to exchange results instantaneously, as the positive and negative matrices spin, reflect, and entangle the lights of their numbers and counters, in a magic machine of our imagination and artificial intelligence.

Traditionally, the roots of "Negative One" were symbolized by Euler with an "*i*" to represent the "imaginary" number required to solve the quadratic equation $x^2 + 1 = 0$ (in which x becomes the imaginary square root of Negative One) facilitating the development of complex numbers. Euler's device of the imaginary *i* in calculus may be replaced with the *iit,* if the actual negative fractional reciprocal of every positive number becomes readily identifiable and quantifiable.

All critical functions of the calculus using converted whole numbers and ratios, decimal fractions, exponents, logarithms, and algorithms should remain true during calculations using *Universal Numbers* produced by the positive logarithmic powers of *two*.

7. Perfect and Mersenne Prime Numbers

All hexadecimal languages, including ASCII, are equally effective in reducing the number of symbols required to display large numbers; however, one can readily see that *UN* significantly improves the visualization of internal relationships and ratios over base 10.

Initially, there is a more logical expression of the powers of *two*: $2^2 = U$ (4), $2^U = 10$ (16), $2^N = 100$ (256), $2^S = 1;000$ (4,096), and $2^{10} = 10;000$ (65,536). One comparative real world example is the largest base-10 number in general use, an unsigned 64-bit integer (2^{64}-1) 18,446,744,073,709,551,615, which is expressed in *UN* as (2^{U0}-1), or *W;WWW;WWW;WWW;WWW;WWW;WWW*.

Another useful piece of evidence is a demonstration of the eighth perfect number[20] 2,305,843,008,139,952,128 which displays in *UN* as *1;WWW;WWW;WS0;000;000*. Expressed as a parenthetical count of (*W)s*, notation of the N^{th} (eighth) perfect number can be simplified in *UN* as $1W^{(6)}S \times 10^6$, with the number of (*W)*s always equaling the number of zeros.

[20] A positive integer is "perfect" if the number equals the sum of its divisors. Thus *5* (6) is perfect because *1 + 2 + 3 = 5* (6), and *Starteen* (28) is perfect because *1 + 2 + U* (4) *+ 7* (9) *+ X* (14) *= 1S* (28).

The first dozen *UN* perfect numbers and their existing expressions in finger base 10 follow in a table as a visual comparison of the information content and comprehension of the same data, displayed differently by the two languages, for analysis and use.

Table 8. *Universal* Perfect Numbers and Base-10 Equivalents

$5 = 6$
$1S = 28$
$1W0 = 496$
$1WS0 = 8{,}128$
$1W^{(3)} \times 10^{3} = 33{,}550{,}336$
$1W^{(U)} \times 10^{U} = 8{,}589{,}869{,}056$
$1W^{(U)}S \times 10^{U} = 137{,}438{,}691{,}328$
$1W^{(6)}S \times 10^{6} = 2{,}305{,}843{,}008{,}139{,}952{,}128$
$1W^{(W)} \times 10^{W} = 2{,}658{,}455{,}991{,}569{,}831{,}744{,}654{,}692{,}615{,}953{,}842{,}176$
$1W^{(15)} \times 10^{15} = 1{,}915{,}619{,}426{,}08{,}236{,}107{,}294{,}793{,}378{,}084{,}303{,}638{,}130{,}997{,}321{,}548{,}169{,}216$
$1W^{(18)}S \times 10^{18} = 13{,}164{,}036{,}458{,}569{,}648{,}337{,}239{,}753{,}460{,}458{,}722{,}910{,}223{,}472{,}318{,}386{,}943{,}117{,}783{,}728{,}128$
$1W^{(1W)}S \times 10^{1W} = 144740111546645244279463731260859884815736774914748358890663543491311991521 28$

We can see from the table that the base 10 numbers ending in 8 now have a *Star* separating the *W*s from the *0*s in *UN* perfect numbers, and that the numbers ending in 6 do not have a *Star*.

In Table 9 below, the *UN* Mersenne Prime numbers[21] that produced these perfect numbers are shown to possess the same abundance of *W*s, created when *one* is subtracted from the logarithmic number produced by a PerfectPrime exponent of *two*. Among all the continuing logarithmic numbers of *two*, these rare perfect logarithmic numbers are produced by the PerfectPrime exponents.

When *one* is subtracted from a perfect logarithmic number, a Mersenne Prime number is revealed, which, when substituted for "n" in Euler's algorithm, $2^{n-1}(2^{n}-1)$, produces a new perfect number.

The perfect logarithmic numbers commence with *U,* the first progression of *two*, followed by its cube *N,* then *20, N0, 2;000, 20;000, N0;000, N0;000;000*, …. Thus far, all known perfect logarithmic numbers after *U* begin with a *two* or an *N*.

[21] First observed in the seventeenth century by Rene Mersenne (a French teaching friar who studied with Descartes and defended Galileo), who noted that all seven then known perfect numbers resulted from subtracting one from the logarithmic product of certain prime exponents of two. His formula $M_p = 2^{p}-1$ for some prime p, led Leonhard Euler to the algorithm, $2^{n-1}(2^{n}-1)$ for some integer, which remains in use today.

Table 9. *Universal* Mersenne Prime Numbers (Being *One* Number Less Than a Perfect Logarithmic Number Produced by a PerfectPrime Exponent of *Two*)

3 (U, or 2^2-1)
6 (N, or 2^3 -1)
1W (20, or $2^4 - 1$)
6W (N0, or $2^6 - 1$)
1:WWW (2:000, or $2^C - 1$)
1W:WWW (20:000, or $2^{11} - 1$)
6W:WWW (N0:000, or $2^{13} - 1$)
6W:WWW:WWW (N0:000:000, or $2^{1W} - 1$)
1:WWW:WWW:WWW:WWW:WWW (2:000:000:000:000:000, or $2^{3C} - 1$)
1WWW...WWW (20:000:000:000:000:000:000:000, or $2^{47} - 1$)
1WWW...WWW (N00:000:000:000:000:000:000:000:000, or $2^{59} - 1$)

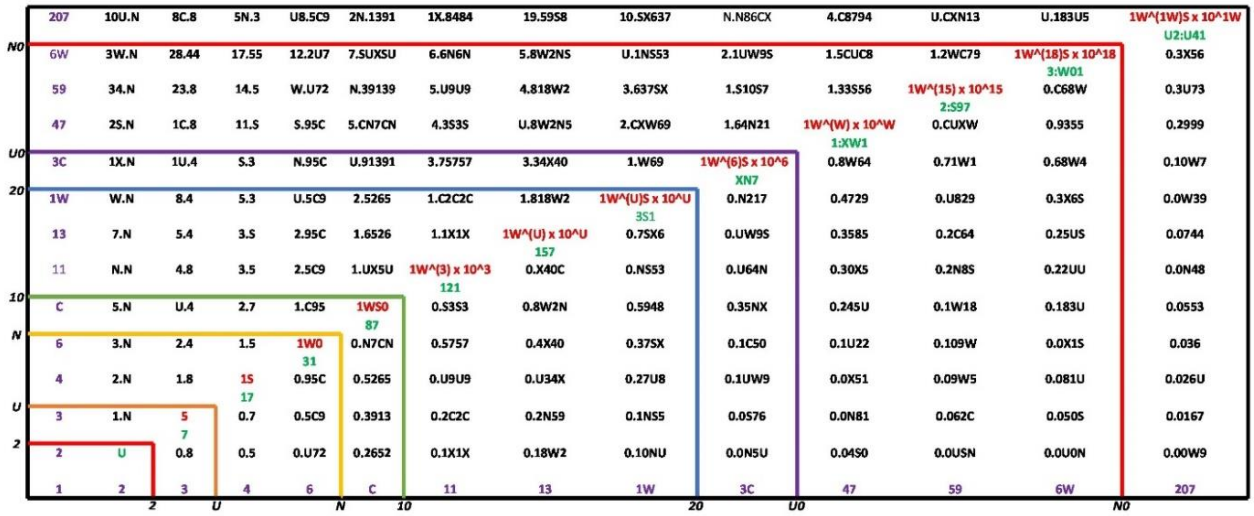
Inasmuch as all *Universal* prime numbers appear to have one of *N* (eight) endings, it is noteworthy that all Mersenne prime numbers necessarily end with a *W*, including the next, yet to be revealed Mersenne prime number *33* (52).

7.1 Using Perfect and Mersenne Prime Numbers to Calculate the Roots of Negative One.

The perfect *UN* numbers can be organized by their Perfect Prime Exponent powers of *two* that produce Mersenne Primes and their perfect numbers in the following matrix of ratios, as formulated by their divisors, along with their squares. The structural geometric powers of *two* are marked on the outside of the matrix. The initial perfect number sets are calculated within a table of proportions in which their Perfect Prime Exponents are divided by each other. These natural "perfect prime numbers" are expressed in *UN* as *3,4,6,C,11,13,1W,3C,47,59, 6W* (127), and *207* (521), representing a natural subset within the *NU* prime numbers.[22]

[22] For an earlier discussion of using perfect numbers as a calculus of the negative fractional counters see: *The Perfect Number Calculus of the Negative Matrices of Mind* (2022) at https://williamjohncox.com/Calculus.pdf

Matrix 4. The Ratio Proportions of the Perfect Prime Exponents and Their Perfect Numbers



The square of *two* at the bottom left, produces *U*, and *U* less *one* (2^2 -1) reveals the first Mersenne Prime number *three*. When *three* is multiplied by its last factor, *two*, the first perfect number six, or *UN five*, is produced. Twice perfect *five* is *Star* (12), and the next perfect number is a *Starteen, 1S* (28).

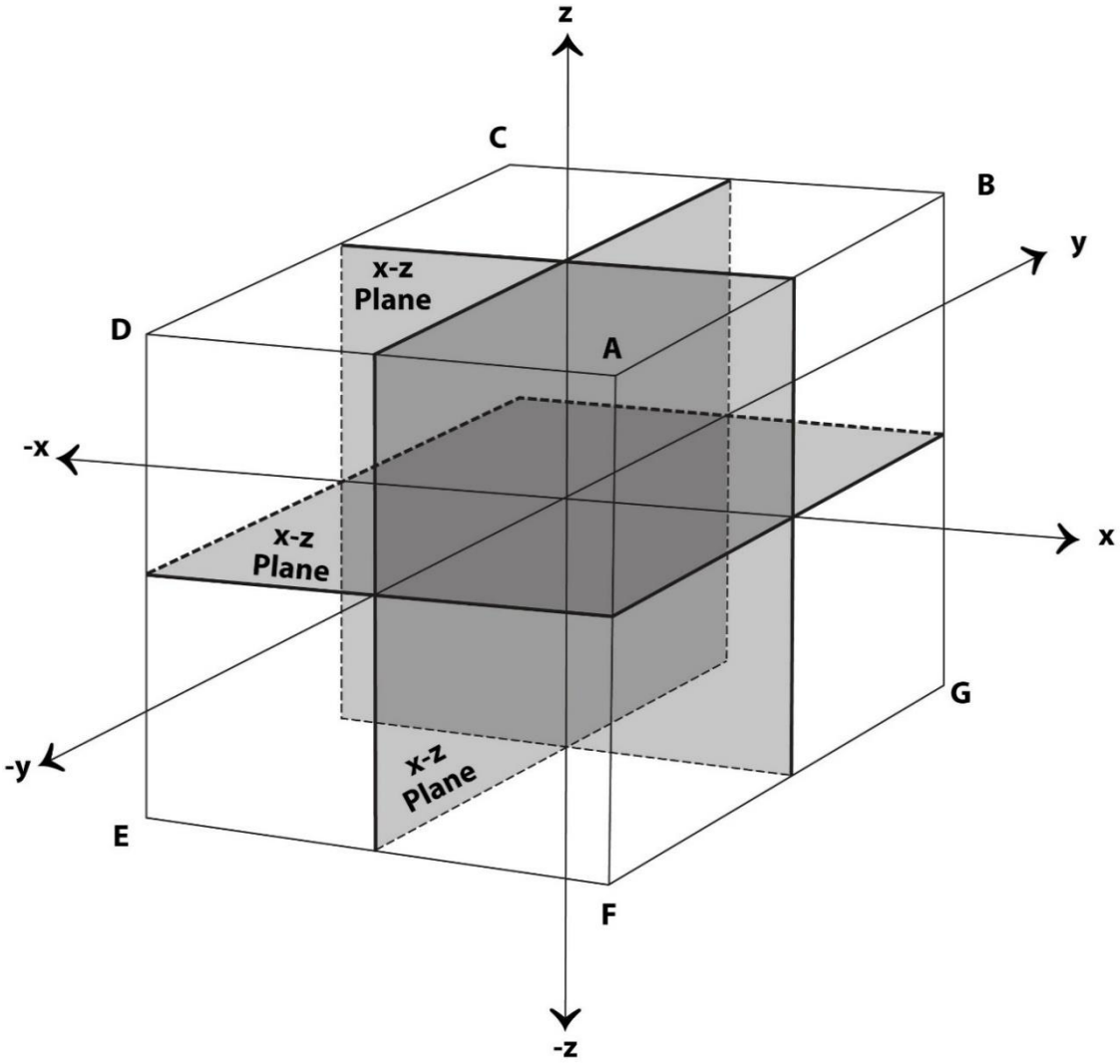
One can begin to discern the visual patterns of ratios accentuated by the *UNStar* numbers in the matrix for each succeeding perfect number. Displayed within the "*One*" spaces of the perfect prime exponents divided by themselves on the ascending diagonal are their perfect numbers and squares.

Inasmuch as the ratio between any two succeeding perfect numbers can be determined with relative precision, that ratio can be applied to the value of the *one minus, iit .010U* in succeeding negative counter matrices that grow to accommodate the need for ever-larger reciprocal negative counter matrices to balance ever-larger positive number matrices.

8. Integration of *Universal Numbers* and *Geometry*

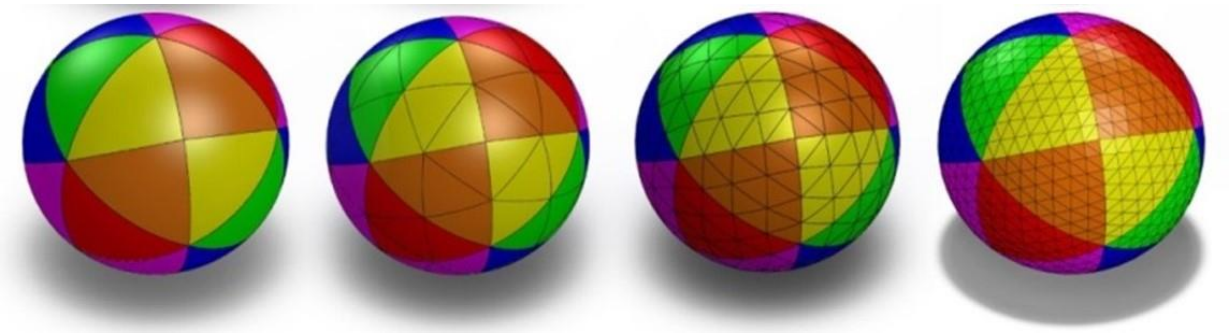
Let us imagine the simultaneous reduction of the Cartesian coordinates by AI of a positive cube along its *N* (eight) corner vertices and its *five* (six) face coordinate vertices through the center zero into the negative space that surrounds it.

Figure 3. Reducing the Cartesian Coordinate Cube Through Zero



We discover that the *X* (14) vertices are connected by *five* (six) lines creating *1N* (24) colored triangles, having perimeters equal to *pi* times radius, and side ratios of *3:3:U* (3:3:4). The resulting sphere is the basis of *Universal Geometry* centered at the core of the Milky Way galaxy, and its natural expansion as a geometric framework to encompass the observable universe is depicted in the following figure.

Figure 4. The Expanding *Universal Geometry* Sphere



The pyramidal space within each of the *1N* right-angle spaces, from the surface to the core can be described by a single polar coordinate within each of the cells. As the triangles subdivide into four equally large triangles with each phase of expansion, the area within each cell, from core to surface, continues to be defined by its unique polar coordinate.

As a final exercise, imagine the exterior of The Device is inscribed with the six circles of the *Universal* sphere, and that the location of every imaginable number and reciprocal counter can be identified by a polar coordinate that fires whenever that number or counter is called upon to perform a function. The matrices disappear and a unified body of positive and negative elements appears in which every element is related to all others and the answer to every calculation is known before it is asked.

9. The Quantification of *Universal* Constant Numbers

More precise than the proximate geometrical values used in the negative fractional counters, the scientific numbers of *pi, phi*, and *e* remain irrational in *Universal Numbers*; however, these constant numbers are also "normal" in that additional digits quickly begin to appear with average frequency. Thus, for their application as scientific and mathematical ratios, these constant numbers naturally "round off" at *N* for most calculations (*pi = 3.2U3W58NNN*, *phi = 1.7X36679N*, and *e = 2.96X14152N*).

With hexadecimal providing 1.6 times more counting elements than decimal, these quantified *UN* values *are* the essential ratio numbers of science, with the remaining places (such as *pi* now calculated to 62.8 trillion digits) generating little more than curious, mathematical clutter. The *three* consecutive *N*s at the *sixth* place of scientific *Universal pi* are a significant portion of the number's ratio, quantifying the irrational number before it begins to generate random noise. By comparison, *pi* expressed in base 10 does not produce a triple repeating number until the 153rd place.

These quantified *Universal* constant numbers can be applied with standard precision for most calculations, reserving the irrationality of *pi* to continue producing conceptually random numbers as an essential function of the calculus amidst the reality of chaos. A longer value only becomes critical in equations that delve deeply into the quantum physics of sub-atomic matter.[23]

As each irrational constant number displays an *N* at the approximate point where its value as a ratio number ends and it commences to display exact, random numbers, each naturally rounds off at its *Universal* quantified limit.

10. Universal Numbers and the Calculus

Simultaneously discovered in the late 1600s by Isaac Newton in England and Gottfried Wilhelm Leibniz in Germany, using various algebraic methods, the "calculus" of continuous change combines the study of infinitesimals with that of finite differences, unifying integral calculus with differential calculus, and facilitates their inverse operations. Newton privately used his "fluxions" to calculate difficult problems of physics leading to his amazing discoveries of gravity and light, while Leibniz fully published his method with a clear set of rules for everyone to use. Newton jealously secreted his method and accused Leibniz of plagiarism. Today, Newton, having written in the English of Empire, as aided by the victories of wars, received a knighthood and most of the credit; however, the methodical concept of calculus was best documented (and named) in German by Leibniz as a practical tool in the service of science.

The power of the calculus is its facility to manipulate combinations of numbers (combinatorics) and conceptual concepts (artificial numbers) according to rigorous rules that produce exact results in the real world. In addition to the recent precise placement of the Webb Space Telescope at its Lagrange Point a million miles beyond Earth, NASA's DART spacecraft just hit the bullseye of an asteroid the size of a football stadium with its refrigerator size payload of instruments, after a ten-month curved

[23] Another constant fractional language value for *pi* appears between the geometric at *3.2U72U7* and scientific at *3.2U3W58NNN*, which is a simple rounding of both values of *pi* at *3.2UU*. Twice is *5.UNN*, half is *1.72200*; when divided by *12*, the answer is *.0203*, and by *2U* it is *.0101* (comparable to the *itt, one negative .010U*), which when multiplied by *WW* = *.WWWW*. Half of scientific *pi* is *1.721WN*, which is very close to *1.72200*, and twice scientific *pi* is *5.UN6XC411*, which is near to *5.UNN*.

journey of 6.8 million miles, colliding at 14,000 mph and altering its course. Calculating these curves by using infinitesimal lines and calculating the area within the curves is the domain of the calculus.

The essential method of calculus is the binomial theorem which simplifies the lengthy algebraic calculation of binomials and polynomials, such as a+b and x+y. The powers of (a+b) can be algebraically derived by analysis, such as $(a+b)^2 = (a+b)(a+b) = a^2 + ab + ab + b^2 = a^2 + 2ab + b^2$ in which a^2 occurs once, ab occurs twice and b^2 occurs once, for a sequence of 1-2-1. The longer cubing of the binomial $(a+b)^3$ results in $a^3 + 3a^2b + 3ab^2 + b^3$, in which the sequence of combined numbers is 1-3-3-1. With each greater power of the binominal the algebraic analysis becomes longer and more tedious.

Named for the French mathematician who published it in 1665, the demonstration and use of Pascal's Triangle to calculate binomials can be found as early as the eleventh century in Persia and China. The triangle commences with one and combines the adjoining numbers at each succeeding level to create the combined numbers of the next layer, with each exhibiting the powers of the binomial (a+b). The triangle begins with one to the zero power, 1-1 as the first power, the second binomial power numbers 1-2-1, and the third power numbers 1-3-3-1 in both base 10 and *UN*–which are the same numbers produced by the algebraic analysis above.

All is well so long as the powers do not grow too large, but when the algebraic processes became too long for pages to hold, and the triangles too big for the desktop, the method discovered by Leibniz and Newton was the binomial theorem which allows the solution of any binomial power (n), as factored with (k). The desired power number to be substituted for n and for the k term can be in either base *10* or *UN*.

$$(a+b)^n = \sum_{k=0}^{n} \binom{n}{k} a^{n-k} b^k$$

To confirm that the calculus will effectively process *Universal Numbers*, let us model a *Universal* Pascal Triangle as demonstrative evidence of the natural relationships and growth of *Universal Numbers*, as they relate to the calculus of combined numbers.

Table 10. Pascal's Triangle in Cursive *Universal Numbers*

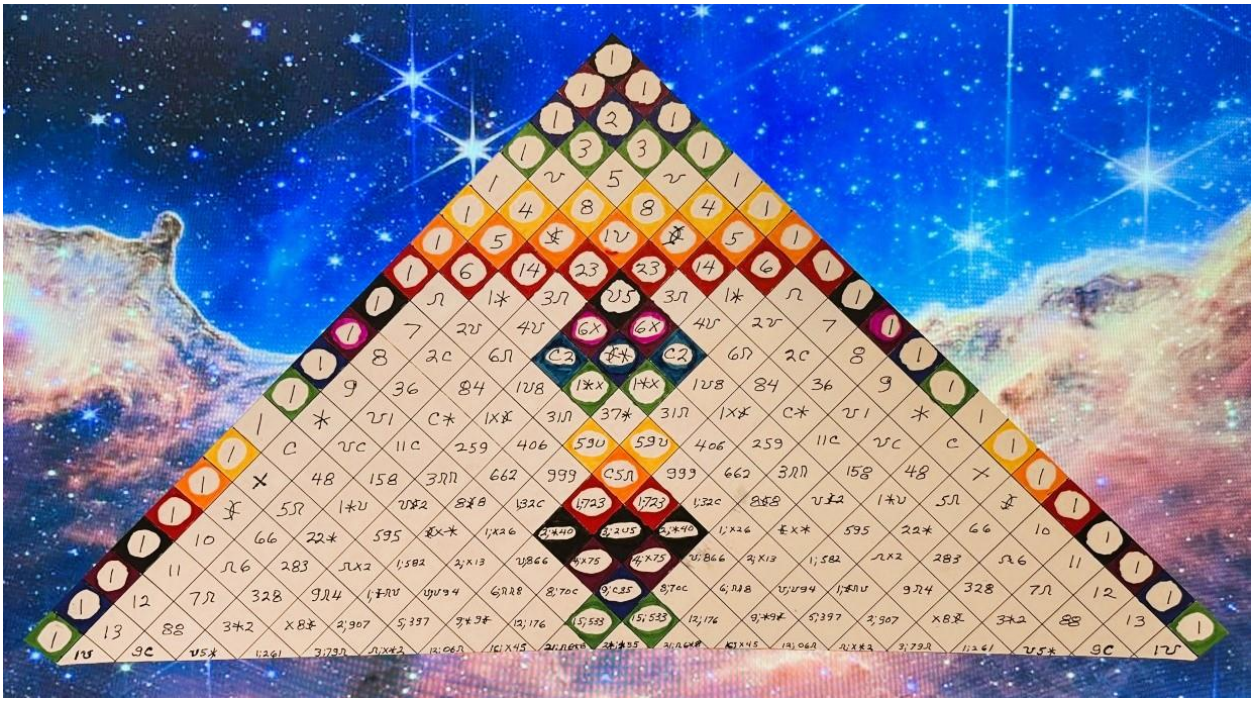


Table 10 provides solutions for the powers of binomials to the 20th, or *Uteenth* power. Observationally, one can see how nicely the new *UNStar* collecting symbols manifest themselves, such as in the *N*th (8th) binomial power[24], *1-N-1S-3N-U5-3N-1S-N-1* (1-8-28-56-70-56-28-8-1). We can also see that *UN 4* (5) is still half of *8* (10), as expressed in the *4*th (5th) binomial power, *1-4-8-8-4-1*.

The core combined numbers from the top, *1, 2, 5, 1U, U5, WS, 37S, C5N, 3:2U5, 9;C35,* and *2S:S55*, etc. are summations of combinations at each level, with each representing the maximum number of all possible two dimensional paths through the combinations of numbers at that point, to return to one, along with the other combined numbers at that level of binomial power.

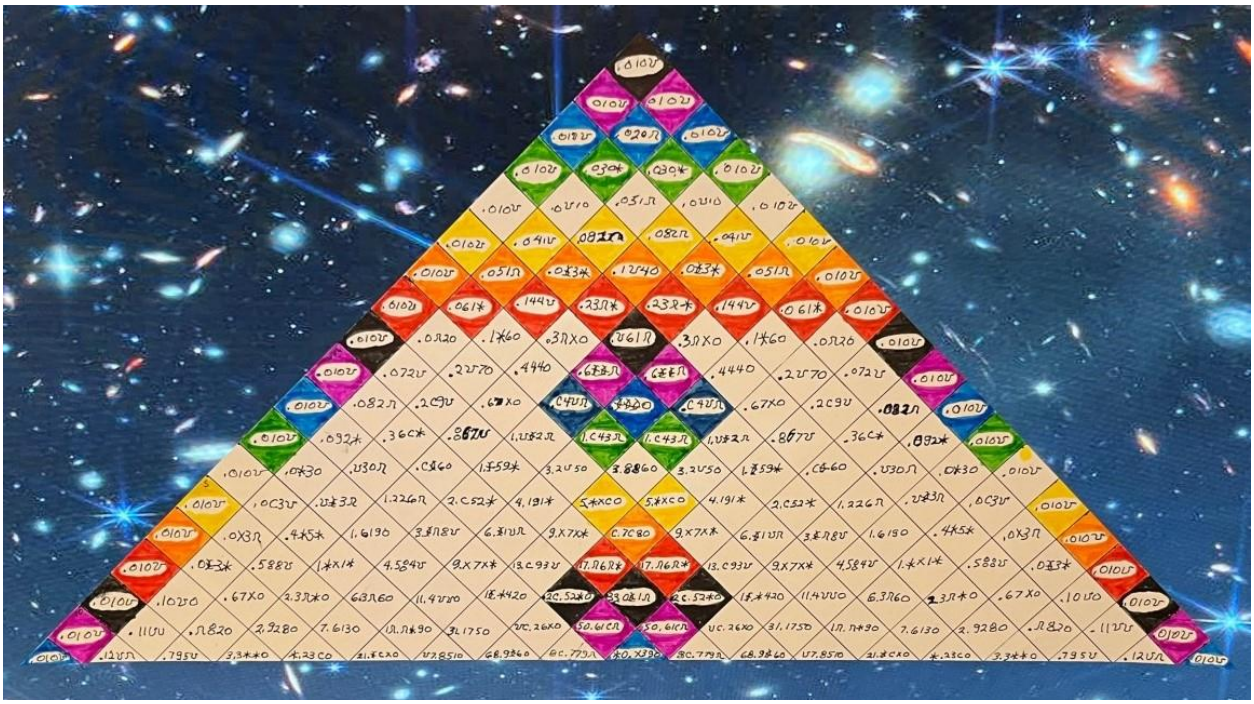
The proportional difference between each combined core number and the next appears to be approximately *.UUUU*. The core number of the *Uteenth* (20th) binomial power is the lovely (*twenty Star; Star fifty five*) *2S;S55* (183,398), which is the diagonal focus of the triangular *nines* (11s). Starting with 1-2-1 as the square of 11, the first *4* (5) Pascal numbers are the powers of 11 in both base 10 and *UN*, up to *1-4-8-8-4-1*.

[24] To avoid confusion, recall that *UN* numbers are uppercase and italicized, and the nth power is normally shown lower case without italics. The same as for x and *X*.

Just as prime numbers remain prime irrespective of base, the entire foundation of the symbolic methodology of algebraic calculus should remain unchanged when processing *Universal Numbers,* as it appears the calculus itself is a *Universal* function, which should more easily demonstrate increasingly relevant symbolism when processing *Universal Numbers*. This is especially true if the *Universal* fractional counting language of the *one negative .010U* proves useful in quantifying the Negative One. (*See* Section 5 above.)

To test the utility of the fractional language, the following Table 11 is a cursive Pascal Triangle calculated with the *.010U, iit, one negative* counter as a quantified root element of the Negative One. The core combined counter of the *eighth* (tenth) binomial power, an expression of *.082N,* is *.WWW0* (the Basic Negative One), and all the combined counters at or above this level can be found in Table 6, as all are multiples of *.010U*. Except for the initial *.010U*, the combined core counters all end in *0*s and *N*s, as the only possible combinations of *U*.

Table 11. Pascal's Triangle Built With *iit .010U, one minus Universal* Fractional Counters



The core counter of the *12*th (20th) binomial power as expressed by *.12UN* is *S0.X390*. There are exactly *9;CXS one negative .010Us* in this core counter at the *12*th

binomial power, which is near the value of *9;C35*, the *12*th binomial power built on the whole *one* in Table 10.

As one last exhibit, the two *Universal* triangles are superimposed to demonstrate the coincidence of the Negative One core counter, *.WWW0* and the *One* at the zero portal. The counters track the negative regression, and the numbers track the positive progression.

Table 12. Integration of the *Universal* One Number Triangle with the *One Minus .010U* Counter Triangle at the Basic Negative One *.WWW0*

11. The Verdict

The power of *Universal Numbers* to simplify and quantify the expression and calculation of all numbers, including the irrational, infinitesimal, and artificial, and to encode and transmit far greater amounts of information than base 10, has been proven beyond a reasonable doubt and to a scientific certainty. *And*, if this judgment is sustained, *Universal Numbers* should reduce the error rate of all data communication, increase the speed of binary computing, and achieve practical quantum computing.[25]

In application, *Universal Numbers* commence with *one* and its binary *two*; they are programmed for computer operations organized in sets of *U, N*, and *Star* at basic *10* (16), which serves as a communication portal. From there, the numbers naturally expand to *UN* standard base *100* (256) and beyond as needed for programing, display, analysis, and storage.

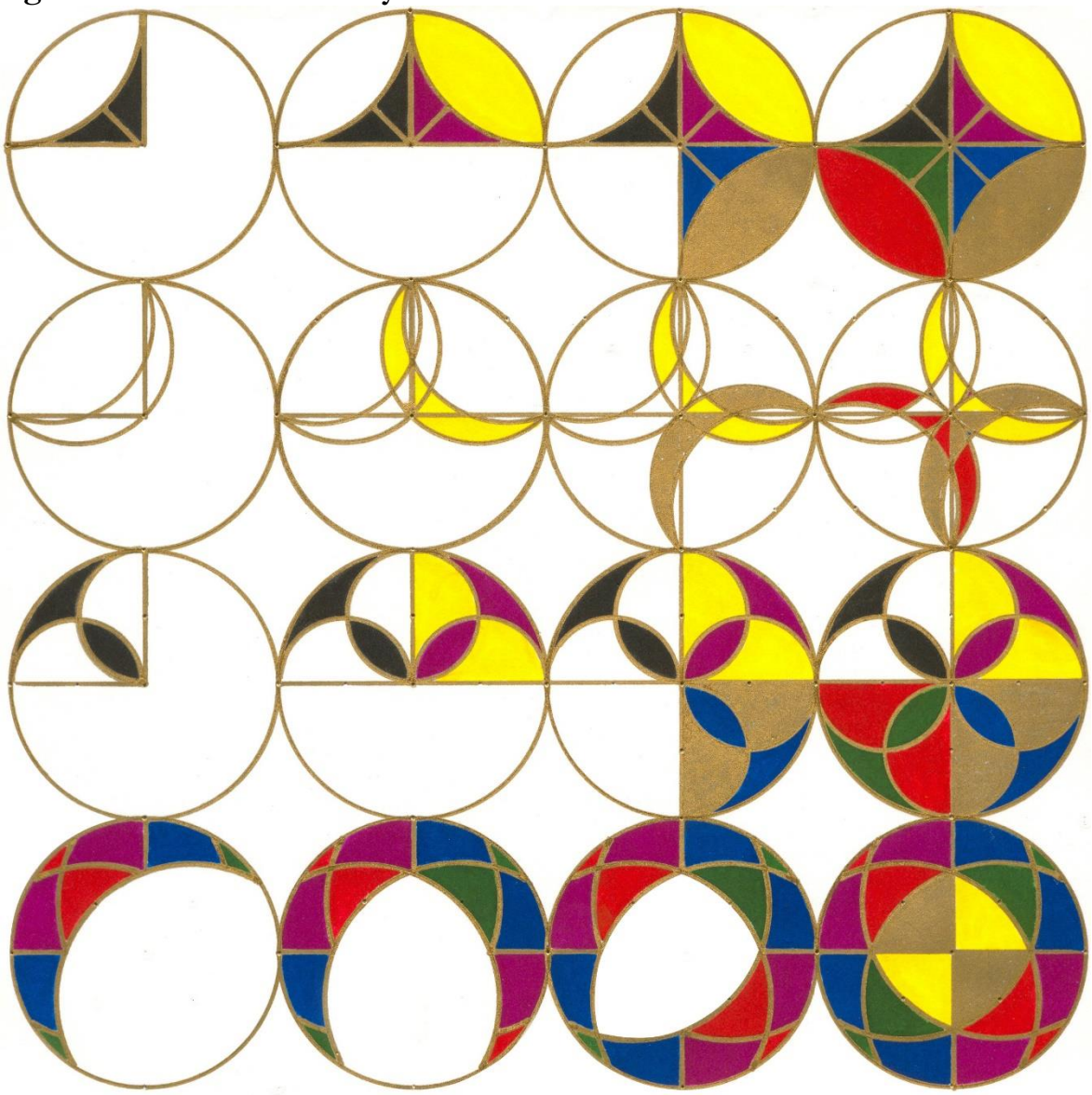
The symbolic imagery exhibited by the tables and figures are direct evidence that the natural beauty and elementary logic of *Universal Numbers* are an improvement in pattern recognition and memorization over base 10 and ASCII. The extent of the advantage of *UN* in the science of information theory requires real life testing of the calculus in applying the functions of higher mathematics and producing exact, replicable results, such as the analysis of Webb Space Telescope data, and charting curved paths from a moving Earth through the cosmos to moving destinations.

While some work remains before an application can be easily downloaded that simply translates ASCII and base 10 to *UN* within all computers (along with an *UNAI* Device that imaginarily spins positive and negative matrices, instantly solving problems and establishing coordinates), the available evidence as exhibited heretofore compels these firm conclusions:

> Base-10 and ASCII systems founded upon the number of human fingers are inherently flawed and self-limiting for all scientific matters, *and* the alternative symbolism of *Universal Numbers* should not only work better for all mathematical purposes, but as a creation of imagination and mind, they are more pleasing to look at.

[25] One of the greatest barriers to fault-tolerant quantum computing is the incredibly massive quantity of numbers required for the instant correction of fragile, error-prone qubits due to decoherence and noise. None of which can ever be solved by base-10 mathematics.

Figure 5. The Geometric Symbolism of *Universal Numbers*



Summation

As we are about to start out all over again–after 50 lost years and billions of wasted dollars spent on a false theory of cosmology–together, with a new understanding of the static, infinite universe of light, life, and mind within which we all live, thrive, and are now threatened, perhaps we should seriously consider the mathematics of that universe. Contemplate the implications of becoming free of Newton's laws of solar gravity, once it is realized that gravity is simply a manifestation of quantum relativity, and his laws are recognized as an elementary application of Maxwell's more universal laws of electromagnetism to the "massification" of plasma produced by a new electric star, uniting her and her progeny mass and holding them together for possible organic life, but having little galactic or universal application.

Incredible knowledge that is presently incomprehensible awaits just beyond our reach, *as* militarization continues to misuse the elementary laws and to waste precious natural resources to make weapons of war to kill People, blocking access to the ways of the universe. Militarization has allowed the People's self-governments to be purchased and corrupted by inhuman corporate "persons" that control the levers of power required to confront the environmental and economic crises, which threaten immediate disruption of the worldwide societal communication, commerce, and collaboration required for survival.

There is justified reason for the apprehension we feel, and for our fear of the unknown; however, all is not lost. We, collectively, are much better, stronger, and brighter than we think we are, individually; and the very best *is* yet to come. ~*wjc*

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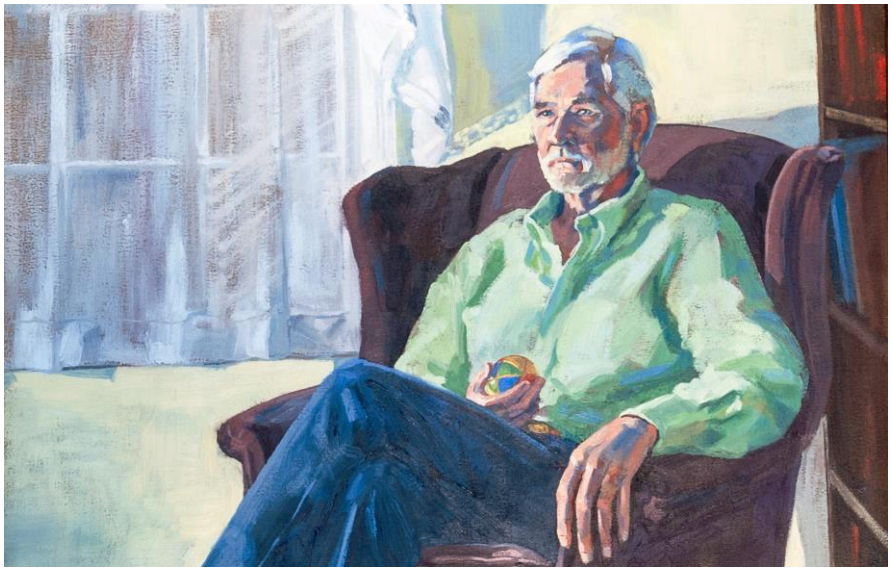
The Author



For more than 50 years, William John Cox has written extensively on public policy, law, politics, history, philosophy, mathematics, and the human condition. Known by his work rather than by name, his adventures during a long career in the U.S. justice system have entered the nation's written history.

Upon his honorable discharge as a Hospital Corpsman from the U.S. Navy in 1962, Cox was appointed as a police officer and joined the "New Breed" movement in the Sixties to define and professionalize law enforcement. He was soon elected to serve as president of all law enforcement officers in San Diego County in the California statewide professional organization (PORAC) that conceived the Peace Officers Standards and Training (P.O.S.T.) commissions now adopted by all states.

Transferring to LAPD in 1968, and later serving as a police sergeant attending evening law school, Cox wrote the principles and philosophy of Los Angeles Police Department in its Policy Manual. He was then loaned to President Nixon's National Advisory Commission in 1973 to write the Role of the Police in America, creating the criminal justice policy that established still-existing national law enforcement standards.

As an attorney, Cox worked for the U.S. Department of Justice to implement national criminal justice standards and goals, prosecuted cases for the Los Angeles County District Attorney's Office, and operated a public interest law practice in Long Beach primarily dedicated to the defense of young people accused of serious crimes.

Cox volunteered *pro bono* services in several landmark legal cases. In 1979, he filed a class-action lawsuit on behalf of all citizens directly in the U.S. Supreme Court alleging that the government no longer represented the voters who elected it.

As a remedy, Cox petitioned the Court to mandate the failed government to hold a National Policy Referendum on the 12 most critical issues in conjunction with every presidential election, so the People can vote and make their own policies for their elected representatives to implement.

When the Supreme Court declined to hear his petition, Cox ran for president in 1980 as a write-in candidate to promote government by people-policy referenda and nonviolence against other nations or peoples. Instead of war, Congressional declarations of arrest warrants should issue to secure the appearance of dangerous autocrats at the World Court of Justice to "defend the legitimacy of their government" over the innocent people of countries such as Iraq and North Korea.

In 1981, representing a U.S. Korean War veteran, a Jewish immigrant who had survived Auschwitz as a youth by pretending to be older, Cox provided *pro bono* services as he investigated and successfully sued a group of radical right-wing organizations that denied the Holocaust. With the Los Angeles Superior Court taking judicial notice of the Holocaust at a hearing televised by all three major networks, the case became the subject of the movie, *Never Forget* in 1991.

It was while engaged in these high profile matters that Cox escaped the stress of responsibility after work and while sleeping by imagining the compression of a cube of the universe down its coordinates *through* its center and out the other side of nothing, becoming the *Universal Geometry* sphere, with the *Universal Numbers* to describe it. He continued to reflect upon these matters as mind games and mental exercises for the next forty years until this eBook about information focuses his current thinking at this critical time of crisis.

Leaving private practice in 1984, Cox served two former LAPD commanding officers as general counsel and operations officer of their nationwide security consulting and investigation corporation that tested the security of the U.S. nuclear weapons facilities and provided services to major corporations and law firms. When his principals retired and sold their corporation to investors, Cox opened a private investigative home law office in Long Beach overlooking the Harbor, primarily offering specialized

evidentiary consultant services, including data resources, to major law firms before easy internet access was available.

During this time, Cox quietly represented a still "secret client" *pro bono,* and he signed a contract with the Biblical Archeological Society that allowed the publication of almost 1,800 photographs of ancient Dead Sea Scrolls in 1991 that had been suppressed for more than 40 years, with their study denied to generations of biblical scholars.

Cox concluded his investigative law career in 2007 as a Supervising Trial Counsel for the State Bar of California, where for seven years, under the auspices of the California Supreme Court, he organized and ran a "Fast Track" team of lawyers, investigators, and paralegals who worked with law enforcement and the Superior Courts to quickly prosecute dishonest lawyers who endangered the public and their clients, seizing their practices. His success was recognized by the legislature when his team was empowered to target criminal gangs engaged in the illegal, unlicensed practice of law.

Continuing to contemplate public policy, political, philosophical, and mathematical matters after his retirement on a combined public safety pension, and following his survival from near-death, full-body sepsis in late 2014, Cox realized his time remaining in his life was running out, and he began to self-publish the various matters he was thinking and writing about. During the ten years since, he has published ten print books and four eBooks, in addition to those previously published.

Now in his early 80s, as an armchair philosopher and great-grandfather of four, Cox continues to read, write, and think every day. He submitted a new petition to the U.S. Supreme Court for a redress of the People's grievances against their government in 2018 for the reserved rights of liberty generally, and in 2022 for the universal rights of women. He has photographed and made videos of protests over the years; and he creates and maintains internet websites. His digital autobiography and libraries are at WilliamJohnCox.com, and *The Gift of Mind* series is at Mindkind.info.[26]

[26] The painting of the author holding the *Universal Geometry* sphere, the cursive *Universal Numbers* in Table 1, and the original drawing of author's physical model of The Device in Figure 2, upon which the final computer graphic model was derived, are by master artist Helen Werner Cox, without whose love and support for almost 25 years none of this would have been possible. Tables 2, 3, and 4 and Matrices 2, 3, and 4 were edited by her daughter Naomi Madrigal.

"It is increasingly clear that the shared information of human civilization is not only defined and conveyed by numbers, but that we, the observers, and our minds that created them, have become numbers, as these words you are reading were created by minds and reproduced by numbers.

"Numbers are a language created by minds to communicate truths, and *minds are an essential element in the transmission and analysis of information*.

"The transfer of information from one mind to another allows minds to merge and to focus the power of their concentration on the cascade of crises currently threatening the extinction of humanity by the end of this century."