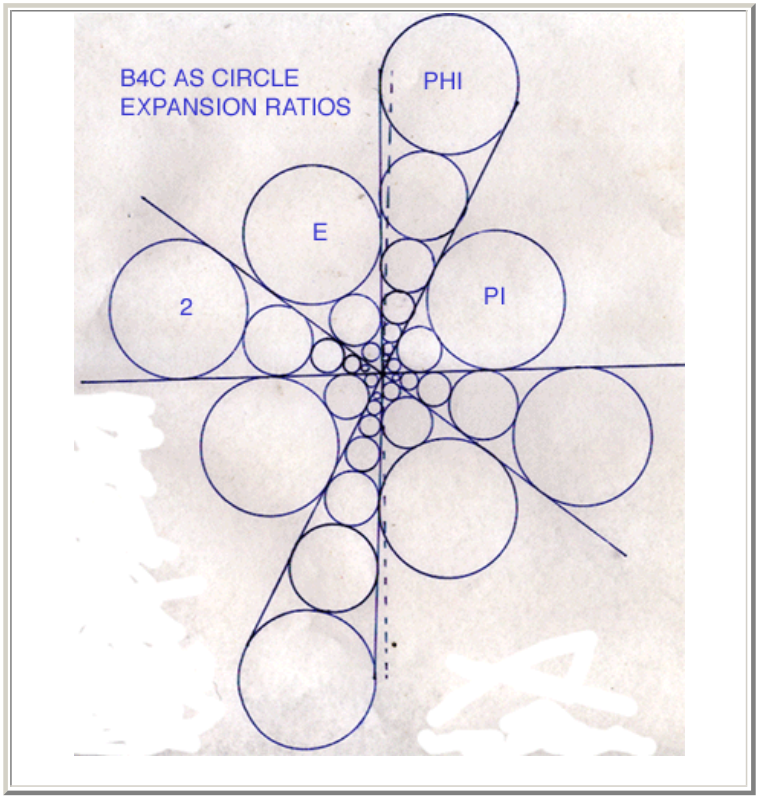
Basic Four Constants (B4C) Circle Expansion/Contraction Ratio Coordination



Again and again in nature one finds that things live and 'work' because of the fudge factor, the 'lawful inexactitudes', the colel of numerology. The inexact recurrence cycles of the planets, not even explained by nested levels as Steiner pointed out in the 1920's, and re-affirmed to exist by chaos theory investigations in the late 20th century are good examples. Human art from traditional indigenous sources uses the imperfect pattern device commonly, as for example in a Navajo rug pattern that has closure but for a loose thread, to allow consciousness focused by the design an out to find a higher level or octave. These examples are all evidences of the dynamic presence of shocks in the octaval processes of existence.

The inexact but close coordination of the circle expansion /contraction ratios for the basic four (real domain) math constants that form a group from several different perspectives illustrate an example of a Gurdjieffian TI-DO shock or bridging energy in an octave process. The TI-DO shock fills the ascending TI interval to the next octaves' fundamental DO to exactitude, thus completing it. These constants were coordinated by ancient builders when they erected structures based on 2 orthogonal axes using the math relations of phi, the golden section, and two for the north-south axis math relations and e, base of the natural logarithms, and pi for the east-west axis. The PI Great Pyramid at Giza, Egypt and the Parthenon in Athens, Greece, are two examples. I have also found that the B4C are coordinated by a rule of exponents such that a new constant is created which is the least-mean-square error optimized value of the number which is simultaneously a root of each of the 4 constants where the index of the root is very close to an integer of 3 digits or less. This optimized value I designate HC (Heleus' constant) equal to 1.0060427, which is simultaneously about the 80th root of phi, the 115th root of 2, the 166th root of e, and the 190th root of pi. HC approximations and its integral and simple rational powers abound ubiquitously in tables of math constants (such as Steve Finch's). The basic 4 constants also coordinate by summing to just over a straight angle when represented as circle expansion/contraction ratios created by stacking tangent circles of that common ratio inside a characteristic angle and bringing all four angles to a common origin. When this is done, the sum

exceeds a straight angle by about 3.57 degrees, which as shown here, characterizes a TI-DO shock.

In G. Spencer Brown's epochal math book, The Laws of Form (and considering the author's Buddhist leaning, the title may as well have been The Loss of Form), makes a case that the basic object and experience in math is distinction, to make one, or have one.
Modeling this as a straight line orthogonal bisected yields two right angles above and two below the original horizontal line relating two points of view. The right angle is thus the first and foremost object created as the distinction. It also as angle represents the fullness of a range of choices included by the distinction.

Here the constants have been grouped so that pairs come near as possible to sum to a right angle. The angles for phi and pi sum to about 89.5 degrees and the angles for 2 and e sum to almost 94 degrees, so adding to a straight angle plus about 3.57 degrees. I have been able to demonstrate systems thinker and Bell Helicopter inventor Arthur Young's conjecture (The Reflexive Universe) that e and pi are 'somehow the same number'. Indeed, a fairly simple demonstration shows how they are orthogonal phase-conjugate partners, or the same entity seen from one side or the other of a right angle. In the illustration, you see they form nearly a right angle as measured between their bisectors. Likewise, phi and 2, but so far I have found no similar demonstration for their orthogonality.

In an octaval process, the fundamental note is doubled in frequency ascending to the high DO, thus high to low DO frequencies have a 2:1 ratio. According to Gurdjieff, there are two places in the process of eight distinct stops where normal progression from step to step breaks down, needing external energy or a shock to proceed, eliminating relative hazard or chaos. These occur between the MI and FA and TI and DO notes which in a Western scale are half-steps instead of whole steps. In a natural or just intonation scale, the ratio of the TI-note to low DO is 15/8 or 1.875:1. Since phi, e, and pi are respectively an irrational number and two transcendentals, of the four basic constants only 2 is an integer, and so admits of more possibility of adjustment as a simple entity since the others are defined by rigid operations. When the adjustment is made shrinking (narrowing) the 2-angle so the four sum to exactly a straight angle, the ratio of circle radii in adjacent circles in the 2-angle drops to 1.87260738197 which is barely under the 1.875 just intonation natural ratio by one part in 782.66, covering the TI interval very well, and thus reducing the octave 2:1 ratio to effectively TI at 1.875. This means the original excess of the sum of the basic four constants' angles of about 3.57 degrees beyond the straight angle represents the TI-DO shock in process completing it and coordinating the constants about a common center.

Michael Heleus ----- Oct. 3, 2003

B4C Main Basic Real Constants Part II

It often happens in searching for hidden significant connections between basic math entities like the basic four real constants phi, 2, e, and pi that unexpectedly a connection will appear that in retrospect seems a natural development expectable in due course. An example connecting these four constants by exponents in a different way than in part I follows:

Solve
(Phi^x + 2^x + e^x + pi^x - RTANG = 0, x) | x = .445704478798

where RTANG (=3 + 2A(3/2)) is the ratio of radially adjacent tangent circles as in Part I included in a

right angle. When RTANG is turned inside out by taking its inverse RTANG^-1, and substituted into the above equation, x becomes -4.5412907205. Approximations to the absolute value of that are important in balancing radial motion with rotary motion. Logarithmically, i.e., musically, comparing the two x's absolute values with the larger as numerator yields 1.8725564444. This value is to 1 part in 36,761.7937266 the radially adjacent circle ratio in the adjusted-to-make-a-straight-angle angle including the formerly 2-ratio radially adjacent and tangent circles of part I . Hardly a coincidence since the same four constants in the context of right and straight angles are involved.

Since '+' is one-dimensional grouping and 'x' is two dimensional grouping., we now push the envelope a bit to illustrate a near-invariance under orthorotative transformation, i.e.., dimension shift, by substituting 'x' for '+' in

Phi^x + 2^x + e^x + pi^x - RTANG = 0

Then, if RTANG^-1 is substituted for RTANG in a second x -equation, the x values resulting are + and -.531093692179, respectively. The former we'll call A. A = 17/32 to a part in in 3397.74227114. The reciprocal of A =A^-1 is 1.88290694227 B. We just saw the value 1.8725564444 derived from the x values of the 1-D '+' or summed variety of the B4C exponential equation, which is to 1 part in 180.914625312 equal to B from the multiplied variety of the equation, so demonstrating the near-invariance under orthorotation of the '+' and 'x' varieties of the B4C-equivalent-to-a-right-angle equal exponential equation.

Michael Heleus Nov. 25, 2003

MICHAEL HELEUS UPDATE....MARCH 16, 2008

The constant linking B4C, that is phi, 2, e, and pi by being nearly the same root from a two or three digit integer inverse power of the constants such that when the constant, HC, is raised to each of the integer powers one of the B4C constants results to better than 1 part in about 1000. When least mean squares error optimized, the number is 1.00604272345--compare that to the current most elegant,simplest and most accurate approximation just found (3/2008):

31^(570^-1)=1.00604272299

which is good to a part in about 2.2 billion. 31 closely approximates pi cubed and 31 also is the number of great circles relating to an icosahedral system.

Michael

MUSES/HELEUS FUNCTION LINKING B4C

Muses' function in k (real k holding over range plus-minus 100) :

5^(k+1)*(e/7)^k*phi^(k-2)=approx

6*pi^(k-1)

So k=-1 gives 5.9998, k=0 gives 5.9999, k=1 gives 5.99996, k=2 gives 6.00002, and when k=6, 6*pi^5 is closely equal the mass ratio of proton to electron. This function may indicate something of relative flatness of space with k values giving yields around 6.

I rewrote Muses' expression to give all 4 main constants on one side by dividing the left side by the right side, subtracting 1, *taking the absolute value and reciprocating, then* dividing that entire quantity by 10800 and adding 1 --the resulting function I recommend you plot, and try some values of k now called x particularly at x=-(2^2) giving about e, -(e^e) giving about pi/2, phi^phi giving 16.92, almost centered tesseract 3d projection vertex number 17--x=1.617^1.617 gives y=17.01 and at x=17 one gets y=1.618793+, a very neat reciprocity revealing the close link between phi and 17 as centralizing agents across the real number field. The maximum of this function occurs at x=1.5790696, or just beyond pi/2 at pi/1.9895213, which falls just above multinacci number 1.98358+ which is the positive real root of x^5-x^4-x^3-x^2-x-1=0,

so while 5d, it refers to a recursion system of 6 terms, and thus the Whitlockean hexa-scheme.

This function is near the heart of math and deserves intense study.

Michael Heleus

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