Universal Numbers and the Transmission of Information

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Background & Proposition. While serving as a public-interest lawyer and prosecuting a series of high-profile legal cases in the 1970s and 80s, the author sought relief from the pressures of litigation by engaging in mind experiments in which he imagined contracting a cube from its corners through its center into an inverse expanding sphere inscribed with six great circles defining 24 equal right-angle geodesic triangles having perimeters measured by *pi* times radius and side ratios of 3:3:4. To better describe the resulting geometry, base-10 numbers were increased to base-16 Universal (*UN*) mathematics by inserting special symbols for the powers and multiples of two: 1,2,3,*U*,4,5,6,*N*,7,8,9,*S*, C,X,W,10. Over the next 40 years, efforts continued to prove or disprove the proposition that *UN* is sufficiently superior to decimal and ASCII numbers to justify its adoption in the expression and transmission of information.

Study & Method. Untrained in mathematics beyond high school, and working entirely alone, the author sought practical applications for *UN* numbers. Initially, without access to computer programs, the values of the mathematical constant numbers including *pi*, *phi*, and *e* were calculated using pen and paper conversion and multiplication tables. While irrational, these constants seem "normal" in that each digit appears with average frequency, and they naturally round off at N for most calculations (*pi* = 3.2U3W58NNN, *phi* = 1.7X36679N, and *e* = 2.96X14152N). With hexadecimal providing1.6 times more counting elements than decimal, these quantified *UN* values *are* the essential ratio numbers, with the remaining chatter (such as *pi* now calculated to 50 trillion decimal places) generating little more than numerical noise.

Results & Conclusions. All hexadecimal languages, including ASCII, are equally effective in reducing the number of digits required to display large numbers; however, one can readily see that *UN improves the visualization of internal relationships*. Initially, there is a more logical expression of the powers of two, such as 2^N = 100 (256), 2^S = 1:000 (4,096), and 2^{10} = 10:000 (65,536).Other examples include the largest base-10number in an unsigned 64-bit integer (2^{64}-1) 18,446,744,073,709,551,615, which is expressed in *UN* as (2^{U0}-1), orW:WWW:WWW:WWW:WWW:WWW, and the sixth perfect number 2,305,843,008,139,952,128 which displays as 1:WWW:WWW:WS0:000:000, or more simply as 1W$^{(6)}$S x 10^6. The first dozen *UN* perfect numbers and their existing expression in base 10follow as a comparison of information transmission in both languages.

The *UN* Perfect Numbers and their Existing Base-10 Equivalents

5 = 6
1S = 28
1W0 = 496
1WS0 = 8128
$1W^{(3)}$ x 10^{3} = 33550336
$1W^{(U)}$ x 10^{U} = 8589869056
$1W^{(U)}S$ x 10^{U} = 137438691328
$1W^{(6)}S$ x 10^{6} = 2305843008139952128
$1W^{(W)}$ x 10^{W} = 2658455991569831744654692615953842176
$1W^{(15)}$ x 10^{15} = 191561942608236107294793378084303638130997321548169216
$1W^{(18)}S$ x 10^{18} = 13164036458569648337239753460458722910223472318386943117783728128
$1W^{(1W)}S$ x 10^{1W} = 14474011154664524427946373126085988481573677491474835889066354349131199152128

To organize these blocks of Ws, *UN* naturally generates a system of fractions based on the ancient sacred number of one divided by seven. When converted to *UN* six, the number becomes 0.2U72U7, half of which is 0.12UN, a magical little number known as a "*2bit.*"Or, we can divide one by twice six, or *UN* X (14) to also produce the fractional number 0.12U7. Then, if we multiply, a *2bit*times X we get a "buck" of .WWWs. And, if we divide a *2bit*12 (18) times, we identify the elegant little fractional number 0.010U.

Called an *i-it* ("i-it") and quantified as the "one minus," 0.010U initiates an internal WS (252)-base fractional number series continuing as .020N, .030S, .0U10, … .WWW0. Each counter advances by one sequential number in the left two places and in sets of U(four) on the right. These fractional counters may serve to symbolize "qubits," such as the three quantum states of .010U designated as .0101, .0102, and.0103.

The Value of Visualization. To the extent ASCII symbols are currently used worldwide in the coding of binary numbers, *UN* may be easier for everyone, in every language, to work with since each "WORD" of 10 (16) "bits" has special symbols for "nibbles" of U (four) and "bytes" of N (eight). A basic computer app automatically correlating ASCII and *UN* should accommodate all existing coding, while making the visual displays of symbolic representation and internal ratios more comprehensible to programmers and its patterns identifiable by artificial intelligence, all while remaining transparent to the machines that mindlessly process the bits of our lives, as instructed. *By gaining a new way to see something differently, previously unimaginable ways of communicating may be discovered*.

While remaining in common use, such as for counting inches, dozens, and fingers, base 10 is not useful purpose in digital communications. With the dissonance of base-10resolved, computers should operate harmoniously from binary, up through the natural *UN*-ASCII entry and display portal at hexadecimal 10 (16) and continuing to increase by the natural powers of two, up through 100 (256), and beyond, eternally, as needed to count things, large and small.