1238.30 **Cosmic Commensurability of Time and Size Magnitudes:** Each degree of 360 degrees of circular arc is subdivided into 60 minutes and the minutes into 60 seconds each. There are 1,296,000 seconds of arc in a circle of 360 degrees.

1238.31 One minute of our 8,000-mile-diameter planet Earth's great circle arc = one nautical mile = 6,076 feet approximately. A one-second arc of a great circle of Earth is 6,076/60 = 101.26 feet, which means one second of great-circle arc around Earth is approximately 100 feet, or the length of one tennis court, or one-third of the distance between the opposing teams' goal posts on a football field. We can say that each second of Earth's great circle of arc equals approximately 1,200 inches (or 1,215.12 "exact"). There are 2 1/2 trillion atomic-nucleus diameters in one inch. A hundredth of an inch is the smallest interval clearly discernible by the human eye. There are 25 billion atomic-nucleus diameters in the smallest humanly visible "distance" or linear size increment. A hundredth of an inch equals 1/120,000th of a second of great-circle arc of our spherical planet Earth. This is expressed decimally as .0000083 of a second of great-circle arc = .01 inch; or it is expressed scientifically as .01 inch = 83×10^{-7}. A hundredth of an inch equals the smallest humanly visible dust speck; therefore: minimum dust speck = 83×10^{-7} seconds of arc, which equals 25 billion atomic-nucleus diameters—or 2 1/2 million angstroms. This is to say that it requires seven places to the right of the decimal to express the fractional second of the greatcircle arc of Earth that is minimally discernible by the human eye.

1238.40 **Fourteen-illion Scheherazade Number:** The Fourteen-illion Scheherazade Number includes the first 15 primes, which are:

$$1^{n} \cdot 2^{12} \cdot 3^{8} \cdot 5^{6} \cdot 7^{6} \cdot 11^{6} \cdot 13^{6} \cdot 17^{2} \cdot 19 \cdot 23 \cdot 29 \cdot 31 \cdot 37 \cdot 41 \cdot 43$$

It reads:

3,128,581,583,194,999,609,732,086,426,156,130,368,000,000

1238.41 **Declining Powers of Factorial Primes:** The recurrence of the prime number 2 is very frequent. The number of operational occasions in which we need the prime number 43 is very less frequent than the occasions in which the prime numbers 2, 3, 5, 7, and 11 occur. This Scheherazade Number provides an abundance of repowerings of the lesser prime numbers characterizing the topological and vectorial aspects of synergetics' hierarchy of prime systems and their seven prime unique symmetrical aspects (see Sec. 1040) adequate to take care of all the topological and trigonometric computations and permutations governing all the associations and disassociations of the atoms.

1238.42 We find that we can get along without multirepowerings after the second repowering of the prime number 17. The prime number 17 is all that is needed to accommodate both the positive and negative octave systems and their additional zero- nineness. You have to have the zero-nine to accommodate the noninterfered passage between octave waves by waves of the same frequency. (See Secs. 1012 and 1223.)

1238.43 The prime number 17 accommodates all the positive-negative, quanta-wave primes up to and including the number 18, which in turn accommodates the two nines of the invisible twoness of all systems. It is to be noted that the harmonics of the periodic table of the elements add up to 92:

2	
8	18
8	
18	
18	
18	
18	36
2	

92	

There are five sets of 18, though the 36 is not always so recognized. Conventional analysis of the periodic table omits from its quanta accounting the always occurring invisible additive twoness of the poles of axial rotation of all systems.

(See Sec. 223.11 and Table 223.64, Col. 7.)

1238.50 **Properties:** The 3 fourteen-illion magnitude Scheherazade Number has 3×10^{43} whole-number places, which is 10^{37} more integer places than has the 1×10^{6} number expressing the 1,296,000 seconds in 360 degrees of whole-circle arc, and can therefore accommodate rationally not only calculations to approximately 1/l00th of an inch (which is the finest increment resolvable by the human eye), but also the 10^{-7} power of that minimally visible magnitude, for this 3×10^{43} SSRCD has enough decimal places to express rationally the 22-billion-light-years-diameter of the omnidirectional, celestial-sphere limits thus far observed by planet Earth's humans expressed in linear units measuring only l,000ths of the diameter of one atomic nucleus.

1238.51 **Scheherazade Numbers: 47:** The first prime number beyond the trigonometric limit is 47. The number 47 may be a flying increment to fill allspace, to fill out the eight triangular facets of the non-allspace-filling vector equilibrium to form the allspace-filling first nuclear cube. If 47 as a factor produces a Scheherazade Number with mirrors, it may account not only for all the specks of dust in the Universe but for all the changes of cosmic restlessness, accounting the convergent-divergent *next event*, which unbalances the even and rational whole numbers. If 47 as a factor does not produce a Scheherazade Number with mirrors, it may explain that there can be no recurring limit symmetries. It may be that 47 is the cosmic random element, the agent of infinite change.

1238.52 **Addendum Inspired by inferences of Secs. 1223.12, 1224.30-34 inclusive and 1238.51**, just before going to press with *Synergetics* 2, we obtained the following 71 integer, multi-intermirrored, computer-calculated and proven, volumetric (third power) Scheherazade number which we have arranged in ten, "sublimely rememberable," unique characteristic rows. $2^{12} \cdot 3^{8} \cdot 5^{6} \cdot 7^{6} \cdot 11^{6} \cdot 13^{6} \cdot 17^{4} \cdot 19^{3} \cdot 23^{3} \cdot 29^{3} \cdot 31^{3} \cdot 37^{3} \cdot 41^{3}$·$43^{3} \cdot 47^{3}$ the product of which is
616,494,535,0,868
49,2,48,0
51,88
27,49,49
00,6996,185
494,27,898
35,17,0
25,22,

73,66,0
864,000,000
If all the trigonometric functions are reworked using this 71 integer number, embracing all prime numbers to 50, to the third power, employed as volumetric, cyclic unity, all functions will prove to be whole rational numbers as with the whole atomic populations.

1238.60 **Size Magnitudes**

An Atomic Nucleus Diameter = A.N.D. = 

Atomic Nucleus Diameters:

10,000		= 1 Angstrom (One atomic diameter)	= 10 one-illion
$1 \cdot 10^{4}$		= 1 Angstrom	= 10 one-illion
$25 \cdot 10^{9}$		= 1 Speck of Dust (= One hair's breadth)	= 25 three-illion
$25 \cdot 10^{11}$		= 1 Inch	= 2 1/2 four-illion
$3 ù 10^{13}$		= 1 Foot	= 30 four-illion
$1 \cdot 10^{14}$		= 1 Meter	= 100 four-illion
$10 \cdot 10^{16}$		= 1 Kilometer	= 100 five-illion
$18 \cdot 10^{16}$		= 1 Mile (Nautical)	= 180 five-illion
$144 \cdot 10^{19}$		= 1 Diameter of Earth	= 1.44 seven-illion
$144 \cdot 10^{21}$		= 1 Diameter of Sun	= 144 seven-illion

$144 \cdot 10^{25}$  = 1 Diameter of Solar System = 1 1/2 nine-illion

$108 \cdot 10^{28}$  = 1 Light Year (6 trillion miles) = 1 ten-illion

$2\ 1/3 \cdot 10^{40}$  = Diameter of astro observed sweepout (22 billion light years) = 23 thirteen-illion

1238.70

$1 \cdot 10^{6}$	=	1 million	=	1 two-illion heartbeats ago	=	2 weeks
$31 \cdot 10^{6}$	=	31 million	=	31 two-illion heartbeats ago	=	1 year
$5ù10^{8}$	=	500 million	=	500 two-illion heartbeats ago	=	16 years (college)
$1 \cdot 10^{9}$	=	1 billion	=	1 three-illion heartbeats ago	=	32 years (prime life)
$2 \cdot 10^{9}$	=	2 billion	=	2 three-illion heartbeats ago	=	Average lifetime
$42 \cdot 10^{9}$	=	42 billion	=	42 three-illion heartbeats ago	=	Mohammed
$60 \cdot 10^{9}$	=	60 billion	=	60 three-illion heartbeats ago	=	Christ
$78 \cdot 10^{9}$	=	78 billion	=	78 three-illion heartbeats ago	=	Buddha
$200 \cdot 10^{9}$	=	200 billion	=	200 three-illion heartbeats ago (8,000 years ago)	=	Earliest Egypt
$500 \cdot 10^{9}$	=	500 billion	=	500 three-illion heartbeats ago (15,000 years ago)	=	Earliest artistic culture (Thailand)
$1 \cdot 10^{12}$	=	1 trillion	=	1 four-illion heartbeats ago	=	30,000 years ago (Last Ice Age)

$75 \cdot 10^{12}$	=	75 trillion	=	75 four-illion heartbeats ago	=	Leakey: Earliest human skull: 2 1/2 million years ago
$75 \cdot 10^{12}$	=	75 trillion	=	Capital Wealth of World		
$1 \cdot 10^{17}$	=	100 quadrillion	=	100 five-illion heartbeats ago	=	Age of our planet Earth
$3 \cdot 10^{17}$	=	300 quadrillion	=	300 five-illion heartbeats ago	=	Known limit age of Universe (10 billion years ago)

1238.80 **Number Table: Significant Numbers** (see Table 1238.80)

1239.00 **Limit Number of Maximum Asymmetry**

1239.10 Powers of Primes as Limit Numbers: Every so often out of an apparently almost continuous absolute chaos of integer patterning in millions and billions and quadrillions of number places, there suddenly appears an SSRCD rememberable number in lucidly beautiful symmetry. The exponential powers of the primes reveal the beautiful balance at work in nature, which does not secrete these symmetrical numbers in irrelevant capriciousness. Nature endows them with functional significance in her symmetrically referenced, mildly asymmetrical, structural formulations. The SSRCD numbers suddenly appear as unmistakably as the full Moon in the sky.

1239.11 There is probably a number limit in nature that is adequate for the rational, whole-number accounting of all the possible general atomic systems' permutations. For instance, in the Periodic Table of the Elements, we find 2, 8, 8, 18. These number sets seem familiar: the 8 and the 18, which is twice 9, and the twoness is perfectly evident. The largest prime number in 18 is 17. It could be that if we used all the primes that occur between 1 and 17, multiplied by themselves five times, we might have all the possible number accommodations necessary for all the atomic permutations.

1239.20 **Pairing of Prime Numbers:** I am fascinated by the fundamental interbehavior of numbers, especially by the behavior of primes. A prime cannot be produced by the interaction of any other numbers. A prime, by definition, is only divisible by itself and by one. As the integers progress, the primes begin to occur again, and they occur in *pairs.* That is, when a prime number appears in a progression, another prime will appear again quite near to it. We can go for thousands and thousands of numbers and then find two primes appearing again fairly close together. There is apparently some kind of companionship among the primes. Euler, among others, has theories about the primes, but no one has satisfactorily accounted for their behavior.

1239.30 **Maximum Asymmetry:** In contrast to all the nonmeaning, the Scheherazade Numbers seem to emerge at remote positions in numerical progressions of the various orders. They emerge as meaning out of nonmeaning. They show that nature does not sustain disorder indefinitely.

1239.31 From time to time, nature pulses inside-outingly through an omnisymmetric zerophase, which is always our friend vector equilibrium, in which condition of sublime symmetrical exactitude nature refuses to be caught by temporal humans; she refuses to pause or be caught in structural stability. She goes into progressive asymmetries. All crystals are built in almost-but-not quite-symmetrical asymmetries, in positive or negative triangulation stabilities, which is the maximum asymmetry stage. Nature pulsates torquingly into maximum degree of asymmetry and then returns to and through symmetry to a balancing degree of opposite asymmetry and turns and repeats and repeats. The maximum asymmetry probably is our minus or plus four, and may be the fourth degree, the fourth power of asymmetry. The octave, again.

Afterpiece
