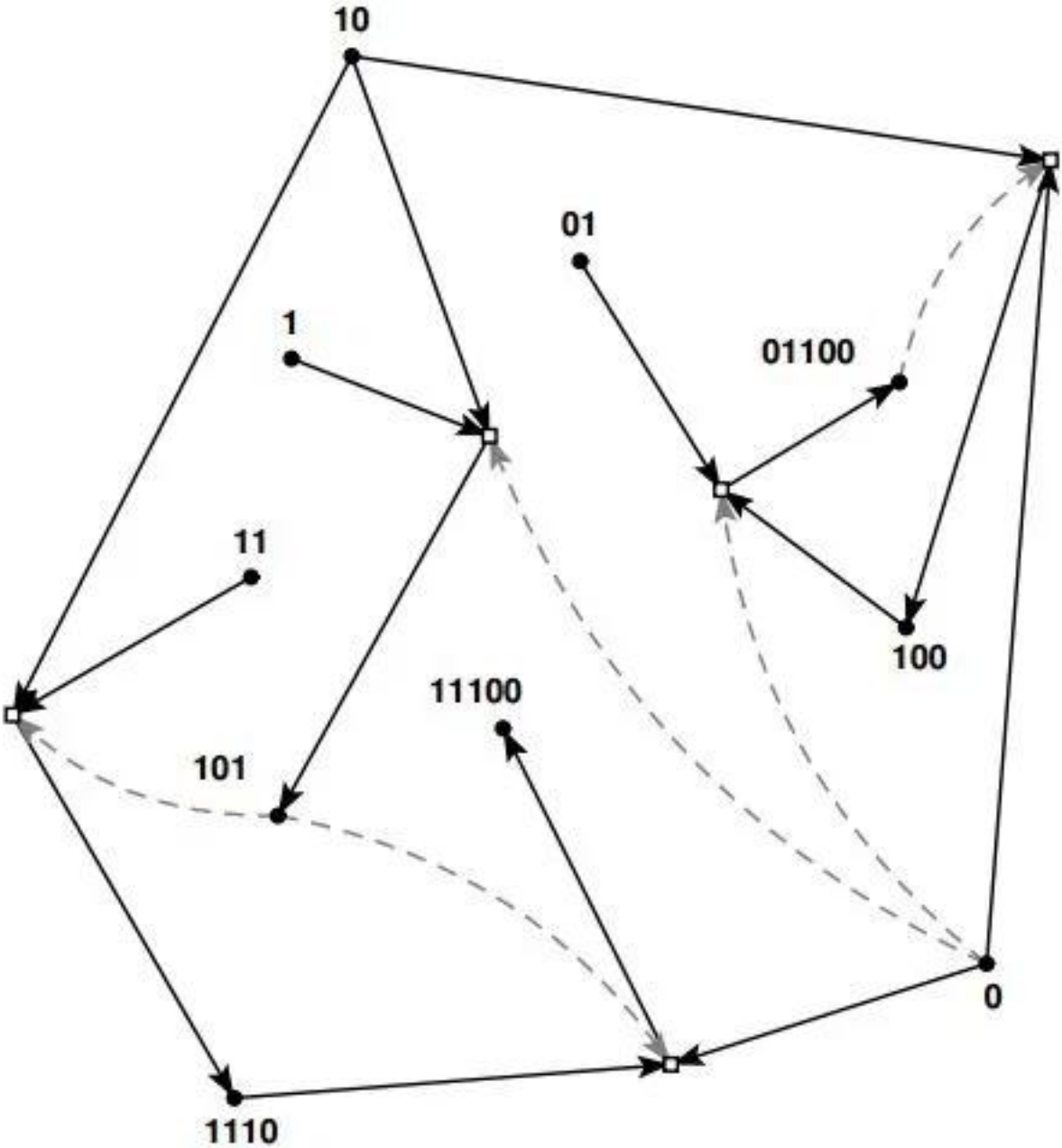

10
01
1
01100
11
100
11100
101
0
1110

Orpheus

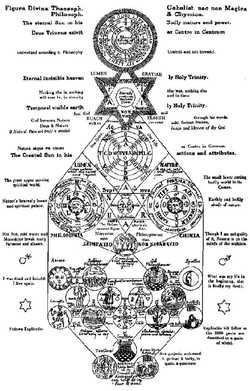
CHART OF THE ORPHIC THEOGONY

Unaging Time

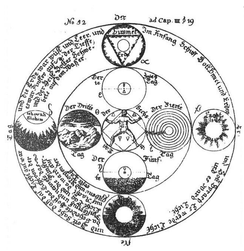
The Primordial Triad — The One-Many-All — Universal Good, Universal Soul, Universal Mind

Super-sensible World

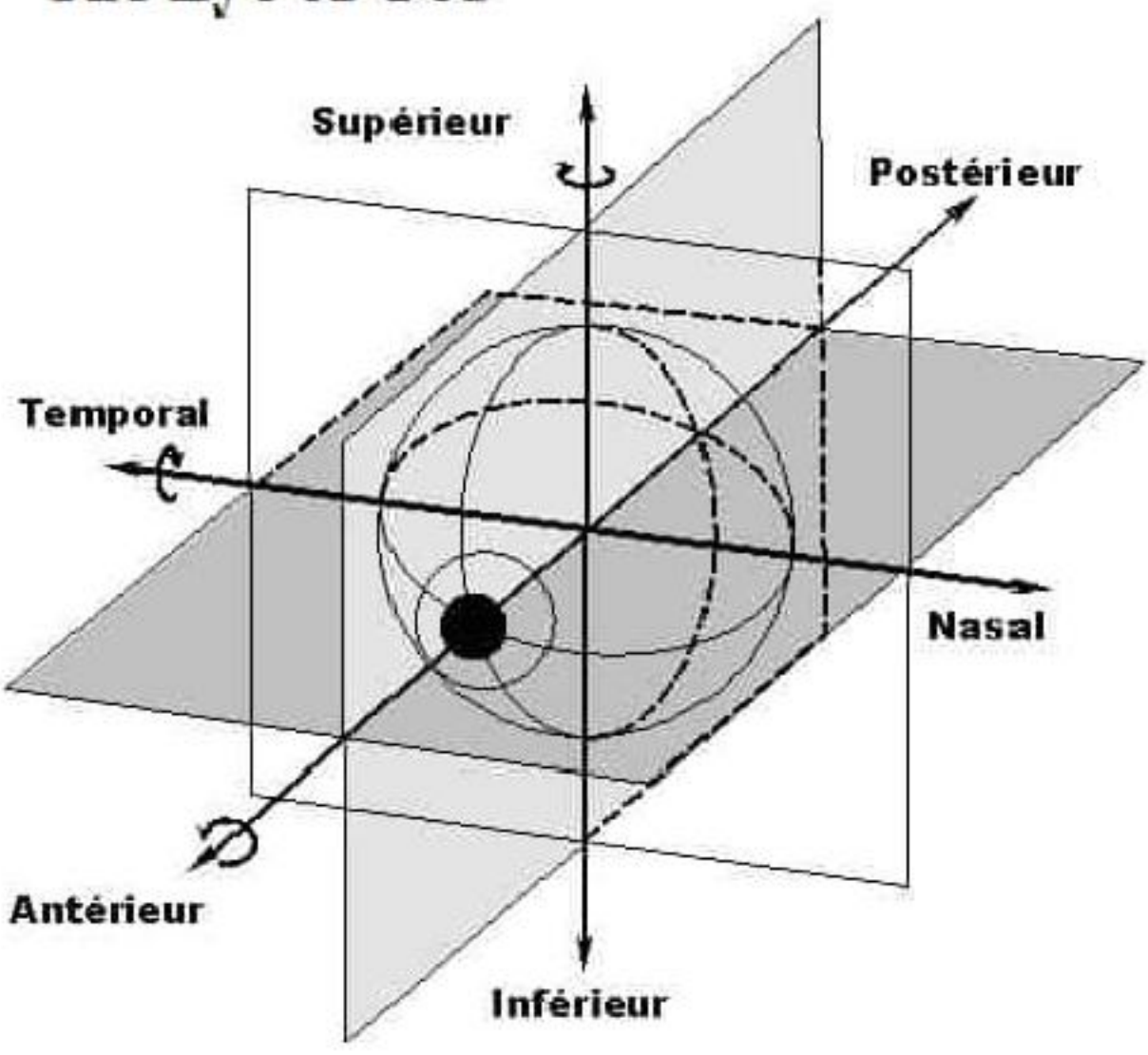
- **Noëtic Triad** — Being [Vestibule of the Good]
  - Bound (Hyparxis—Father) [One] — Æther, Chaos, Egg
  - Infinity (Power—Mother) [Many] — Egg [Night] containing the Triple God [The 'Dragon of Wisdom']
  - Mixed (Mind—Son) [All]
    - [Beauty] — Phanes [Gt. Grandfather—Manifestor—Animal Itself]
    - [Truth] — Ericapæus
    - [Symmetry] — Metis
- **Noëtic-noëric Triad** — Life
  - Essence, Life, Intellect, 'The Abiding' — Supercelestial Place [Plain of Truth; Kingdom of Adrastia]
  - Infinite Power, Intelligible Life, 'The Proceeding' — Celestial Arch [Heaven] — Uranus [Grandfather]
  - Intelligible Intellect, 'The Returning' — Subcelestial Arch
- **Noëric Triad [Hebdomadic]** — Intellect
  - Cronus—Saturn [Father] [and a septenary hierarchy]
  - Rhea [and a septenary hierarchy]
  - Zeus—Jupiter (Demiurgus) [and a septenary hierarchy]
  - Curetic or Unpolluted Triad [each a septenary hierarchy]
  - The Seventh Monad [The Separative Deity] Oceanus

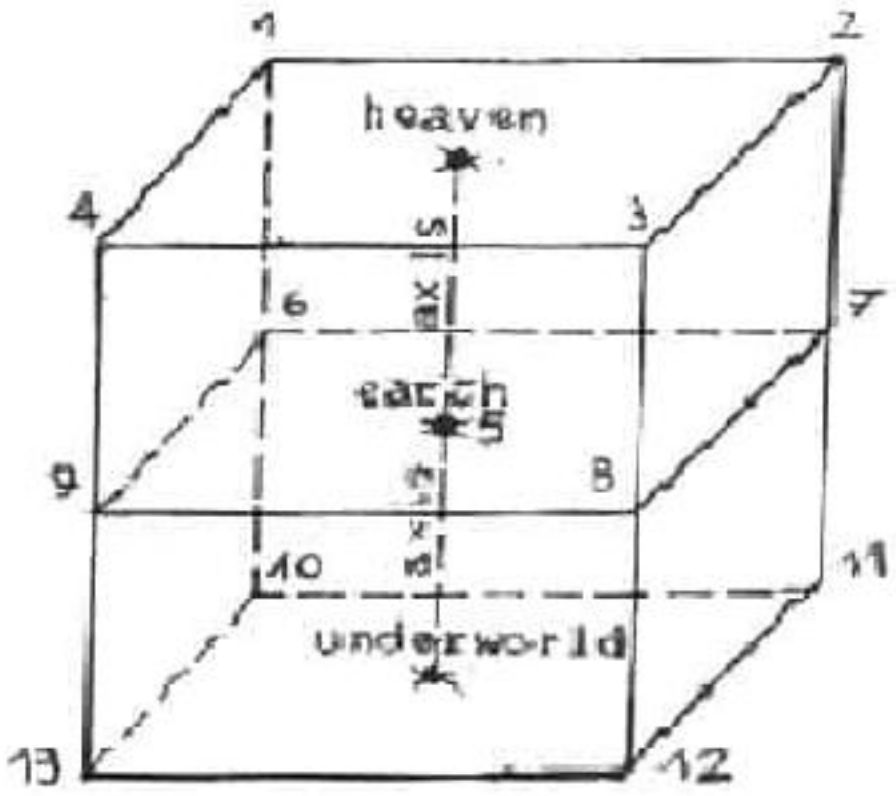


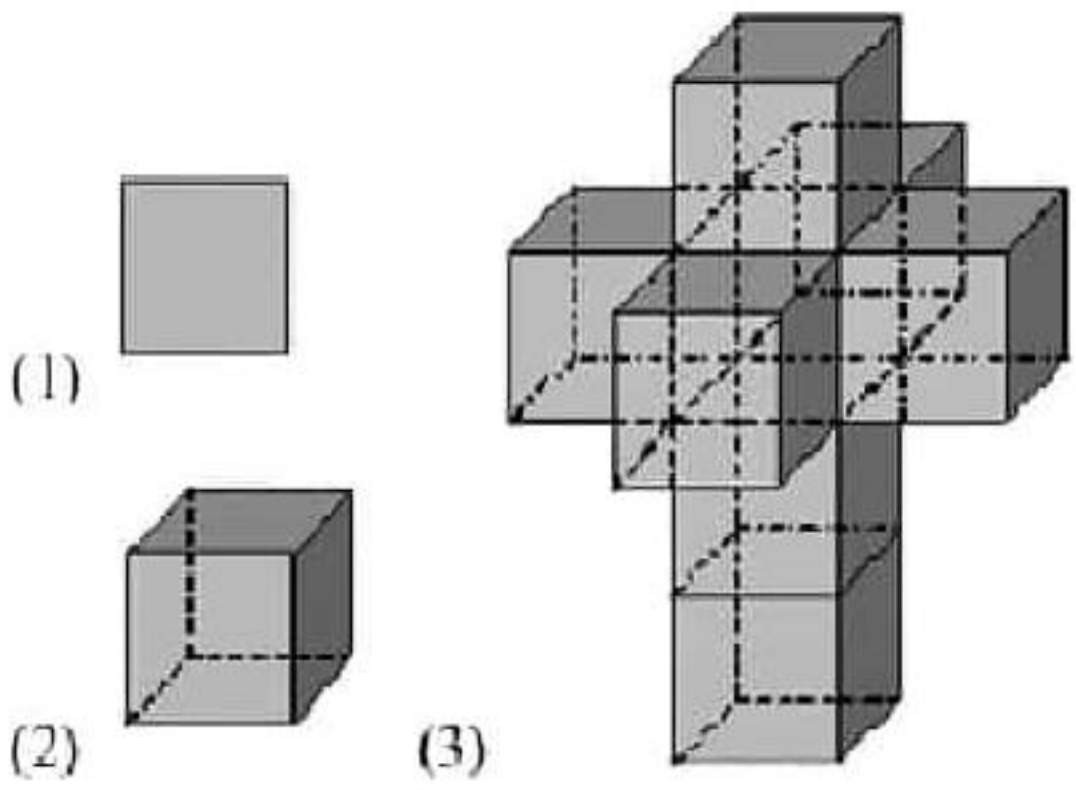
MYTHOLOGICAL INTERCHANGE OF "MACROCOSM" AND "MICROCOSM."

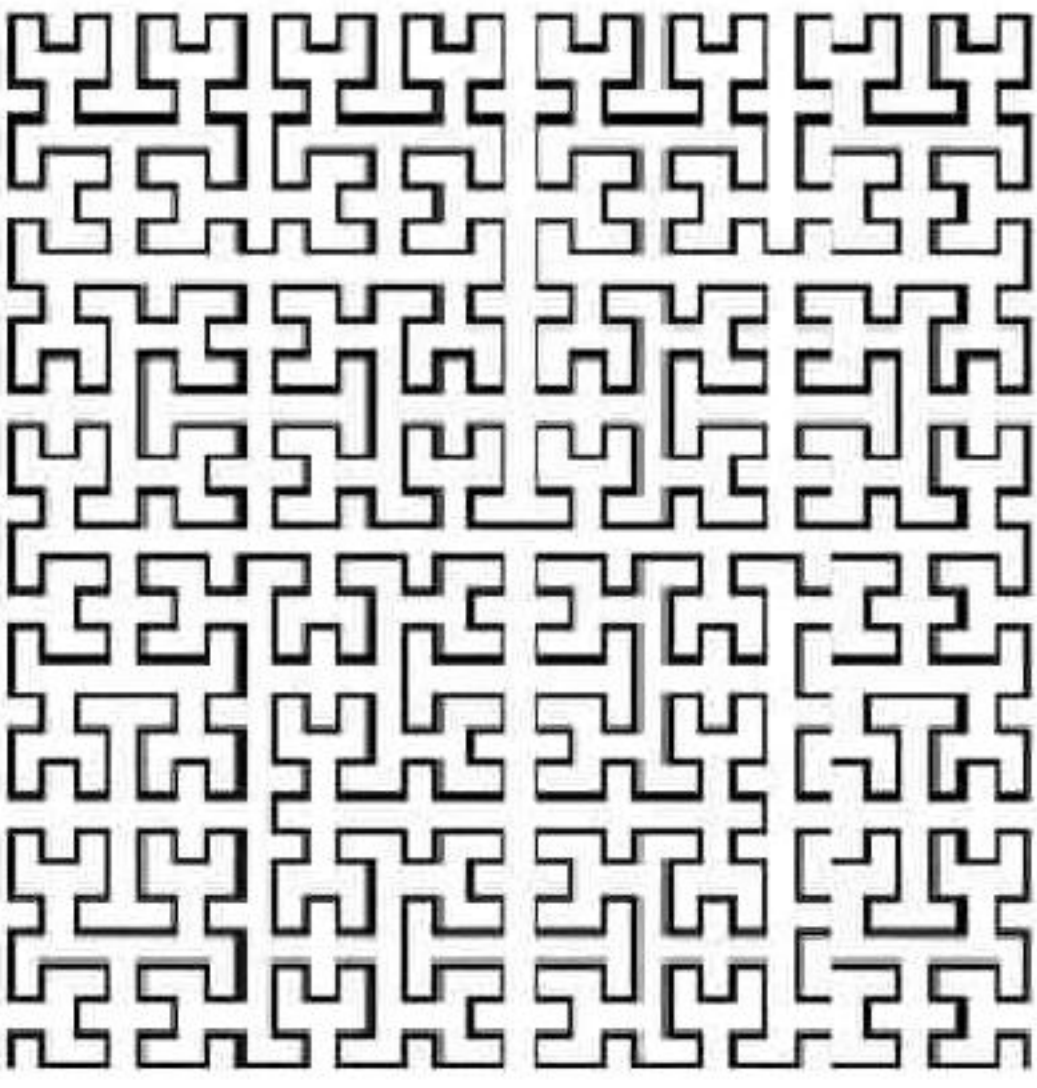

№ 52
Cap. III § 19
Der Mensch
Der Andere Schöpfer
Der Mensch
Der Andere Schöpfer
Der Mensch
Der Andere Schöpfer

"The Eye of God"







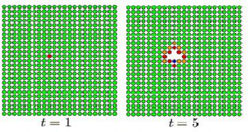


FFT MAP 19-JUL-94

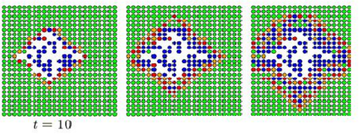
SECTION 19 Y = 0.3167 X VARIES ALONG HORIZONAL

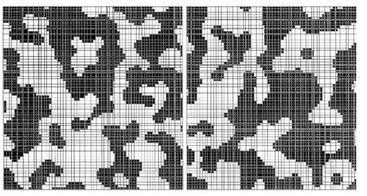
	0.00	0.04	0.08	0.13	0.17	0.21	0.25	0.29	0.33	0.38	0.42	0.46	0.50
0.00	-438	-364	-212	-125	-101	-317	-388	-311	-142	-14	2	-37	-28
1	-338	-195	-13	58	-34	-193	-252	-137	70	204	188	81	20
0.04	-102	77	242	311	177	-12	-85	28	232	261	311	145	14
3	119	298	447	447	276	64	-29	56	230	332	258	88	-69
0.08	198	321	436	368	169	-41	-130	-70	56	123	64	-78	-194
5	114	228	287	134	-80	-255	-303	-238	-150	-122	-174	-254	-287
0.13	-29	84	71	-95	-306	-424	-399	-296	-221	-224	-281	-313	-269
7	-84	48	13	-178	-377	-436	-333	-177	-95	-123	-191	-206	-129
0.17	30	169	118	-89	-280	-301	-146	45	131	90	10	-9	62
9	[illegible]	[illegible]	[illegible]	75	-118	-129	33	219	288	230	146	130	185
0.21	50	358	429	179	-19	-36	100	242	266	184	105	109	171
11	500	544	472	140	-42	-57	50	137	106	-4	-75	-36	57
0.25	[illegible]	[illegible]	100	-18	-147	-128	-30	16	-56	-182	-238	-164	-34
13	157	121	-35	-189	-231	-152	-43	-18	-106	-226	-256	-151	3
0.29	64	-23	-173	-258	-210	-71	46	51	-46	-144	-137	-4	158
15	147	5	-149	-185	-74	93	184	148	30	-51	-6	152	314
0.33	314	134	-23	-30	105	253	288	180	22	-56	11	185	344
17	399	201	65	86	222	328	284	102	-94	-174	-96	77	224
0.38	247	82	4	75	220	284	177	-52	-256	-315	-223	-63	39
19	-71	-196	-192	-46	128	175	34	-200	-370	-376	-250	-102	-18
0.42	-373	-464	-384	-165	46	96	-45	-261	-378	-317	-144	5	51
21	-471	-540	-418	-143	64	118	-15	-206	-285	-182	22	176	199
0.46	-332	-379	-250	-14	183	220	94	-80	-151	-55	135	279	294
23	-103	-111	7	183	306	303	181	27	-50	1	132	239	251
0.50	6	57	175	281	314	258	147	34	-31	-22	37	91	96

	0.50	0.54	0.58	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.92	0.96	1.00
0.00	145	160	108	58	58	89	109	112	122	145	159		
1	68	160	194	146	81	67	104	144	157	154	145	114	
0.04	8	83	130	93	21	-10	16	58	74	71	53	16	
3	-47	1	-25	-95	-132	-109	-63	-40	-41	-46	-58		
0.08	-97	-122	-189	-220	-181	-115	-79	-80	-78	-57			
5	-141	-84	-117	-188	-211	-148	-48	7	-2	-20	8		
0.13	-152	-24	35	-5	-88	-115	-36	93	166	141	78	69	
7	140	186	131	34	-5	69	207	288	246	134	64		
0.17	254	258	182	79	31	98	212	289	240	98	-19		
9	247	253	197	98	4	-37	8	106	172	127	-8	-131	
0.21	202	150	39	-72	-139	-149	-104	-28	22	-8	-108	-200	
11	17	-118	-220	-243	-205	-145	-88	-56	-72	-131	-181		
0.25	23	-50	-183	-260	-231	-142	-63	-25	-18	-33	-62	-84	
13	70	-4	-134	-193	-124	6	98	111	82	54	37	24	
0.29	213	118	-34	-100	-18	131	224	208	138	89	77	69	
15	222	32	-67	-6	137	222	183	79	11	9	21		
0.33	349	227	14	-121	-98	20	93	44	-73	-145	-126	-77	
17	250	129	-44	-203	-209	-122	-62	-107	-215	-272	-225	-132	
0.38	39	82	2	-128	-224	-231	-169	-126	-162	-245	-275	-199	-73
19	-18	-15	-61	-114	-139	-119	-73	-51	-87	-148	-153	-56	84
0.42	18	-22	-21	17	67	101	97	49	-4	0	101	236	
21	78	92	153	212	228	196	132	73	74	159	276		
0.46	217	150	153	203	236	218	161	91	39	35	92	178	
23	191	137	135	158	148	86	8	-46	-65	-53	-17	30	
0.50	67	50	48	82	38	-63	-158	-185	-145	-86	-50	-39	

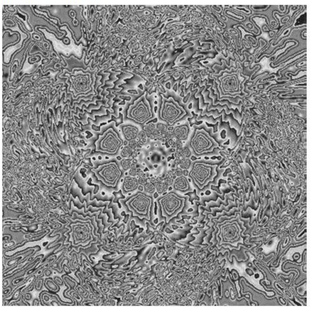


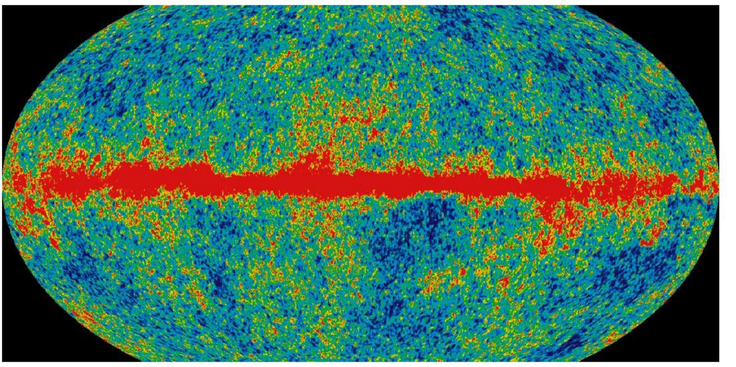
$I = .5$
$D = 3$
$\lambda = 3$
$M = .5$

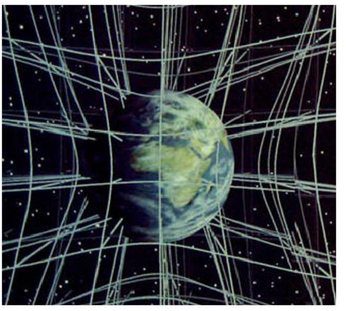


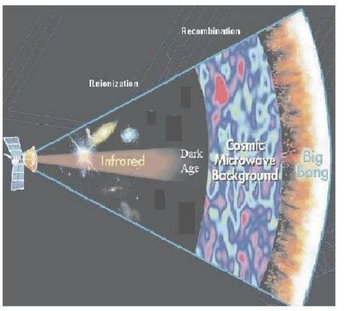


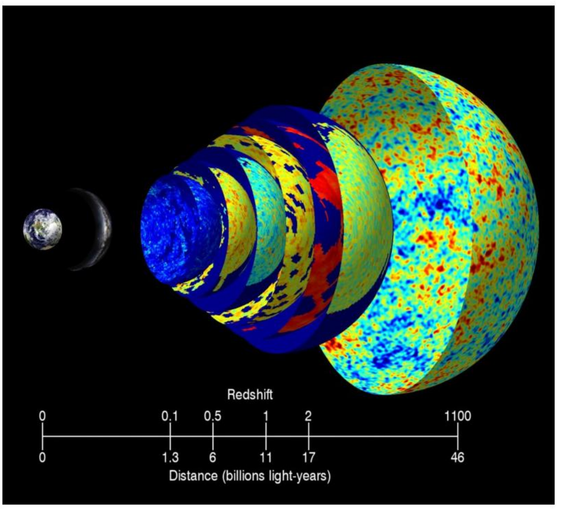
A remarkable pattern generated by the distribution of the first few billion primes.

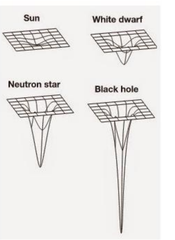


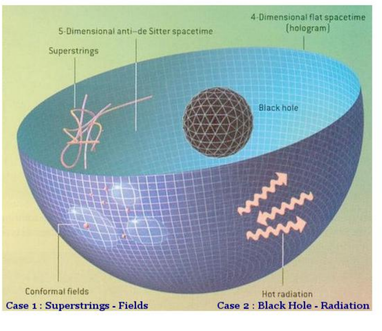




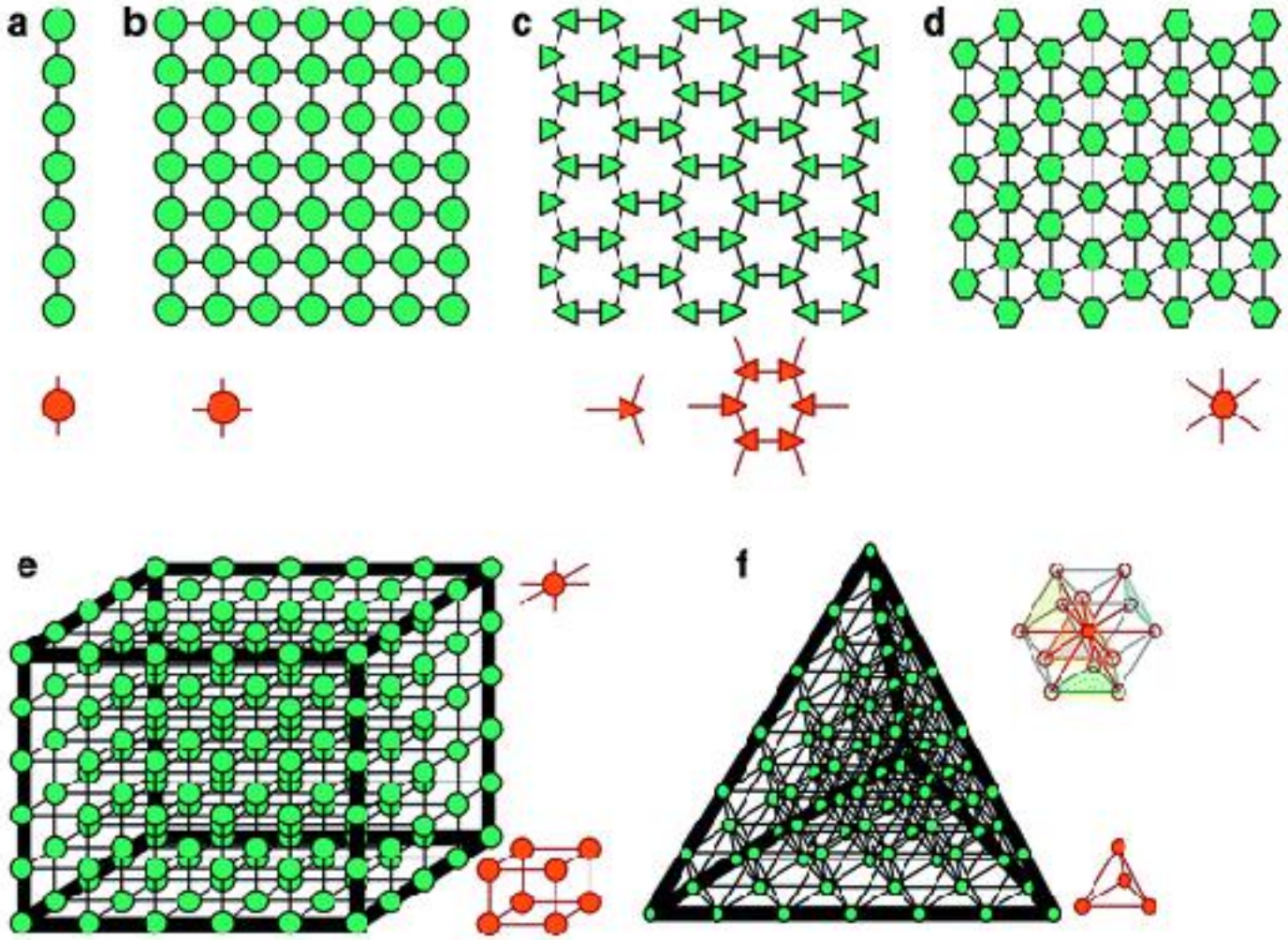


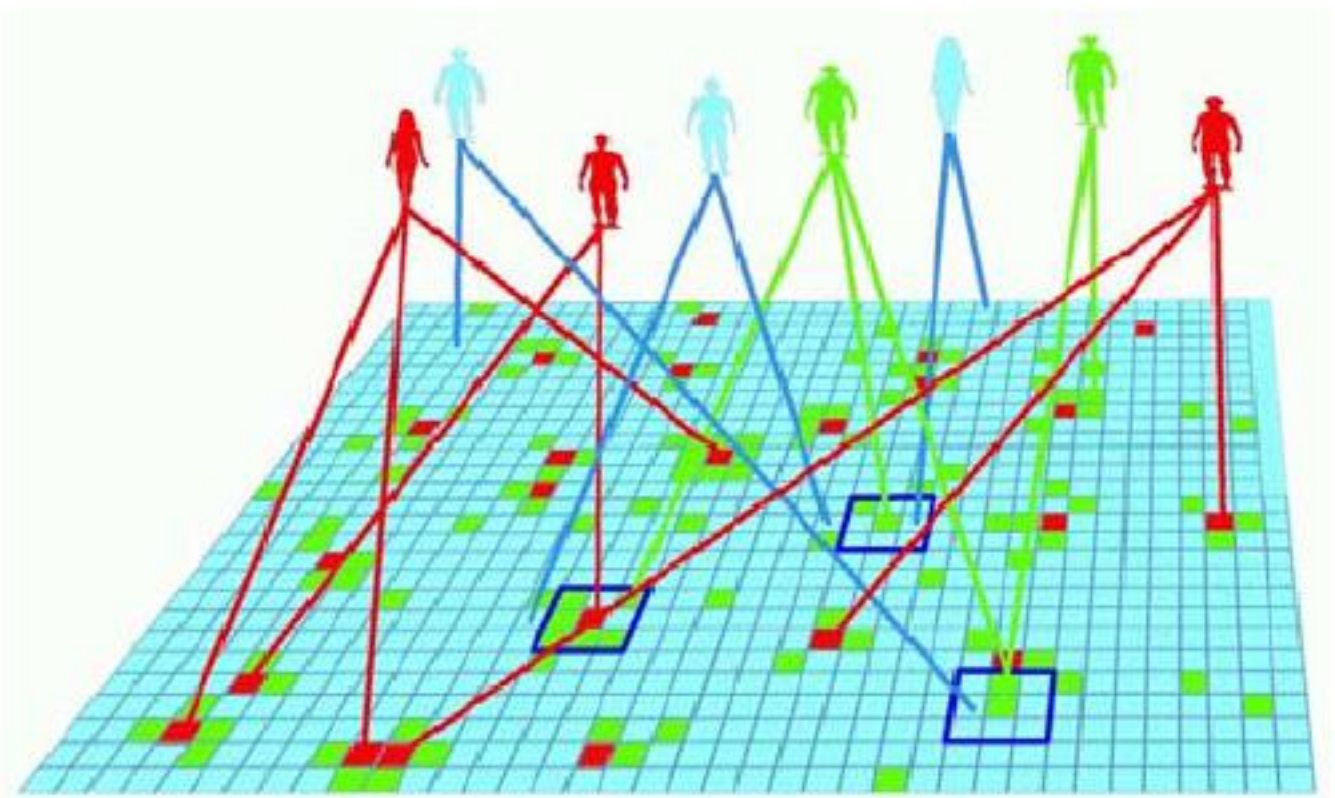


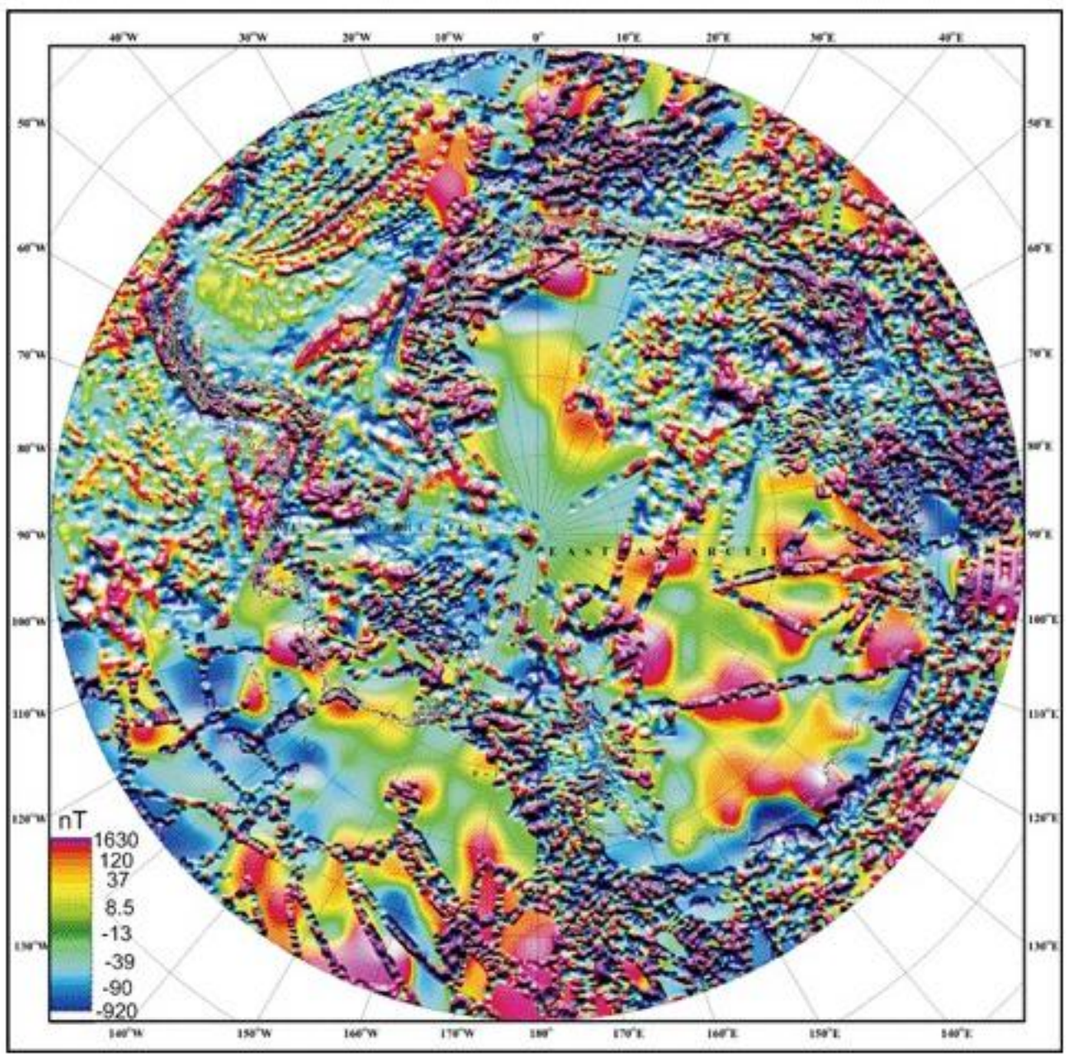


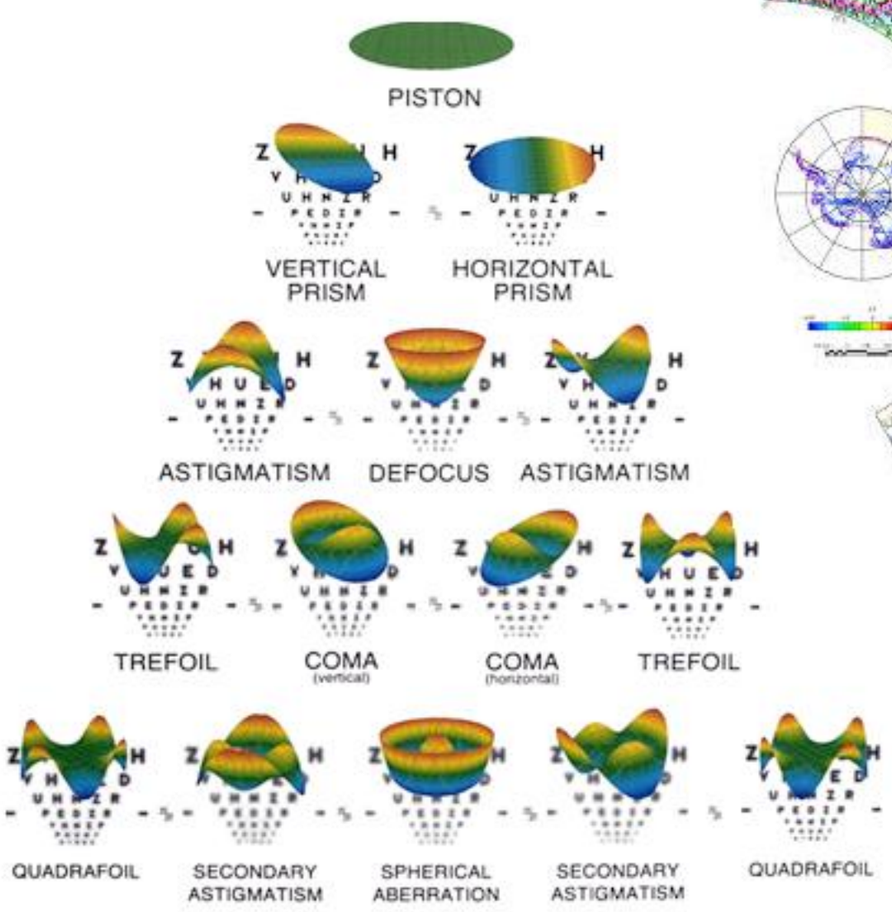


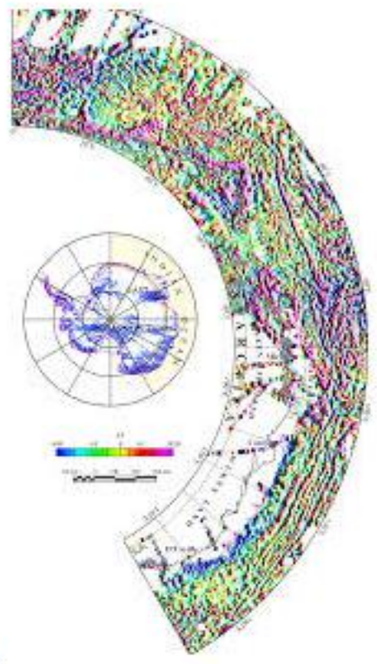
Case 1 : Superstrings - Fields Case 2 : Black Hole - Radiation

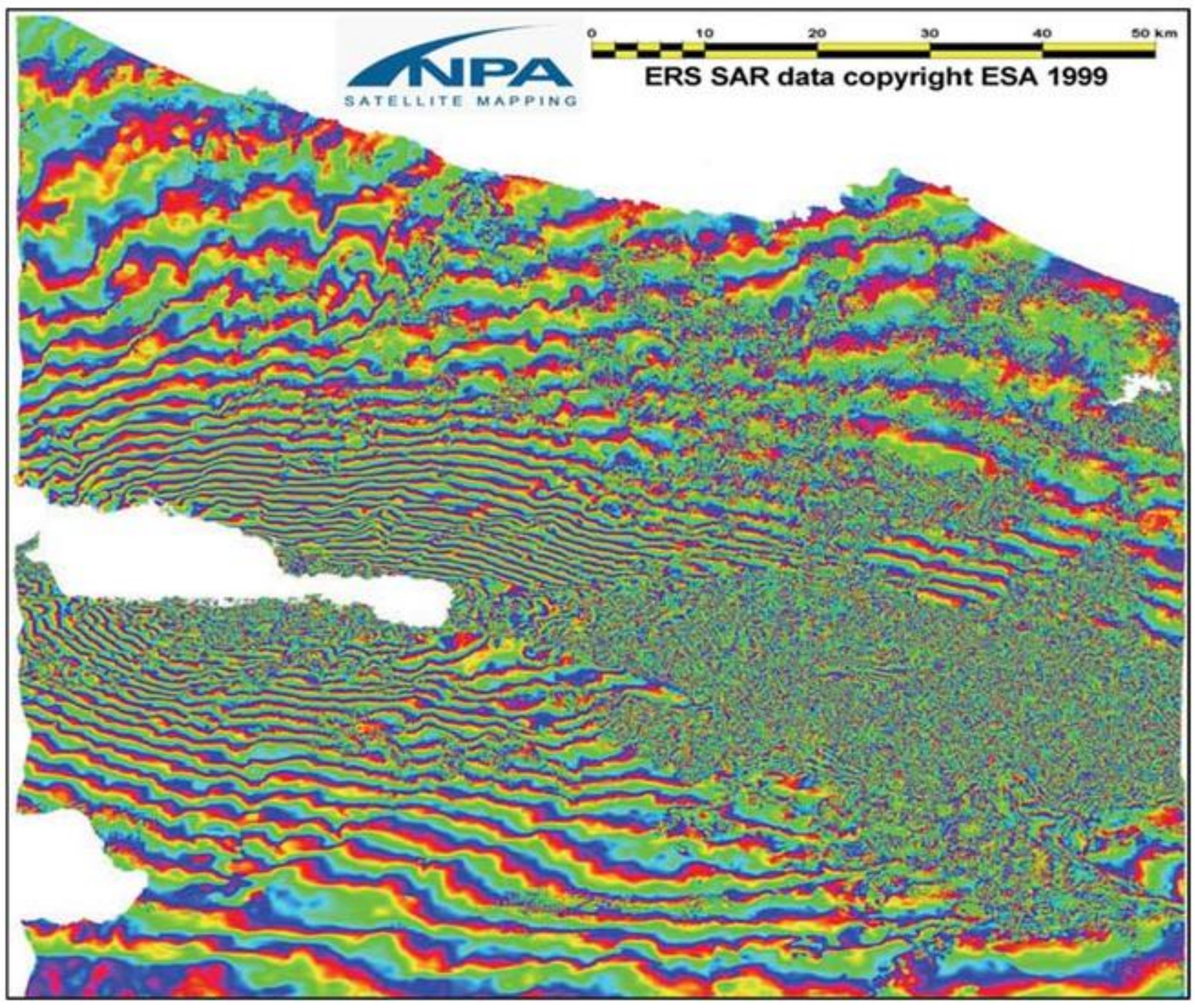

a
b
c
d
e
f

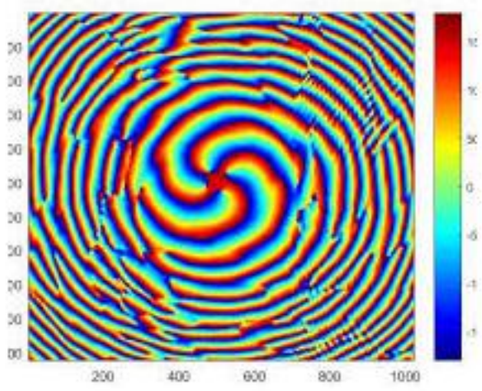


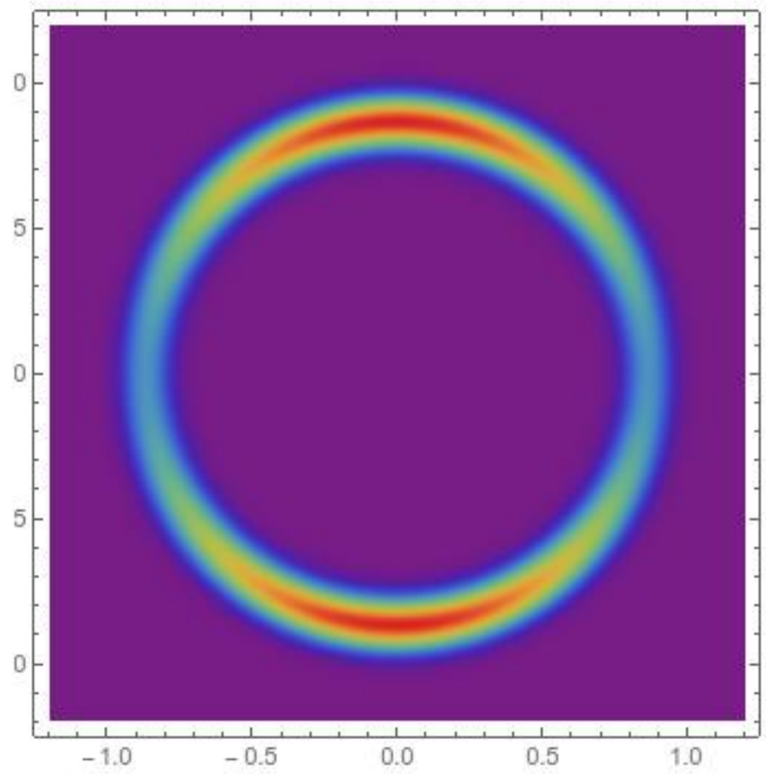

nT
1630
120
37
8.5
-13
-39
-90
-920

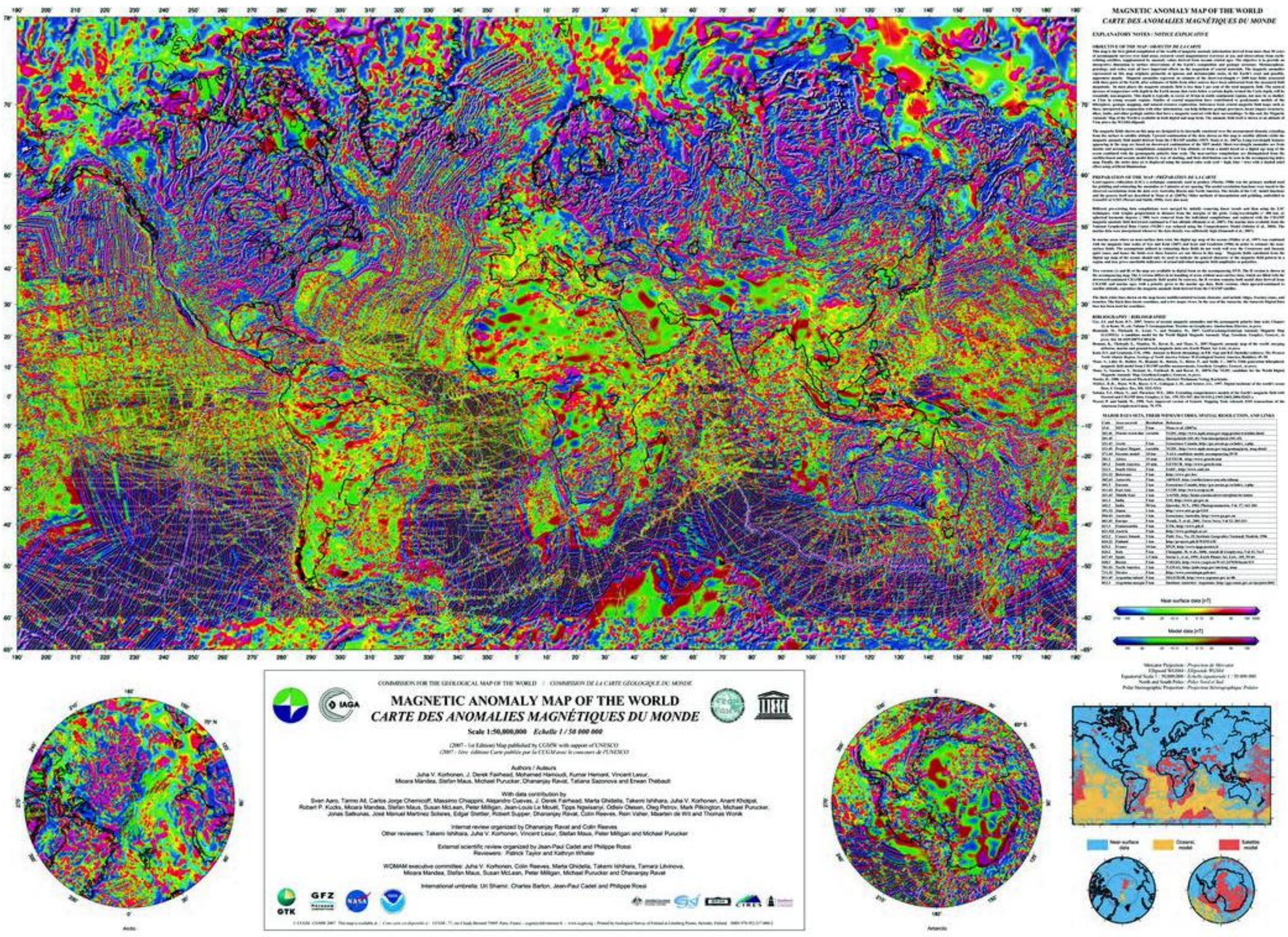

PISTON
VERTICAL PRISM
HORIZONTAL PRISM
ASTIGMATISM
DEFOCUS
ASTIGMATISM
TREFOIL
COMA (vertical)
COMA (horizontal)
TREFOIL
QUADRAFOIL
SECONDARY ASTIGMATISM
SPHERICAL ABERRATION
SECONDARY ASTIGMATISM
QUADRAFOIL



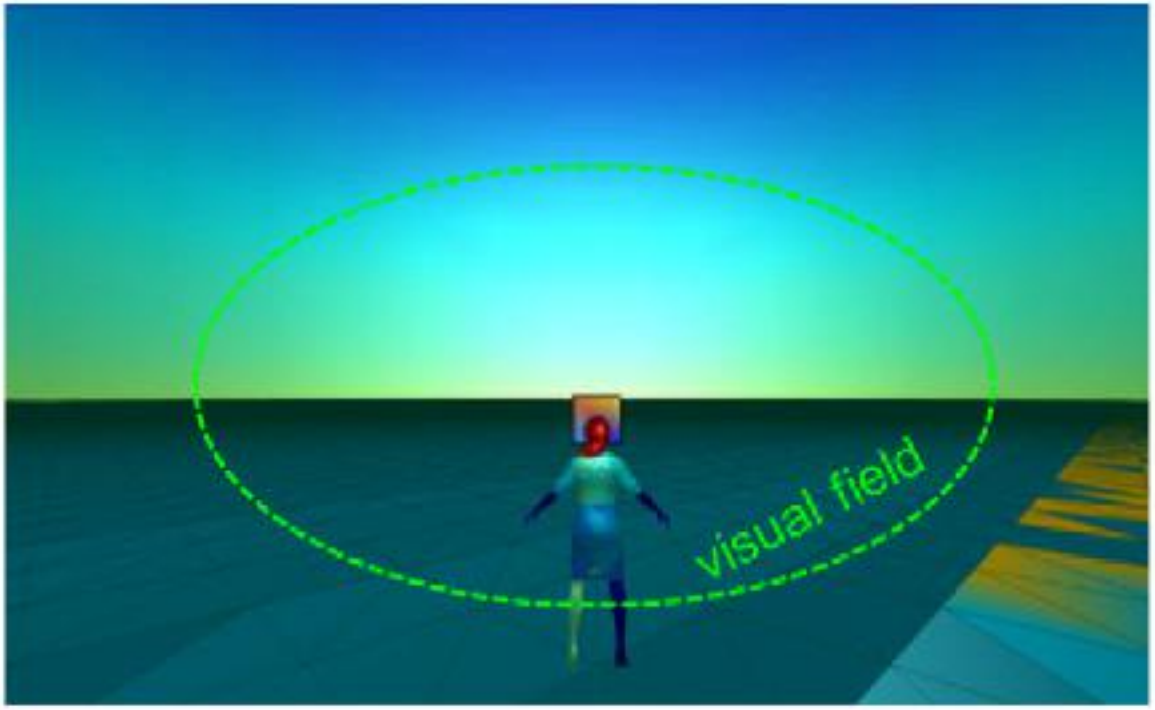

NPA
SATELLITE MAPPING
0 10 20 30 40 50 km
ERS SAR data copyright ESA 1999

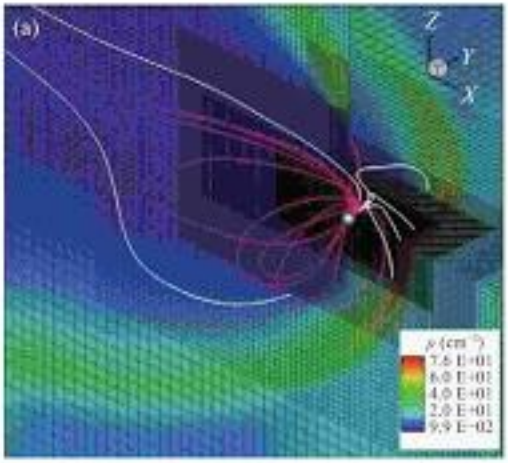


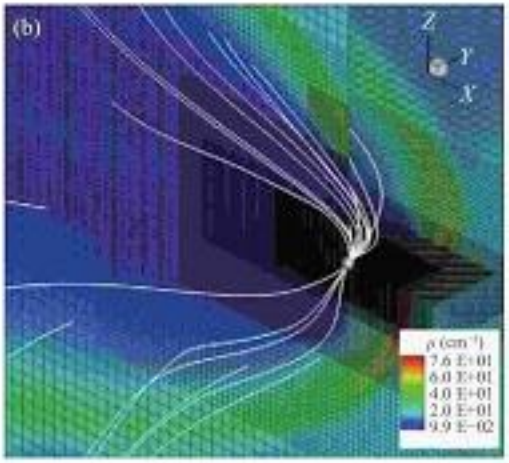


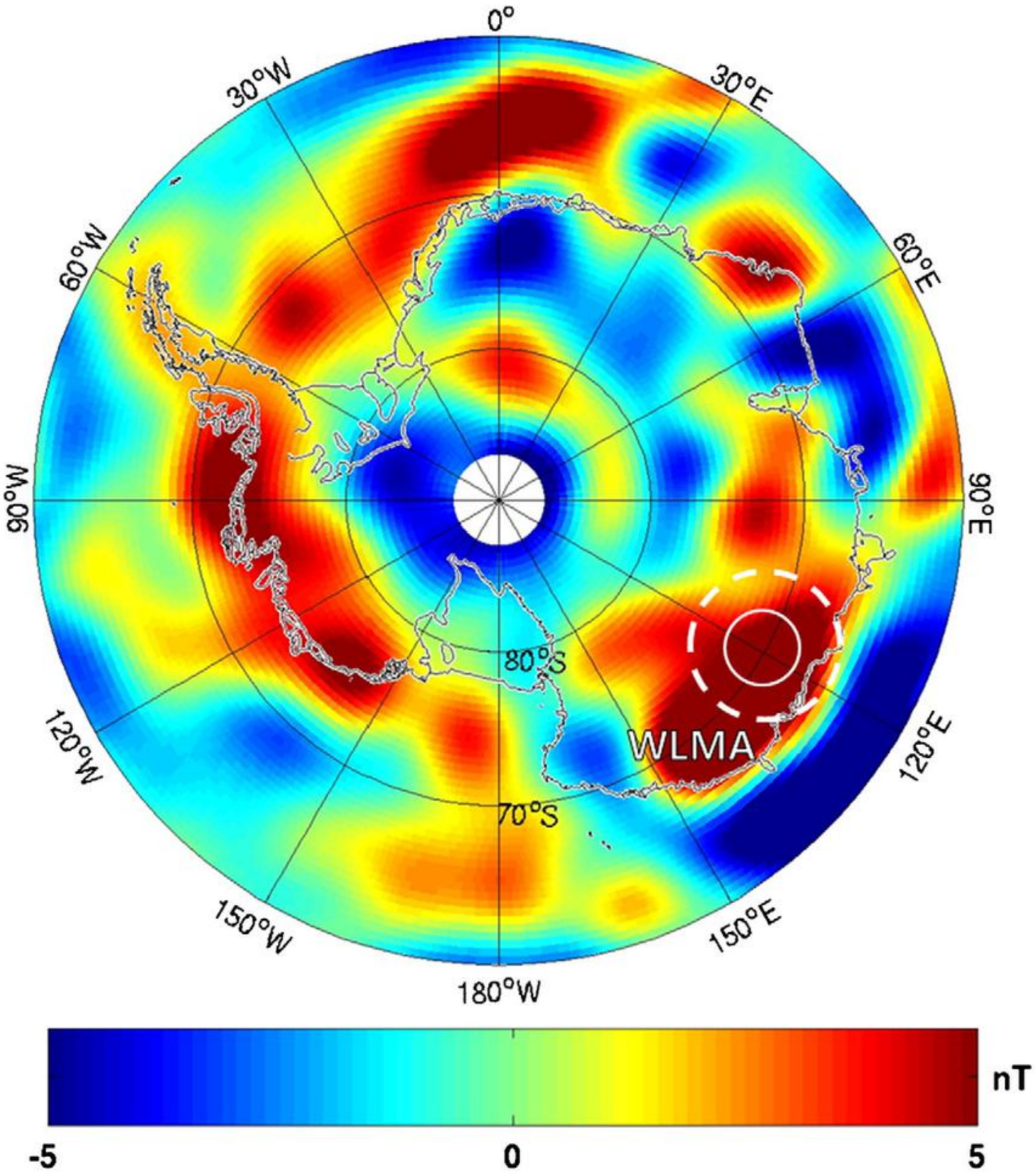

MAGNETIC ANOMALY MAP OF THE WORLD
CARTE DES ANOMALIES MAGNÉTIQUES DU MONDE
EXPLANATORY NOTES / NOTICE EXPLICATIVE
Near-surface data [nT]
Model data [nT]
COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD / COMMISSION DE LA CARTE GÉOLOGIQUE DU MONDE
MAGNETIC ANOMALY MAP OF THE WORLD
CARTE DES ANOMALIES MAGNÉTIQUES DU MONDE
Scale 1:50,000,000 Echelle 1 / 50 000 000
Authors / Auteurs
With data contribution by
Internal review organized by Dhananjay Ravat and Colin Reeves
External scientific review organized by Jean-Paul Cadet and Philippe Rossi
International umbrella: Uri Shamir, Charles Barton, Jean-Paul Cadet and Philippe Rossi
Arctic
Antarctic
Near-surface data
Oceanic model
Satellite model

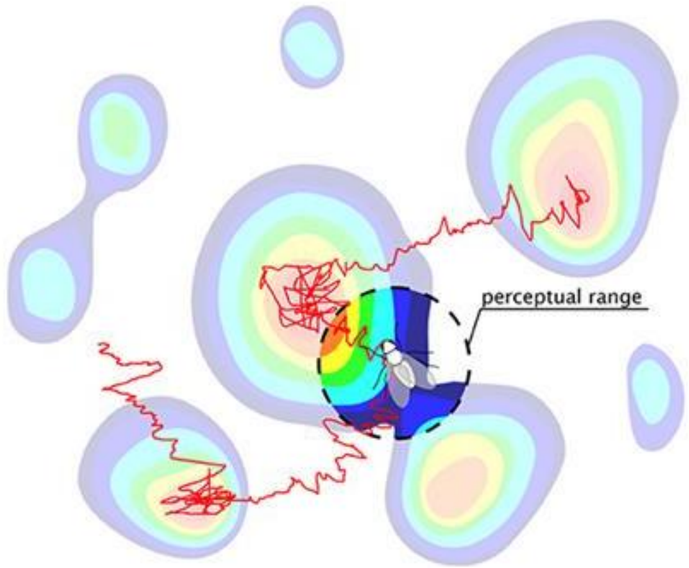
Lived space: $S_2 = T^{l} \circ R$

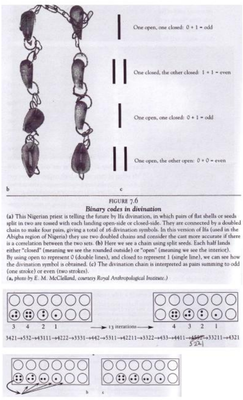


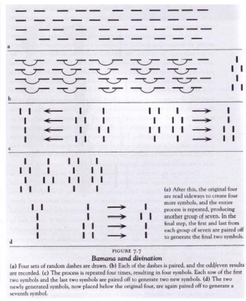


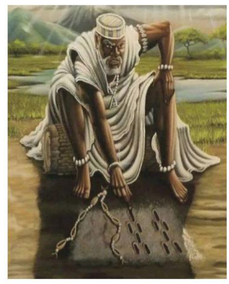


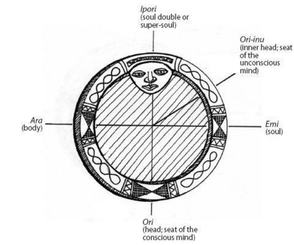

0°
30°W
30°E
60°W
60°E
90°W
90°E
80°S
70°S
120°W
120°E
150°W
150°E
180°W
WLMA
nT
-5
0
5


perceptual range



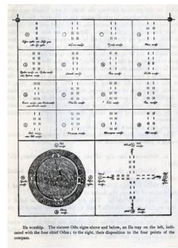


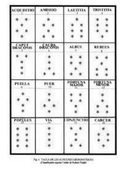




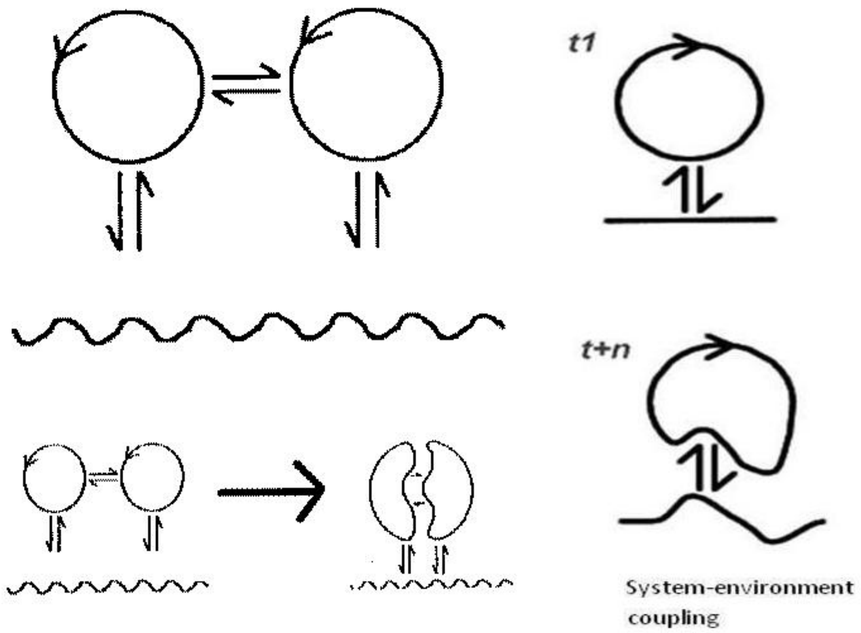
Total number of counters	Behavior (after transients)
1	Marching
2	Period 2
3	Marching
4	Period 3
5	Period 3
6	Marching
7	Period 4
8	Period 4
9	Period 4
10	Marching
11	Period 5
12	Period 5
13	Period 5
14	Period 5
15	Marching

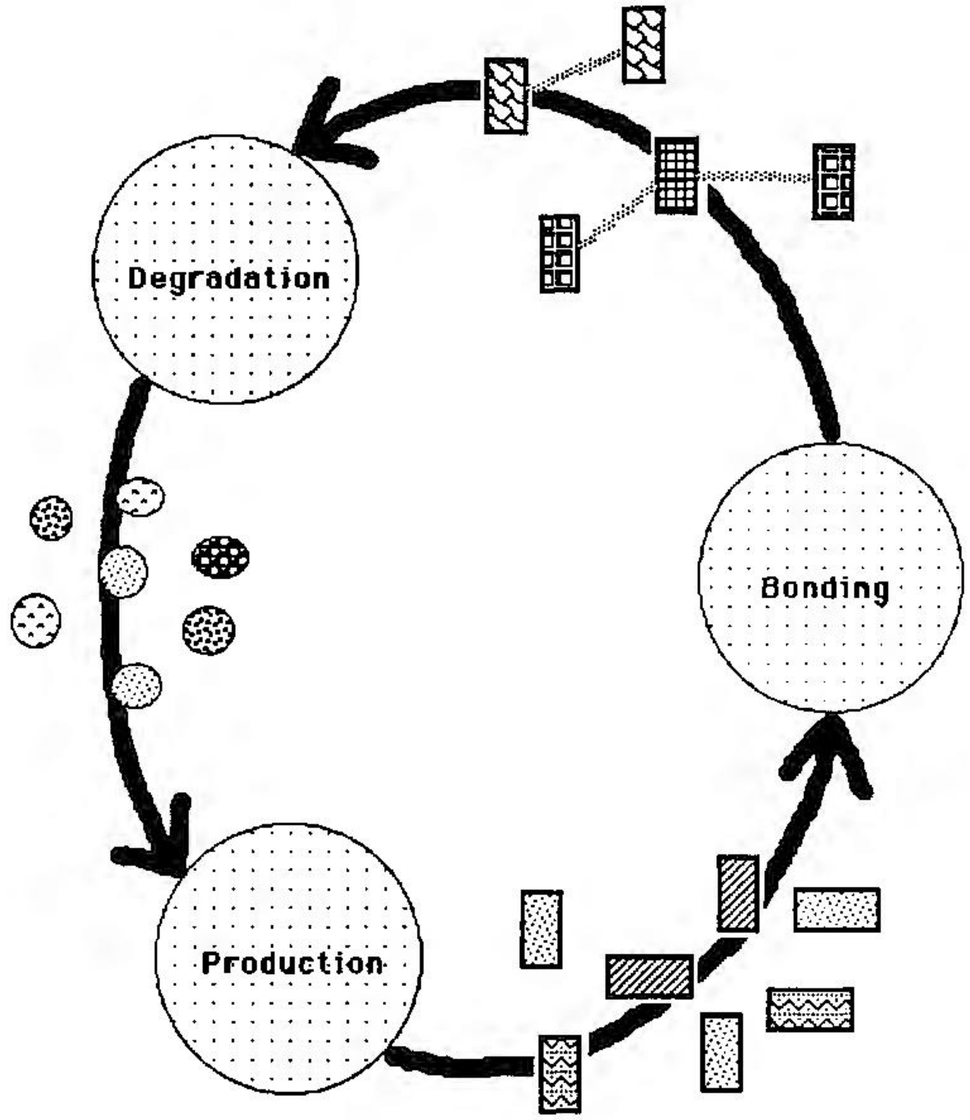
Binary Base-16/10	Latin name	Direction	Gender	Element
0000 0	Populus (people)	both	F	Water
0001 1	Laetitia (joy)	up	M	Air
0010 2	Rubeus (red)	up	M	Fire
0011 3	Fortuna Minor (small fortune)	up	F	Earth
0100 4	Albus (white)	down	F	Water
0101 5	Amissio (loss)	up	M	Fire
0110 6	Conjunctio (reunion)	both	M	Air
0111 7	Cauda Draconis (dragon's tail)	up	F	Earth
1000 8 (-8)	Tristitia (sadness)	down	F	Earth
1001 9 (-7)	Carcer (prison)	both	F	Water
1010 A (10, -6)	Acquisitio (gain)	down	M	Air
1011 B (11, -5)	Puer (boy)	up	M	Air
1100 C (12, -4)	Fortuna Major (big fortune)	down	M	Fire
1101 D (13, -3)	Puella (girl)	down	F	Water
1110 E (14, -2)	Caput Draconis (dragon's head)	down	M	Fire
1111 F (15, -1)	Via (way)	both	F	Water

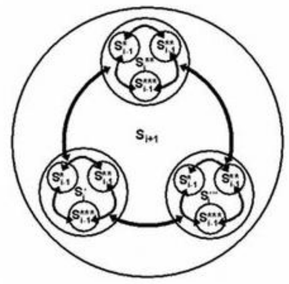


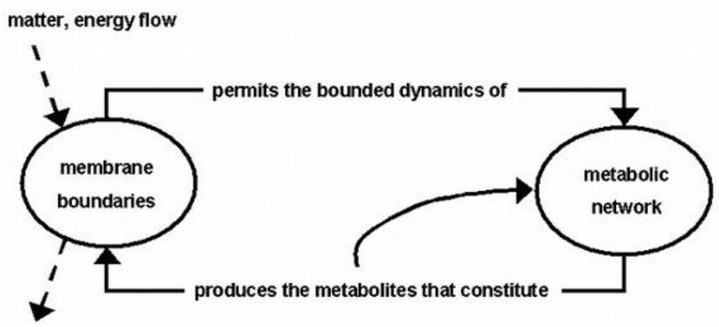


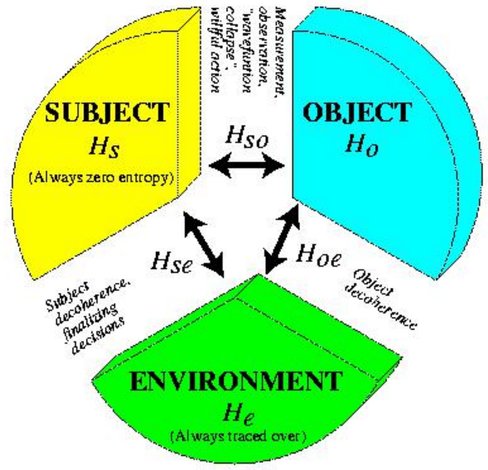
SIGNO ERIANO DE LOS DIECISÉIS EJIOGUN EIFÁ	NOMBRE DEL ODÙ Y NUMERO QUE CORRESPONDE AL GRAFO (OPELEBARA)	SIGNO NOMBRE DE LA APINI (OPÓNICA ACERTO)	ASTROLÓGICA ELEMENTO DIRECCIÓN	DIAS BUENOS	COSAS QUE CONTROLA EL ODÙ, DECIDAN QUÉ HAGAN EN EL ODÙ	DESCRIPCIÓN METAFÍSICA
I	ÈJÌOGBÉ 8	+ + + + + + + + (LA VIDA)	ACUARIUS AIRE ESTE	DIUMEREE	La Luz, conocer, obtener, la salud, la suerte, la vida, la felicidad, ganar, conocimientos, la salud, grupos, los abiertos, una blanca, conocer, capítulo	Alimentado este Ifa Odùnsa y el Ancestro Mundo perfecto del destino personal.
II	ÒYÈKÚ 2	+ + + + + + + + POPULAR (HAMBRIENTA)	CAPRICORNIO TIERRA OESTE	EMEKA	La Muerte, la Luna, los capítulos, la tierra, los hermanos, problemas entre hermanos, la desconfianza, conocimientos, sabiduría, transformarse de la manga, por la mano, la cara, la cabeza, el pecho, Yoruba, Olódumaré, Olódumaré, Olódumaré, Olódumaré	Hacer Ifa Chibu, y estar bien Ifa
III	ÌWÒRÌ 12	+ + + + + + + + CONJUNTO (UNIÓN)	LEO FUEGO SUR	EMUTE	Cierre, los brujos fuerza, conflicto, ofrenda, la gran suerte, celebración, relacionar con la suerte, dinero, dinero, dinero	Desaparecer de a través de desarrollo espiritual
IV	ÒDÍ 7	+ + + + + + + + CÁNCER (FRÍO)	CÁNCER AGUA NORTE	EFFUA JOBAN	Mantenerse, Mantenerse, Mantenerse, Mantenerse, Mantenerse, mediocridad, descomunales intentos, la suerte, mala, capítulo, la agua y grave, acontecimientos, cambios de carácter, cambios, cambiar con consciencia, cambiar, Yoruba	Desaparecer a través de malas suerte, de la transformación de algo malo
V	ÌROSÙN 4	+ + + + + + + + FORTUNA MAYOR (FORTUNA MAYOR)	ARIES FUEGO SUR	KAYODE	Dinero, la muerte, la vida, almacenar lugares, carácter fuerte, problemas, problemas, problemas

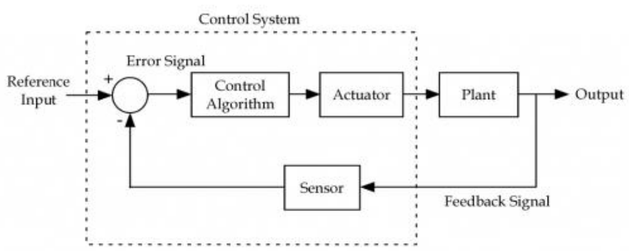


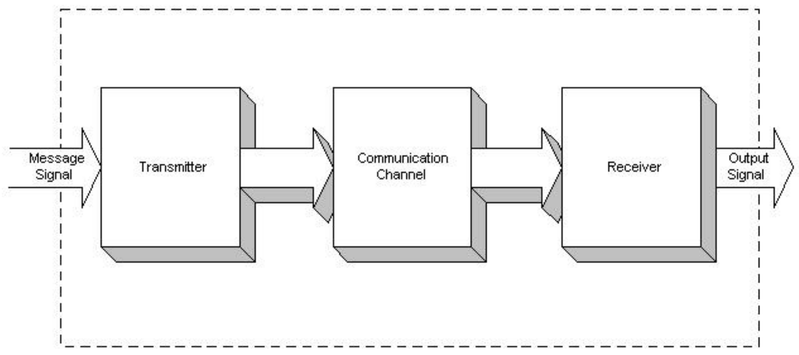












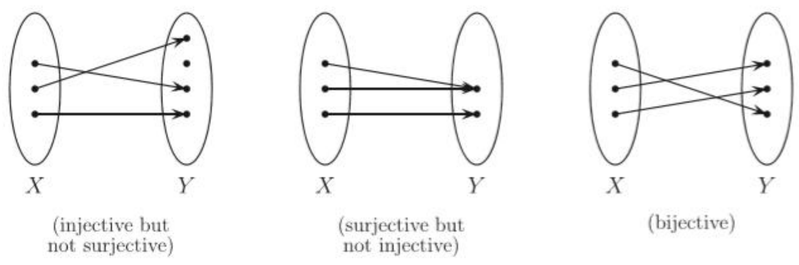
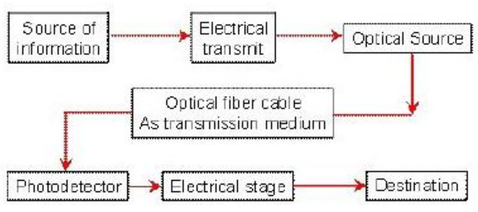
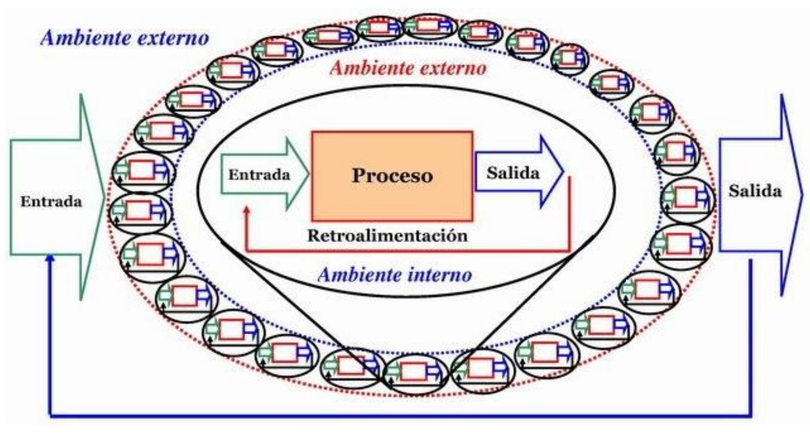


Figure A.1 Types of map.





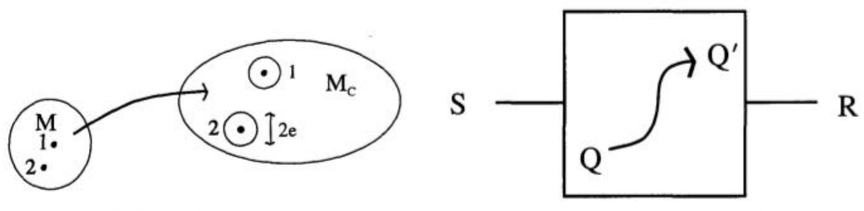
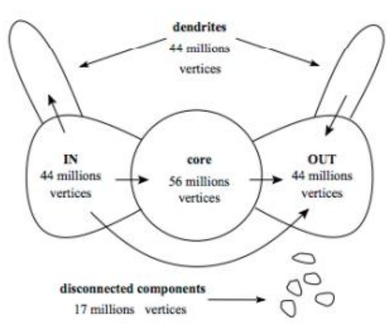


Fig. 4.2 A Message Space Mapping

Fig. 3.1 A Generic Finite State Machine



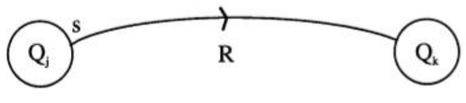
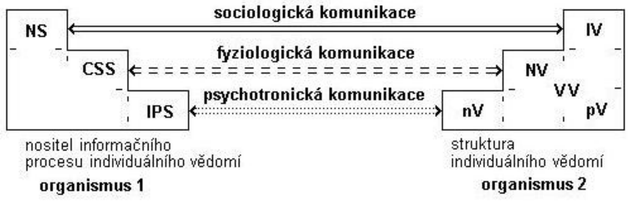
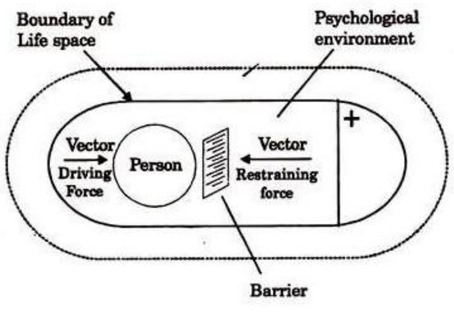
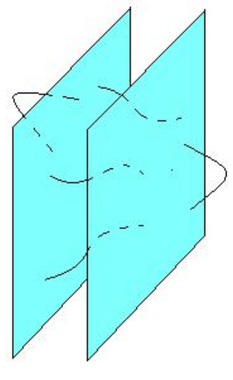
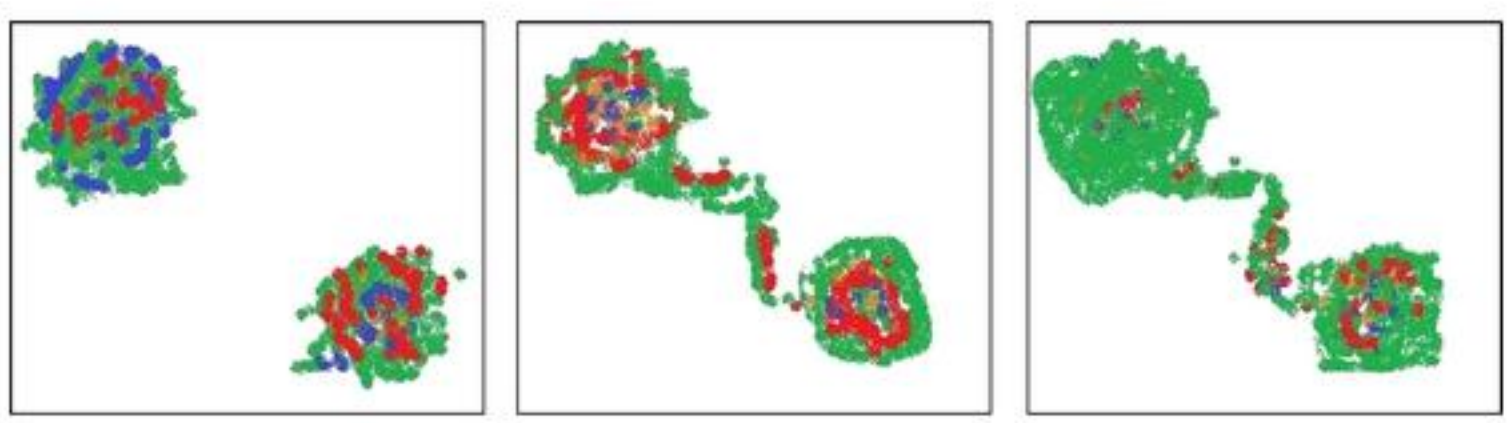


Fig. 3.2 A Graphical Depiction of a State Transition









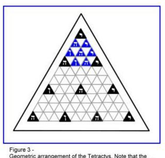


Figure 3 -
Geometric arrangement of the Tetractys. Note that the larger triangle is divisible into an infinite number of smaller triangles. This unique feature in which each of the smaller "pieces" of the larger image contains the entirely of the larger image is called holography.

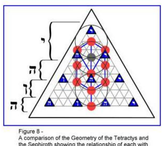
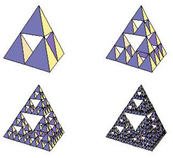
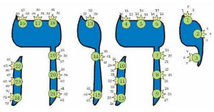
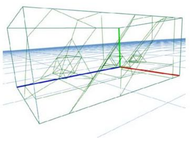


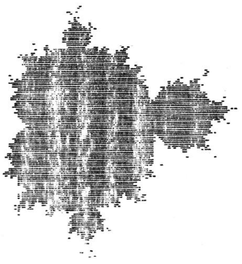
Figure 8 -
A comparison of the Geometry of the Tetractys and the Sephiroth showing the relationship of each with the Tetragrammaton.

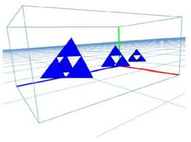


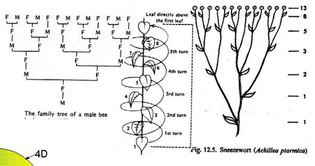
Brain Theory	Science	Spiritual
Recurrent Loops & Time	Everything in Universe a Wave	God is Sound & Time Cycles
Lateral Competition	Evolution & Survival of Fittest	Cosmic Battle Good & Evil
Connecting Up & Linking Up	Science of Complexity	Mystical Coming togetherness of God or GodHead
Fractal Computing Architecture	Fractal Universe	Correspondence or Image of God
Sensing/Doing or Inflow/Outflow	Divergence i.e. Ontogeny, Big Bang, Tree of Life	Cosmic Tree, Emanations of God Return to the Source

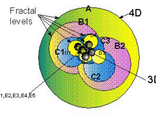




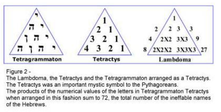


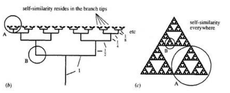






1	Natural numbers,									$n = C(n, 1)$
1	1	Triangular numbers,								$T_n = C(n+1, 2)$
1	2	1	Tetrahedral numbers,							$Te_n = C(n+2, 3)$
1	3	3	1	Pentatope numbers						$= C(n+3, 4)$
1	4	6	4	1	5-simplex ({3,3,3,3}) numbers					
1	5	10	10	5	1	6-simplex ({3,3,3,3,3}) numbers				
1	6	15	20	15	6	1	7-simplex ({3,3,3,3,3,3}) numbers			
1	7	21	35	35	21	7	1			
1	8	28	56	70	56	28	8	1		





יה = YAH
יהו = YAHU
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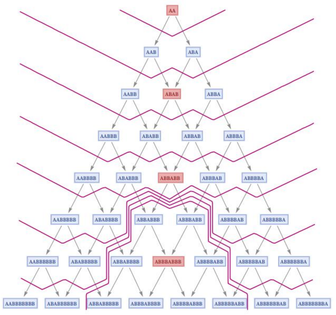
יהודה = YAHUDAH

$$\begin{array}{c} 2 \\ \hline 3\ \ 6 \\ \hline 5\ \ 10\ \ 15\ \ 30 \\ \hline 7\ \ 14\ \ 21\ \ 42\ \ 35\ \ 70\ \ 105\ \ 210 \end{array}$$

$$\begin{array}{c} a \\ \hline b.\ ab \\ \hline c.\ ac.\ bc.\ abc \\ \hline d.\ ad.\ bd.\ abd.\ cd.\ acd.\ bcd.\ abcd \end{array}$$



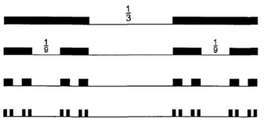


Fig. 3.19. Four sequential steps in the construction of a Cantor set.

$$D = \frac{\ln 2}{\ln 3} \cong 0.63.$$

Thus the Cantor set somehow fills more of space than a point, but less than the Euclidean one-dimensional line $0 < D < 1$.

n	α_n	β_n
0	a	b
1	c	d
2	$b+d$	$a+c$
3	$a+c+d$	$b+c+d$
4	$a+b+2.c+d$	$a+b+c+2.d$
5	$a+2.b+2.c+3.d$	$2.a+b+3.c+2.d$
6	$3.a+2.b+4.c+4.d$	$2.a+3.b+4.c+4.d$
7	$4.a+4.b+7.c+6.d$	$4.a+4.b+6.c+7.d$
8	$6.a+7.b+10.c+11.d$	$7.a+6.b+11.c+10.d$
9	$11.a+10.b+17.c+17.d$	$10.a+11.b+17.c+17.d$

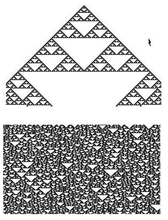
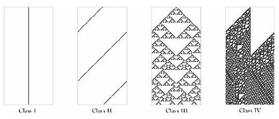


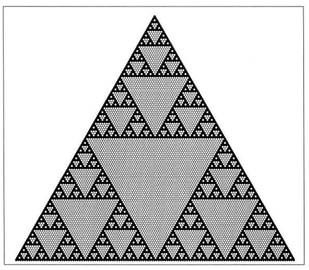
Figure 2: Two examples from Mac Cellular Automata software of 1-D, 2-state CA. Both are generated with Sierpinski rule. However, top starts with initial condition of one 'seeded' row (one black pixel in row; all other pixels white); bottom is top after many time-steps have passed.

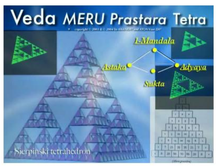
2	3	5	7	11	13	17	19	23	29	31	37	41	43	47	53	59	61	67	71
1	2	2	4	2	4	2	4	6	2	6	4	2	4	6	6	2	6	4	
1	0	2	2	2	2	2	4	4	2	2	2	2	2	0	4	4	2		
1	2	0	0	0	0	0	2	0	2	0	0	0	2	4	0	2			
1	2	0	0	0	0	2	2	2	2	0	0	2	2	4	2				
1	2	0	0	0	2	0	0	0	2	0	2	0	2	2					
1	2	0	0	2	2	0	0	2	2	2	2	2	0						
1	2	0	2	0	2	0	2	0	0	0	0	2							
1	2	2	2	2	2	2	2	0	0	0	2								
1	0	0	0	0	0	0	2	0	0	2									
1	0	0	0	0	0	2	2	0	2										
1	0	0	0	0	2	0	2	2											
1	0	0	0	2	2	2	0												
1	0	0	2	0	0	2													
1	0	2	2	0	2														
1	2	0	2	2															
1	2	2	0																
1	0	2																	
1	2																		
1																			

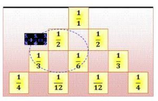
Table 1 – (N_a, N_b) **at tree levels**

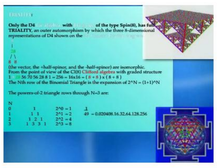
$Level + 1 = m$	1	2	3	4	5	6
T_1	(1,0)					
T_2	(1,0)	(0,1)				
T_3	(1,1)	(2,0)	(0,1)			
T_4	(1,2)	(2,1)	(1,1)	(0,1)		
T_5	(2,3)	(2,3)	(4,1)	(2,2)	(0,1)	
T_6	(3,5)	(3,5)	(4,4)	(6,2)	(2,3)	(0,1)

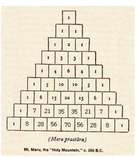


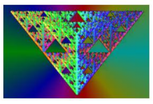






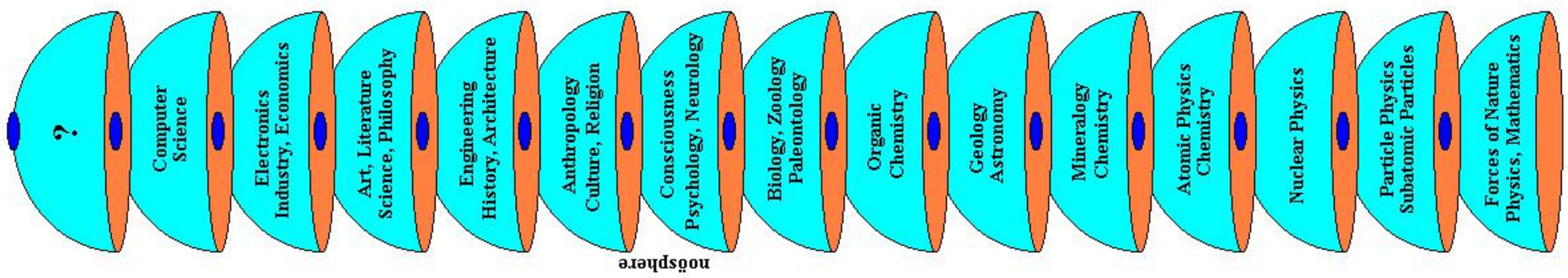




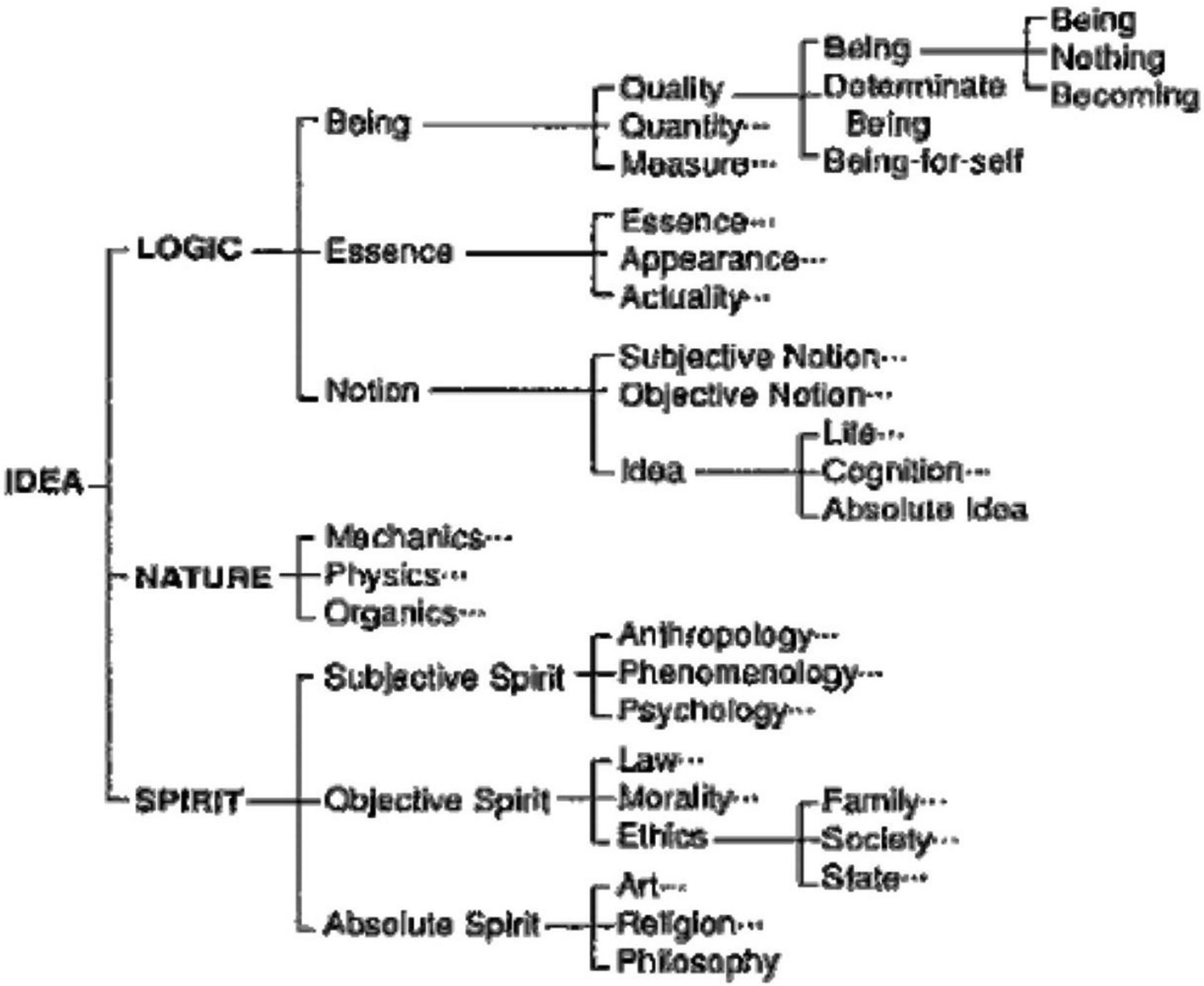


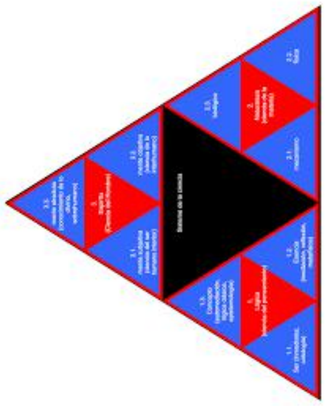
Leibniz harmonic triangle
A triangle of fractions that is related to the more famous Pascal triangle in a very simple way. Each row of the Leibniz harmonic triangle starts with the reciprocal of the row number (or the row number plus one depending on whether one starts counting from 1 or 0). Every entry is the sum of the two numbers just below it. The entries can thus be computed sequentially left to right and top to bottom using subtraction instead of addition.

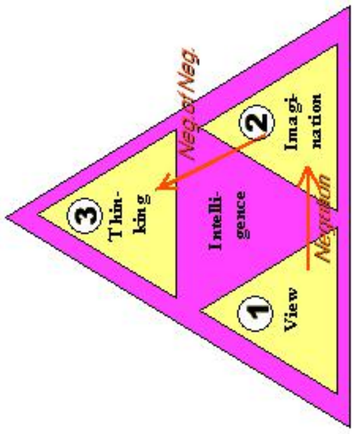
1/1
1/2 1/2
1/3 1/6 1/3
1/4 1/12 1/12 1/4
1/5 1/20 1/30 1/20 1/5

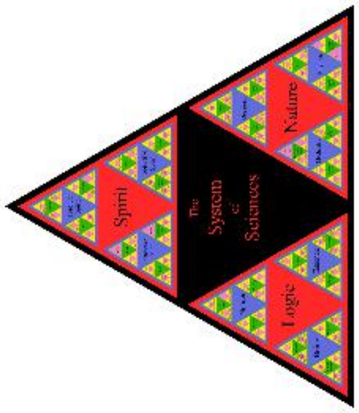

?
Computer Science
Electronics Industry, Economics
Art, Literature Science, Philosophy
Engineering History, Architecture
Anthropology Culture, Religion
Consciousness Psychology, Neurology
Biology, Zoology Paleontology
Organic Chemistry
Geology Astronomy
Mineralogy Chemistry
Atomic Physics Chemistry
Nuclear Physics
Particle Physics Subatomic Particles
Forces of Nature Physics, Mathematics
noösphere

ANANTA
ETERNITY


IDEA
LOGIC
Being
Quality
Being
Being
Nothing
Becoming
Determinate Being
Being-for-self
Quantity
Measure
Essence
Essence
Appearance
Actuality
Notion
Subjective Notion
Objective Notion
Idea
Life
Cognition
Absolute Idea
NATURE
Mechanics
Physics
Organics
SPIRIT
Subjective Spirit
Anthropology
Phenomenology
Psychology
Objective Spirit
Law
Morality
Ethics
Family
Society
State
Absolute Spirit
Art
Religion
Philosophy



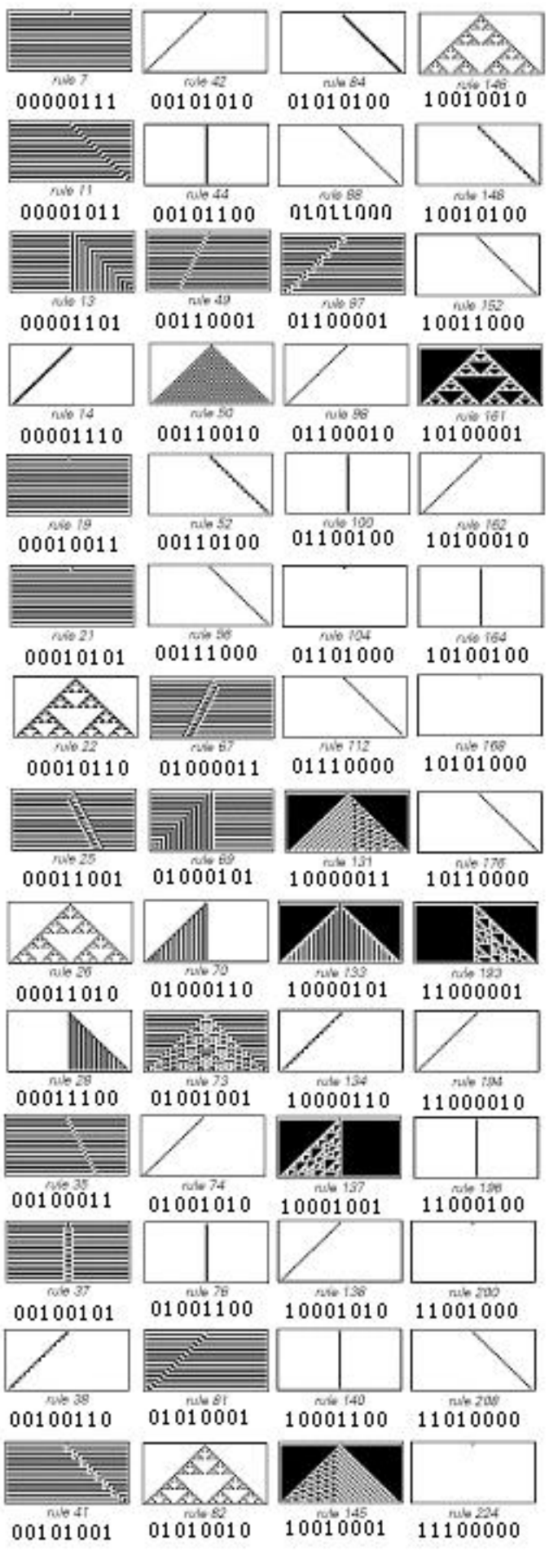

Neg of Neg
Negation
1 View
2 Imagination
3 Thinking
Intelligence


Spirit
Nature
Logic
The System of Sciences

Grade: 0

1	2	3	4	5	6	7	8
rule 0 00000000	rule 1 00000001	rule 3 00000011	rule 7 00000111	rule 15 00001111	rule 240 11110000	rule 248 11111000	rule 252 11111100	rule 254 11111110	rule 255 11111111
rule 2 00000010	rule 5 00000101	rule 11 00001011	rule 23 00010111	rule 232 11101000	rule 244 11110100	rule 250 11111010	rule 253 11111101
rule 4 00000100	rule 6 00000110	rule 13 00001101	rule 27 00011011	rule 228 11100100	rule 242 11110010	rule 248 11111001	rule 251 11111011
rule 8 00001000	rule 9 00001001	rule 14 00001110	rule 29 00011101	rule 226 11100010	rule 241 11110001	rule 246 11110110	rule 247 11110111
rule 16 00010000	rule 10 00001010	rule 19 00010011	rule 30 00011110	rule 225 11100001	rule 236 11101100	rule 245 11110101	rule 239 11101111
rule 32 00100000	rule 12 00001100	rule 21 00010101	rule 39 00100111	rule 216 11011000	rule 234 11101010	rule 243 11110011	rule 223 11011111
rule 64 01000000	rule 17 00010001	rule 22 00010110	rule 43 00101011	rule 212 11010100	rule 233 11101001	rule 238 11101110	rule 191 10111111
rule 128 10000000	rule 18 00010010	rule 25 00011001	rule 45 00101101	rule 210 11010010	rule 230 11100110	rule 237 11101101	rule 127 01111111
	rule 20 00010100	rule 26 00011010	rule 46 00101110	rule 209 11010001	rule 229 11100101	rule 235 11101011
	rule 24 00011000	rule 28 00011100	rule 51 00110011	rule 204 11001100	rule 227 11100011	rule 231 11100111

Grade: 3



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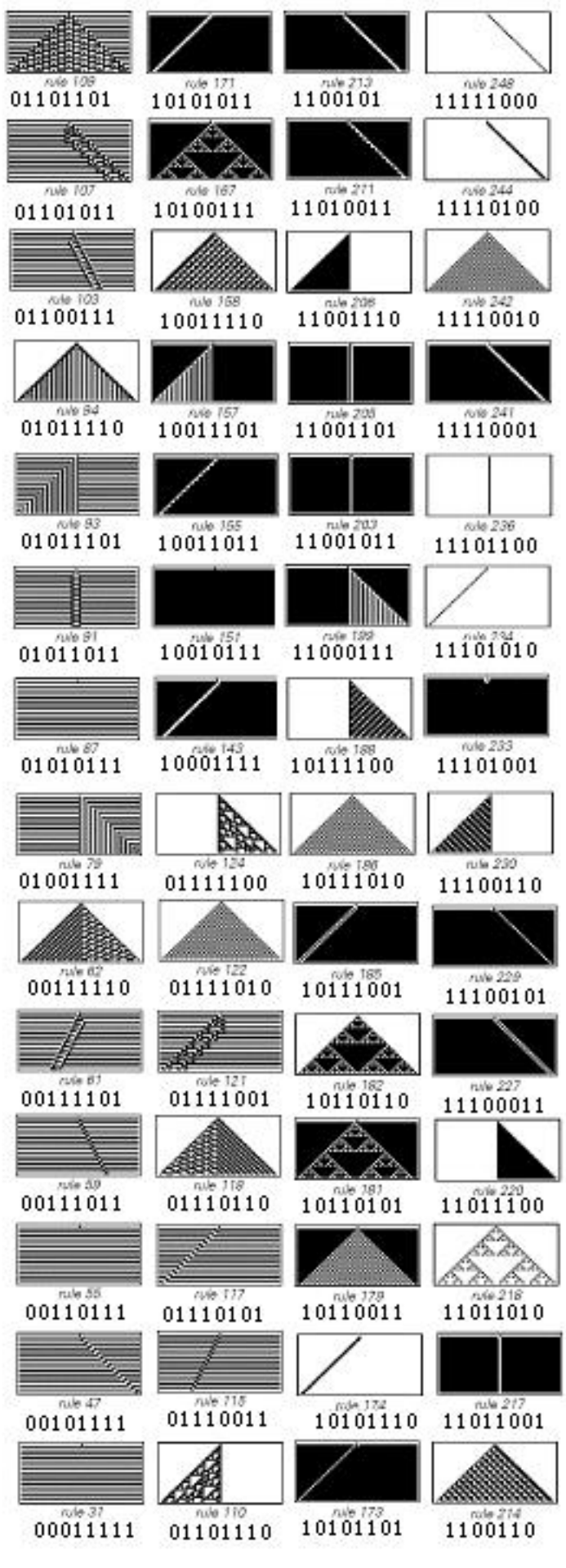

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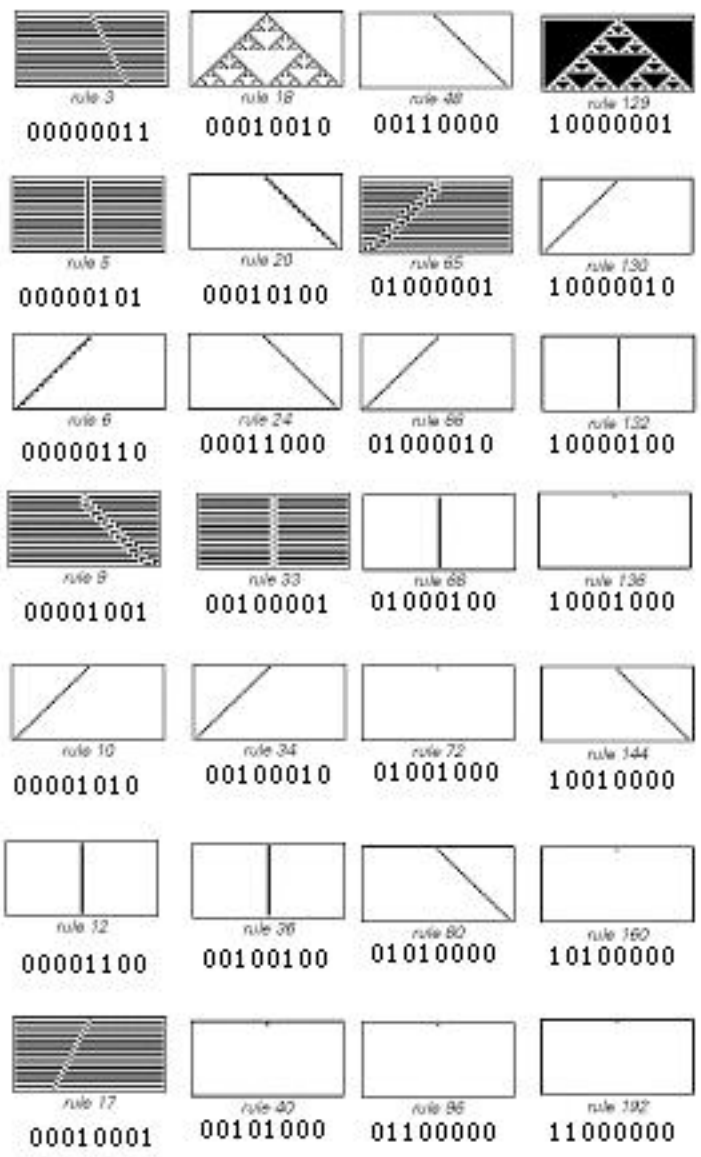

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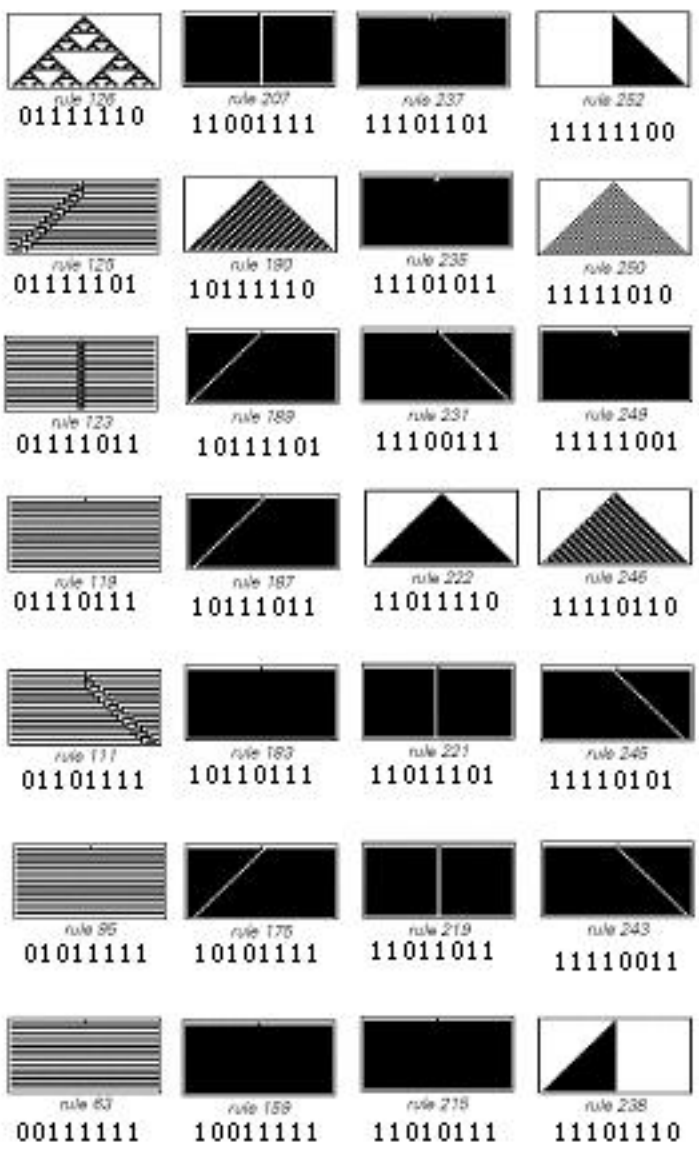

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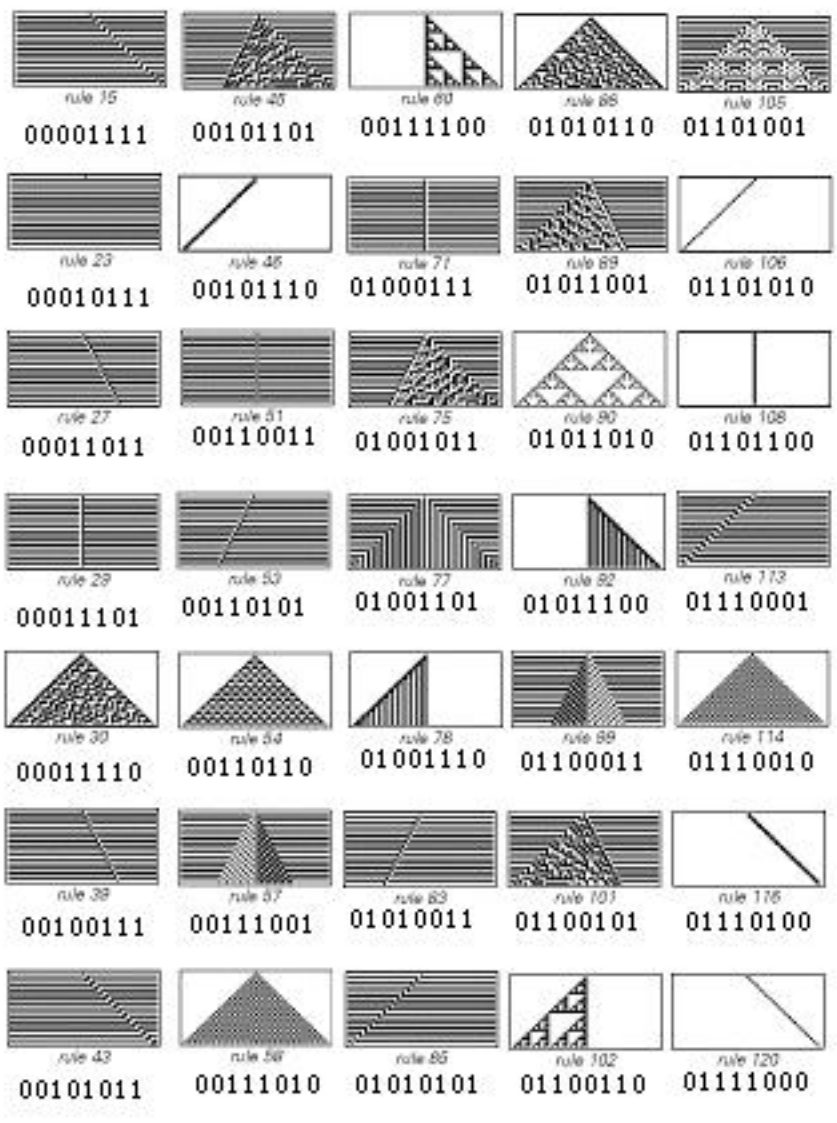
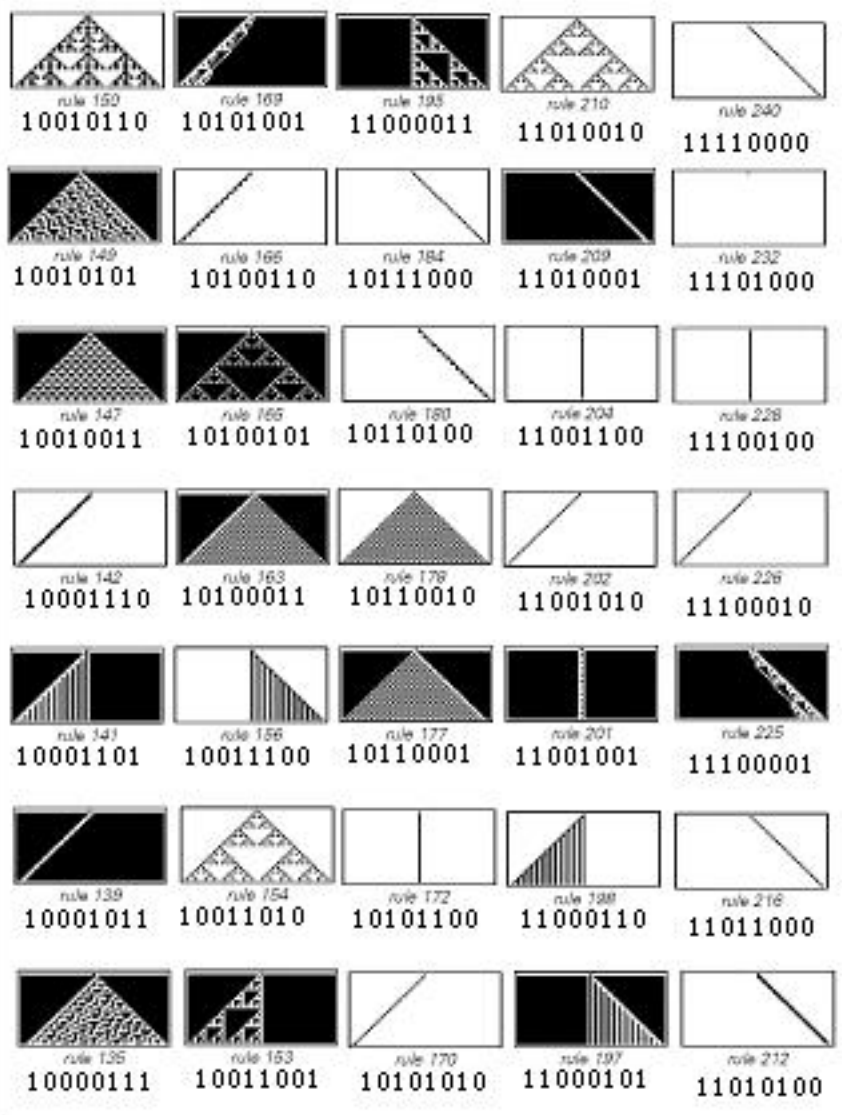
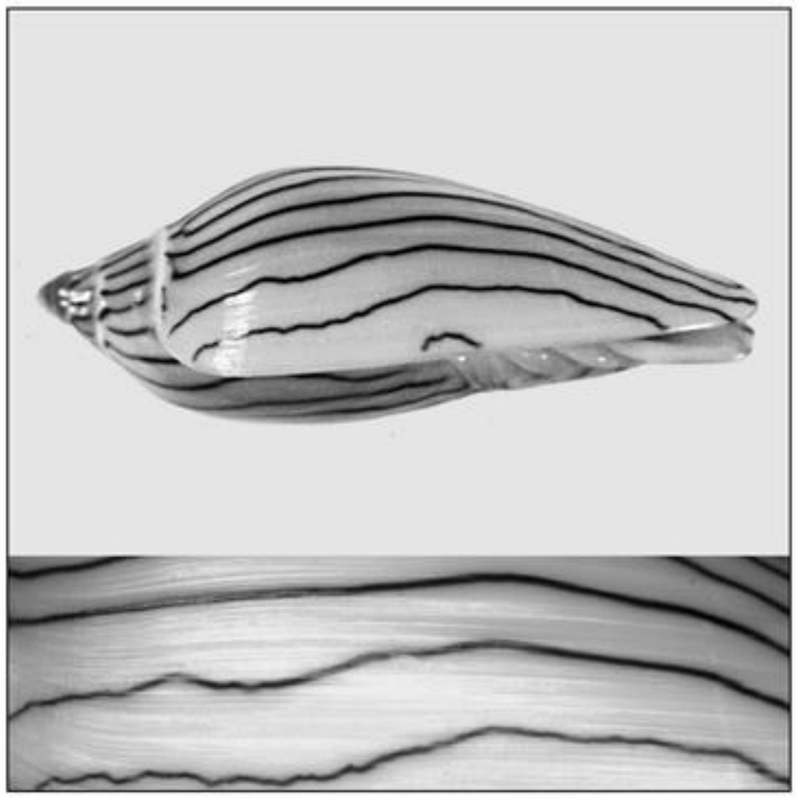
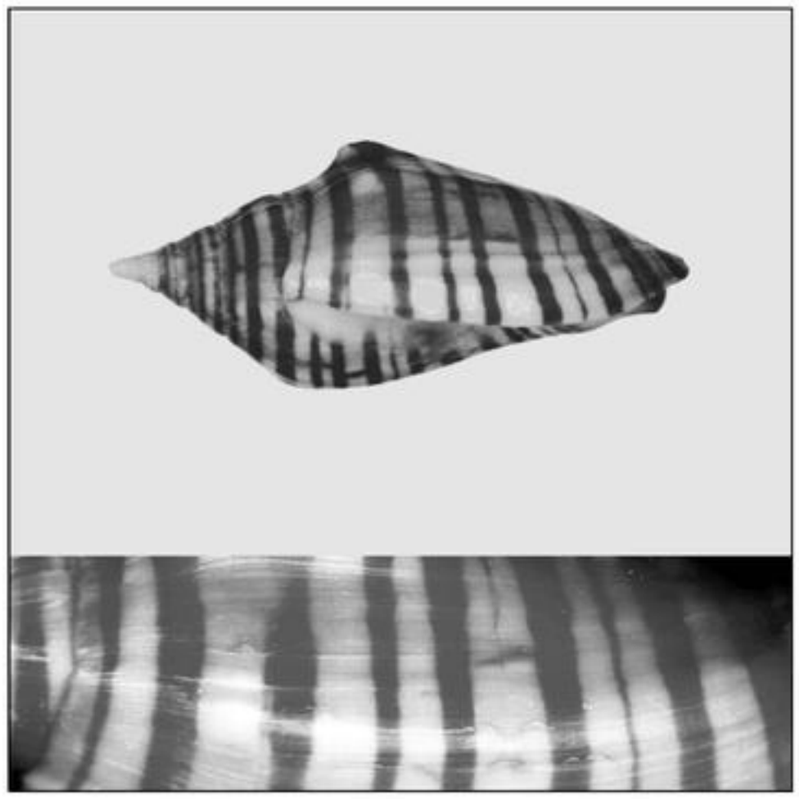
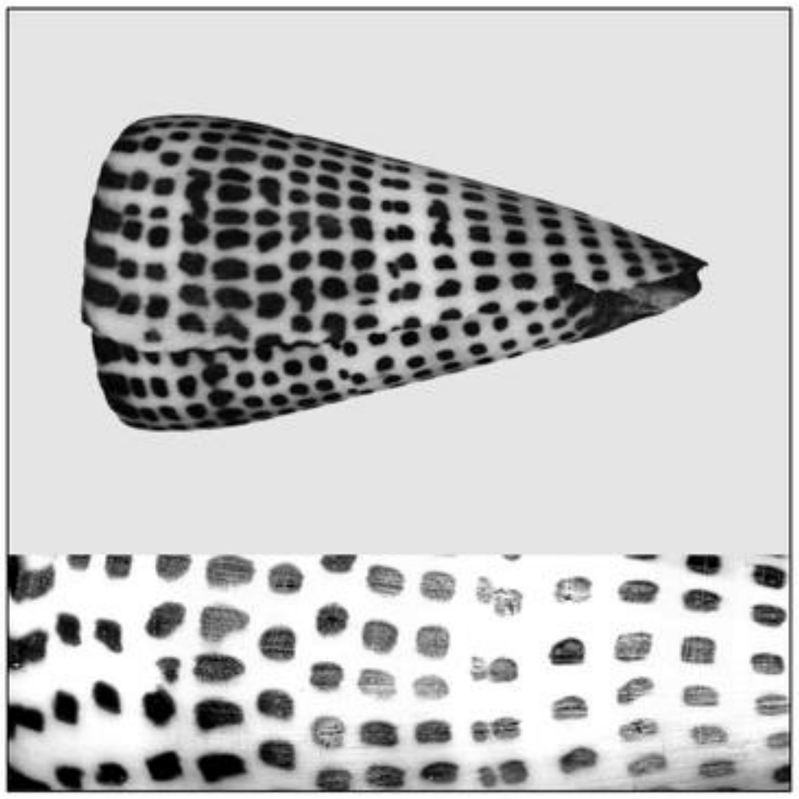
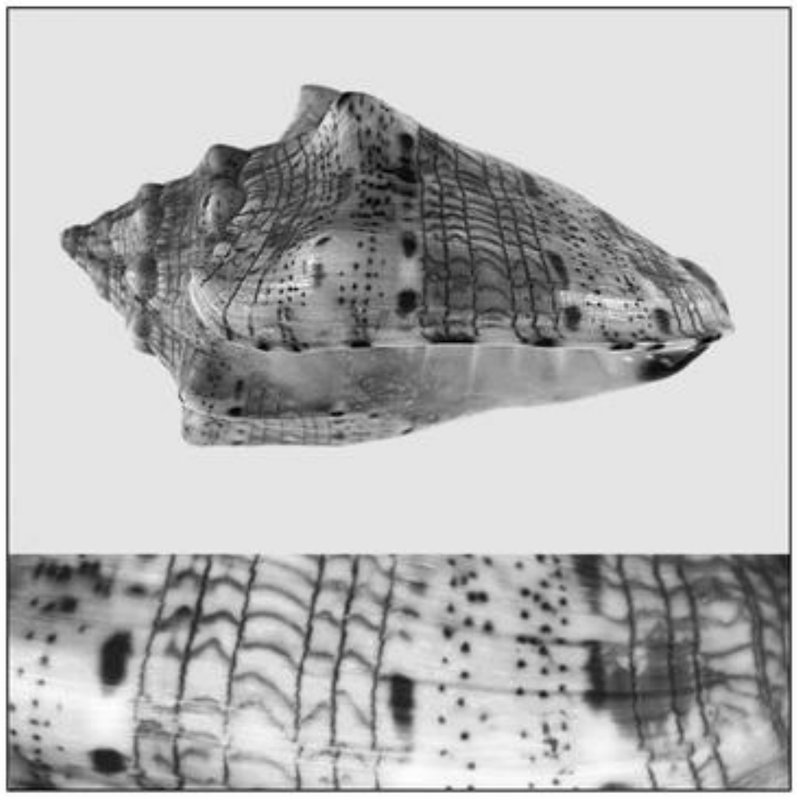


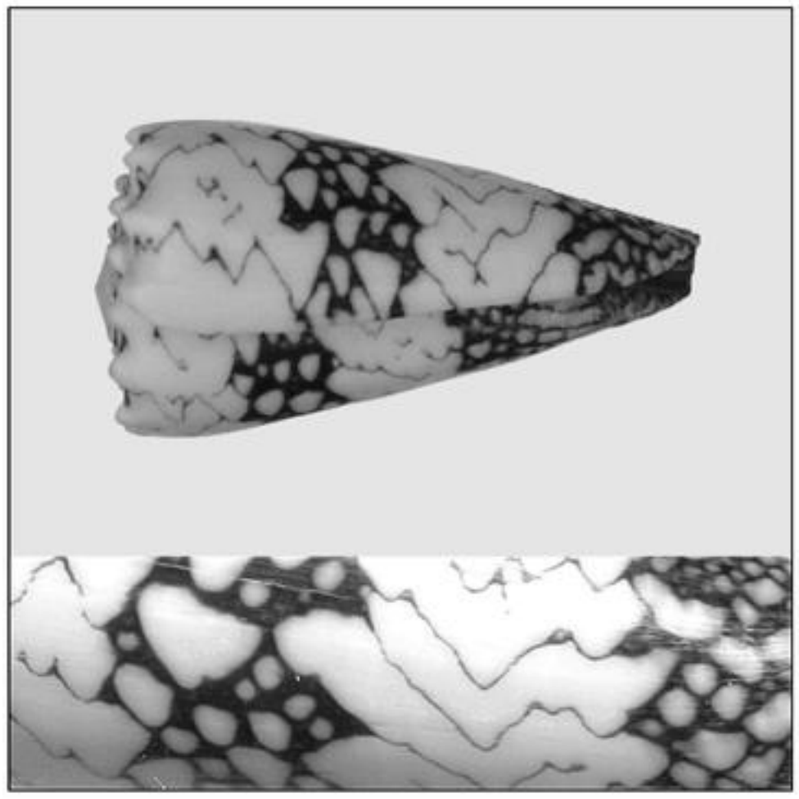


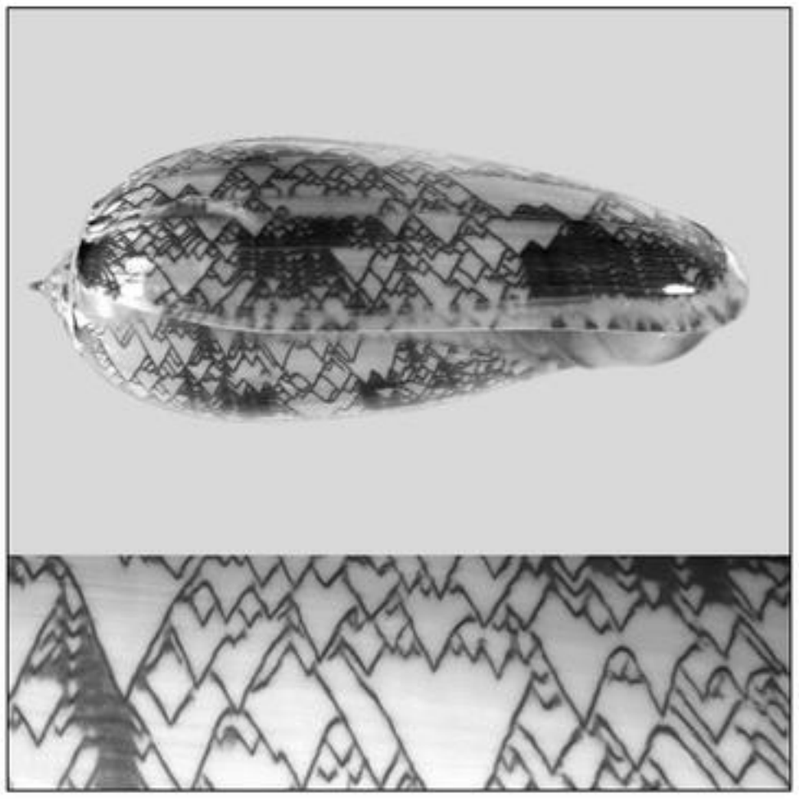


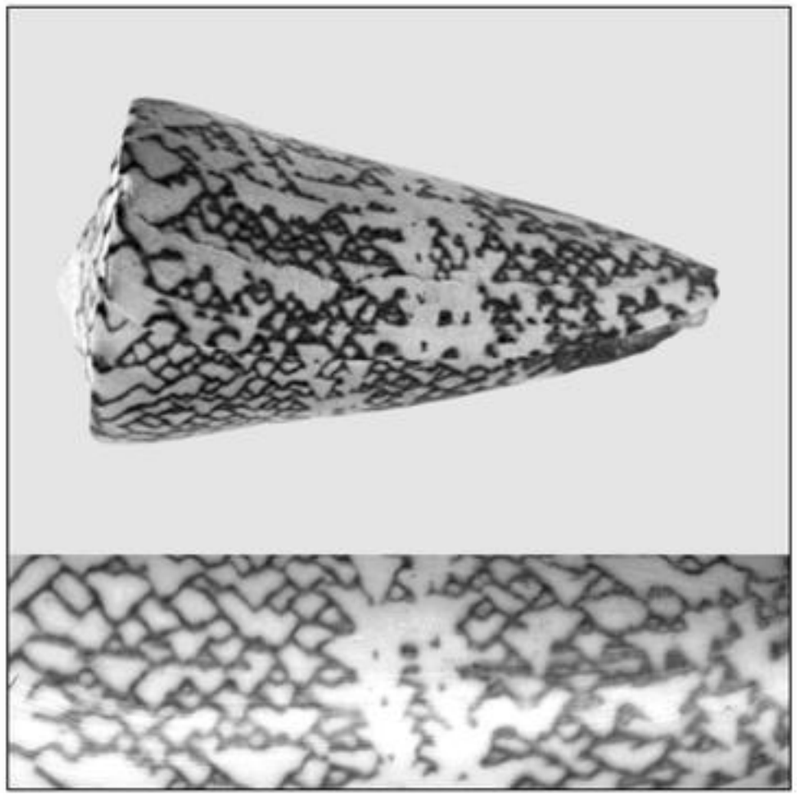


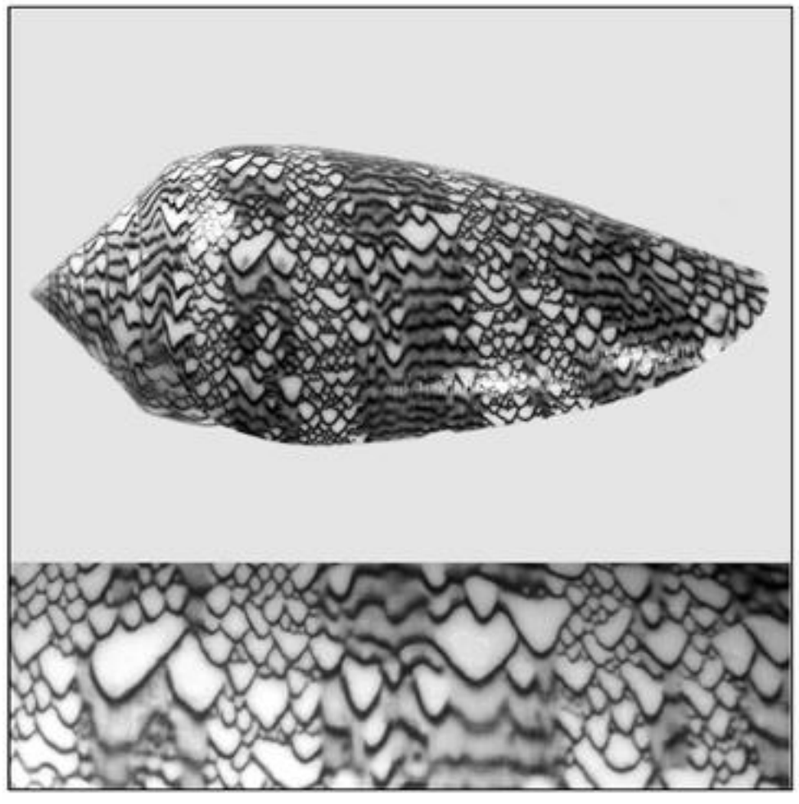


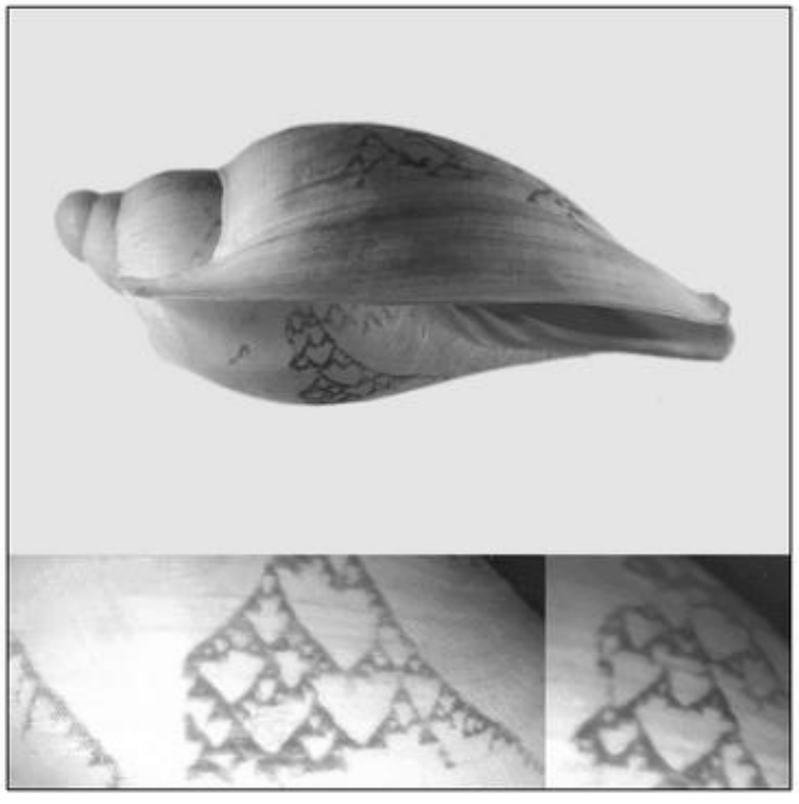




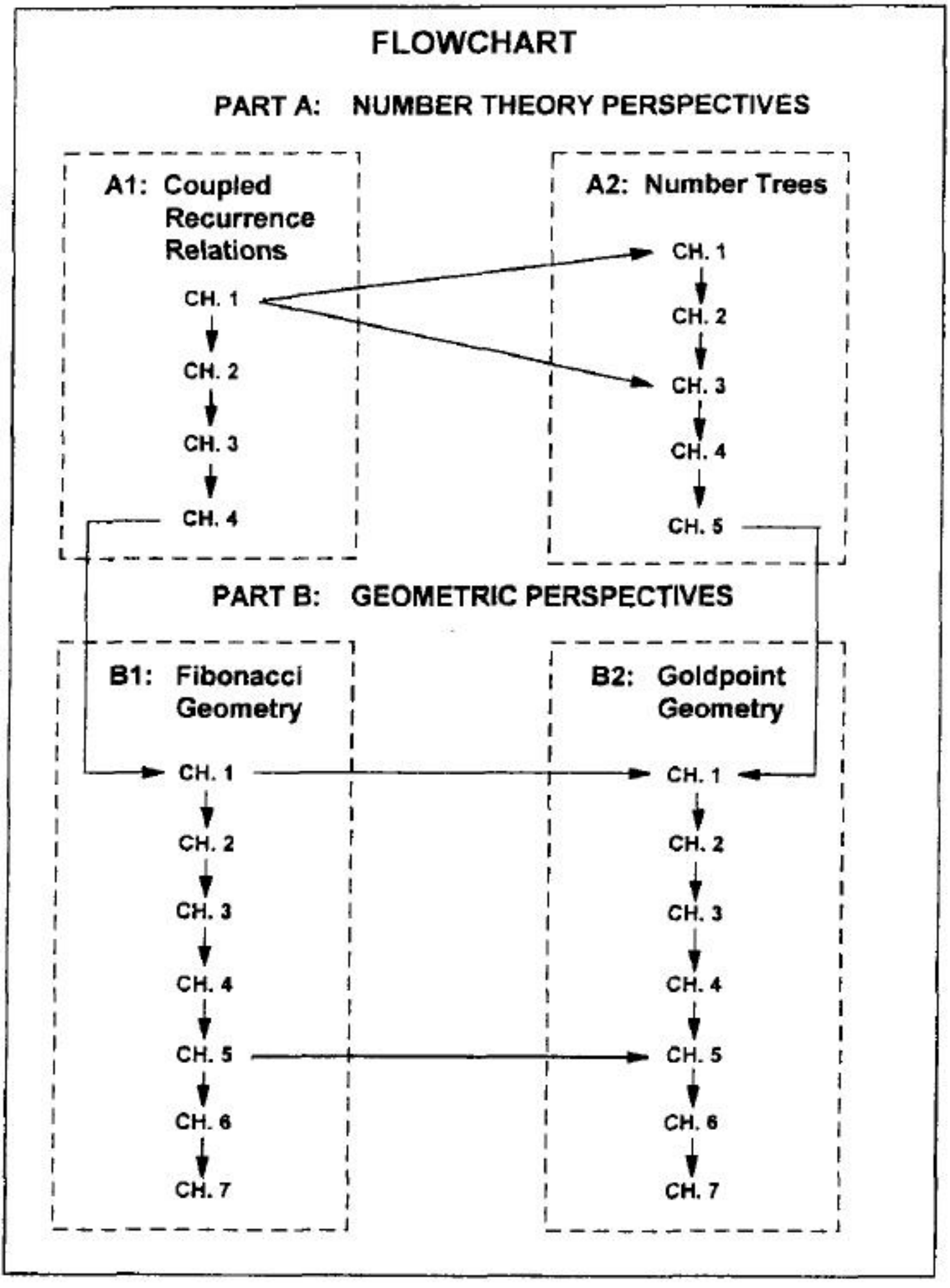








FLOWCHART


PART A: NUMBER THEORY PERSPECTIVES
A1: Coupled Recurrence Relations
CH. 1
CH. 2
CH. 3
CH. 4
A2: Number Trees
CH. 1
CH. 2
CH. 3
CH. 4
CH. 5
PART B: GEOMETRIC PERSPECTIVES
B1: Fibonacci Geometry
CH. 1
CH. 2
CH. 3
CH. 4
CH. 5
CH. 6
CH. 7
B2: Goldpoint Geometry
CH. 1
CH. 2
CH. 3
CH. 4
CH. 5
CH. 6
CH. 7

→

e		f		g		a		b		c		d		e’
30		32		36		40		45		48		54		60
	s		t		t		t		s		t		t	
144		135		120		108		96		90		80		72
e		d		c		b		a		g		f		e’

←

24		27		30		32		36		40		45		(48)
→														
						→								
e’		d’		c’		b		a		g		f		(e)
	9:8		10:9		16:15		9:8		10:9		9:8		16:15	

Tetrachord I

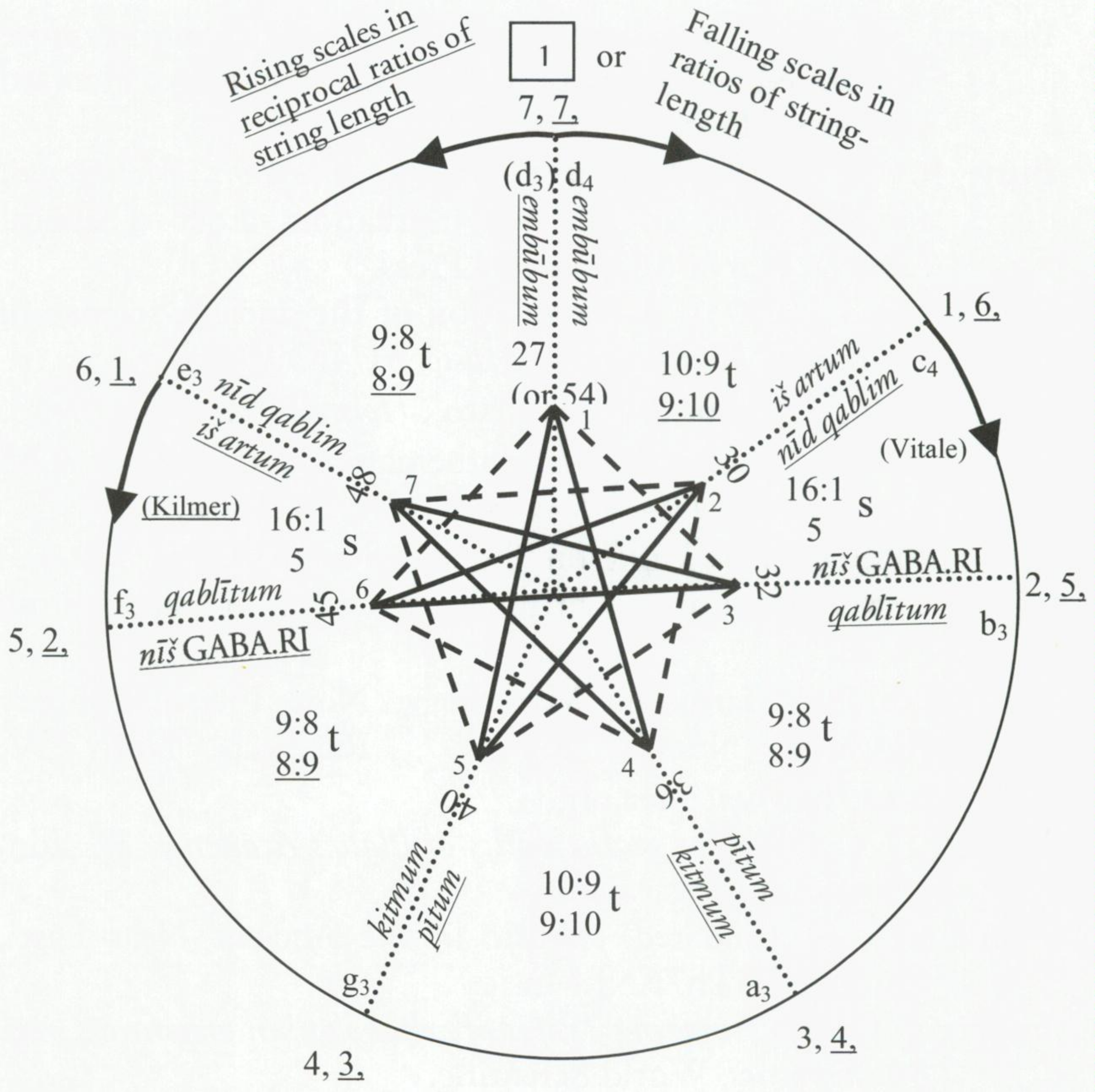
Tetrachord II

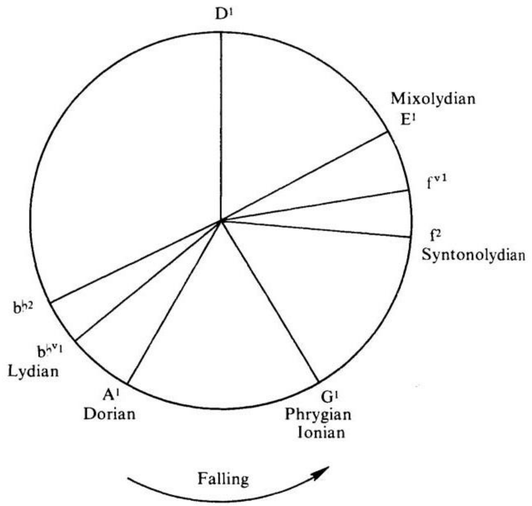
384		432		486		512		576		648		729		768
e’		d’		c’		b		a		g		f		e
	9:8		9:8		256:243				9:8		9:8		256:243	

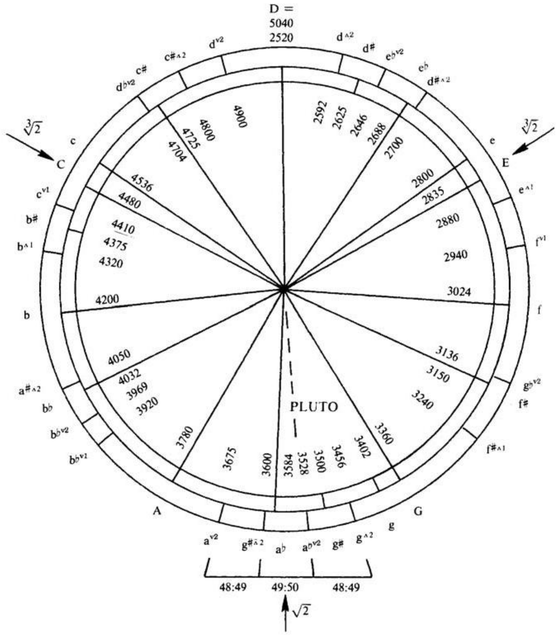
9:8
Disjunction

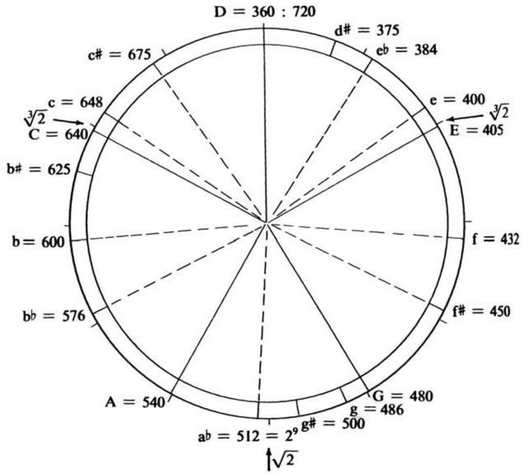
Appendix I

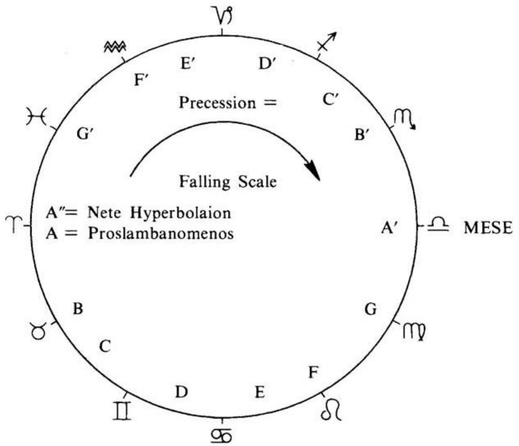
	Tone Numbers *see note 1	Modern Pitches C_4=MiddleC	Babylonian Heptachord nid qablim	Greek Dorian Octave species	Music of the Spheres *see note 2		Tetractys	Demiurge's Portions
1	384	E_6			(Fixed Stars)			1
2	432	D_6			Saturn	(Kronos)		
3	486*	C_6			Jupiter	(Zeus)		
4	512	B_5			Mars	(Ares)		
5	576	A_5			Mercury	(Hermes)		
6	648*	G_5			Venus	(Aphrodite)		
7	729*	F_5			Sun			
8	768	E_5			Moon			2
9	864	D_5						
10	972	C_5						
11	1024	B_4						
12	1152	A_4						3
13	1296	G_4						
14	1458	F_4						
15	1536	E_4						4
16	1728	D_4				1728		
17	1944	C_4	Greater			1944		
18	2048	B_3	Perfect					see note 3
			System			2187	=B flat	
19	2304	A_3				2304		
20	2592	G_3						
21	2916	F_3						
22	3072	E_3				Lesser		8
23	3456	D_3				Perfect		9
24	3888	C_3				System		
25	4096	B_2						
26	4608	A_2						
27	5184	G_2						
28	5832	F_2						
29	6144	E_2						
30	6912	D_2						
31	7776	C_2						
32	8192	B_1						
33	9216	A_1						
34	10368	G_1						27
		Note 1: Reduced by syntonic comma (x80/81) to 480, 640, and 720 for Babylonian scale.						
		Note 2: Timaeus 38 c-d. Names in Epinomis 986c. cf Rebublic 616c-617c.						
		Note 3: Tetrachord synemminon (conjunct).						

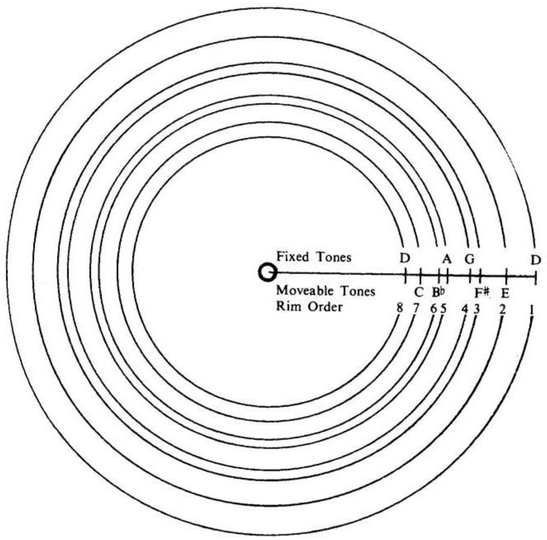

Rising scales in reciprocal ratios of string length
1
or
Falling scales in ratios of string-length
7, 7,
(d3) d4
embūbum
embūbum
1, 6,
9:8 t
8:9
27
(or 54)
10:9 t
9:10
6, 1,
e3
nīd qablim
iš artum
c4
iš artum
nīd qablim
(Vitale)
(Kilmer)
16:1 s
5
16:1 s
5
nīš GABA.RI
2, 5,
f3
qablītum
qablītum
b3
5, 2,
nīš GABA.RI
9:8 t
8:9
9:8 t
8:9
10:9 t
9:10
kitmum
pītum
pītum
kitmum
g3
a3
3, 4,
4, 3,
1
2
3
4
5
6
7
30
32
36
40
45
48

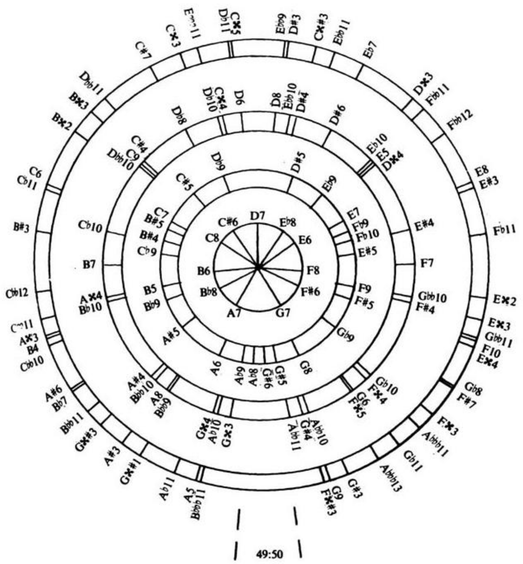


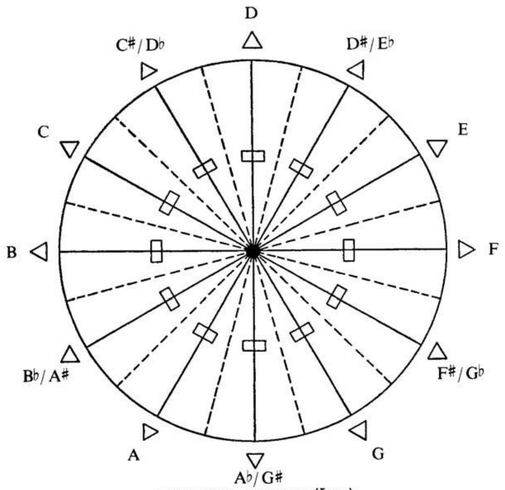






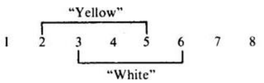






A FUNCTIONAL CIVIC PLAN (*Laws*)

- ● Centrally located capital city
- — Radial highways
- ▭ Regional markets and temples
- - - - District boundaries
- △ Frontier garrisons



Falling	D	C	B♭	A	G	F	E♭	D	Greek Dorian
Rising	D	E	F#	G	A	B	C#	D	Inverse Dorian = modern major

Rim	Tone	Width	Speed	Color	Body
8	D′	4th	1st	reflection from 7th	Moon
7	C	5th		brightest	Sun
6	Bb	2nd	2nd	2nd in whiteness	Venus
5	A	6th		yellow	Mercury
4	G	3rd	3rd	slightly ruddy	Mars
3	F♯	7th	4th	whitest	Jupiter
2	E	8th	5th	yellow	Saturn
1	D	1st		spangled	fixed stars

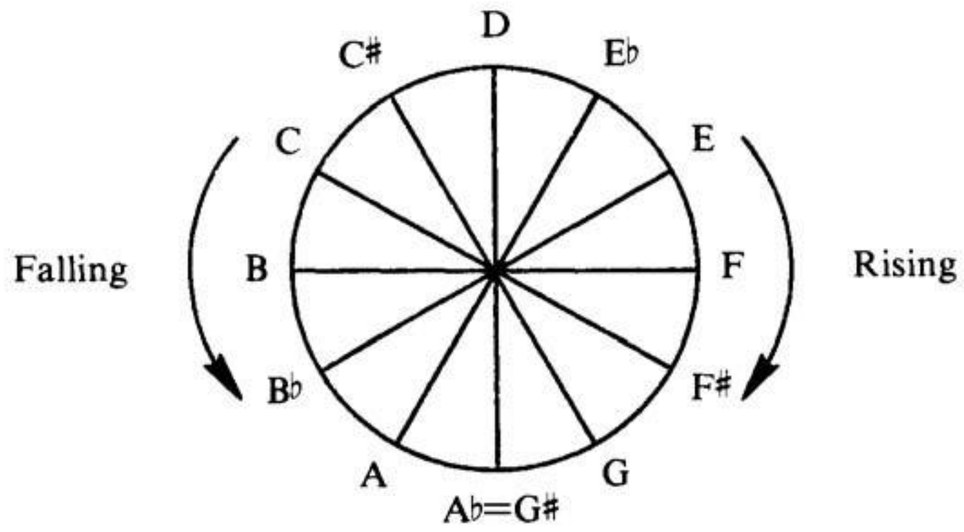
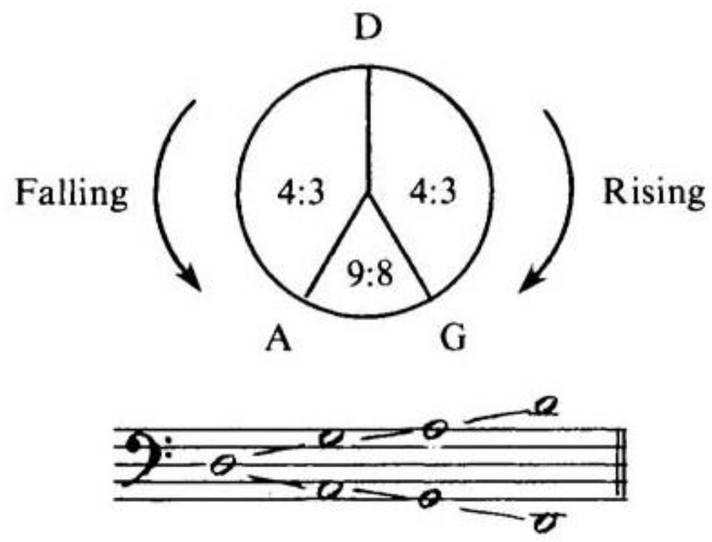
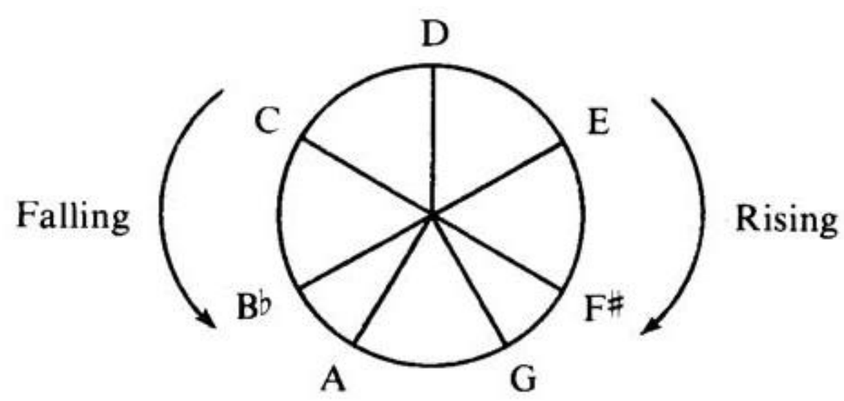


FIGURE 1

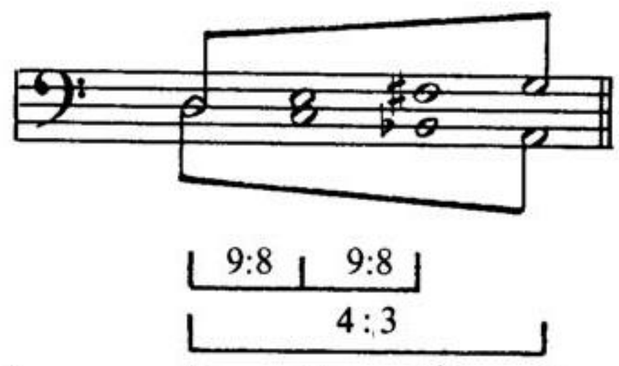
The Equal Tempered Scale



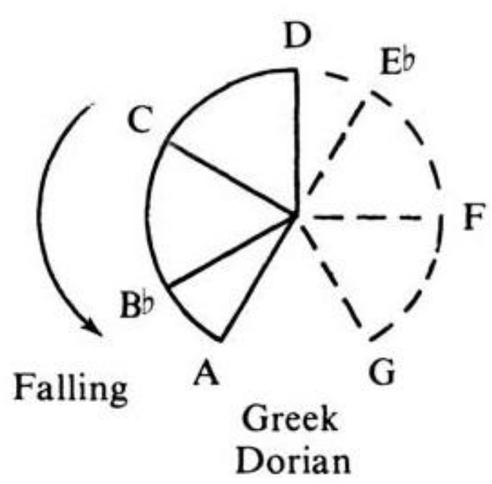
Rising	D		G		A		D
Falling	D		A		G		D
Ratios	6	:	8	: :	9	:	12



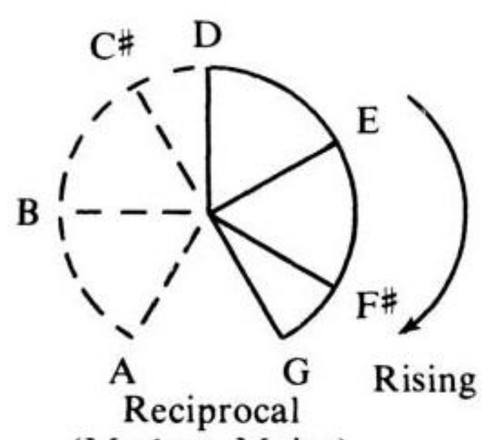
"Tone-numbers" 192 216 243 256



Rising	D	E	F#	G	Inverse Dorian
Falling	D	C	B♭	A	Dorian

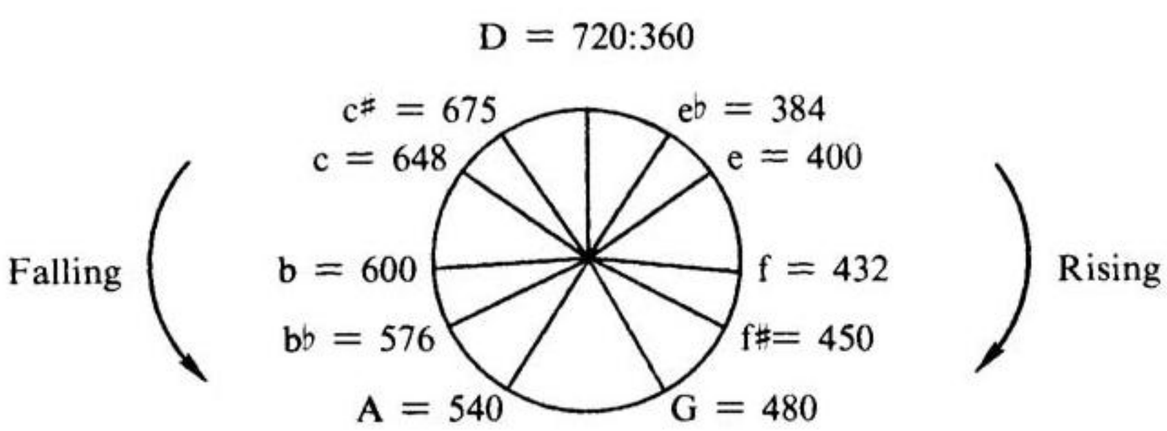


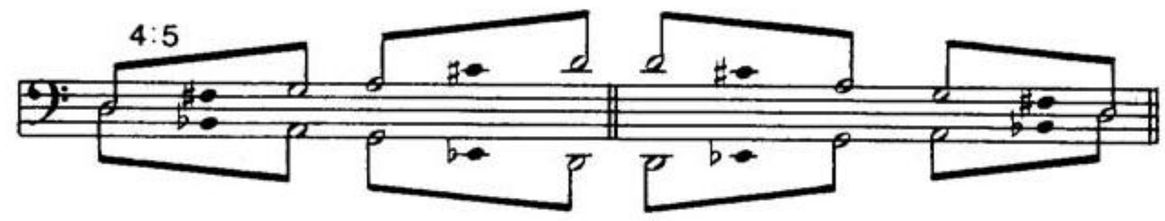
Greek Dorian



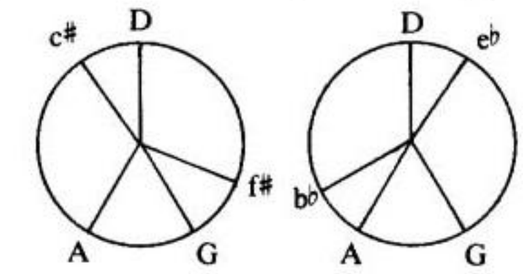
Reciprocal (Modern Major)

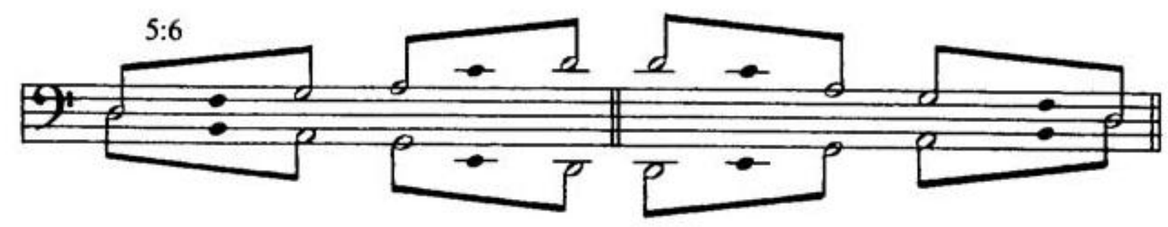
Smallest Integers	384	432	486	512	576	648	729	768
Falling (Dorian)	D	C	B♭	A	G	F	E♭	D
Rising (reciprocal)	D	E	F#	G	A	B	C#	D



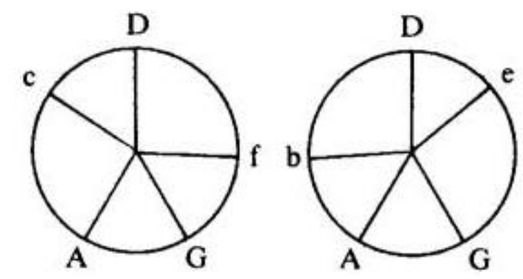


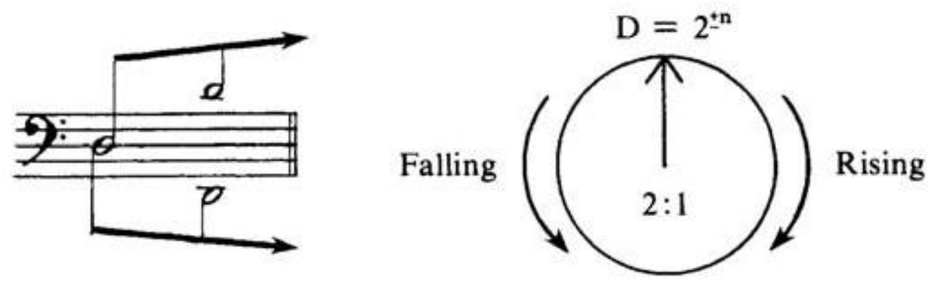
	24	30	32	36	45	*48*	30	32	40	45	48	*60*
Tonal Inverses	D	f# b♭	G A	A G	c# e♭	D	D	c# e♭	A G	G A	f# b♭	D
	6	:	8 : :	9	:	12	6	:	8 : :	9	:	12

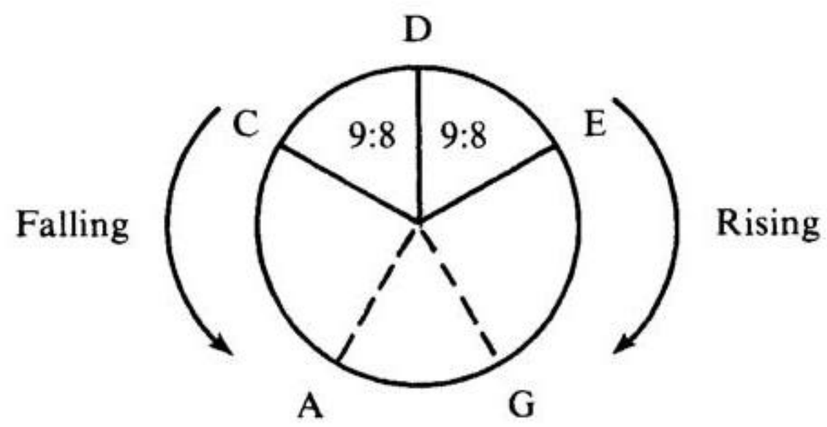


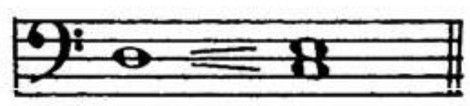


	30	36	40	45	54	*60*	18	20	24	27	30	*36*
Tonal Inverses	D	f b	G A	A G	c e	D	D	c e	A G	G A	f b	D
	6	:	8 : :	9	:	12	6	:	8 : :	9	:	12

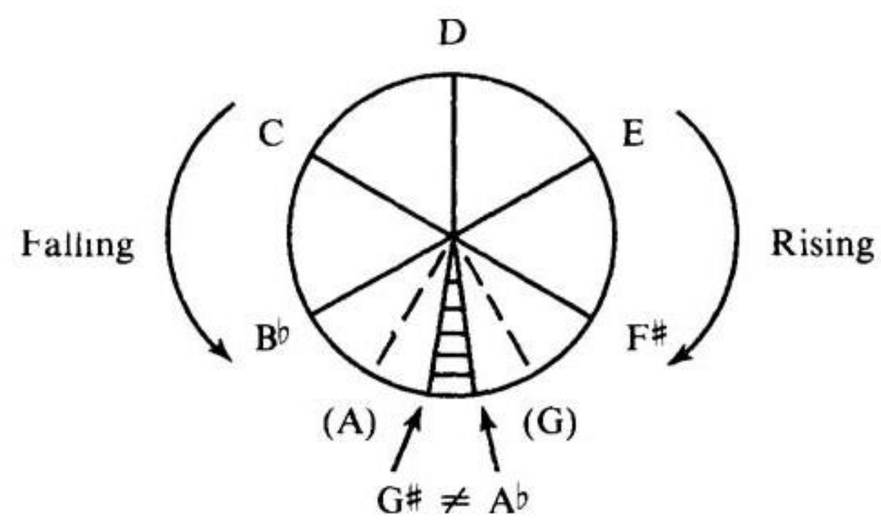








9:8



Subdivision	Integers	Units	Commas	Intervals
	B = 4096			2048
Diaschisma	4213	+117	"2"	
Diaschisma	4330	+117	"2"	
Comma	B♭ = 4374	+44	1	
Diaschisma	4491	+117	"2"	
Diaschisma	A = 4608	+117	"2"	

Total Commas = 9

Wholetone — Apotome — Lemma — Diesis

243 2187 — 9 256 2304

CANDIDATES

18 "PARENTS"	TEN-MAN TEAMS: THE TEN	RECIPROCALS
1. D 5040 × 6/7 = 4320, b^{*1};	× 7/12 = 2940, f^{*1};	$(b^{\natural 1}, 4320)$
2. c♯ 4725 × 6/7 = 4050, $a\sharp^{*2}$;		
3. c 4536 × 6/7 = 3888, a^{*2};	× 7/12 = 2646, $e\flat^{*2}$;	$d\sharp^{*2}$, 4800
4. C 4480 × 6/7 = 3840, a^{*1};		
5. b♯ 4375 × 6/7 = 3750, $g\sharp^{*2}$;		
6. b 4200 × 6/7 = 3600, $g\sharp^{*1}$;	× 7/6 = 4900, d^{*2};	d^{*2}, 2592
7. b♭ 4032 × 6/7 = 3456, g^{*2};	× 7/6 = 4704, $d\flat^{*2}$;	$d\sharp^{*2}$, 2700
8. A 3780 × 6/7 = 3240, $f\sharp^{*1}$;	× 7/6 = 4410, c^{*1};	e^{*1}, 2880
9. a♭ 3584 × 6/7 = 3072, f^{*2};		
10. g♯ 3500 × 6/7 = 3000 $e\sharp^{*2}$;		
11. g 3402 × 6/7 = 2916, e^{*2};	× 7/6 = 3969, $b\flat^{*2}$;	$[f\sharp^{*2}, 3200]^{\circ}$
12. G 3360 × 6/7 = 2880, e^{*1};	× 7/6 = 3920, $b\flat^{*1}$;	$f\sharp^{*1}$, 3240
13. f♯ 3150 × 6/7 = 2700, $d\sharp^{*2}$;	× 7/6 = 3675, a^{*2};	g^{*2}; 3456
14. f 3024 × 6/7 = 2592, d^{*2};	× 7/6 = 3528, $a\flat^{*2}$;	$g\sharp^{*2}$; 3600
15. E 2835 × 12/7 = 4860, $c\sharp^{*1}$;		
16. e 2800 × 12/7 = 4800, $c\sharp^{*2}$;		
17. e♭ 2688 × 12/7 = 4608, c^{*2};	× 7/6 = 3136, $g\flat^{*2}$;	$d\sharp^{*2}$, 4050
18. d♯ 2625 × 12/7 = 4500 $b\sharp^{*2}$;		

Guardians	Walking age	Nurses' strength	Guardians	Walking age	Nurses' strength
1. 5040/2³ = 315	2^9	2^0	20. 3528/2³ = 441	2^9	2^0
2. 4900/2³ = 1225	2^{11}	2^0	21. 3500/2³ = 875	2^{10}	2^0
3. 4800/2⁶ = 75	2^7	2^2	22. 3456/2⁷ = 27	2^5	2^5
4. 4725 = 4725	2^{13}	2^0	23. 3402/2 = 1701	2^{11}	2^0
5. 4704/2³ = 147	2^8	2^4	24. 3360/2³ = 105	2^7	2^3
6. 4536/2³ = 567	2^{10}	2^2	25. 3240/2³ = 405	2^9	2^0
7. 4480/2⁷ = 35	2^6	2^6	26. 3150/2 = 1575	2^{11}	2^0
8. 4410/2 = 2205	2^{12}	2^0	27. 3136/2⁶ = 49	2^6	2^6
9. 4375 = 4375	2^{13}	2^0	28. 3024/2⁴ = 189	2^8	2^2
10. 4320/2⁵ = 135	2^8	2^3	29. 2940/2³ = 735	2^{10}	2^0
11. 4200/2³ = 525	2^{10}	2^0	30. 2880/2⁶ = 45	2^6	2^6
12. 4050/2 = 2525	2^{12}	2^0	31. 2835 = 2835	2^{12}	2^0
13. 4032/2⁶ = 63	2^6	2^6	32. 2800/2⁴ = 175	2^8	2^2
14. 3969 = 3969	2^{12}	2^0	33. 2700/2³ = 675	2^{10}	2^0
15. 3920/2⁴ = 245	2^8	2^2	34. 2688/2⁷ = 21	2^5	2^5
16. 3780/2⁵ = 945	2^{10}	2^0	35. 2646/2 = 1323	2^{11}	2^0
17. 3675 = 3675	2^{11}	2^0	36. 2625 = 2625	2^{12}	2^0
18. 3600/2⁴ = 225	2^8	2^2	37. 2592/2⁵ = 81	2^7	2^1
19. 3584/2⁷ = 7	2^5	2^5			

1. Archytas' Diatonic and Ptolemy's Diatonic Toniaion

A G $f^{\sharp 1}$ E D C $b\flat^{\sharp 1}$ A
9:8 8:7 28:27 9:8 9:8 8:7 28:27

2. Didymus' Diatonic

A G f E D C $b\flat$
9:8 10:9 16:15 9:8 9:8 10:9 16:15 A

3. Ptolemy's Diatonic Malakon

D $e^{\sharp 1}$ $b\flat^{\sharp 2}$ A
8:7 10:9 21:20

4. Ptolemy's Diatonic Syntonon

A g f E D c $b\flat$ A
G f $e\flat$ D C $b\flat$ $a\flat$ G
$f\sharp$ E D $c\sharp$ b A G $f\sharp$
D c b A G $f\sharp$ e $e\flat$ D
10:9 9:8 16:15 9:8 10:9 9:8 16:15 C b

5. Didymus' Chromatic

A $f\sharp$ f E D b $b\flat$ A
D b $b\flat$ A G e $e\flat$ D
6:5 25:24 16:15 9:8 6:5 25:24 16:15

6. Ptolemy's Chromatic Malakon

A $f\sharp$ $f^{\sharp 1}$ E D b $b\flat^{\sharp 1}$ A
6:5 15:14 28:27 9:8 6:5 15:14 28:27

7. Archytas' Enharmonic

A f $f^{\sharp 1}$ E D $b\flat$ $b\flat^{\sharp 1}$ A
5:4 36:35 28:27 9:8 5:4 36:35 28:27

		1. D	5040				
	49:48 [	2. $d^{\sharp 2}$	4900	36:35	(1)		
50:49 [	64:63 [	3. $e\sharp^{*2}$	4800	28:27	(2)		
		4. $c\sharp$	4725	Comma	225:224		
		5. $d\flat^{*2}$	4704	28:27	(3)		
	81:80 [	6. c	4536				
	64:63 [	7. C	4480	36:35	(4)		
	126:125 [	8. $c^{\natural}$	4410	28:27	(5)		
49:48 [	——— [	9. $b\sharp$	4375				
		10. b^{*1}	4320	36:35	(6)		
		11. b	4200	28:27	(7)		
		12. $a\sharp^{*2}$	4050	Comma	225:224		
	64:63 [	13. $b\flat$	4032				
	81:80 [	14. $b\flat^{*2}$	3969	36:35	(8)		
		15. $b\flat^{*1}$	3920	28:27	(9)		
		16. A	3780	36:35	(10)		
		17. a^{*2}	3675	49:48			
		18. $g\sharp^{*2}$	3600				
	225:224 [	19. $a\flat$	3584	50:49	Pluto		
36:35 [	64:63 [	20. $a\flat^{*2}$	3528				
28:27 [	126:125 [	21. $g\sharp$	3500	49:48			9:8
		22. g^{*2}	3456				Interval of
	64:63 [	23. g	3402	36:35	(10)		Disjunction
	81:80 [	24. G	3360				
		25. $f\sharp^{*1}$	3240	28:27	(9)		
		26. $f\sharp$	3150	36:35	(8)		
		27. $g\flat^{*2}$	3136	Comma	225:224		
		28. f	3024	28:27	(7)		
		29. f^{*1}	2940	36:35	(6)		
	49:48 [	30. e^{*1}	2880	28:27	(5)		
	64:63 [	31. E	2835	36:35	(4)		
	81:80 [	32. e	2800				
		33. $d\sharp^{*2}$	2700	28:27	(3)		
		34. $e\flat$	2688	Comma	225:224		
	64:63 [	35. $e\flat^{*2}$	2646				
	126:125 [	36. $d\sharp$	2625	28:27	(2)		
49:48 [	——— [	37. d^{*2}	2592	36:35	(1)		
		1. D	2520				

Item	Completed progression		Falling pitch	Rising pitch	Original "portions"	"Means" inserted
1.	768		D	D	1	6
2.	864		C	E		
3.	972		B♭	F♯		
4.	1024		A	G		8
5.	1152		G	A		9
6.	1296		F	B		
7.	1458		E♭	C♯		
8.	1536		D	D	2	12
9.	1728		C	E		
10.	1944		B♭	F♯		
11.	2048		A	G		16
12.	2187		A♭	G♯		
13.	2304		G	A	3	18
14.	2592		F	B		
15.	2916		E♭	C♯		
16.	3072		D	D	4	24
17.	3456		C	E		27
18.	3888		B♭	F♯		
19.	4096		A	G		32
20.	4374		A♭	G♯		
21.	4608		G	A		36
22.	5184		F	B		
23.	5832		E♭	C♯		
24.	6144		D	D	8	48
25.	6561		D♭	D♯		
26.	6912		C	E	9	54
27.	7776		B♭	F♯		
28.	8192		A	G		
29.	8748		A♭	G♯		
30.	9216		G	A		
31.	10368		F	B		81
32.	11664	$(2^4 \cdot 3^6)$	E♭	C♯		
33.	12288	$(2^{12} \cdot 3)$	D	D		
34.	13122	$(2^1 \cdot 3^9)$	D♭	D♯		
35.	13824	$(2^9 \cdot 3^3)$	C	E		108
36.	15552	$(2^6 \cdot 3^5)$	B♭	F♯		
37.	16384	$(2^{14} \cdot 3^0)$	A	G		
38.	17496	$(2^3 \cdot 3^7)$	A♭	G♯		
39.	18432	$(2^{11} \cdot 3^1)$	G	A		
40.	19683	$(2^0 \cdot 3^9)$	G♭	A♯		
41.	20736	$(2^6 \cdot 3^4)$	F	B	27	162

FIGURE 40

Trigonometric Functions of the 37 Guardians

	Guardians	ratio p/q	L = 2pq	M = p^2-q^2	N = p^2+q^2	degrees
	D	5040	1/1	—	—	0
1	$d^{\sharp 2}$	4900	36/35	2520	71	2521	1.61
2	$c\sharp^{*2}$	4800	21/20	840	41	841	2.79
3	$c\sharp$	4725	16/15	480	31	481	3.70
4	$d\flat^{*2}$	4704	15/14	420	29	421	3.95
5	c	4536	10/9	180	19	181	6.03
6	C	4480	9/8	144	17	145	6.73
7	$c^{\natural}$	4410	8/7	112	15	113	7.63
8	$b\sharp$	4375	144/125	36000	5111	36361	8.08
9	b^{*1}	4320	7/6	84	13	85	8.80
10	b	4200	6/5	60	11	61	10.39
11	$a\sharp^{*2}$	4050	56/45	5040	1111	5161	12.43
12	$b\flat$	4032	5/4	40	9	41	12.68
13	$b\flat^{*2}$	3969	80/63	10080	2431	10369	13.56
14	$b\flat^{*1}$	3920	9/7	126	32	130	14.25
15	A	3780	4/3	24	7	25	16.26
16	a^{*2}	3675	48/35	3360	1079	3529	17.80
17	$g\sharp^{*2}$	3600	7/5	70	24	74	18.92
18	$a\flat$	3584	45/32	2880	1001	3049	19.17
19	$a\flat^{*2}$	3528	10/7	140	51	149	20.02
20	$g\sharp$	3500	36/25	1800	671	1921	20.44
21	g^{*2}	3456	35/24	1680	649	1801	21.12
22	g	3402	40/27	2160	871	2329	21.96
23	G	3360	3/2	12	5	13	22.62
24	$f\sharp^{*1}$	3240	14/9	252	115	277	24.53
25	$f\sharp$	3150	8/5	80	39	89	25.99
26	$g\flat^{*2}$	3136	45/28	2520	1241	2809	26.22
27	f	3024	5/3	30	16	34	28.07
28	f^{*1}	2940	12/7	168	95	193	29.49
29	e^{*1}	2880	7/4	56	33	65	30.51
30	E	2835	16/9	288	175	337	31.26
31	e	2800	9/5	90	56	106	31.89
32	$d\sharp^{*2}$	2700	28/15	840	559	1009	33.64
33	$e\flat$	2688	15/8	240	161	289	33.86
34	$e\flat^{*2}$	2646	40/21	1680	1159	2041	34.60
35	$d\sharp$	2625	48/25	2400	1679	2929	34.98
36	d^{*2}	2592	35/18	1260	901	1549	35.37
37	D	50402	2/1	4	3	5	36.87

FIGURE 41

Symmetric Trigonometric Functions within 432,000

		tones	ratio p/q	L = 2pq	M = p^2-q^2	N = p^2+q^2	degrees
	D	432,000	1/1	—	—	—	0
1	$c\sharp$	421,875	128/125	32000	759	32009	1.36
2	$d\flat$	414,720	25/24	1200	49	1201	2.34
3	$c\sharp$	405,000	16/15	480	31	481	3.70
4	$c\sharp$	400,000	27/25	1350	104	1354	4.41
5	c.	388,800	10/9	180	19	181	6.03
6	C	384,000	9/8	144	17	145	6.73
7	$b\sharp$	375,000	144/125	36000	5111	36361	8.08
8	$c\flat$	373,248	125/108	27000	3961	27289	8.35
9	$c\flat$	368,640	75/64	9600	1529	9721	9.05
10	B	364,500	32/27	1728	295	1753	9.69
11	b	360,000	6/5	60	11	61	10.39
12	$b\flat$	345,600	5/4	40	9	41	12.68
13	$a\sharp$	337,500	32/25	1600	399	1649	14.-
14	$b\flat$	331,776	125/96	24000	6409	24841	14.95
15	A	324,000	4/3	24	7	25	16.26
16	a	320,000	27/20	1080	329	1129	16.94
17	$a\flat$	307,200	25/18	900	301	949	18.49
18	$a\flat$	307,200	45/32	2880	1001	3049	19.17
19	$g\sharp$	303,750	64/45	5760	2071	6121	19.78
20	$g\sharp$	300,000	36/25	1800	671	1921	20.44
21	g	291,600	40/27	2160	871	2329	21.96
22	G	288,000	3/2	12	5	13	22.62
23	$f\sharp$	281,250	192/125	48000	21239	52489	23.87
24	$g\flat$	276,480	25/16	800	369	881	24.76
25	$f\sharp$	270,000	8/5	80	39	89	25.99
26	f	259,200	5/3	30	16	34	28.07
27	F	256,000	27/16	864	473	985	28.70
28	$e\sharp$	253,125	128/75	19200	10759	22009	29.26
29	$e\sharp$	250,000	216/125	54000	31031	62281	29.88
30	$f\flat$	248,832	125/72	18000	10441	20809	30.12
31	E	243,000	16/9	288	175	337	31.26
32	e	240,000	9/5	90	56	106	31.89
33	$e\flat$	233,280	50/27	2700	1771	3229	33.26
34	$e\flat$	230,400	15/8	240	161	289	33.86
35	$d\sharp$	225,000	48/25	2400	1679	2929	34.98
36	$e\flat$	221,184	125/64	16000	11529	19721	35.78
37	D	216,000	2/1	4	3	5	36.87

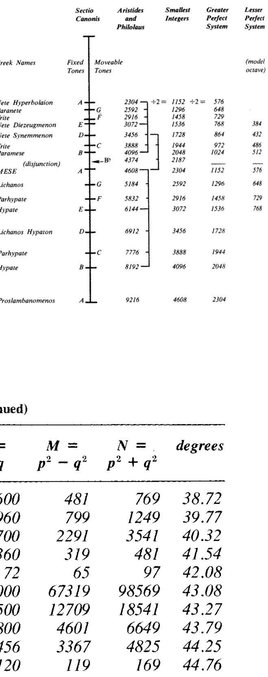


FIGURE 40 (continued)

	Guardians	ratio p/q	L = 2pq	M = p^2-q^2	N = p^2+q^2	degrees
38 = 1	$d^{\sharp 2}$	49002	72/35	5040	3959	6409	38.15
39 = 2	$c\sharp^{*2}$	48002	21/10	420	341	541	39.07
40 = 4	$d\flat^{*2}$	47042	15/7	210	176	274	39.97
41 = 5	c	45362	20/9	360	319	481	41.54
42 = 6	C	44802	9/4	72	65	97	42.08
43 = 7	$c^{\natural 1}$	44102	16/7	224	207	305	42.74
44 = 9	$b^{\sharp 1}$	43202	7/3	42	40	58	43.60
45 = 10	b	42002	12/5	120	119	169	44.76
46 = 11	$a\sharp^{*2}$	40502	112/45	10080	10519	14569	46.22
47 = 12	$b\flat$	40322	5/2	20	21	29	46.40
48 = 14	$b\flat^{*1}$	39202	28/9	252	275	373	47.50
49 = 15	A	47802	8/3	48	55	73	48.89
50 = 17	$g\sharp^{*2}$	36002	14/5	140	171	221	50.69
51 = 18	$a\flat$	35842	45/16	1440	1769	2281	50.85
52 = 19	$a\flat^{*2}$	35282	20/7	280	351	449	51.42
53 = 20	$g\sharp$	35002	72/25	3600	4559	5809	51.70
54 = 21	g^{*2}	34562	24/8	3360	4324	5476	52.15
55 = 22	g	34022	80/27	4320	5671	7129	52.70
56 = 23	G	33602	3/1	6	8	10	53.13
57 = 24	$f\sharp^{*1}$	32402	28/9	504	703	865	54.36
58 = 25	$f\sharp$	31502	16/5	160	231	281	55.29
59 = 26	$g\flat^{*2}$	31362	45/14	1260	1829	2221	55.44
60 = 27	f	30242	10/3	60	91	109	56.60
61 = 28	f^{*1}	29402	24/7	336	527	625	57.48
62 = 29	e^{*1}	28802	7/2	28	45	53	58.11
63 = 31	e	28002	18/5	180	299	349	58.95
64 = 32	$d\sharp^{*2}$	27002	56/15	1680	2911	3361	60.01
65 = 33	$e\flat$	26882	15/4	120	209	241	60.14
66 = 34	$e\flat^{*2}$	26462	20/3	360	5959	6841	60.58
67 = 36	d^{*2}	25922	35/9	630	1144	1306	61.16
68 = 37	D	50404	4/1	8	15	17	61.93

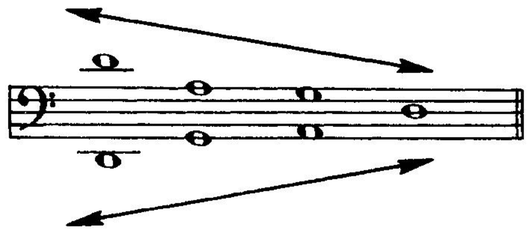
FIGURE 41 (Continued)

	tones	ratio p/q	L = 2pq	M = p^2-q^2	N = p^2+q^2	degrees
38 = 2	$d\flat$	207,360	25/12	600	481	769	38.72
39 = 3	$c\sharp$	202,500	32/15	960	799	1249	39.77
40 = 4	$c\sharp$	200,000	54/25	2700	2291	3541	40.32
41 = 5	c	194,400	20/9	360	319	481	41.54
42 = 6	C	192,000	9/4	72	65	97	42.08
43 = 7	$b\sharp$	187,500	288/125	72000	67319	98569	43.08
44 = 8	$c\flat$	186,624	125/54	13500	12709	18541	43.27
45 = 9	$c\flat$	184,320	75/32	4800	4601	6649	43.79
46 = 10	B	182,250	64/27	3456	3367	4825	44.25
47 = 11	b	180,000	12/5	120	119	169	44.76

| | | | | | | |

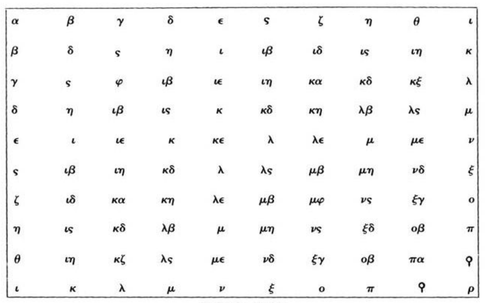
"DOWNWARD"		"UPWARD"
Toward the Infinitely Large	12 : 9 :: 8 : 6	Toward 1 Meaning Part
Toward the Infinitely Small	$\frac{1}{12} : \frac{1}{9} :: \frac{1}{8} : \frac{1}{6}$	Toward 1 Meaning Whole

"Downward" to Infinity



"Upward" to the "ONE"

Falling	D		A		G		D
Rising	D		G		A		D
	12	:	9	::	8	:	6
	$\frac{1}{12}$	:	$\frac{1}{9}$	::	$\frac{1}{8}$	:	$\frac{1}{6}$



a) Greek notation

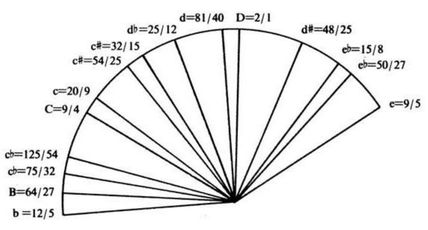
1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

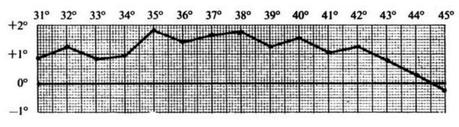
b) Hindu-Arabic notation

FIGURE 43

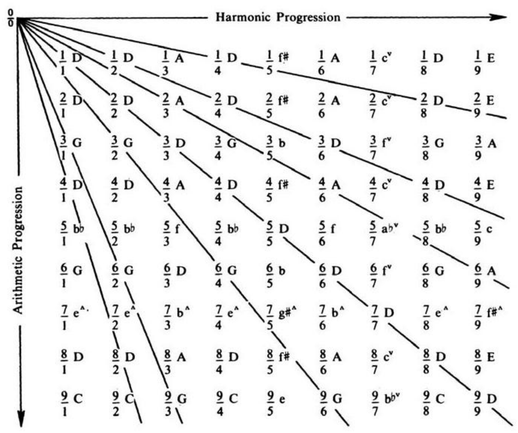
Tonal Interpretation of Plimpton 322

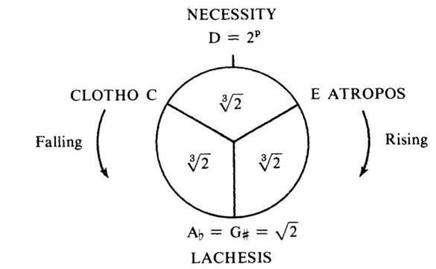
Tone	*line*	*ratio*	*2pq*	$p^2 - q^2$	$p^2 + q^2$	*degrees*
e	17	9/5	90	56	106	31.89*†
e♭	16	50/27	2700	1771	3229	33.26*
e♭	15	15/8	240	161	289	33.86*†
d♯	14	48/25	2400	1679	2929	34.98*
D	13	2/1	60	45	75	36.87*†
d	12	81/40	6480	4961	8161	37.44
d♭	11	25/12	600	481	769	38.72*
c♯	10	32/15	960	799	1249	39.77*†
c♯	9	54/25	2700	2291	3541	40.32*
c	8	20/9	360	319	481	41.54*†
C	7	9/4	72	65	97	42.08*†
c♭	6	125/54	13500	12709	18541	43.27*
c♭	5	75/32	4800	4601	6649	43.79*
B	4	64/27	3456	3367	4825	44.25*
b	3	12/5	120	119	169	44.76*†

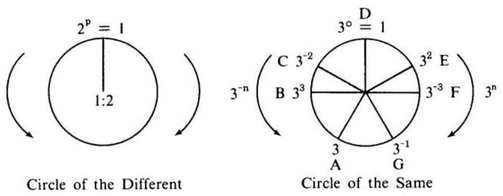


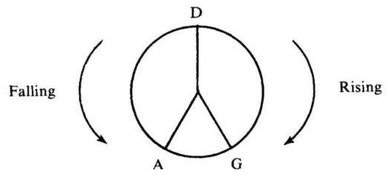


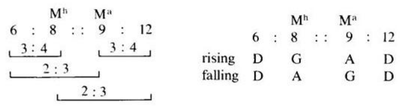
*Also in figure 41 (*Republic*)
†Also in figure 40 (*Laws*)











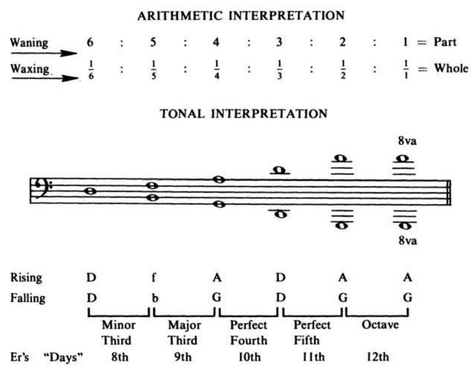
Greek Dorian	D	c	b♭	A	G	f	e♭	D	(falling)
Reciprocal Dorian	D	e	f♯	G	A	b	c♯	D	(rising)
Ratios:	1				:			2	
	2		:		3		:	4	
	4	:	5	:	6				
					4	:	5		
		5	:	6					
				4	:	5	:	6	

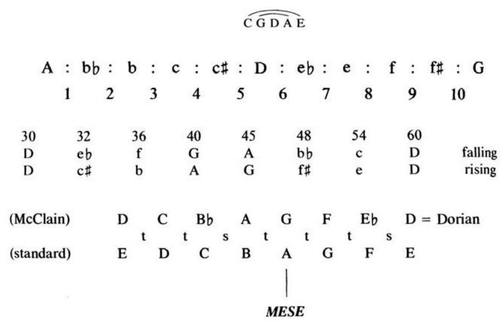
"the root 4:3"	6	:		8	::	9	:		12			
	12	:		9	::	8	:		6			
"friends" 4:5	24	:	30	:	32	:	36	:	45	:	48	"waxing"
	60	:	48	:	45	:	40	:	32	:	30	"waning"
"friends" 5:6	30	:	36	:	40	:	45	:	54	:	60	"waxing"
	36	:	30	:	27	:	24	:	20	:	18	"waning"

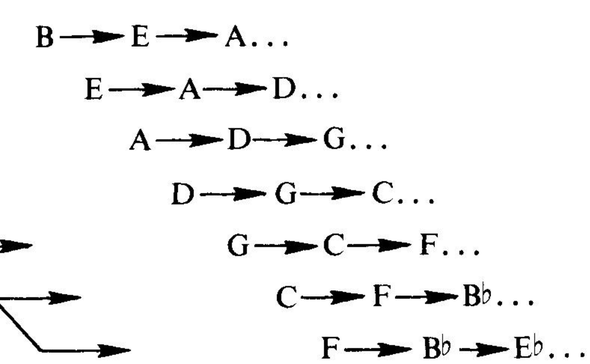
"Guardians"	30	32	36	40	45	48	54	60
Greek Dorian	D	e♭	f	G	A	b♭	c	D
Reciprocal Dorian	D	c♯	b	A	G	f♯	e	D

rising	D	E	F	G	A	B	C	D
	t	s	t	t	t	s	t	
falling	D	C	B	A	G	F	E	D

Tones:	D	e♭	e	f	f♯	G	A	b♭	b	c	c♯	D
"Waxing"	360	384	400	432	450	480	540	576	600	648	675	720
"Waning"	720	675	648	600	576	540	480	450	432	400	384	360







Arithmetical Implication

5,184	5,832	6,561	6,912	7,776	8,192	9,216	10,368
D	C	B♭	A	G	F♯	E	D
192	216	243	256	256	243	216	192

Dorian model (8:9) Reciprocal Dorian

$$8^6 = 262144 = A\flat = 512^2 = 2^{18}; \times 2 = 524288$$
$$\times \tfrac{9}{8} = 294912 = B\flat$$
$$\times \tfrac{9}{8} = 331776 = C$$
$$\times \tfrac{9}{8} = 373248 = D \text{ (= center of symmetry)}$$
$$\times \tfrac{9}{8} = 419904 = E$$
$$\times \tfrac{9}{8} = 472392 = F\sharp$$
$$\times \tfrac{9}{8} = 531441 = G\sharp = 729^2 = 9^6$$

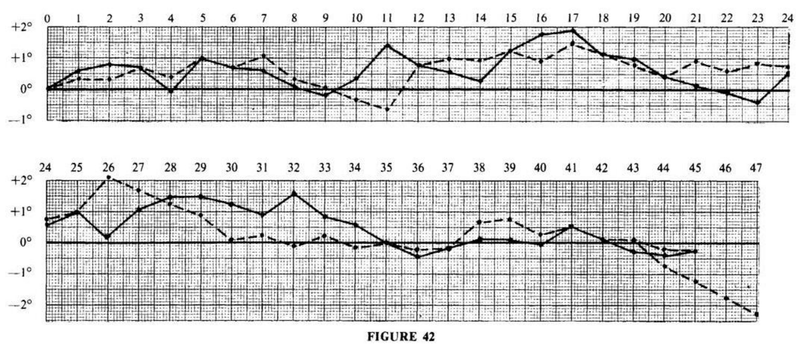


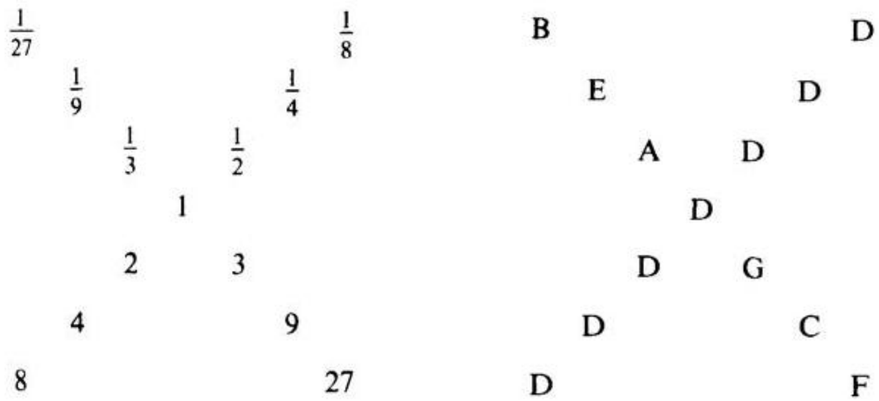
FIGURE 42

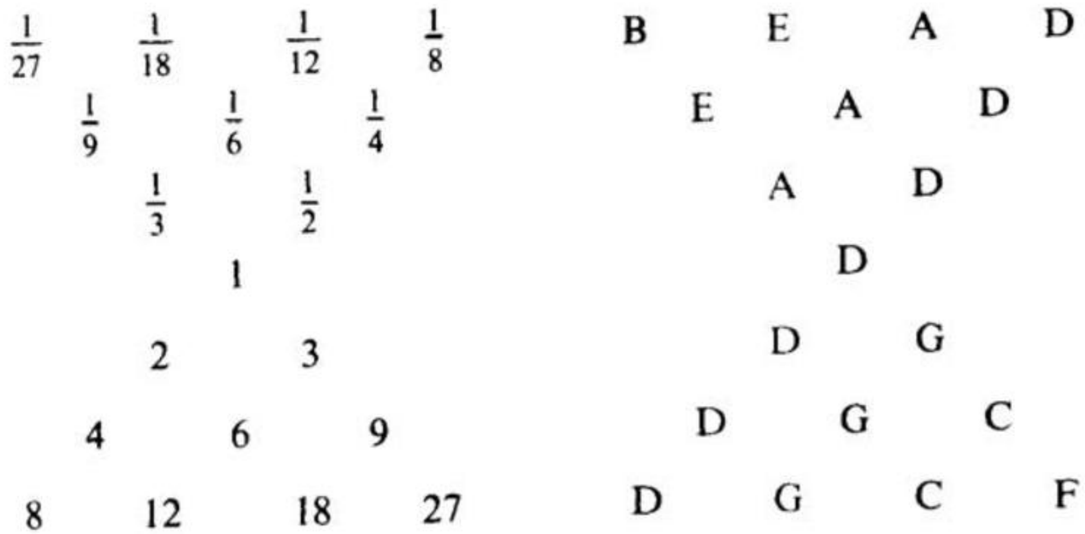
Consecutive Guardians as Generators of Consecutive Pythagorean Triangles

The horizontal axis of the graph correlates consecutive guardians with consecutive degrees in the Pythagorean triangles they generate. The vertical dimension is intended to exaggerate discrepancies between the Archytas tuning of *Laws* (————) and the Just tuning of the *Republic* (– – – –). The flatter the curve the more accurately successive ratios correlate with successive degrees. The *Republic* curve can be improved by the deletion of elements 44 and 46.

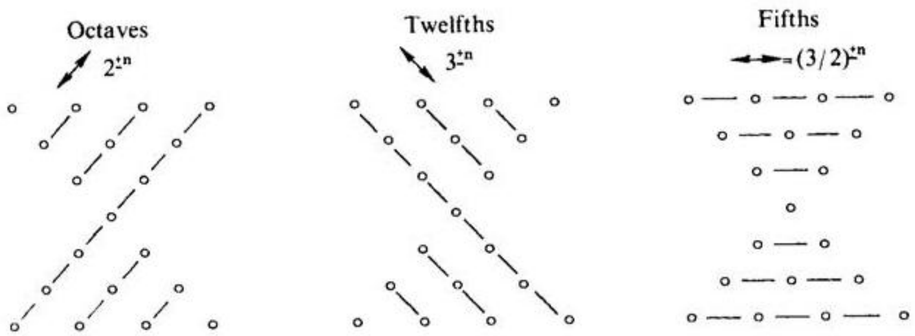
Figure 10: Possible quantification of Akkadian heptatonic scales to match Plato's 'two harmonies'

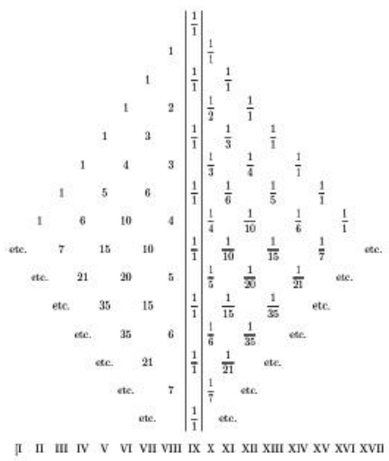
Akkadian Scale Name	Heptatonic scale note, with possible quantification proportional to inferred frequency and relative note ratio													
išartu	E		F		G		A		B		C		D
'normal'	2700		2880		3240		3600		4050		4320		4800
(Dorian)		16:15		9:8		10:9		9:8		16:15		10:9	
kitmu	E		F#		G		A		B		C		D
'closed'	2700		3000		3200		3600		4050		4320		4800
(Hypodorian)		10:9		16:15		9:8		9:8		16:15		10:9	
embūbu	E		F#		G		A		B		C#		D
'reed pipe'	2700		3000		3200		3600		4050		4500		4800
(Phrygian)		10:9		16:15		9:8		9:8		10:9		16:15	
pītu	E		F#		G#		A		B		C#		D
'open'	2700		3000		3375		3600		4050		4050		4800
(Hypophrygian)		10:9		9:8		16:15		9:8		10:9		16:15	
nīd qabli	E		F#		G#		A		B		C#		D#
'fall of the middle'	2700		3000		3375		3600		4050		4500		5000
(Lydian)		10:9		9:8		16:15		9:8		10:9		10:9	
nīš gabarî	E		F#		G#		A#		B		C#		D#
'rise of the duplicate'	2700		3000		3375		3750		4000		4500		5000
(Hypolydian)		10:9		9:8		10:9		16:15		9:8		10:9	
qablītu	E#(F?)		F#		G#		A#		B		C#		D#
'middle'	2880		3072		3456		3840		4096		4608		5120
(Mixolydian)		16:15		9:8		10:9		16:15		9:8		10:9	
or	E		F		G		A		Bb		C		D
	2700		2880		3240		3600		3840		4320		4800

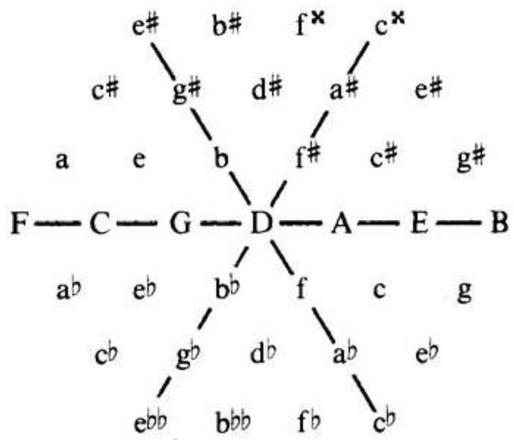




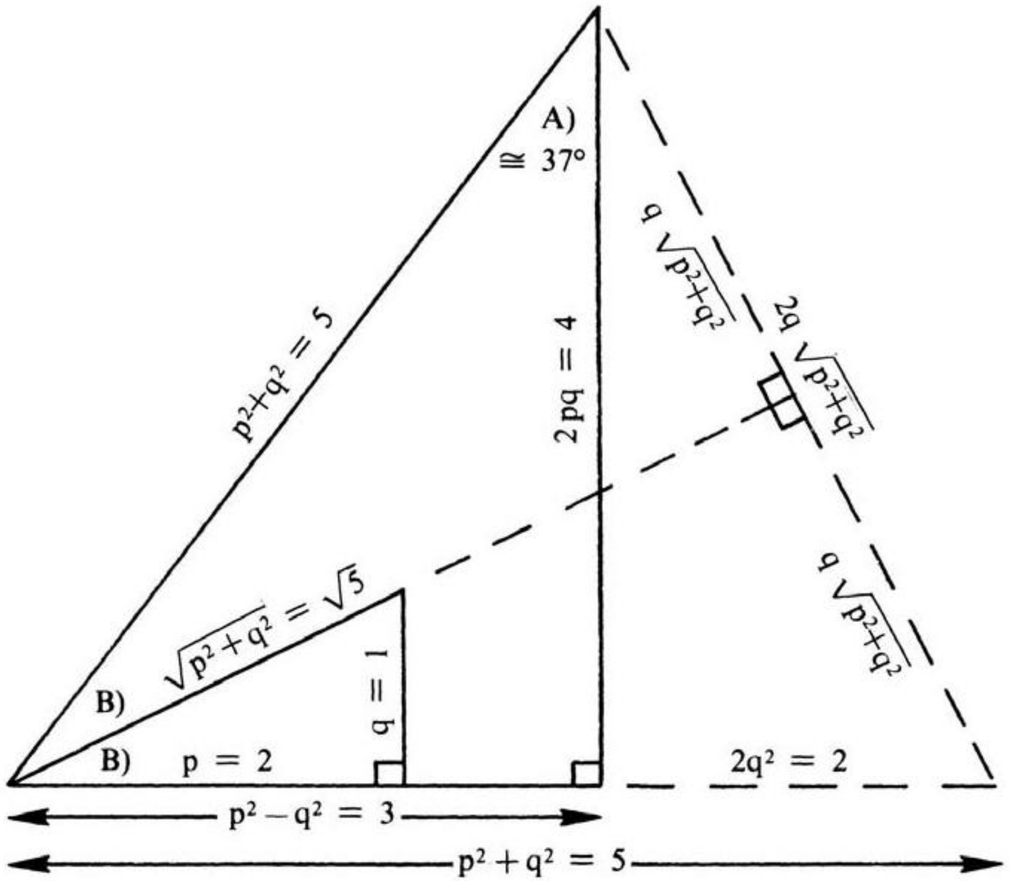
Plato's Cross With The Means Inserted



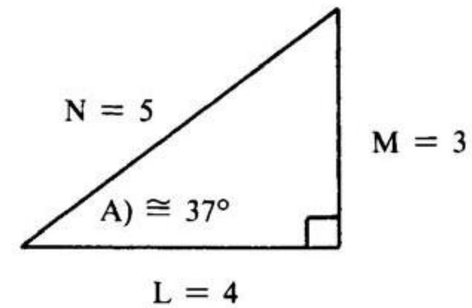


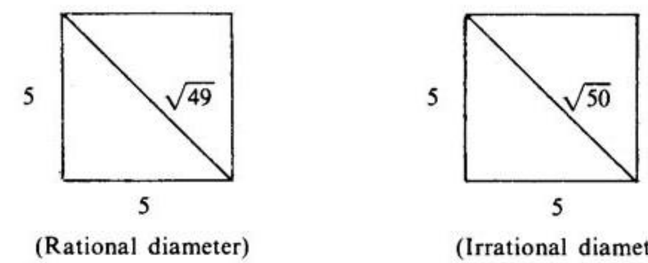


1/27		1/1		1/12		1/8
	1/9		1/6		1/4	
		1/3		1/2		
			1			
		2		3		
	4		6		9	
8		12		18		27

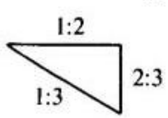


opposite side	*adjacent side*	*hypotenuse*
$L = 2\,pq$	$M = p^2 - q^2$	$N = p^2 + q^2$
	Example: $p = 2,\ q = 1$	
$L = 2 \times 2 \times 1 = 4$	$M = 2^2 - 1^2 = 3$	$N = 2^2 + 1^2 = 5$





										frequency	wave length
1	2	4	8	16	32	64	128	256	512 =	A	G
	3	6	12	24	48	96	192	384	768 =	D	D
		9	18	36	72	144	288	576	1152 =	G	A
			27	54	108	216	432	864	1728 =	C	E
				81	162	324	648	1296	2592 =	F	B
					243	486	972	1944	3888 =	B♭	F♯
						729	1458	2916	5832 =	E♭	C♯
							2187	4374	8748 =	A♭	G♯
								6561	13122 =	D♭	D♯
									19683 =	G♭	A♯



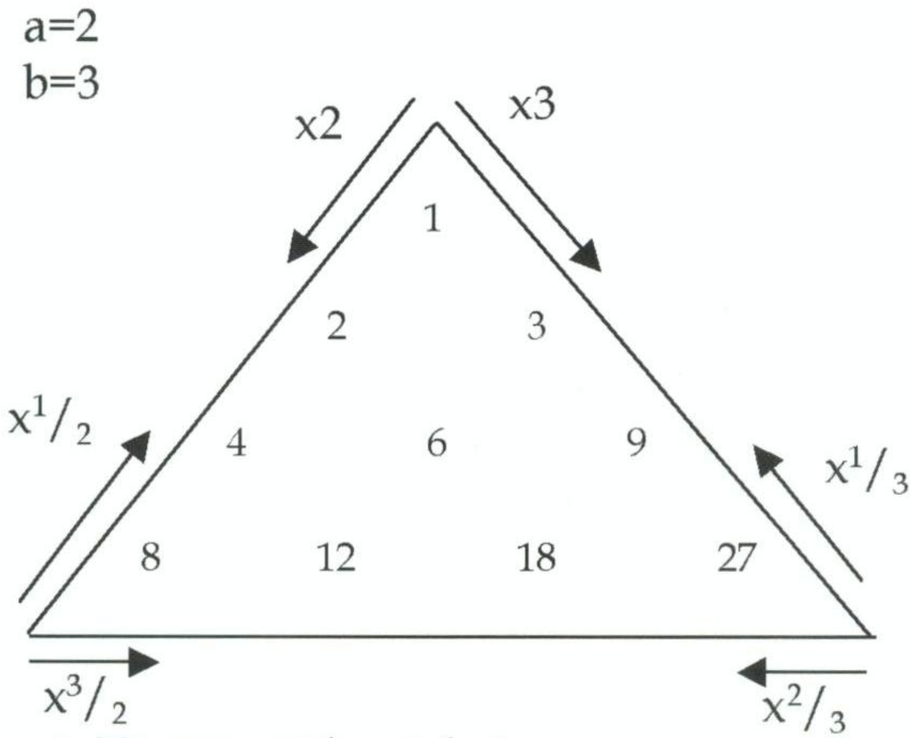


Figure 3: Tetracyts with a=2, b=3

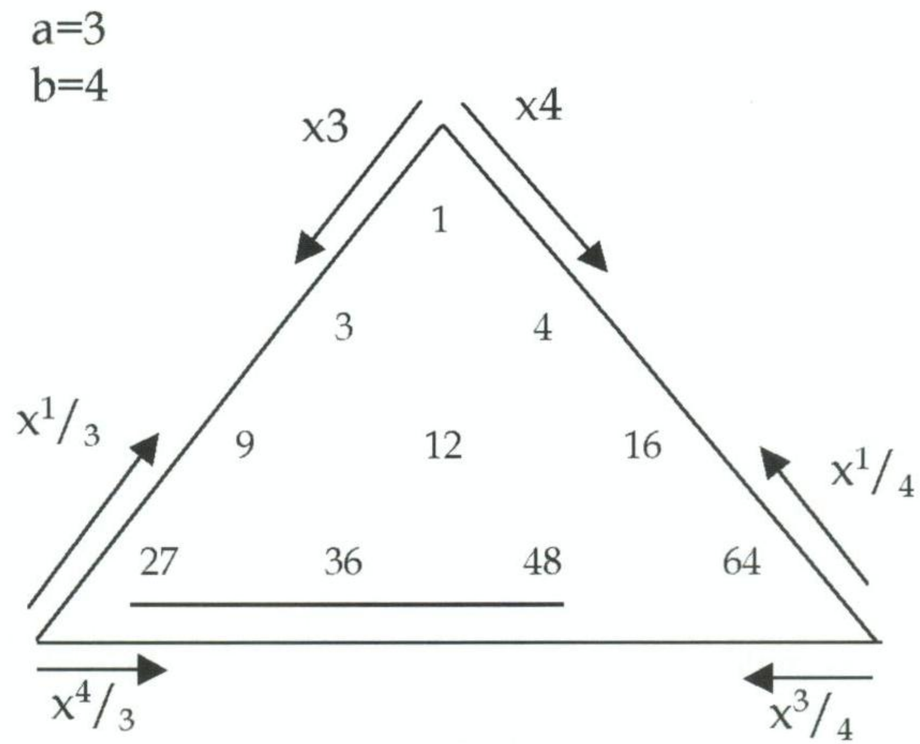
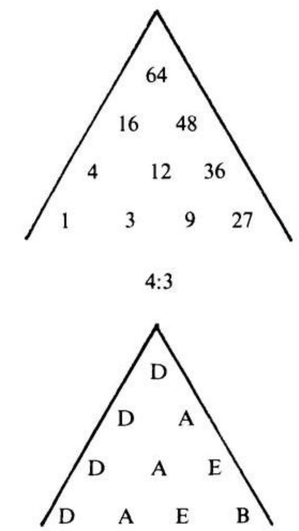


Figure 4: Tetractys with a=3, b=4



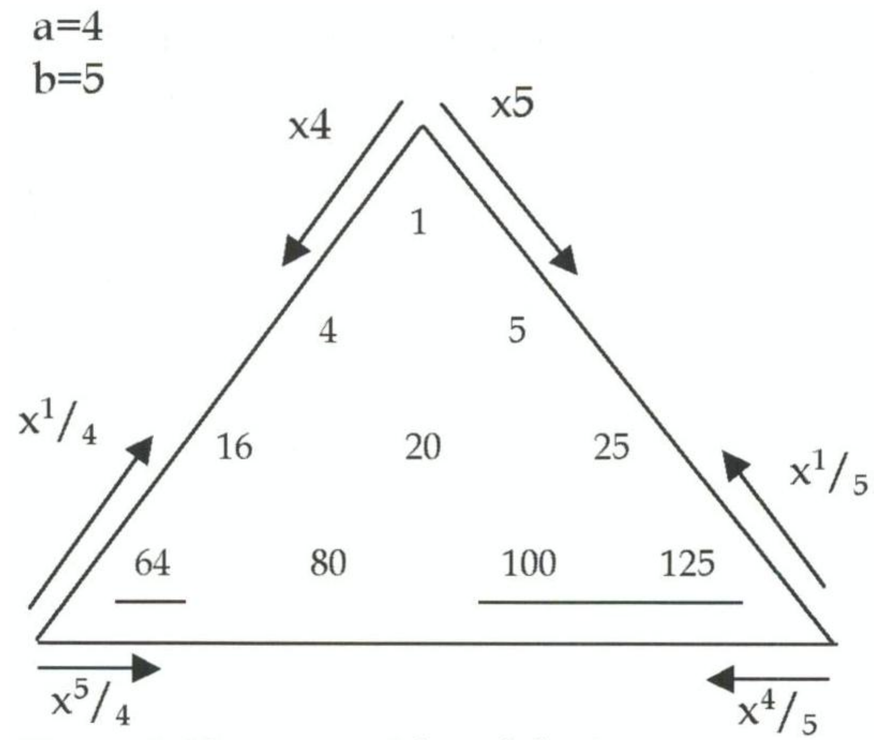


Figure 5: Tetractys with a=4, b=5

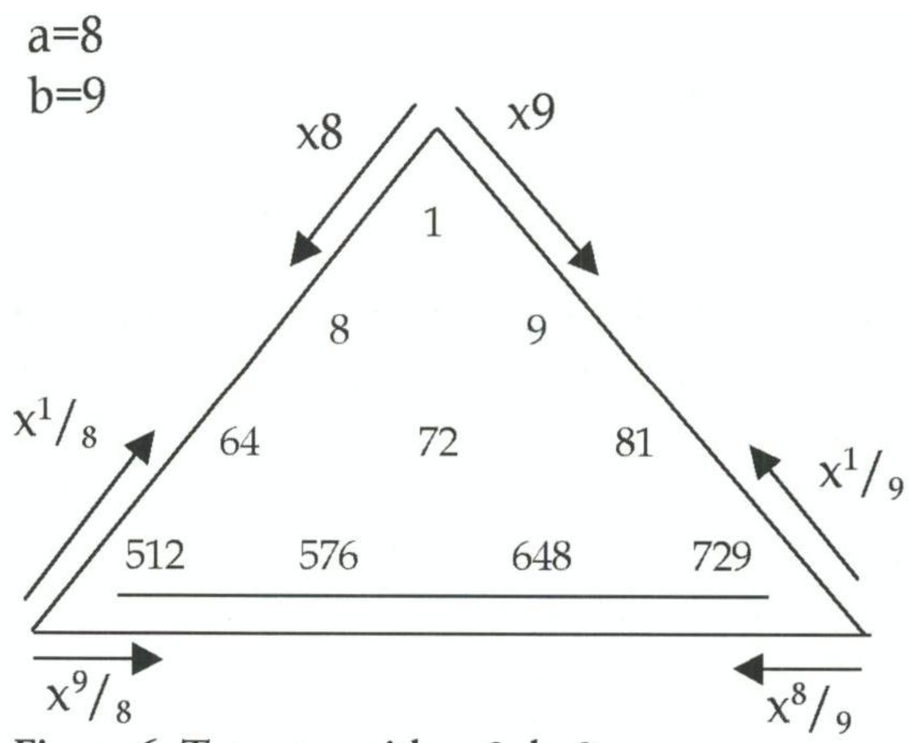
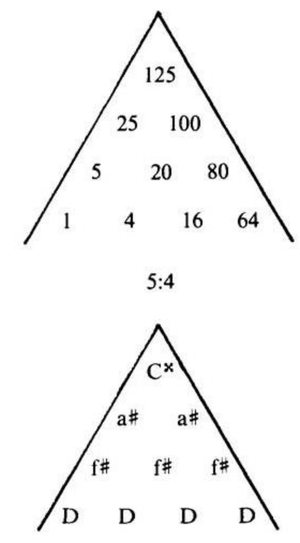


Figure 6: Tetractys with a=8, b=9



The Tone-Field Bounded by the Successive Powers of 60 Interpreted Dialectically

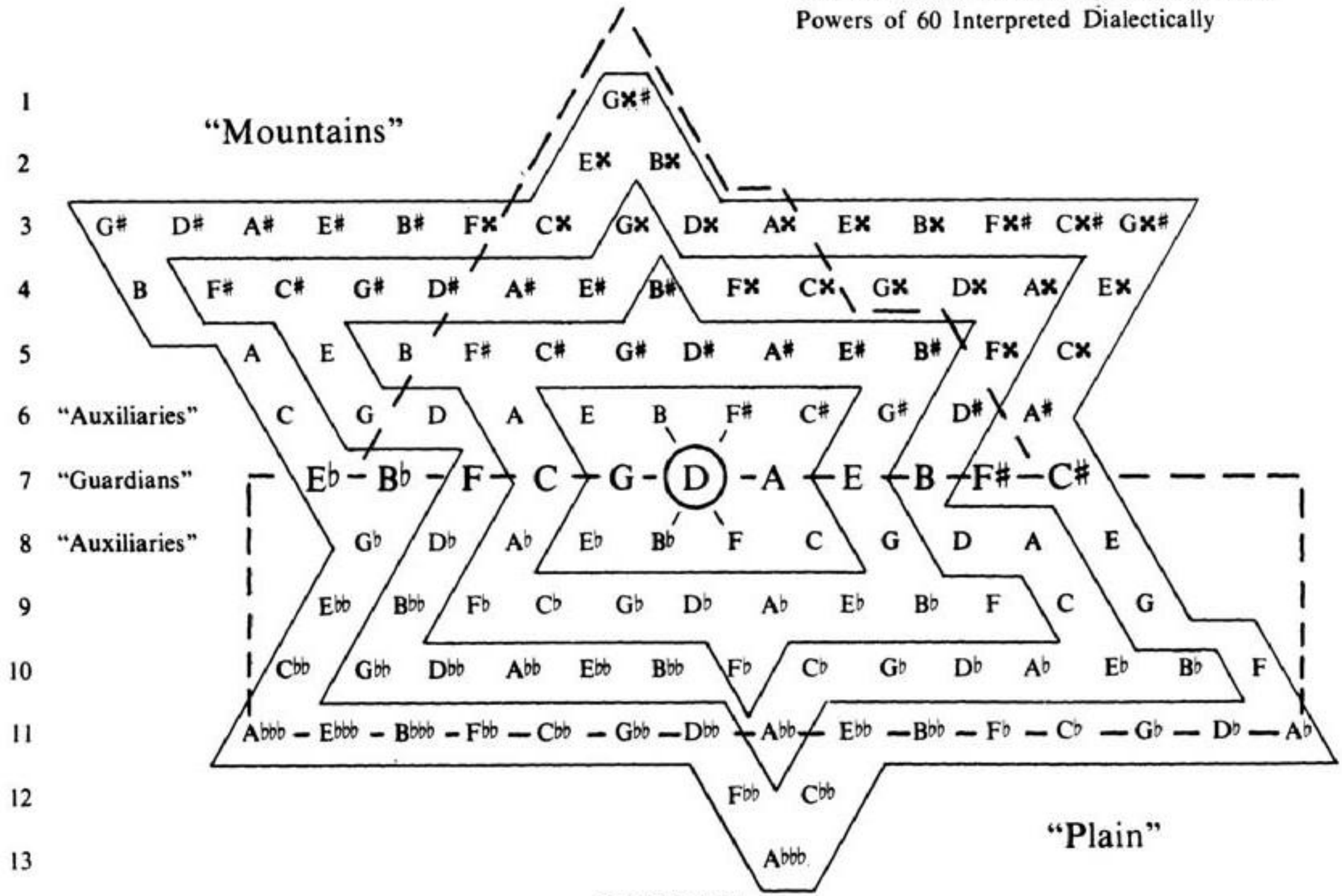
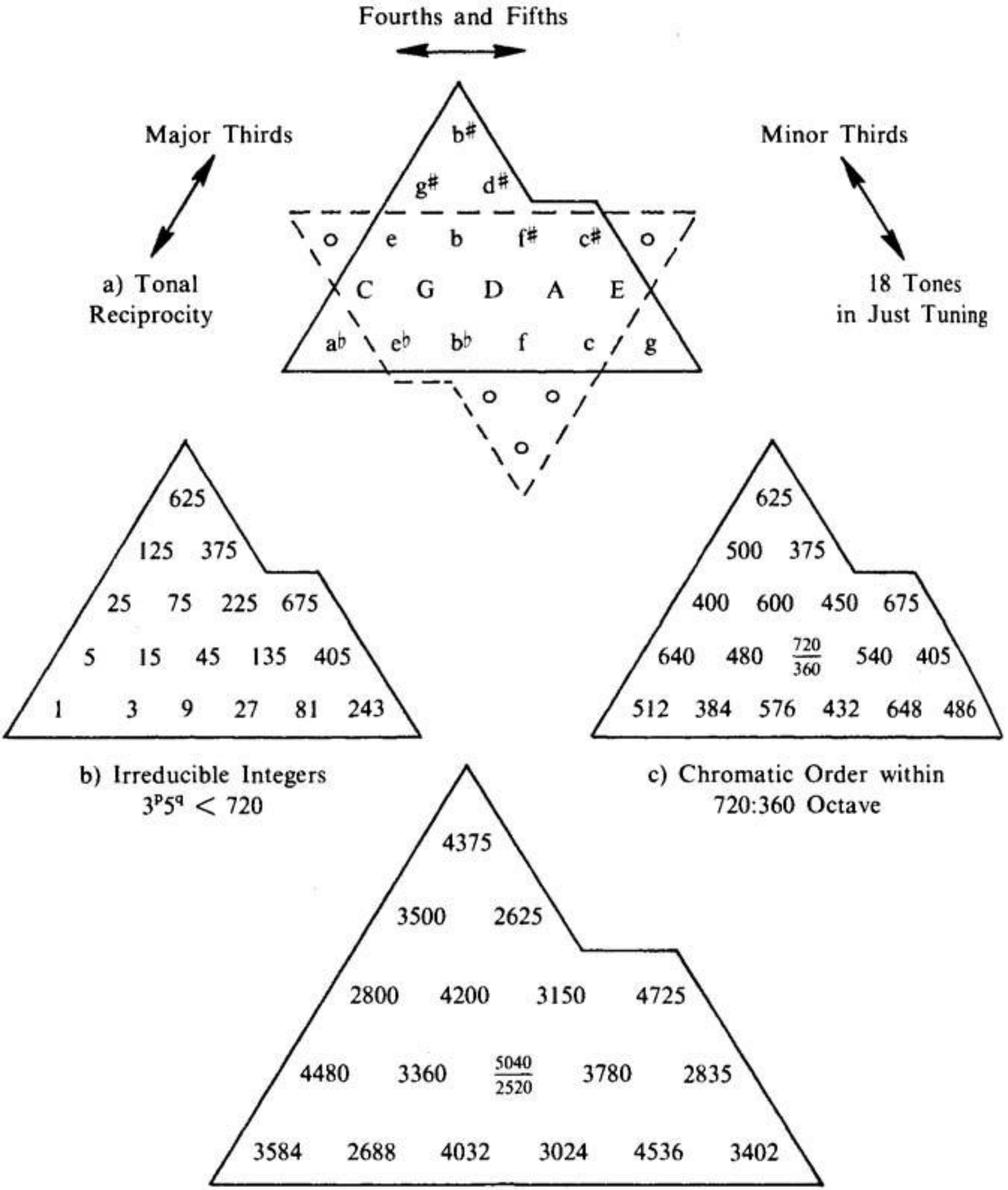
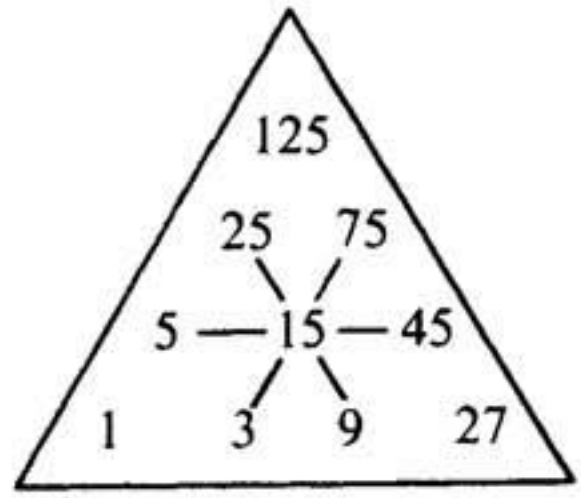


FIGURE 31

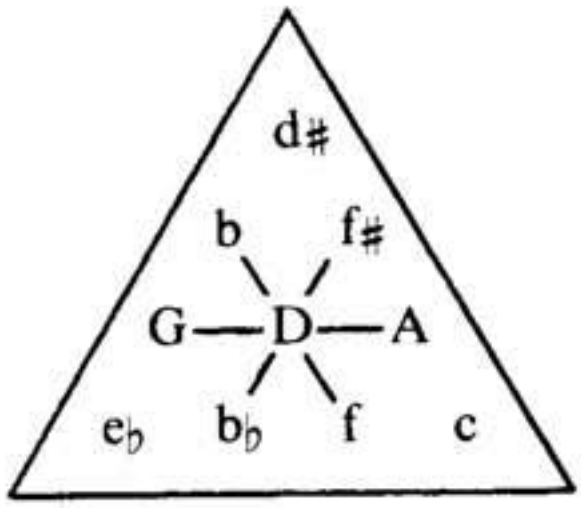
The Plain of Atlantis

The circular capitol city at D is set in the side of the plain and enclosed by the mountains. Tones are generated according to the multiplication tables of figures 4 and 8, and graphed as radial cuts in the tone-circles of figure 30.

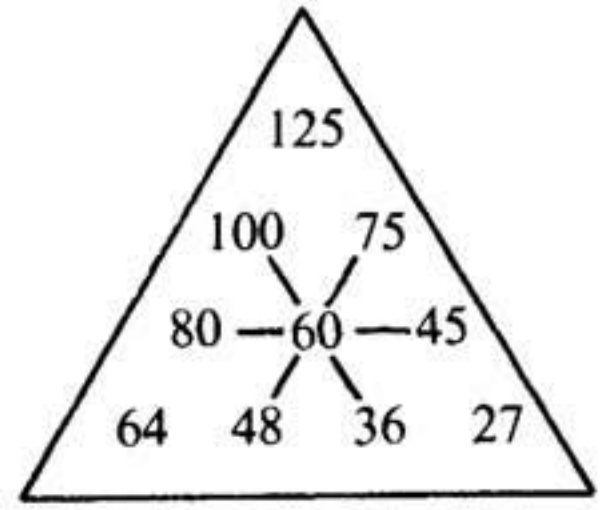

Fourths and Fifths
Major Thirds
Minor Thirds
b#
g# d#
o e b f# c# o
C G D A E
a♭ e♭ b♭ f c g
o o
o
a) Tonal Reciprocity
18 Tones in Just Tuning
625
125 375
25 75 225 675
5 15 45 135 405
1 3 9 27 81 243
b) Irreducible Integers
$3^p5^q < 720$
625
500 375
400 600 450 675
640 480 $\frac{720}{360}$ 540 405
512 384 576 432 648 486
c) Chromatic Order within 720:360 Octave
4375
3500 2625
2800 4200 3150 4725
4480 3360 $\frac{5040}{2520}$ 3780 2835
3584 2688 4032 3024 4536 3402
d) Chromatic Order within 5040:2520 Octave



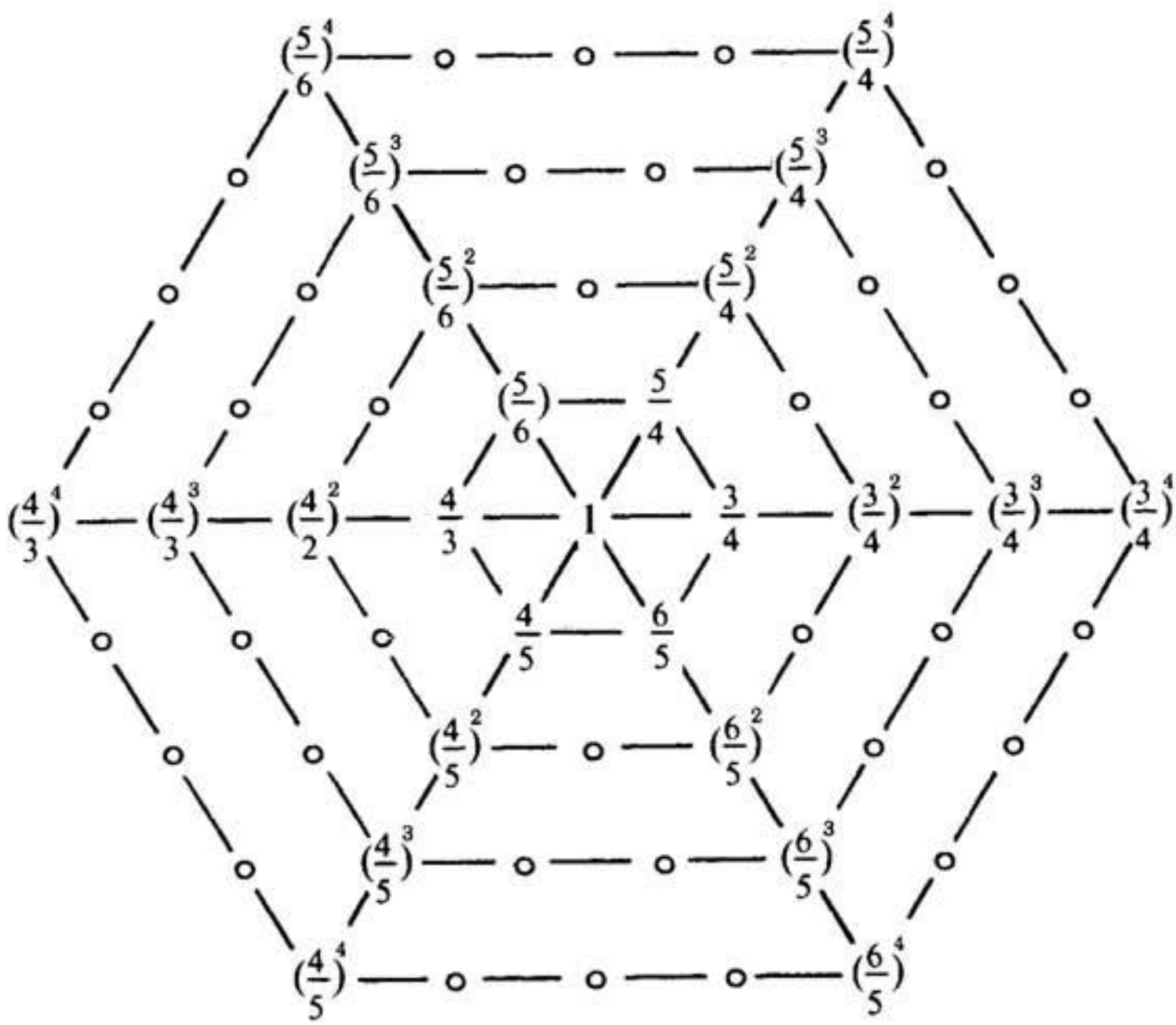
a) Smallest integers
$3^p \times 5^q$



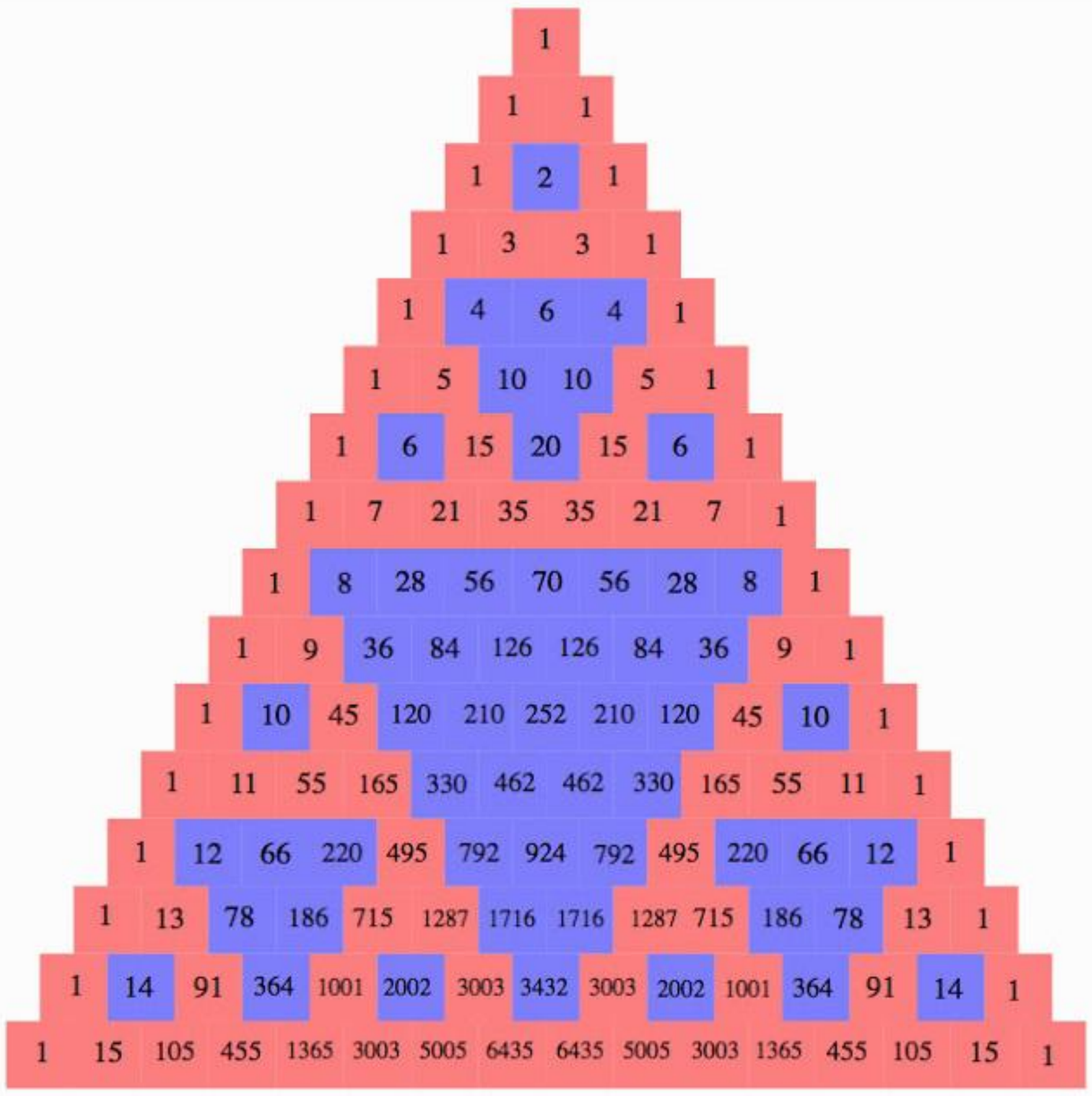
b) Equivalent tones

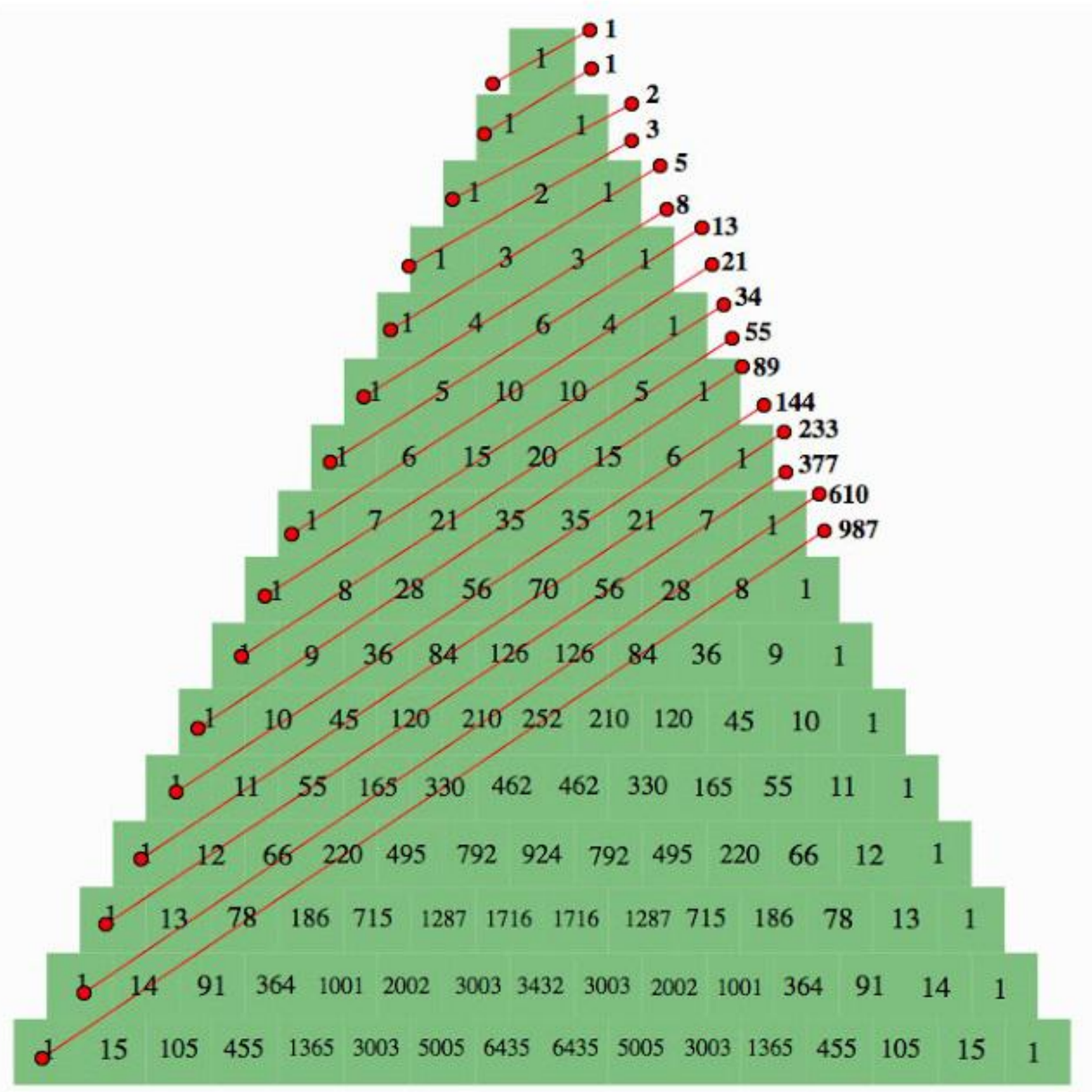


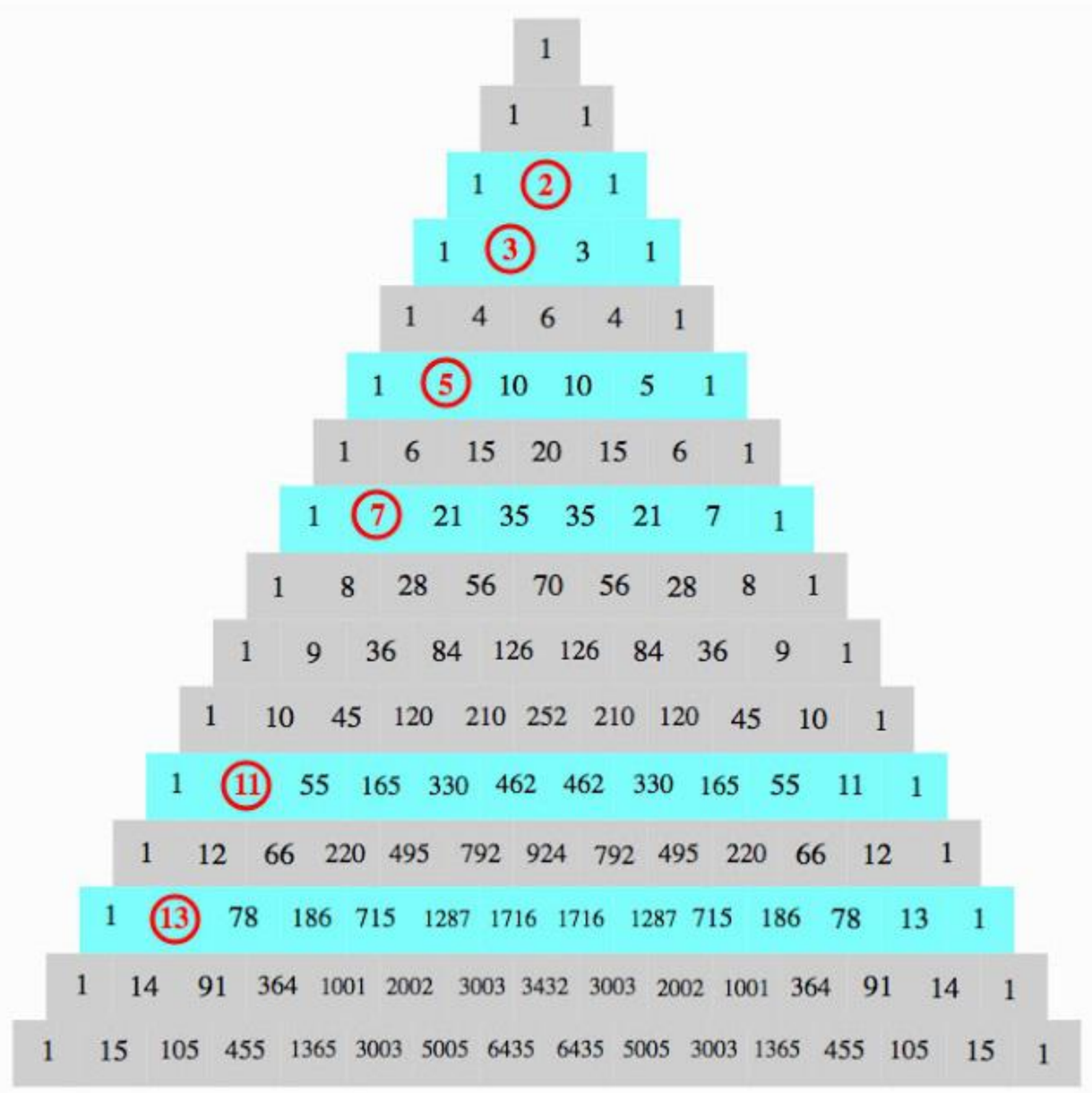
c) 4:3 mated with 5

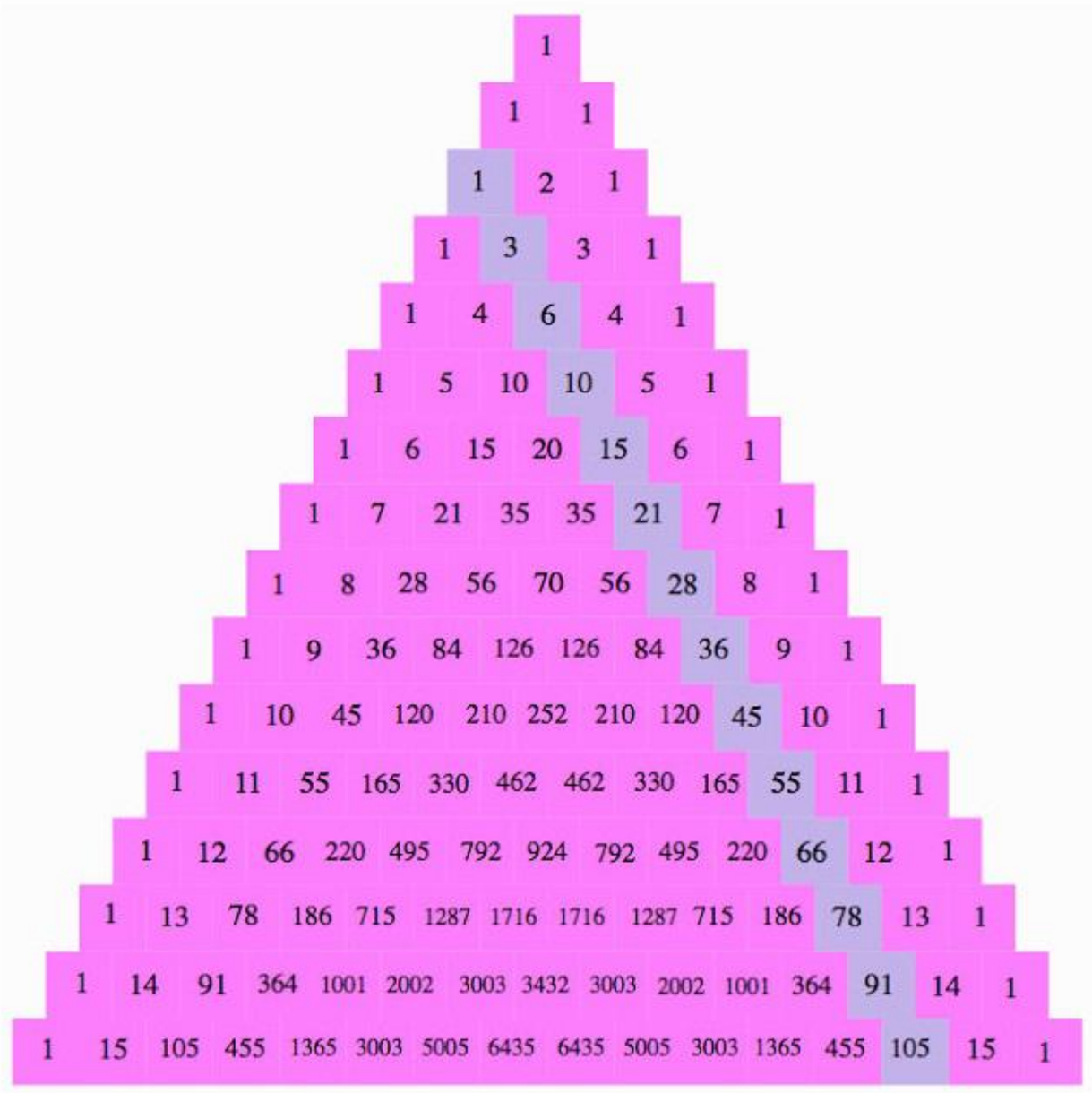


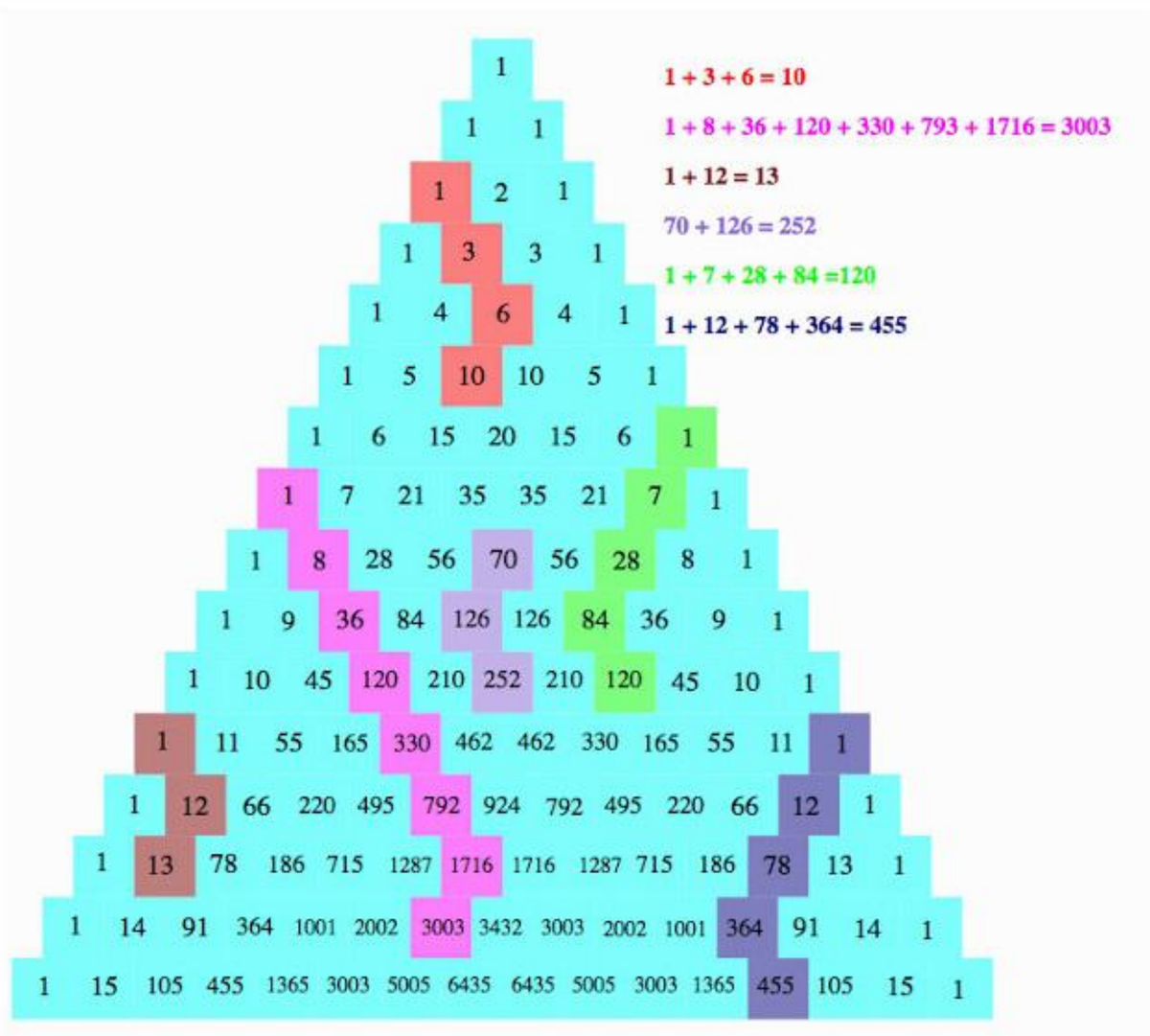
d) Hexagonal symmetry

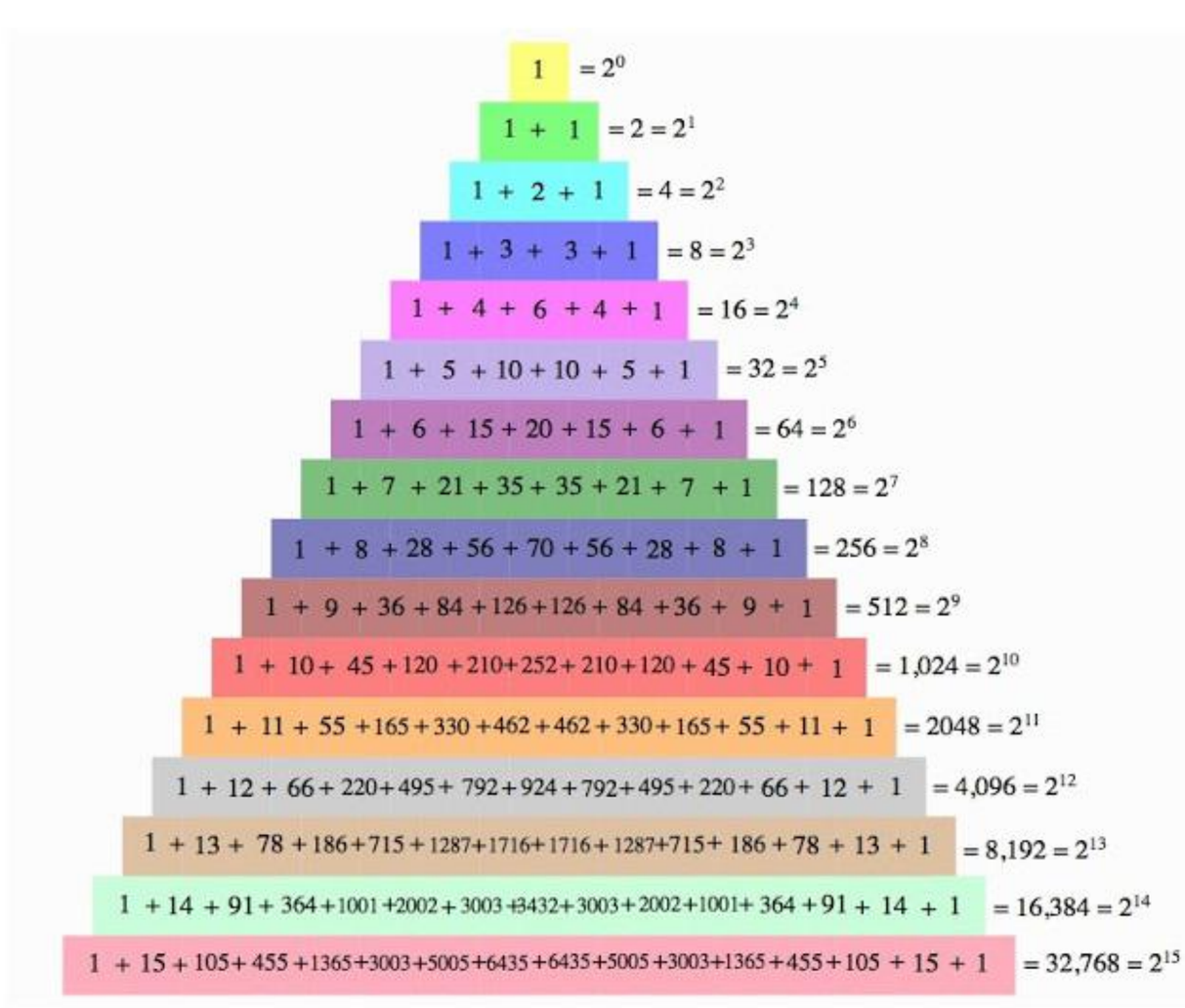

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
1 10 45 120 210 252 210 120 45 10 1
1 11 55 165 330 462 462 330 165 55 11 1
1 12 66 220 495 792 924 792 495 220 66 12 1
1 13 78 186 715 1287 1716 1716 1287 715 186 78 13 1
1 14 91 364 1001 2002 3003 3432 3003 2002 1001 364 91 14 1
1 15 105 455 1365 3003 5005 6435 6435 5005 3003 1365 455 105 15 1

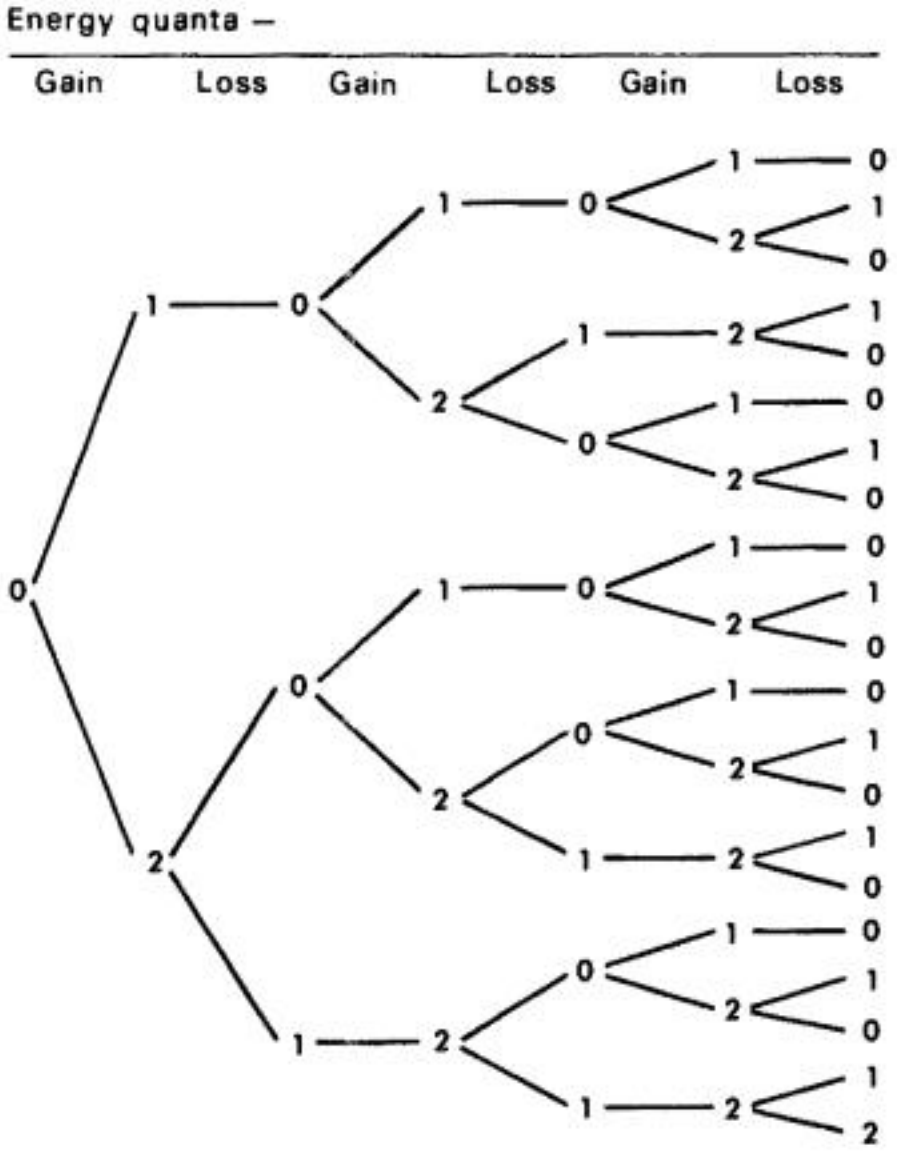

1
1
2
3
5
8
13
21
34
55
89
144
233
377
610
987


1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
1 10 45 120 210 252 210 120 45 10 1
1 11 55 165 330 462 462 330 165 55 11 1
1 12 66 220 495 792 924 792 495 220 66 12 1
1 13 78 186 715 1287 1716 1716 1287 715 186 78 13 1
1 14 91 364 1001 2002 3003 3432 3003 2002 1001 364 91 14 1
1 15 105 455 1365 3003 5005 6435 6435 5005 3003 1365 455 105 15 1


1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 36 84 126 126 84 36 9 1
1 10 45 120 210 252 210 120 45 10 1
1 11 55 165 330 462 462 330 165 55 11 1
1 12 66 220 495 792 924 792 495 220 66 12 1
1 13 78 186 715 1287 1716 1716 1287 715 186 78 13 1
1 14 91 364 1001 2002 3003 3432 3003 2002 1001 364 91 14 1
1 15 105 455 1365 3003 5005 6435 6435 5005 3003 1365 455 105 15 1


1 + 3 + 6 = 10
1 + 8 + 36 + 120 + 330 + 793 + 1716 = 3003
1 + 12 = 13
70 + 126 = 252
1 + 7 + 28 + 84 =120
1 + 12 + 78 + 364 = 455

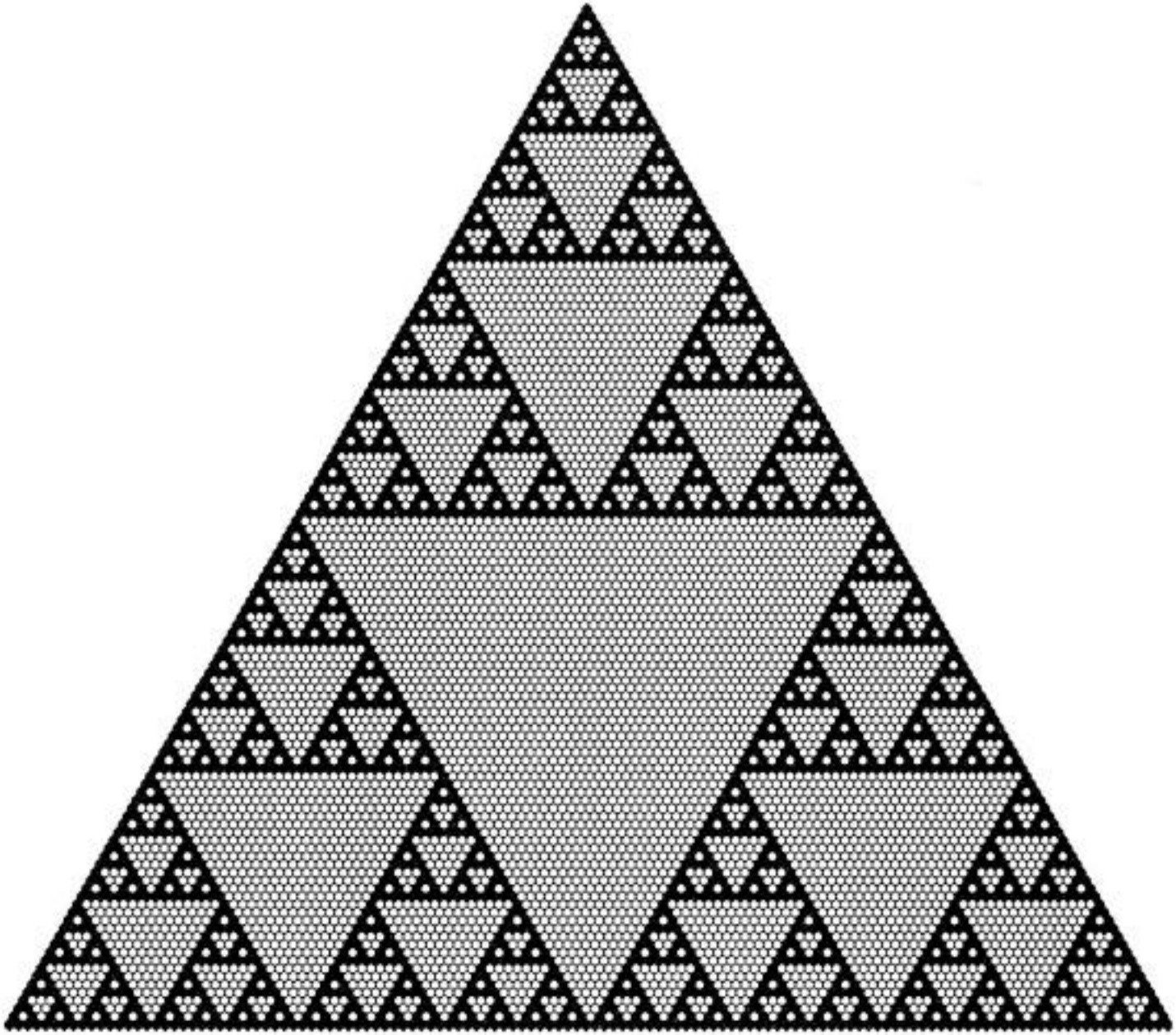

1 = 2^0
1 + 1 = 2 = 2^1
1 + 2 + 1 = 4 = 2^2
1 + 3 + 3 + 1 = 8 = 2^3
1 + 4 + 6 + 4 + 1 = 16 = 2^4
1 + 5 + 10 + 10 + 5 + 1 = 32 = 2^5
1 + 6 + 15 + 20 + 15 + 6 + 1 = 64 = 2^6
1 + 7 + 21 + 35 + 35 + 21 + 7 + 1 = 128 = 2^7
1 + 8 + 28 + 56 + 70 + 56 + 28 + 8 + 1 = 256 = 2^8
1 + 9 + 36 + 84 + 126 + 126 + 84 + 36 + 9 + 1 = 512 = 2^9
1 + 10 + 45 + 120 + 210 + 252 + 210 + 120 + 45 + 10 + 1 = 1,024 = 2^10
1 + 11 + 55 + 165 + 330 + 462 + 462 + 330 + 165 + 55 + 11 + 1 = 2048 = 2^11
1 + 12 + 66 + 220 + 495 + 792 + 924 + 792 + 495 + 220 + 66 + 12 + 1 = 4,096 = 2^12
1 + 13 + 78 + 186 + 715 + 1287 + 1716 + 1716 + 1287 + 715 + 186 + 78 + 13 + 1 = 8,192 = 2^13
1 + 14 + 91 + 364 + 1001 + 2002 + 3003 + 3432 + 3003 + 2002 + 1001 + 364 + 91 + 14 + 1 = 16,384 = 2^14
1 + 15 + 105 + 455 + 1365 + 3003 + 5005 + 6435 + 6435 + 5005 + 3003 + 1365 + 455 + 105 + 15 + 1 = 32,768 = 2^15

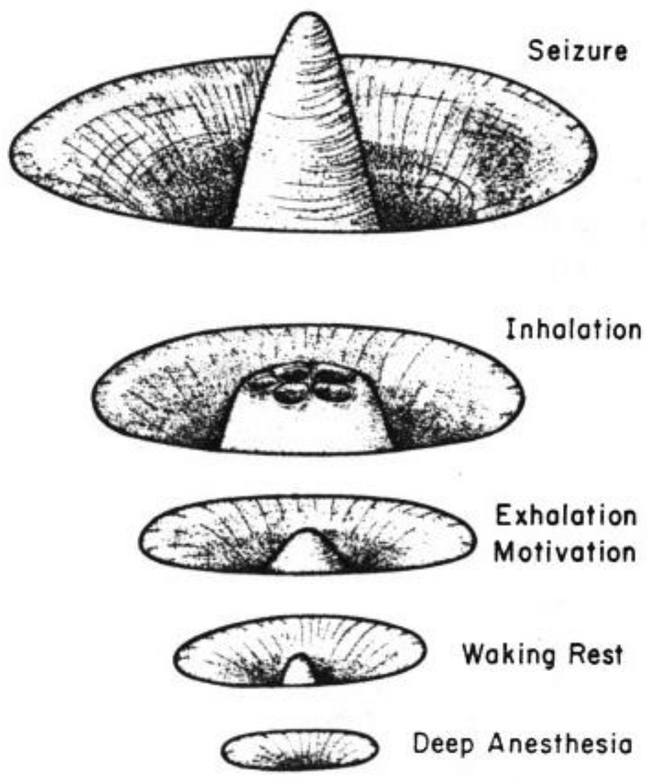


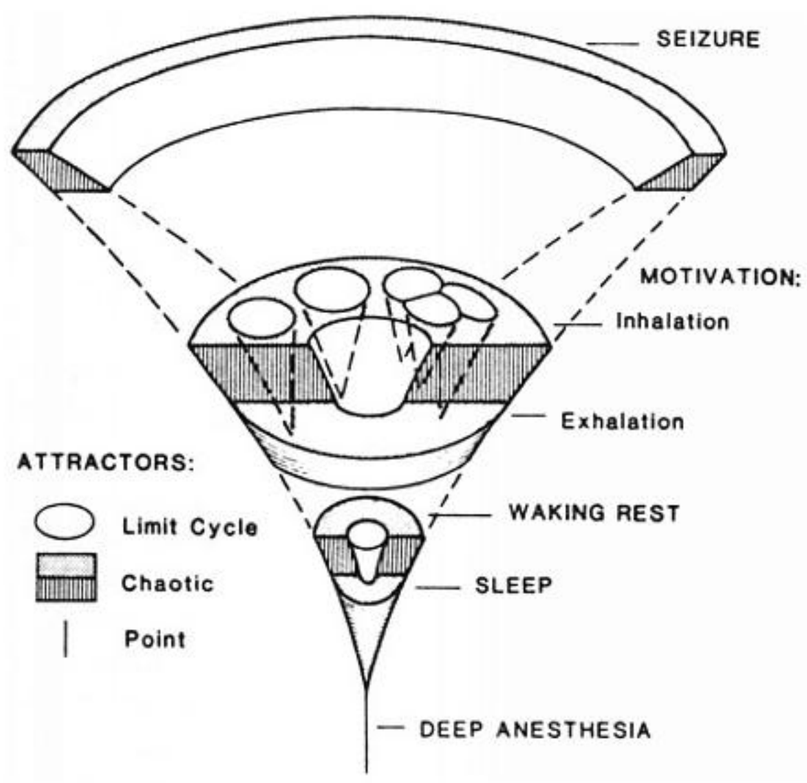
Level							Limit
0	$\frac{1}{1}$	0	$\frac{2}{3}$	0	$\frac{5}{8}$	0	$\frac{13}{21} \rightarrow 0$ or $-\Phi^{1}$
1		$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{3}{8}$	$\frac{5}{13}$	$\frac{8}{21} \rightarrow \Phi^{1/2}$
2		$\frac{1}{2}$	0	$\frac{3}{5}$	0	$\frac{8}{13}$	$0 \rightarrow -\Phi^{1}$ or 0

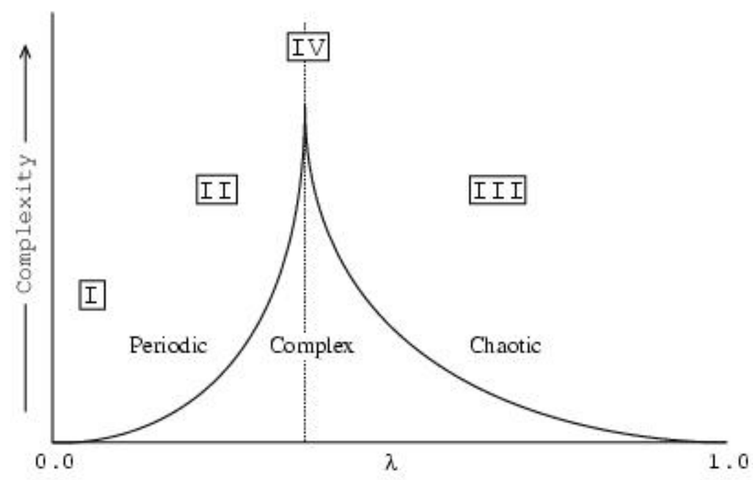
Fig. 12.2. Possible histories of an atomic electron. These fractions, formed of Fibonacci numbers, show the proportion of atoms in each state as time passes. The number of possible different histories of an electron are also members of the Fibonacci sequence:

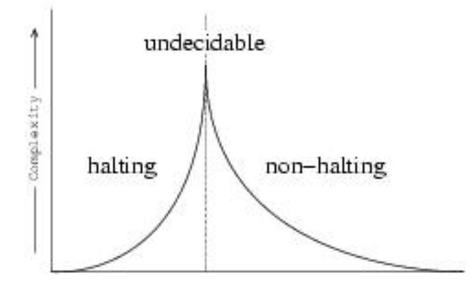
$$1 \quad 2 \quad 3 \quad 5 \quad 8 \quad 13 \quad 21 \quad \cdots$$

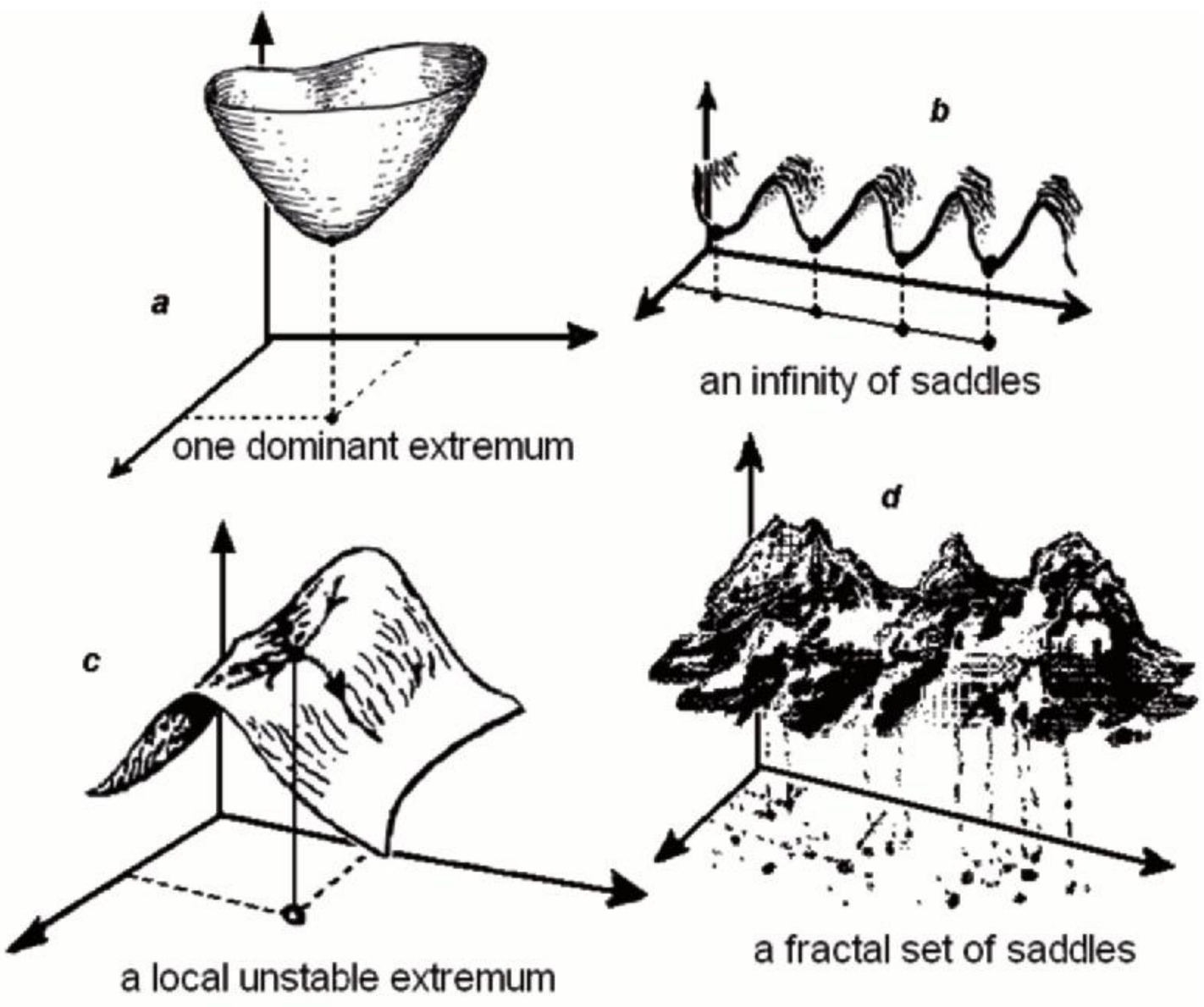


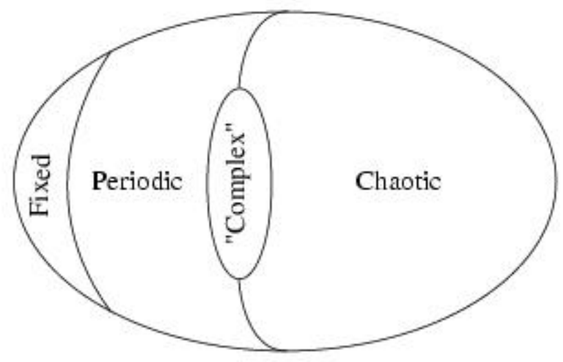


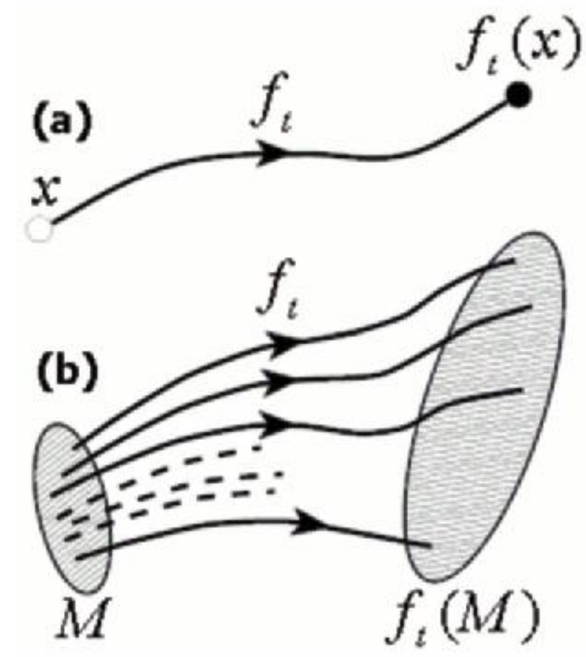




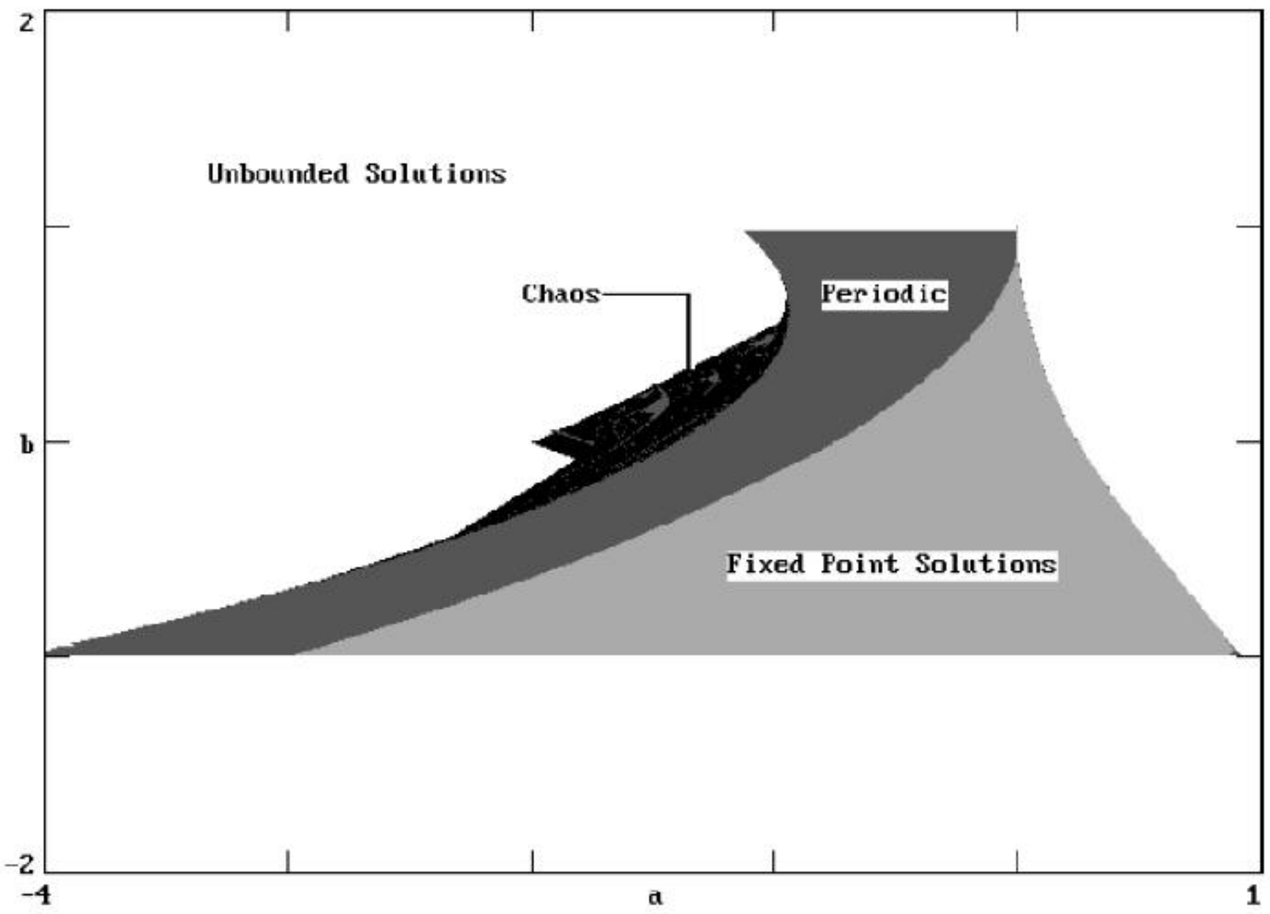


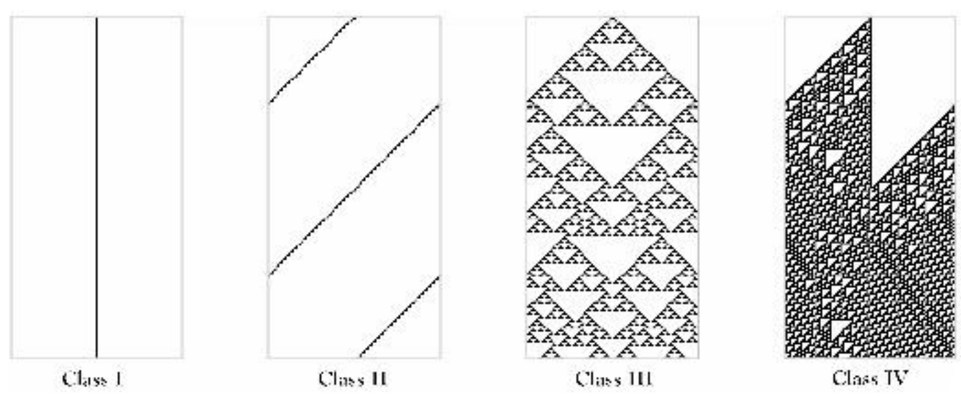


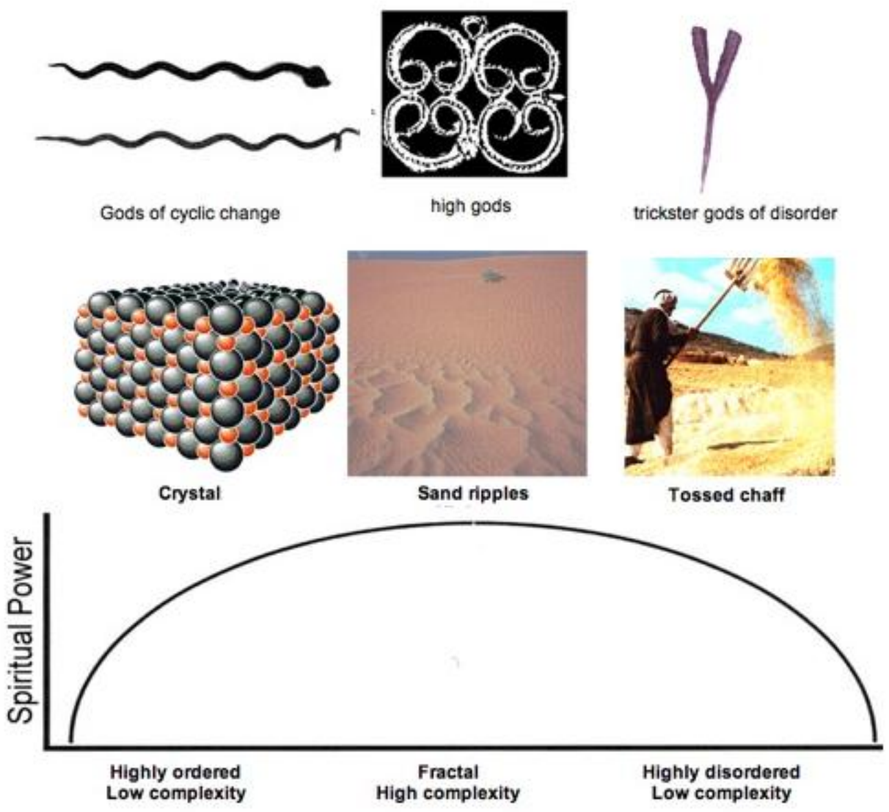


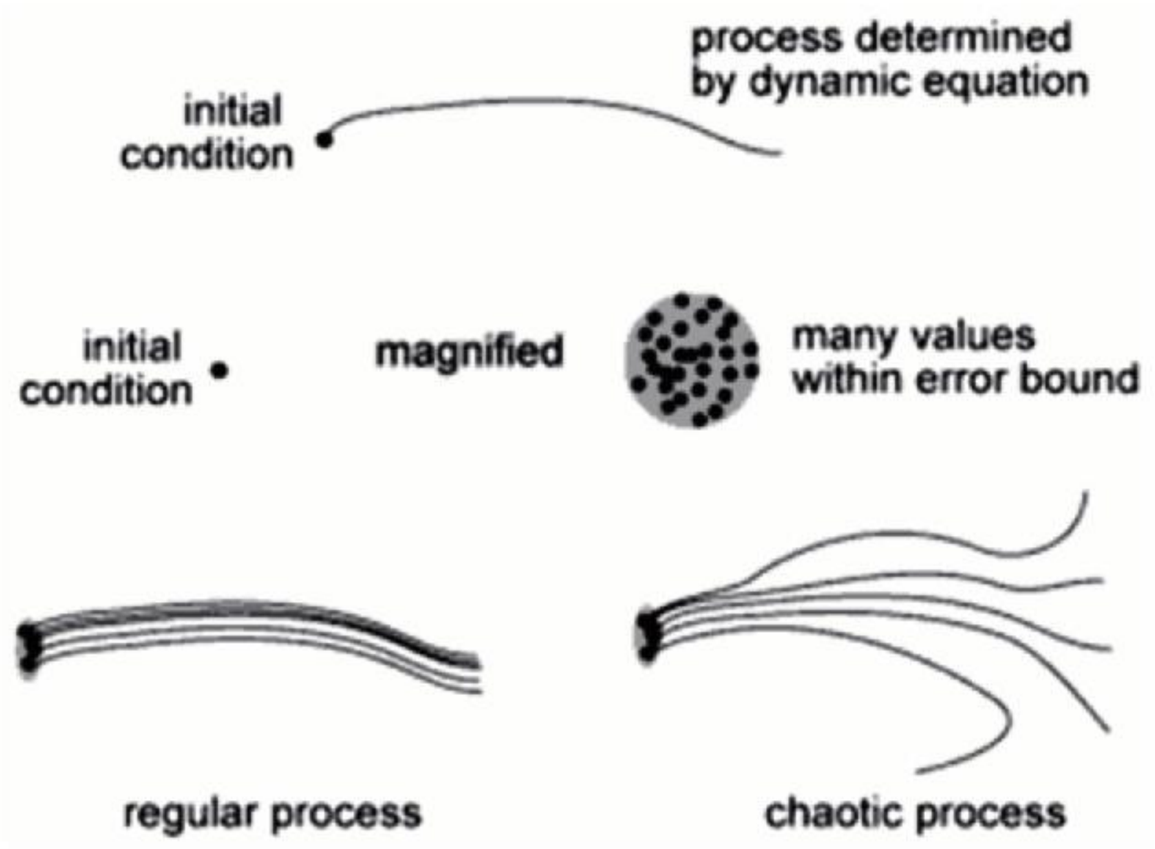


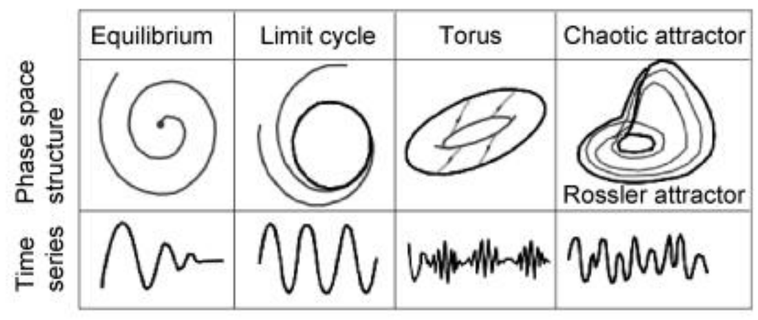
Regions of solutions for the Hénon map in the ab plane

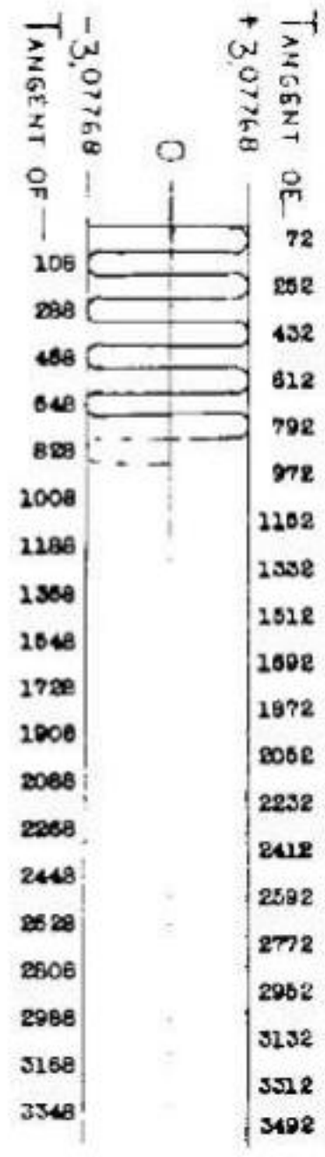












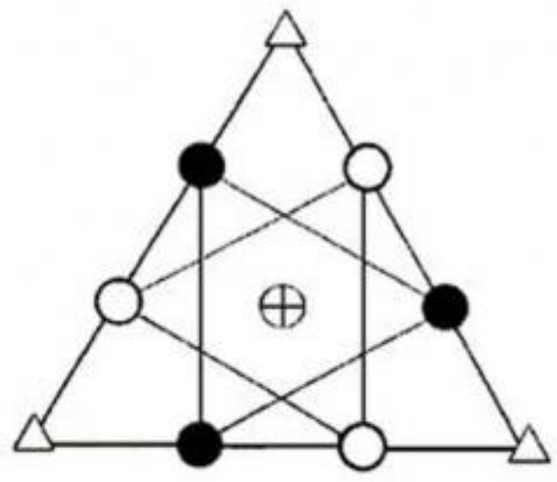
Mandelbrot set, nature (or is it mathematics)

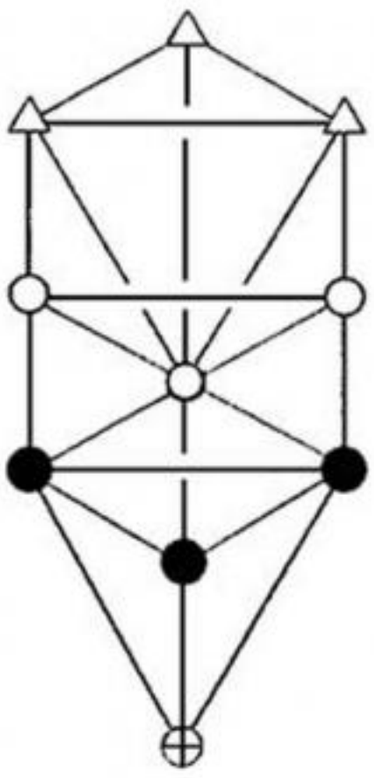
musical idea of 'theme and variation': the shapes are repeated everywhere, yet each repetition is somewhat different.

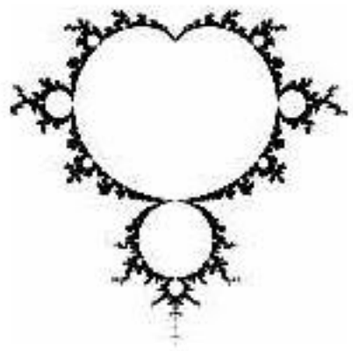
new things appear all the time, and no way to become lost.

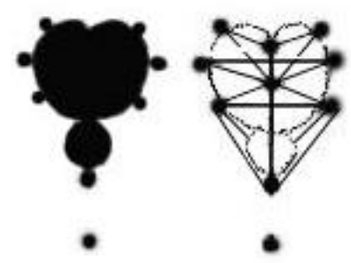
we may call it a borderline fractal, a limit fractal that contains many fractals. Compared to actual fractals, its structures are more numerous, its harmonies are richer, and its unexpectedness is more unexpected-

Benoit Mandelbrot.



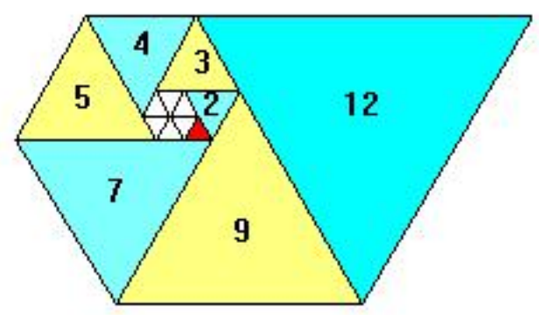


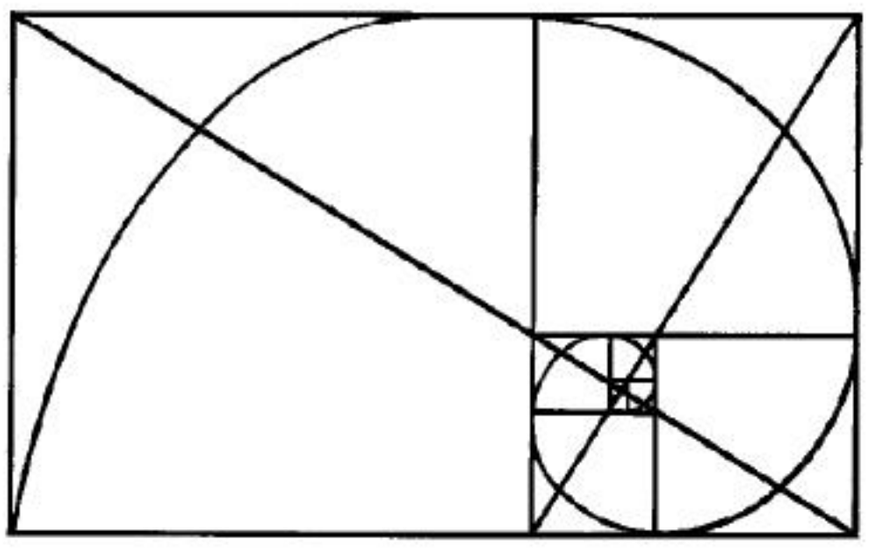




Correspondence between the Tree of Life and the tetractys

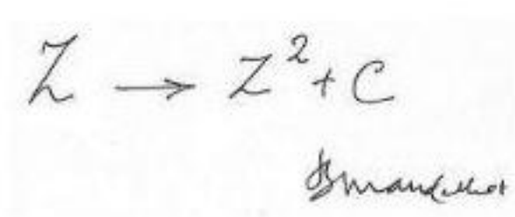
•	=	I	=	10	=	10
• •	=	H I	=	5 + 10	=	15
• • •	=	V H I	=	6 + 5 + 10	=	21
• • • •	=	H V H I	=	5 + 6 + 5 + 10	=	26
				Veliko Ime Boga	=	72

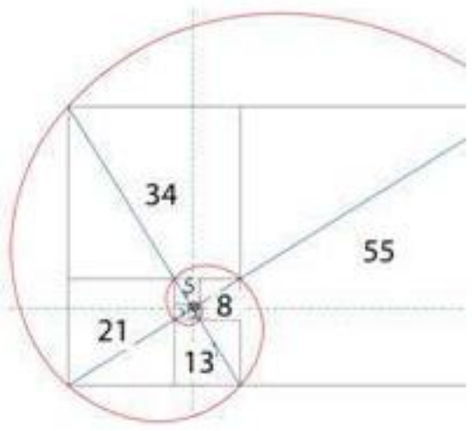


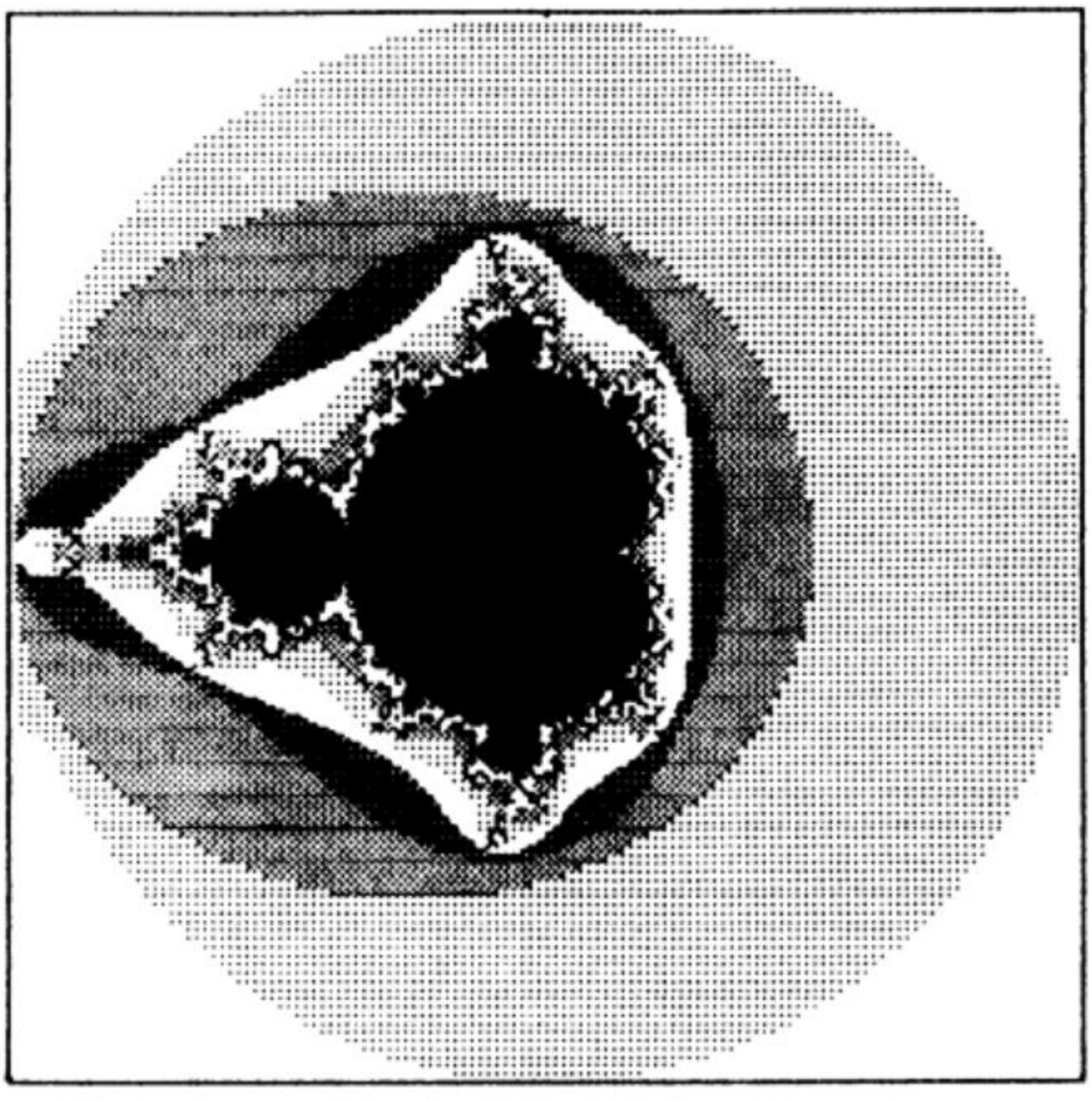


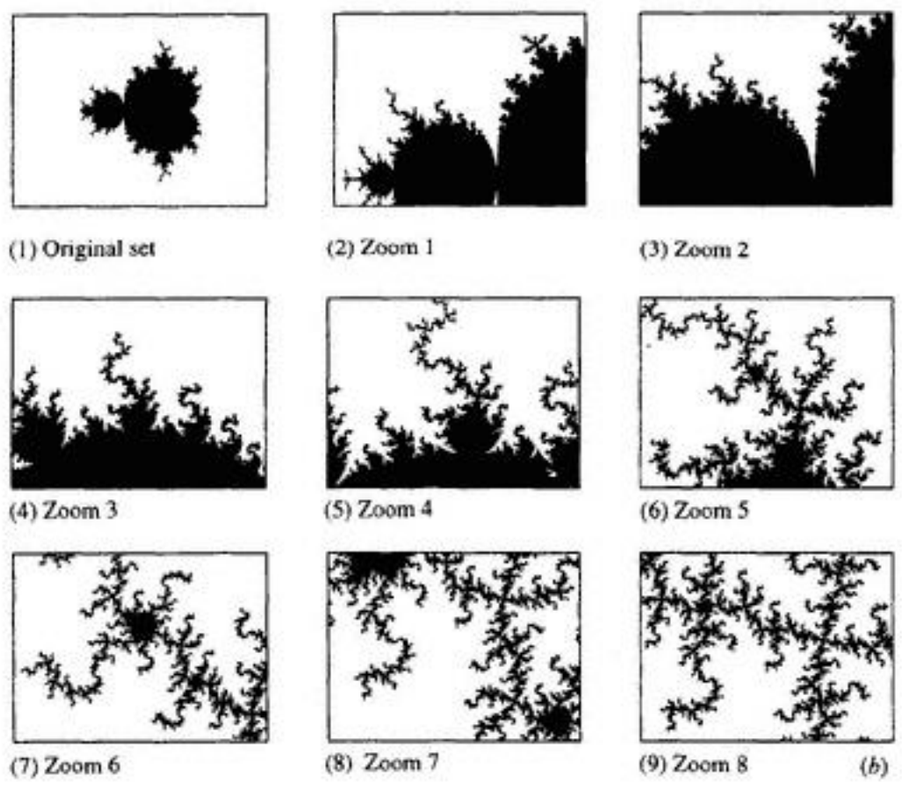
$$1+\frac{1}{1+\frac{1}{1+\frac{1}{1+\dots}}} = \sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1}+\dots}}}$$

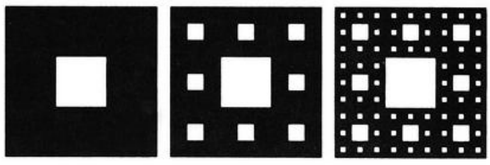
$$= \phi = \frac{1+\sqrt{5}}{2}.$$

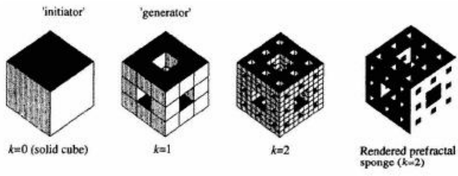


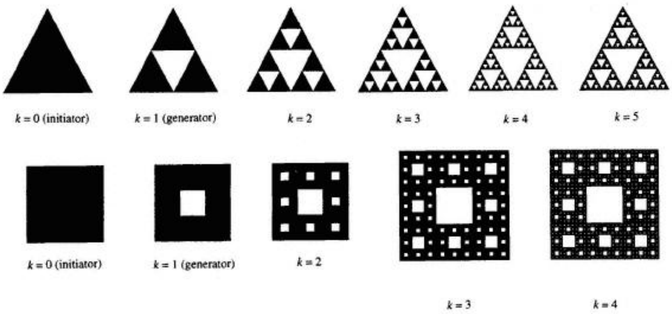


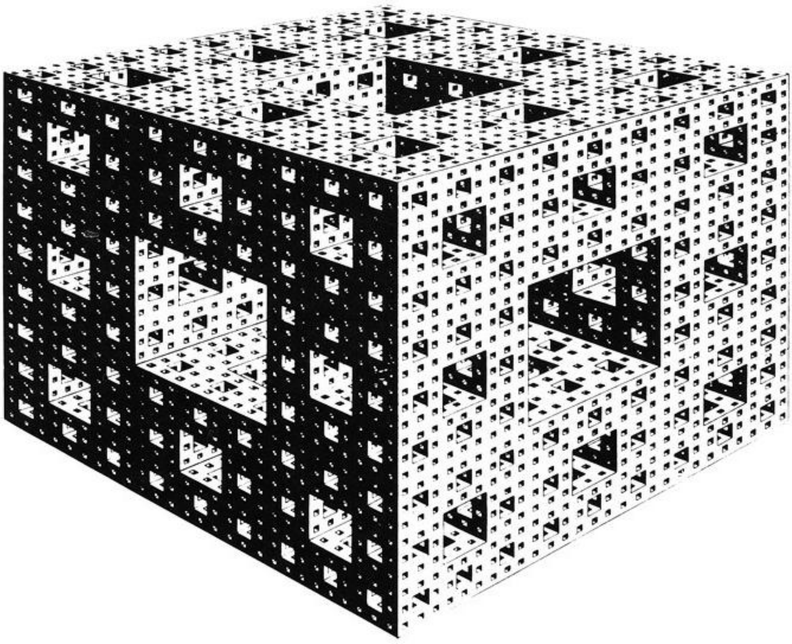


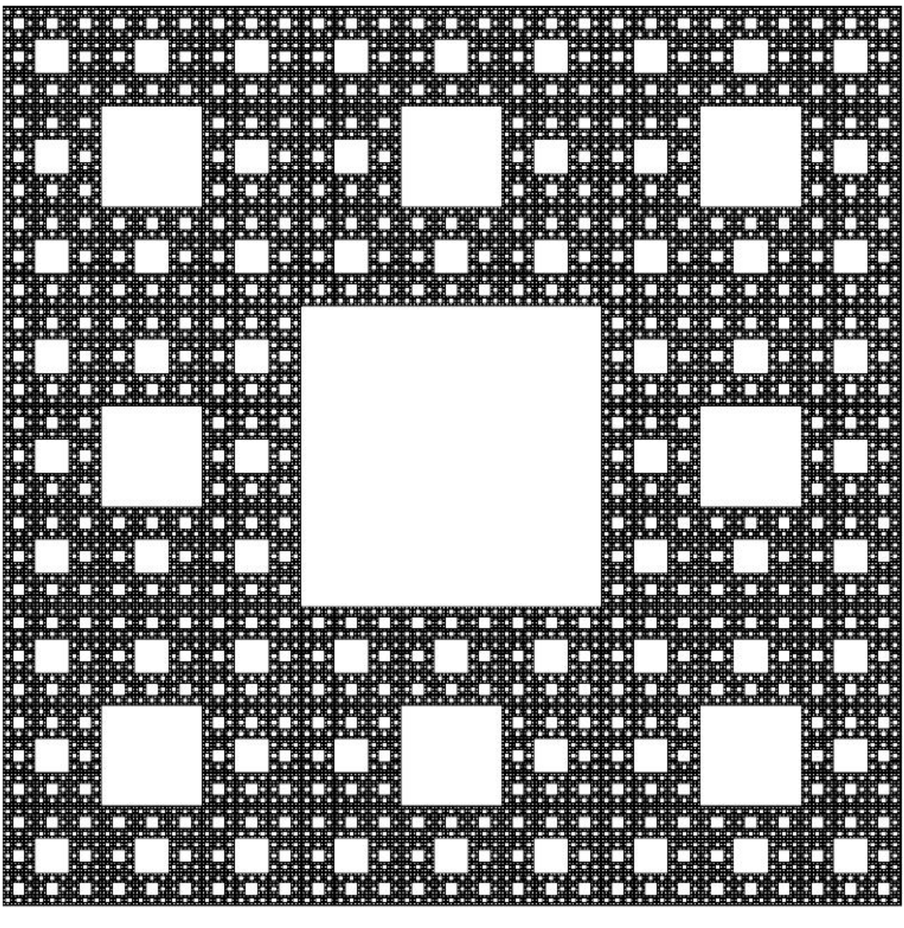


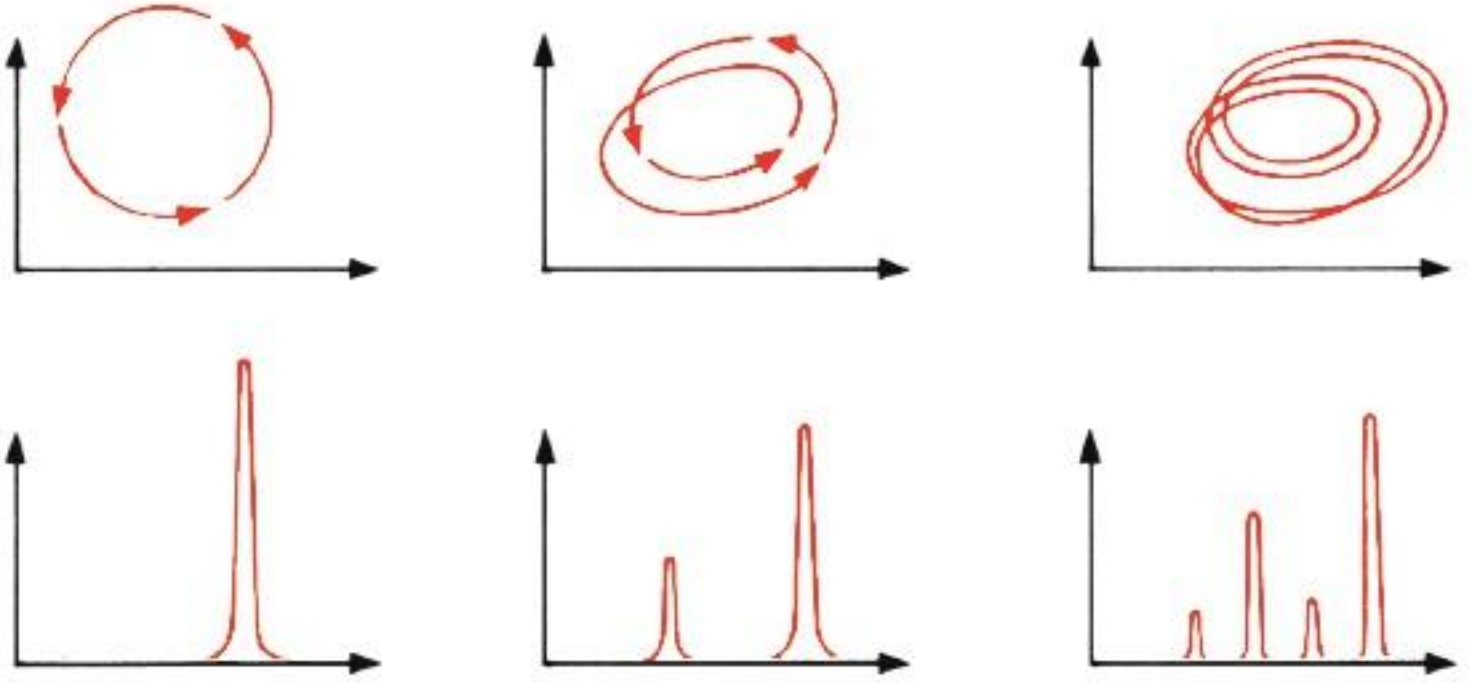


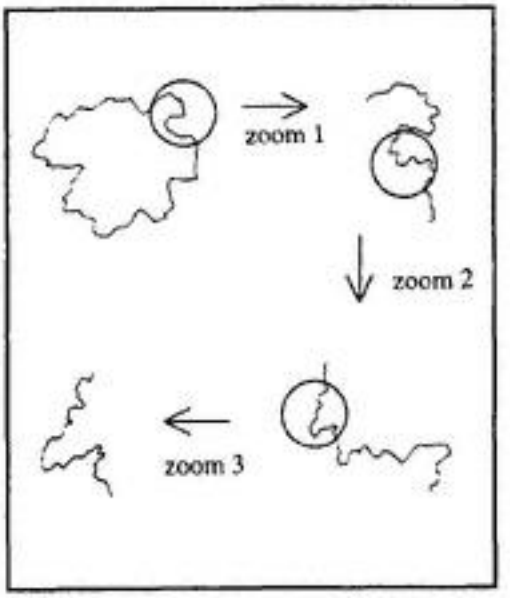

'initiator'
'generator'
k=0 (solid cube)
k=1
k=2
Rendered prefractal sponge (k=2)

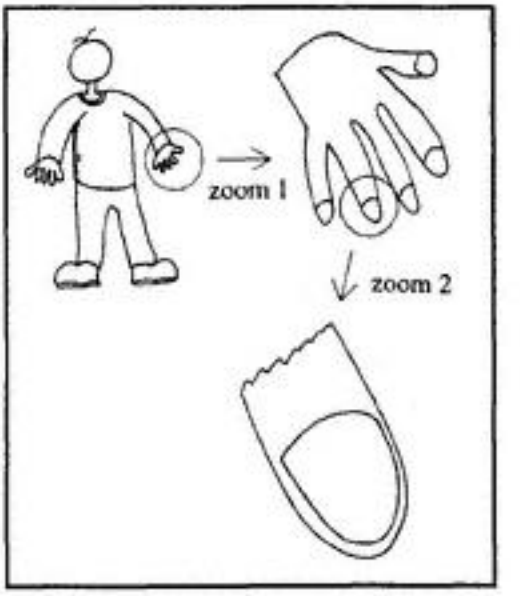

k = 0 (initiator)
k = 1 (generator)
k = 2
k = 3
k = 4
k = 5
k = 0 (initiator)
k = 1 (generator)
k = 2
k = 3
k = 4

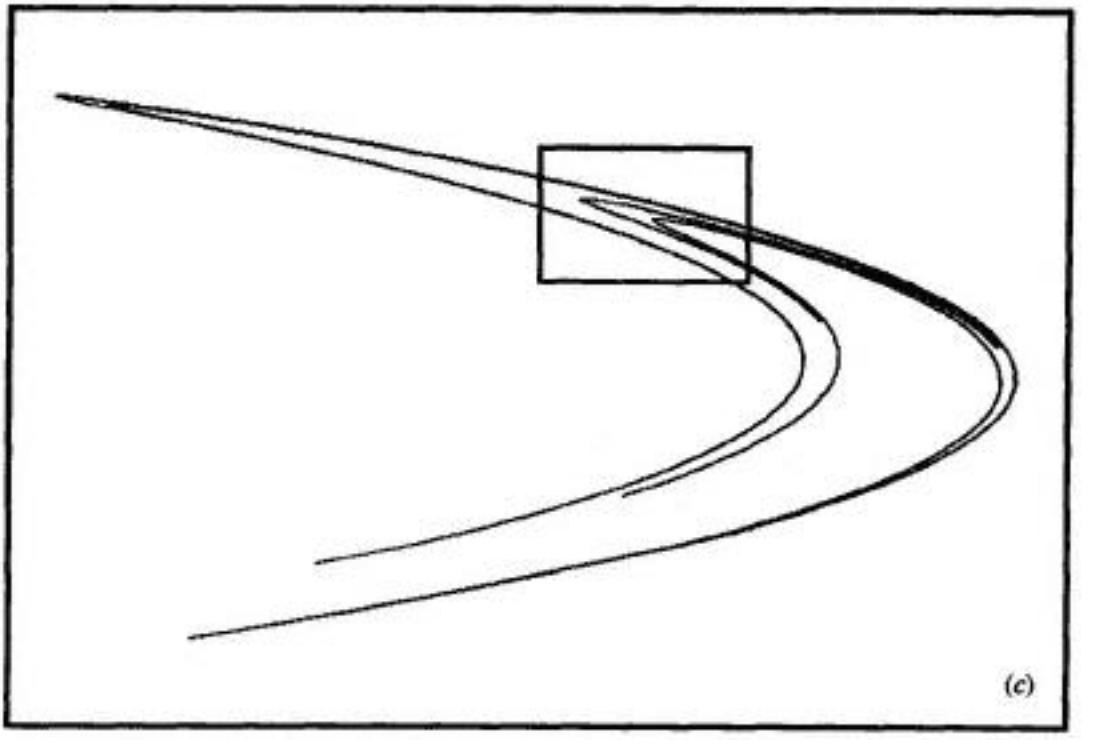







zoom 1
zoom 2
zoom 3


zoom 1
zoom 2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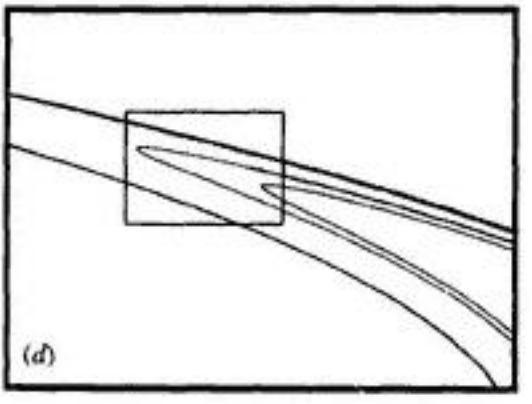
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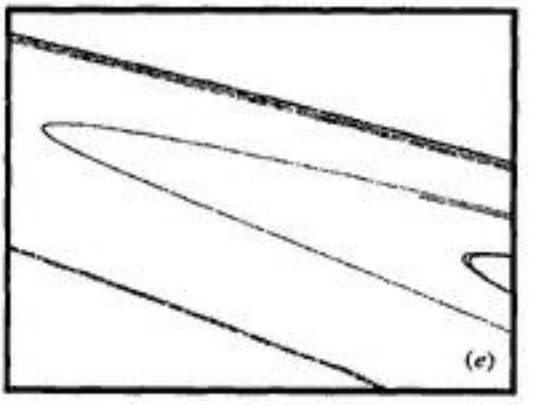
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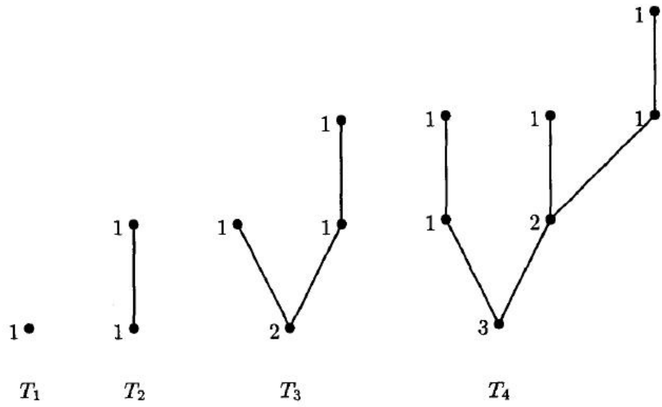
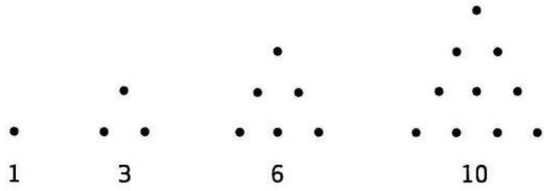
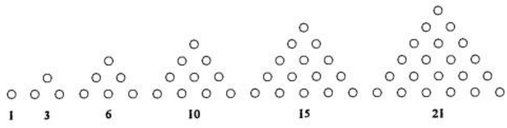
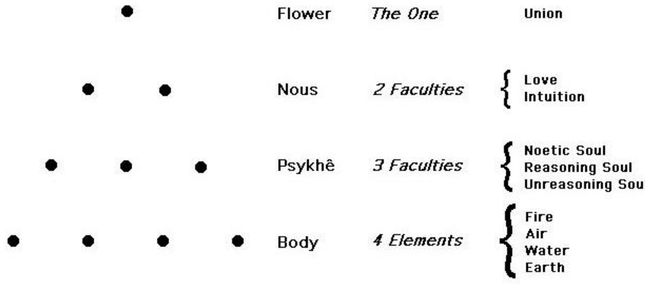
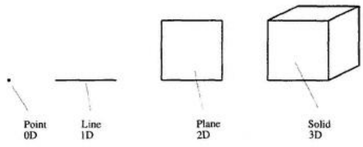

T_1
T_2
T_3
T_4

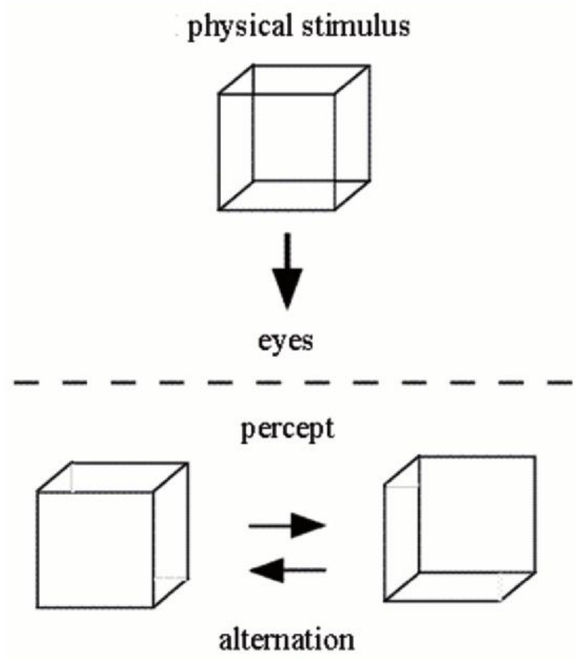

1
3
6
10

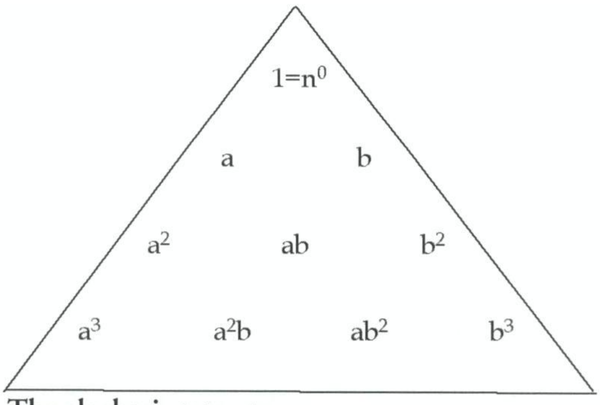

1
3
6
10
15
21


Flower
The One
Union
Nous
2 Faculties
Love
Intuition
Psykhê
3 Faculties
Noetic Soul
Reasoning Soul
Unreasoning Soul
Body
4 Elements
Fire
Air
Water
Earth

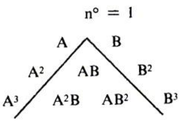
point
(1)
line
A
B
plane
A^2
AB
B^2
solid
A^3
A^2B
AB^2
B^3


Point
0D
Line
1D
Plane
2D
Solid
3D


physical stimulus
eyes
percept
alternation



The algebraic tetractys



$$
\begin{aligned}
(1+x)^0 &= 1 \\
(1+x)^1 &= 1+1x \\
(1+x)^2 &= 1+2x+1x^2 \\
&\vdots \\
(1+x)^n &= a_0+a_1x+\cdots+a_nx^n.
\end{aligned}
$$

$$(x+y)^0 = 1$$
$$(x+y)^1 = 1x+1y$$
$$(x+y)^2 = 1x^2+2xy+1y^2$$
$$(x+y)^3 = 1x^3+3x^2y+3xy^2+1y^3$$
$$(x+y)^4 = 1x^4+4x^3y+6x^2y^2+4xy^3+1y^4$$
$$(x+y)^5 = 1x^5+5x^4y+10x^3y^2+10x^2y^3+5xy^4+1x^5$$
$$(x+y)^6 = 1x^6+6x^5y+15x^4y^2+20x^3y^3+15x^2y^4+6xy^5+1x^6$$
$$(x+y)^7 = 1x^7+7x^6y+21x^5y^2+35x^4y^3+35x^3y^4+21x^2y^5+7xy^6+1y^7$$
$$\cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot$$

Res ex hac Tabula clarius patet:

Series Fractionum Progressionis Arithmeticae Replicatae

	semel	bis	ter	quater	quinquies	sexies	septies
Exponentes	1	2	3	4	5	6	7
	Unitatum	Naturalium	Triangularium	Pyramidalium	Triangulo-Triangularium	Triangulo-pyramidalium	Pyramido-pyramidalium
	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$
	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{7}$
	$\frac{1}{1}$	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{1}{10}$	$\frac{1}{15}$	$\frac{1}{21}$	$\frac{1}{28}$
	$\frac{1}{1}$	$\frac{1}{4}$	$\frac{1}{10}$	$\frac{1}{20}$	$\frac{1}{35}$	$\frac{1}{56}$	$\frac{1}{84}$
	$\frac{1}{1}$	$\frac{1}{5}$	$\frac{1}{15}$	$\frac{1}{35}$	$\frac{1}{70}$	$\frac{1}{126}$	$\frac{1}{210}$
	$\frac{1}{1}$	$\frac{1}{6}$	$\frac{1}{21}$	$\frac{1}{56}$	$\frac{1}{126}$	$\frac{1}{252}$	$\frac{1}{462}$
	$\frac{1}{1}$	$\frac{1}{7}$	$\frac{1}{28}$	$\frac{1}{84}$	$\frac{1}{210}$	$\frac{1}{462}$	$\frac{1}{924}$
Summae	$\frac{0}{0}$	$\frac{1}{0}$	$\frac{2}{1}$	$\frac{3}{2}$	$\frac{4}{3}$	$\frac{5}{4}$	$\frac{6}{5}$ etc.

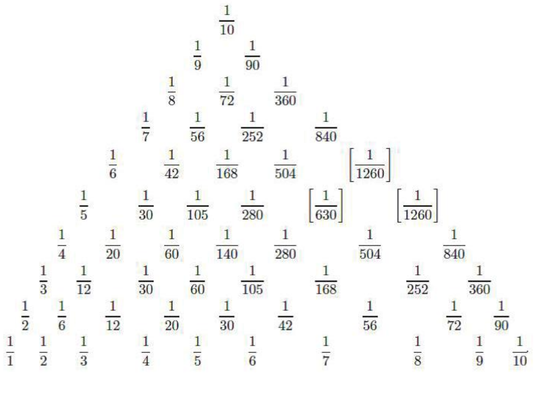
$A-1+\frac{1}{2}B \sqcap 1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}$ etc.

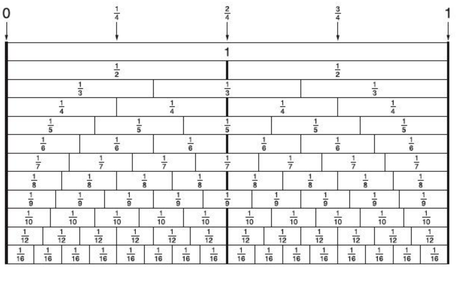
Ergo $A-1+\frac{1}{2}B \sqcap A$. Ergo $B \sqcap \frac{2}{1}$.

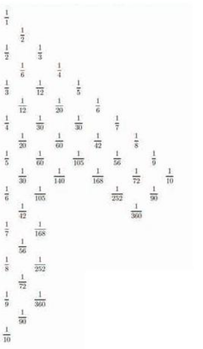
$B-1+\frac{2}{3}C \sqcap B$. Ergo $C \sqcap \frac{3}{2}$.

$C-1+\frac{3}{4}D \sqcap C$. Ergo $D \sqcap \frac{4}{3}$.

A	B	C	D	etc.
$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$
$\frac{1}{1}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$
$\frac{1}{1}$	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{1}{10}$	$\frac{1}{15}$
$\frac{1}{1}$	$\frac{1}{4}$	$\frac{1}{10}$	$\frac{1}{20}$	$\frac{1}{35}$
$\frac{1}{1}$	$\frac{1}{5}$	$\frac{1}{15}$	$\frac{1}{35}$	$\frac{1}{70}$
etc.	etc.	etc.	etc.	etc.
		summa		
$\frac{0}{\ldots}$	$\frac{1}{0}$	$\frac{2}{1}$	$\frac{3}{2}$	$\frac{4}{3}$ etc.
conjecturalia		certa		

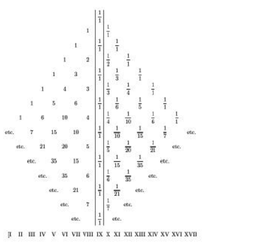


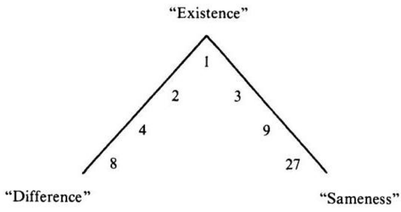


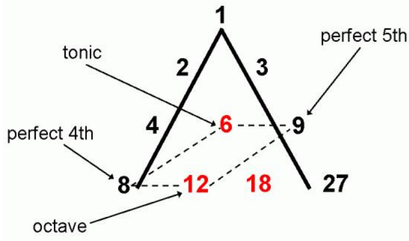


				Pyramid.	Triang. Triang.	Triang. Pyram.	Pyram. Pyram.
			1				
		1		1			
	1		2		1		
0		1		3		1	
	1		3		4		
0		1		6		1	
	1		4		10		1
0		1		10		6	
	1		5		20		8
0		1		15		21	
	1		6		35		28
0		1		21		56	
	1		7		56		36
				28		126	
					126		84
						210	
					210		120
						252	
						462	330
							792
							1716

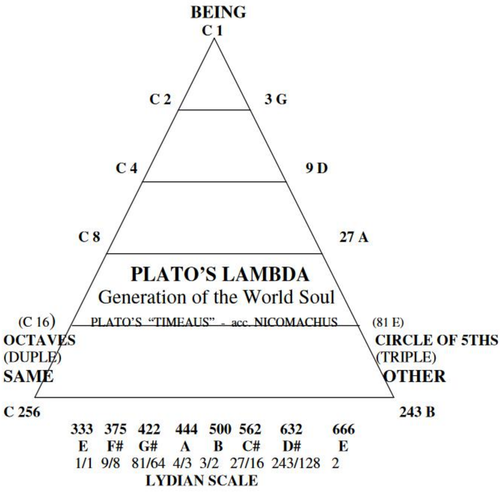
Nullae
Unitates
Numeri Naturales
Triang.

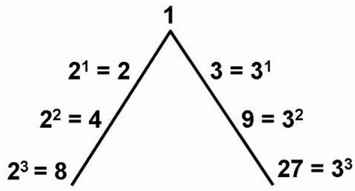




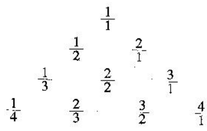


The Lambda Tetractys





Plato's Lambda



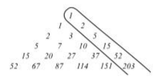
The basic LAMBDOMA Matrix,
named after the Greek letter lambda:
"Λ"

Leibniz harmonic triangle

related to the Pascal triangle in a very simple way. Each row of the Leibniz harmonic triangle starts with the reciprocal of the row number (or the row number plus one depending on whether one starts counting from 1 or 0). Every entry is the sum of the two numbers just below it. The entries can thus be computed sequential left to right and top to bottom using subtraction instead of addition.

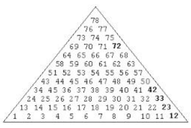
1/1
1/2 1/2
1/3 1/6 1/3
1/4 1/12 1/12 1/4
1/5 1/20 1/30 1/20 1/5

$\frac{1}{1}$
$\frac{1}{2}$ $\frac{1}{2}$
$\frac{1}{3}$ $\frac{1}{6}$ $\frac{1}{3}$
$\frac{1}{4}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{4}$
$\frac{1}{5}$ $\frac{1}{20}$ $\frac{1}{30}$ $\frac{1}{20}$ $\frac{1}{5}$
$\frac{1}{6}$ $\frac{1}{30}$ $\frac{1}{60}$ $\frac{1}{60}$ $\frac{1}{30}$ $\frac{1}{6}$
$\frac{1}{7}$ $\frac{1}{42}$ $\frac{1}{105}$ $\frac{1}{140}$ $\frac{1}{105}$ $\frac{1}{42}$ $\frac{1}{7}$



1
1 2
2 3 5
5 7 10 15
15 20 27 37 52
52 . . .

2 3 5 7 11 13 17 19 23 29 31 . . .
1 2 2 4 2 4 2 4 6 2 . . .
1 0 2 2 2 2 2 2 4 . . .
1 2 0 0 0 0 0 2 . . .
1 2 0 0 0 0 2 . . .
1 2 0 0 0 2 . . .
1 2 0 0 2 . . .
1 2 0 2 . . .
1 2 2 . . .
1 0 . . .
1 . . .



$$\int n = \frac{1}{2} nn + \frac{1}{2} n .$$

$$\int nn = \frac{1}{3} n^3 + \frac{1}{2} nn + \frac{1}{6} n .$$

$$\int n^3 = \frac{1}{4} n^4 + \frac{1}{2} n^3 + \frac{1}{4} nn .$$

$$\int n^4 = \frac{1}{5} n^5 + \frac{1}{2} n^4 + \frac{1}{3} n^3 * - \frac{1}{30} n .$$

$$\int n^5 = \frac{1}{6} n^6 + \frac{1}{2} n^5 + \frac{5}{12} n^4 * - \frac{1}{12} nn .$$

$$\int n^6 = \frac{1}{7} n^7 + \frac{1}{2} n^6 + \frac{1}{2} n^5 * - \frac{1}{6} n^3 * + \frac{1}{42} n .$$

$$\int n^7 = \frac{1}{8} n^8 + \frac{1}{2} n^7 + \frac{7}{12} n^6 * - \frac{7}{24} n^4 * + \frac{1}{12} nn .$$

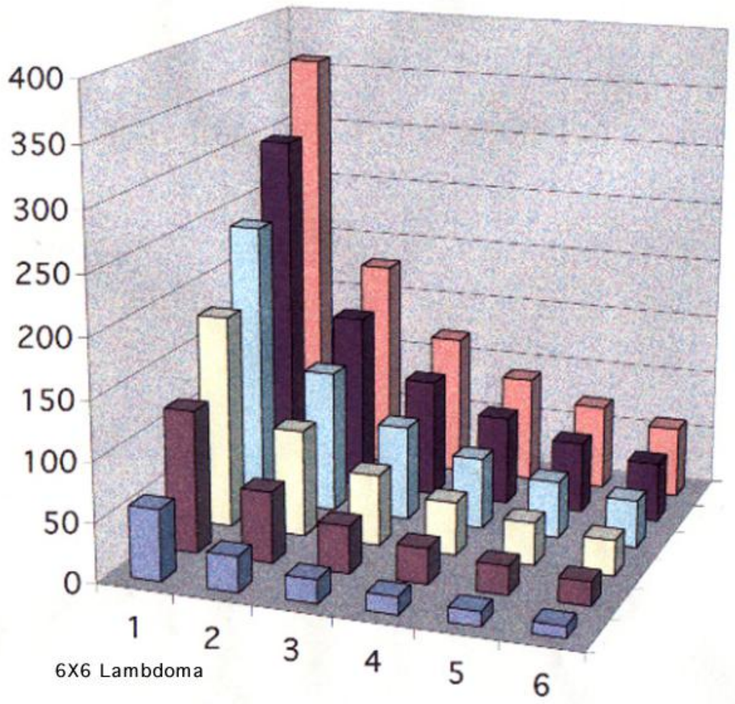
$$\int n^8 = \frac{1}{9} n^9 + \frac{1}{2} n^8 + \frac{2}{3} n^7 * - \frac{7}{15} n^5 * + \frac{2}{9} n^3 * - \frac{1}{30} n .$$

$$\int n^9 = \frac{1}{10} n^{10} + \frac{1}{2} n^9 + \frac{3}{4} n^8 * - \frac{7}{10} n^6 * + \frac{1}{2} n^4 * - \frac{1}{12} nn .$$

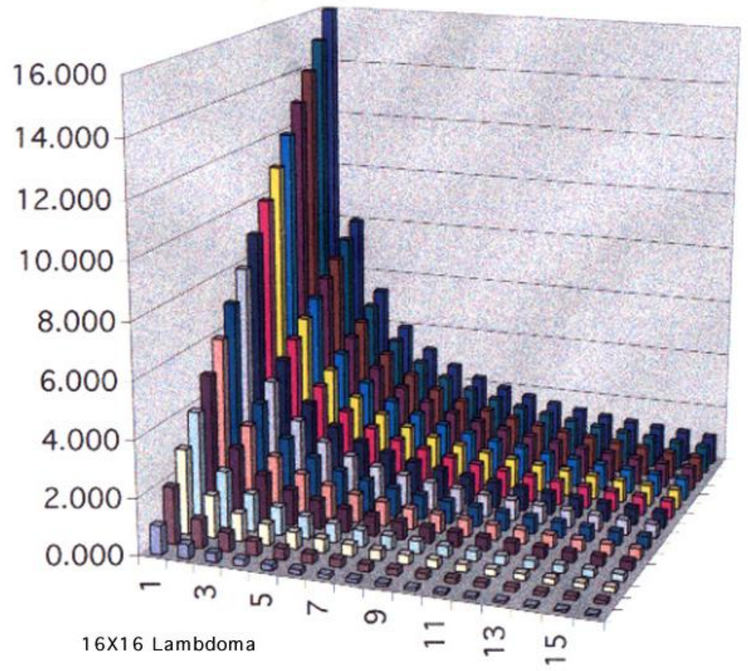
$$\int n^{10} = \frac{1}{11} n^{11} + \frac{1}{2} n^{10} + \frac{5}{6} n^9 * - 1 \; n^7 * + 1 \; n^5 * - \frac{1}{2} n^3 * + \frac{5}{66} n .$$

Table 3
VALUES OF HARMONIC NUMBERS, BERNOULLI NUMBERS, AND FIBONACCI NUMBERS, FOR SMALL VALUES OF n

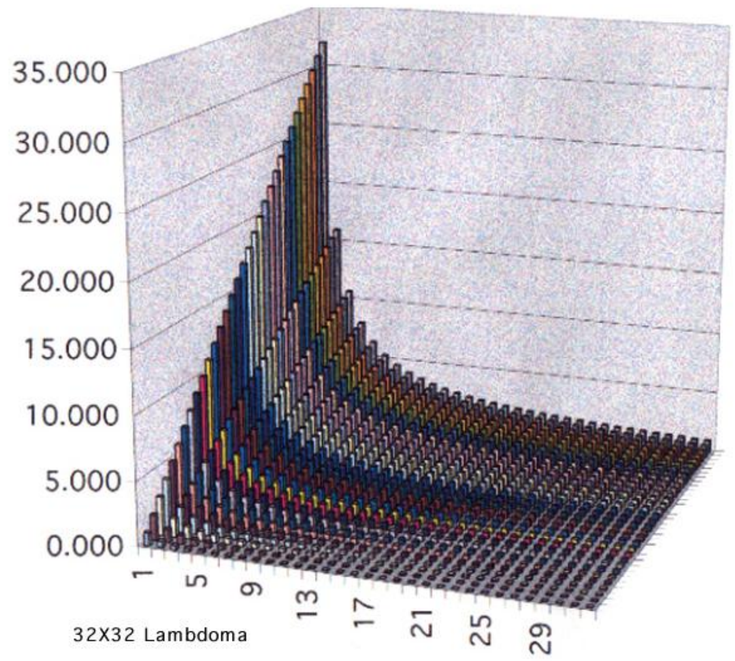
n	H_n	B_n	F_n	n
0	0	1	0	0
1	1	−1/2	1	1
2	3/2	1/6	1	2
3	11/6	0	2	3
4	25/12	−1/30	3	4
5	137/60	0	5	5
6	49/20	1/42	8	6
7	363/140	0	13	7
8	761/280	−1/30	21	8
9	7129/2520	0	34	9
10	7381/2520	5/66	55	10
11	83711/27720	0	89	11
12	86021/27720	−691/2730	144	12
13	1145993/360360	0	233	13
14	1171733/360360	7/6	377	14
15	1195757/360360	0	610	15
16	2436559/720720	−3617/510	987	16
17	42142223/12252240	0	1597	17
18	14274301/4084080	43867/798	2584	18
19	275295799/77597520	0	4181	19
20	55835135/15519504	−174611/330	6765	20
21	18858053/5173168	0	10946	21
22	19093197/5173168	854513/138	17711	22
23	444316699/118982864	0	28657	23
24	1347822955/356948592	−236364091/2730	46368	24
25	34052522467/8923714800	0	75025	25
26	34395742267/8923714800	8553103/6	121393	26
27	312536252003/80313433200	0	196418	27
28	315404588903/80313433200	−23749461029/870	317811	28
29	9227046511387/2329089562800	0	514229	29
30	9304682830147/2329089562800	8615841276005/14322	832040	30



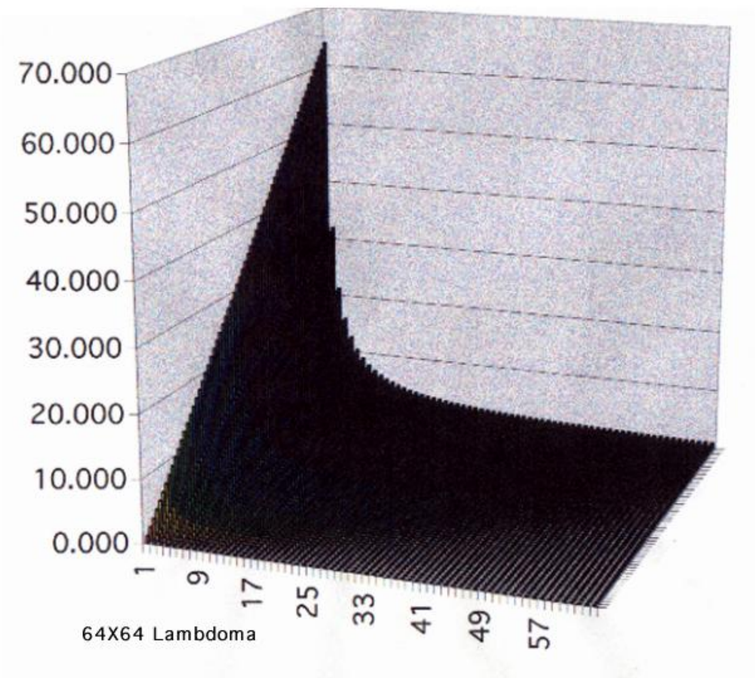
6X6 Lambdoma



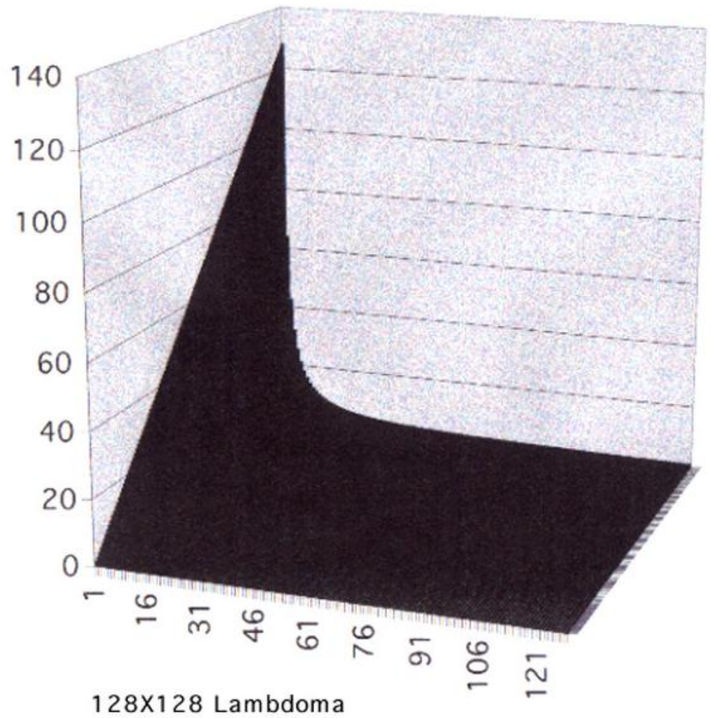
16X16 Lambdoma



32X32 Lambdoma



64X64 Lambdoma



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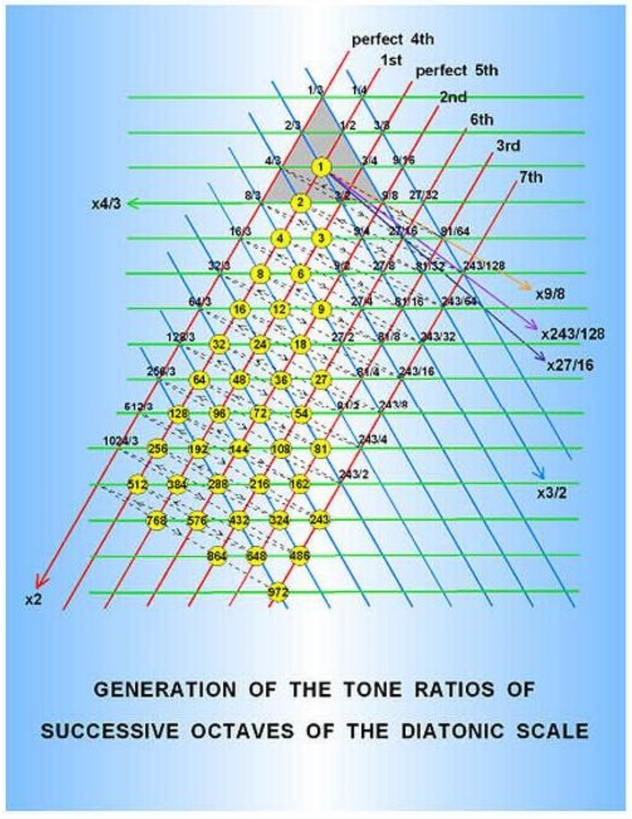

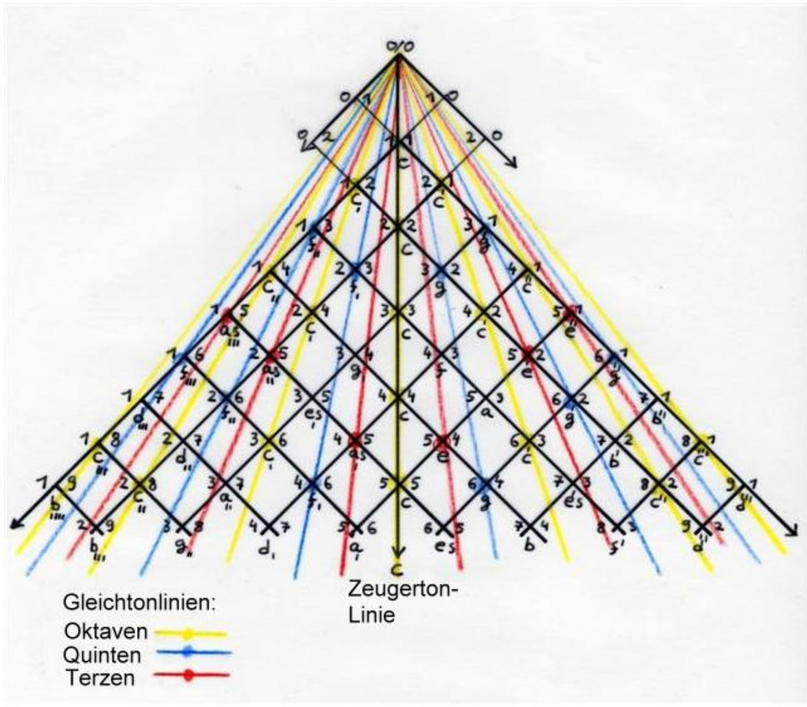

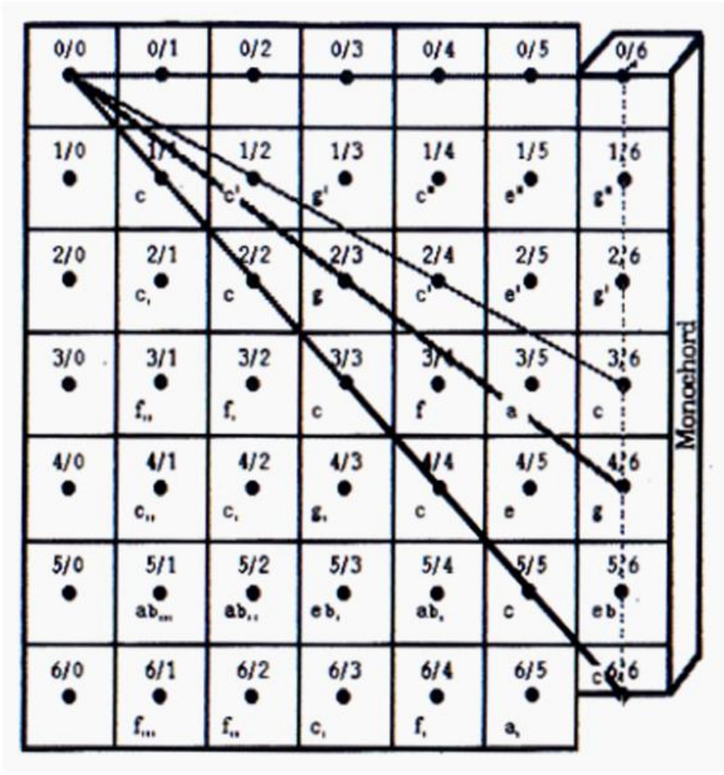

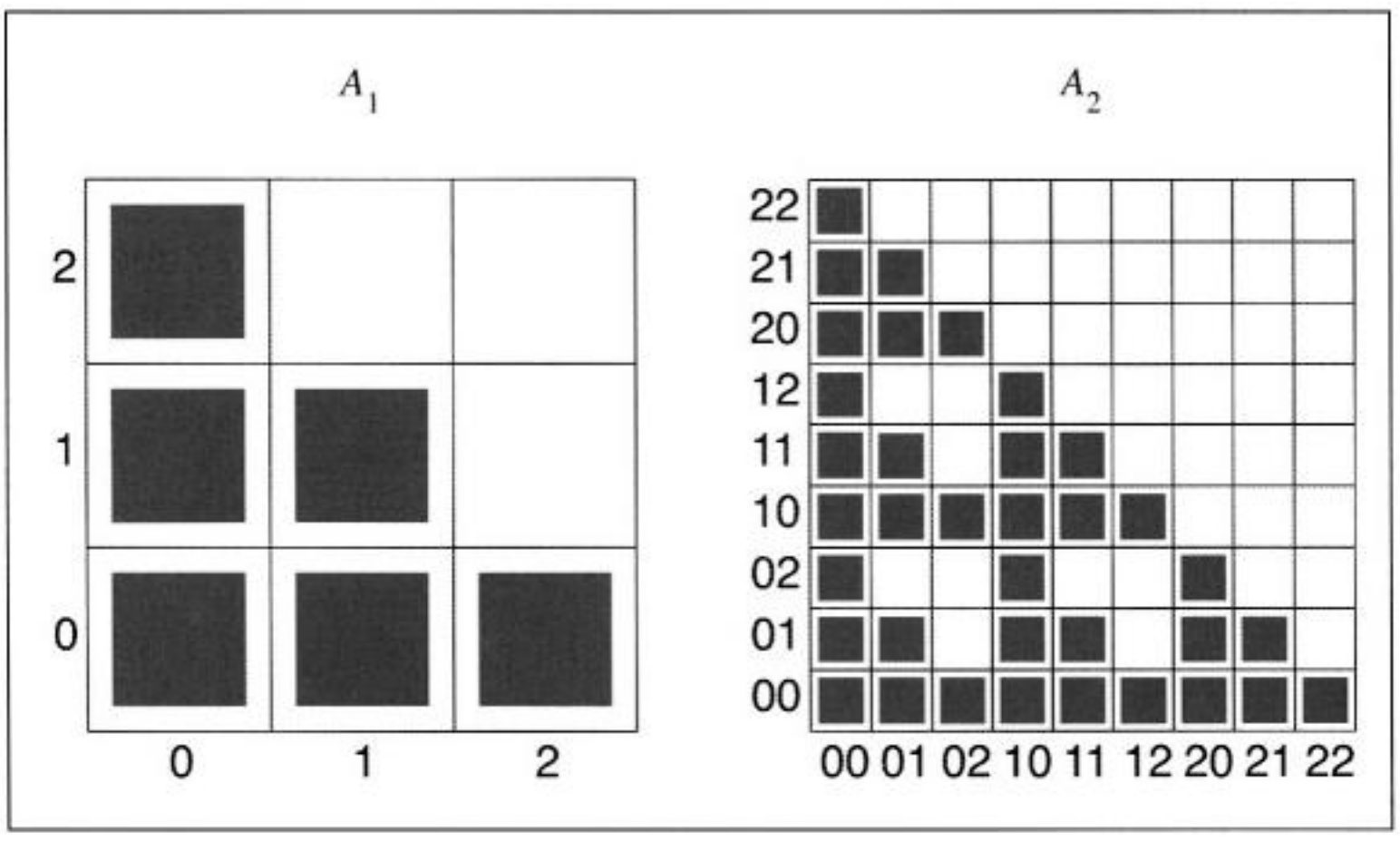

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21	1	8	36	120	330	792	1716	3432	6435
20	1	7	28	84	210	462	924	1716	3003
12	1	6	21	56	126	252	462	792	1287
11	1	5	15	35	70	126	210	330	495
10	1	4	10	20	35	56	84	120	165
02	1	3	6	10	15	21	28	36	45
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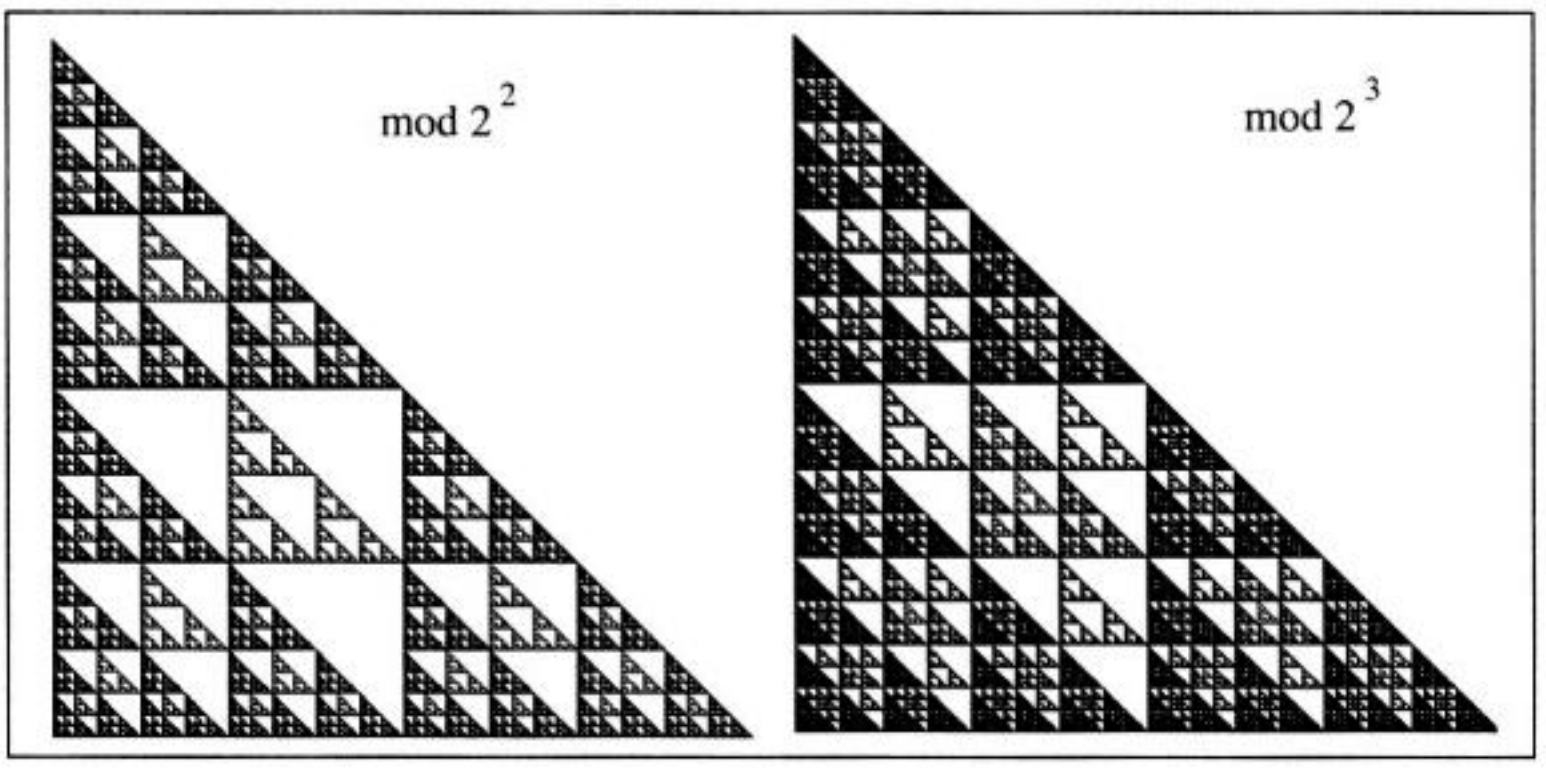
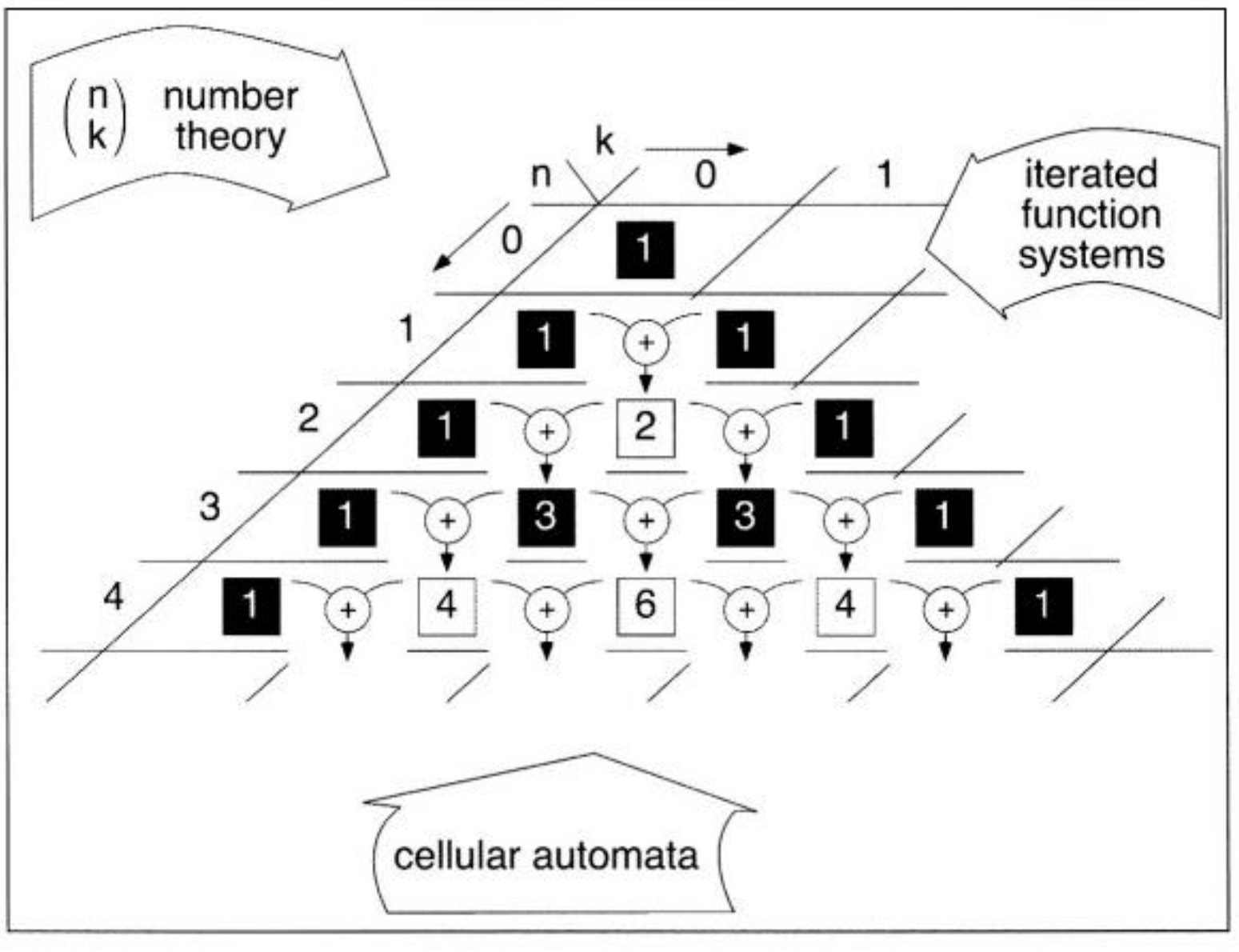
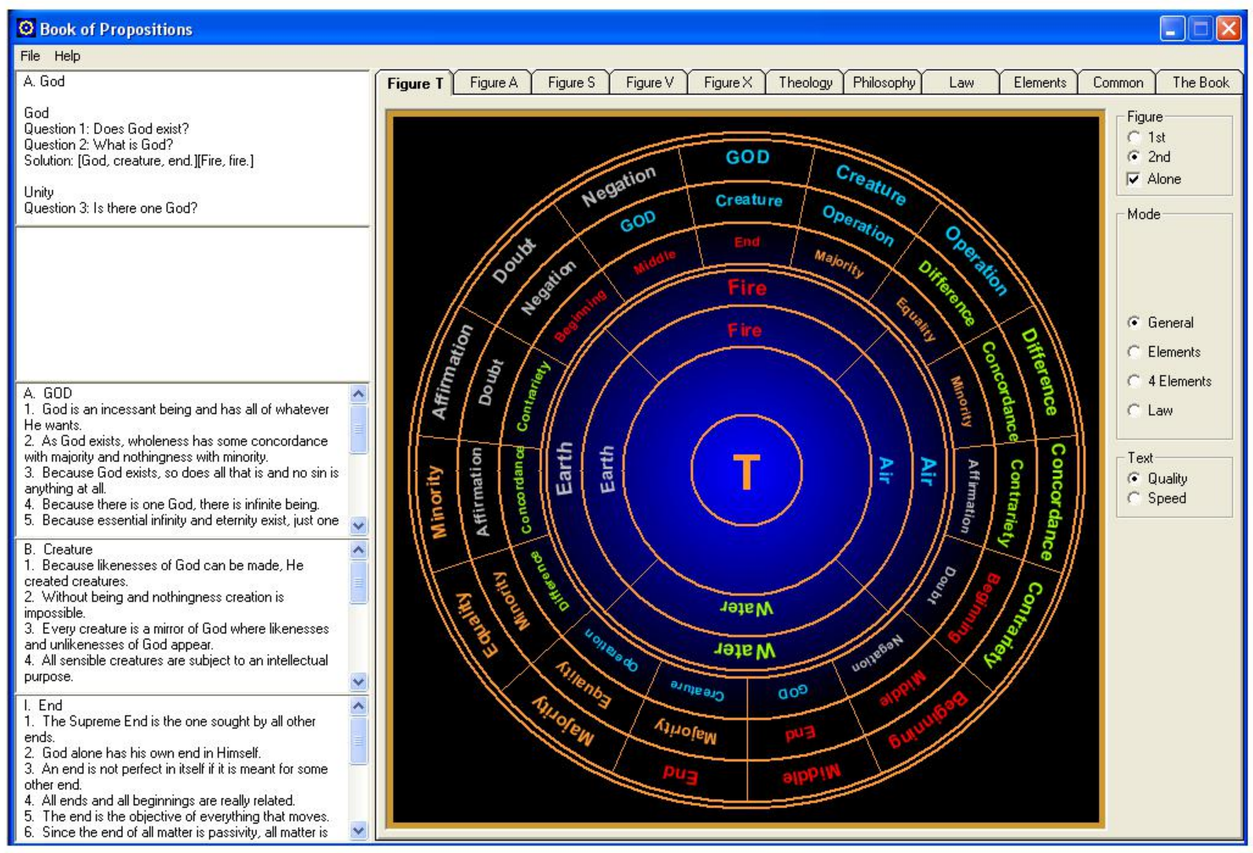
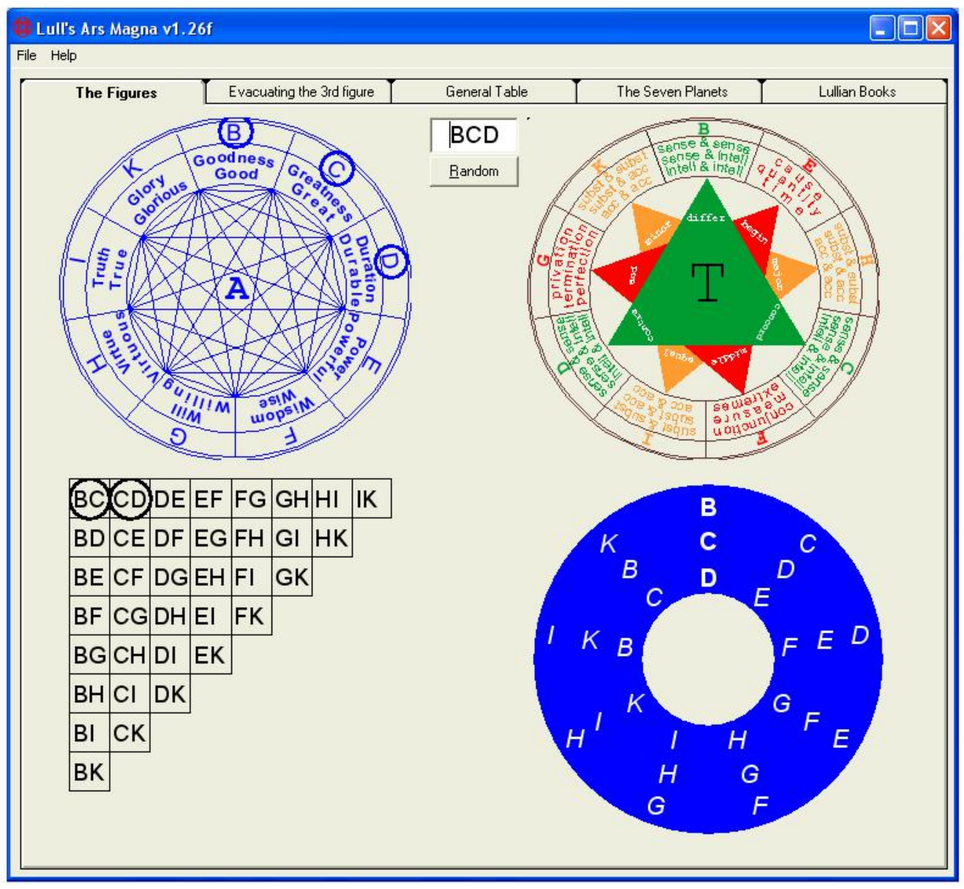
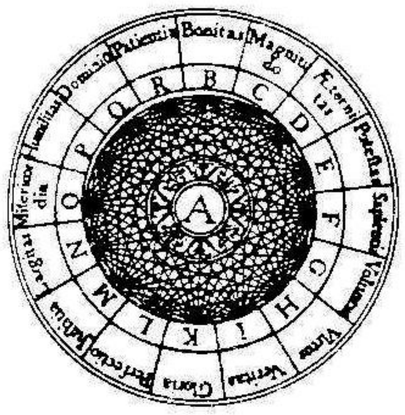
00	1	1	1	1	1	1	1	1	1

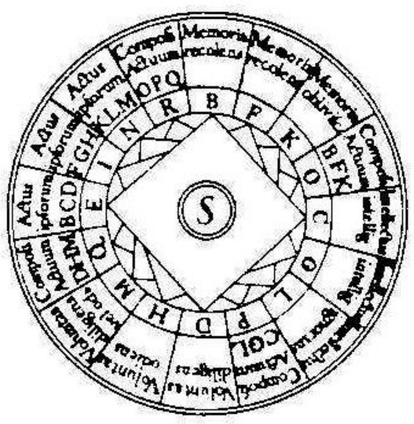


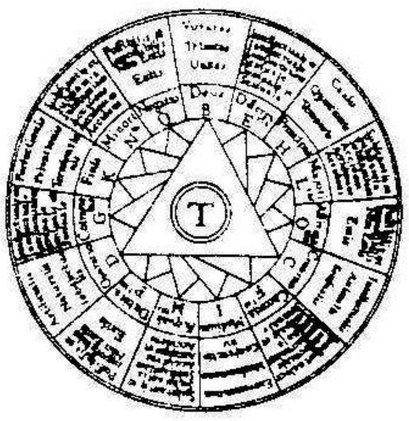


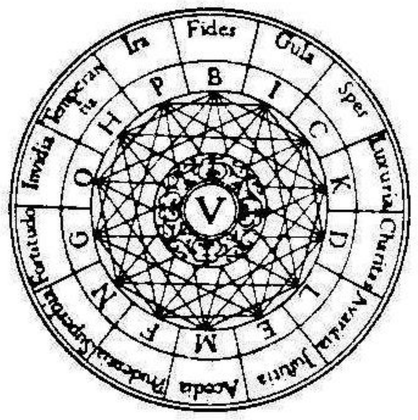

Book of Propositions
File Help
A. God
God
Question 1: Does God exist?
Question 2: What is God?
Solution: [God, creature, end.][Fire, fire.]
Unity
Question 3: Is there one God?
A. GOD
1. God is an incessant being and has all of whatever He wants.
2. As God exists, wholeness has some concordance with majority and nothingness with minority.
3. Because God exists, so does all that is and no sin is anything at all.
4. Because there is one God, there is infinite being.
5. Because essential infinity and eternity exist, just one
B. Creature
1. Because likenesses of God can be made, He created creatures.
2. Without being and nothingness creation is impossible.
3. Every creature is a mirror of God where likenesses and unlikenesses of God appear.
4. All sensible creatures are subject to an intellectual purpose.
I. End
1. The Supreme End is the one sought by all other ends.
2. God alone has his own end in Himself.
3. An end is not perfect in itself if it is meant for some other end.
4. All ends and all beginnings are really related.
5. The end is the objective of everything that moves.
6. Since the end of all matter is passivity, all matter is
Figure T
Figure A
Figure S
Figure V
Figure X
Theology
Philosophy
Law
Elements
Common
The Book
Figure
1st
2nd
Alone
Mode
General
Elements
4 Elements
Law
Text
Quality
Speed
GOD
Creature
Operation
Difference
Concordance
Contrariety
Beginning
Middle
End
Majority
Equality
Minority
Affirmation
Doubt
Negation
Fire
Air
Water
Earth
T

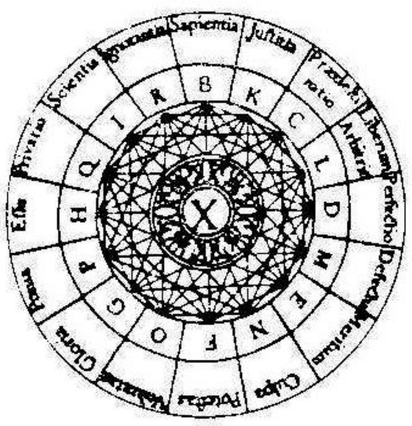

Lull's Ars Magna v1.26f
File Help
The Figures
Evacuating the 3rd figure
General Table
The Seven Planets
Lullian Books
BCD
Random
Goodness Good
Greatness Great
Duration Durable
Power Powerful
Wisdom Wise
Will Willing
Virtue Virtuous
Truth True
Glory Glorious
A
T
BC CD DE EF FG GH HI IK
BD CE DF EG FH GI HK
BE CF DG EH FI GK
BF CG DH EI FK
BG CH DI EK
BH CI DK
BI CK
BK

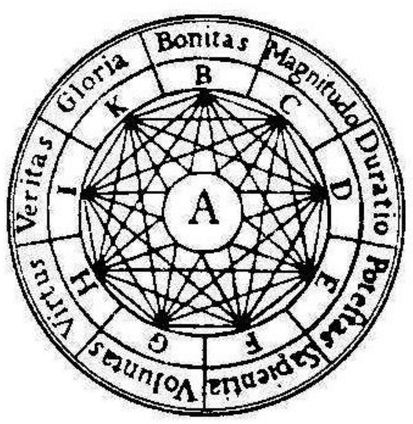


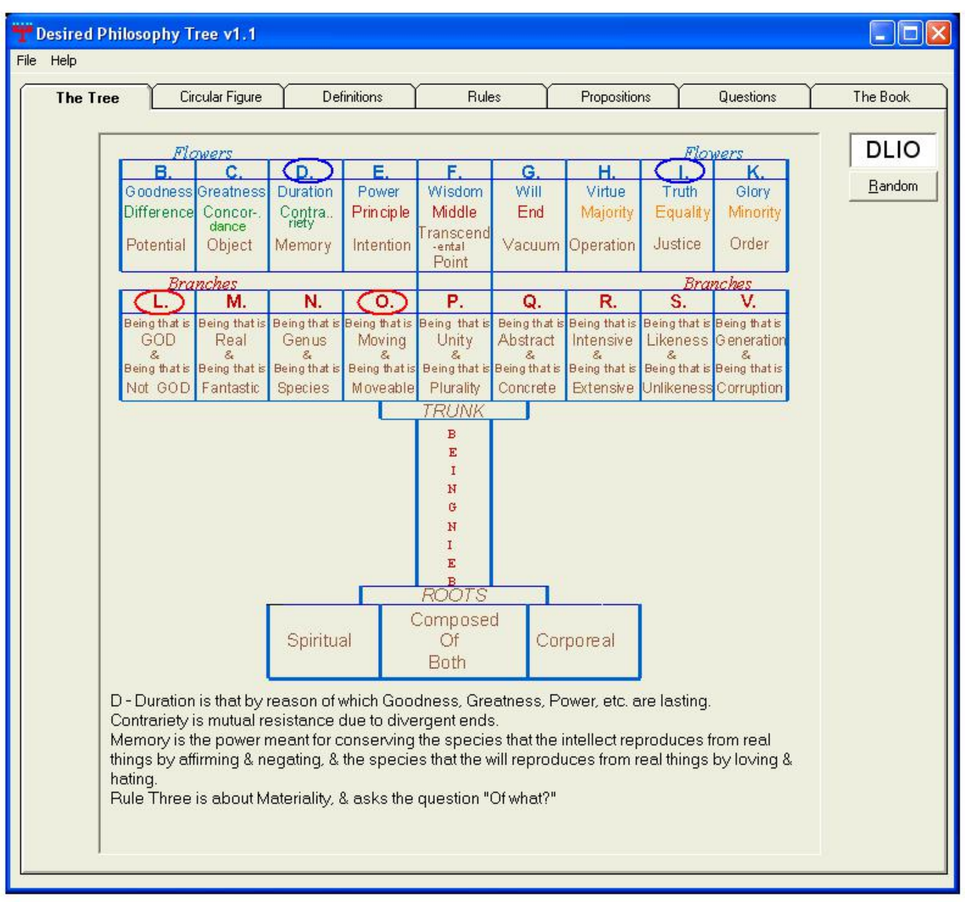


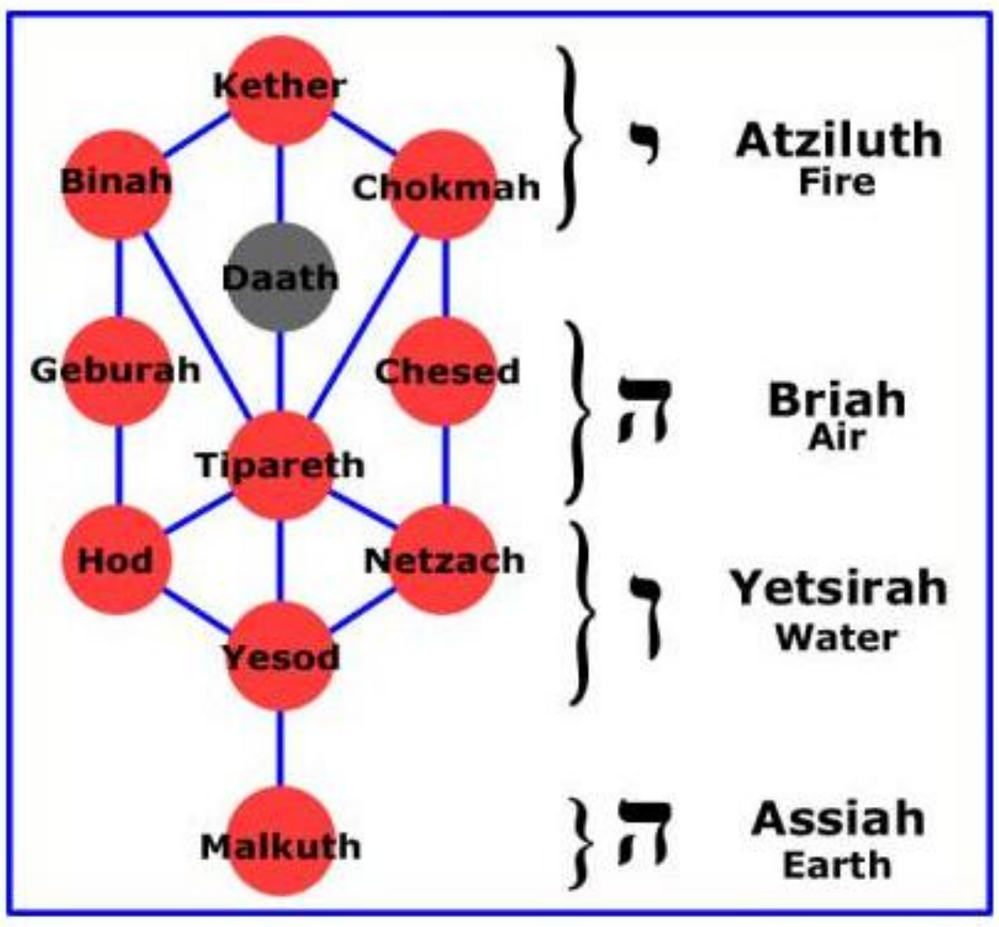


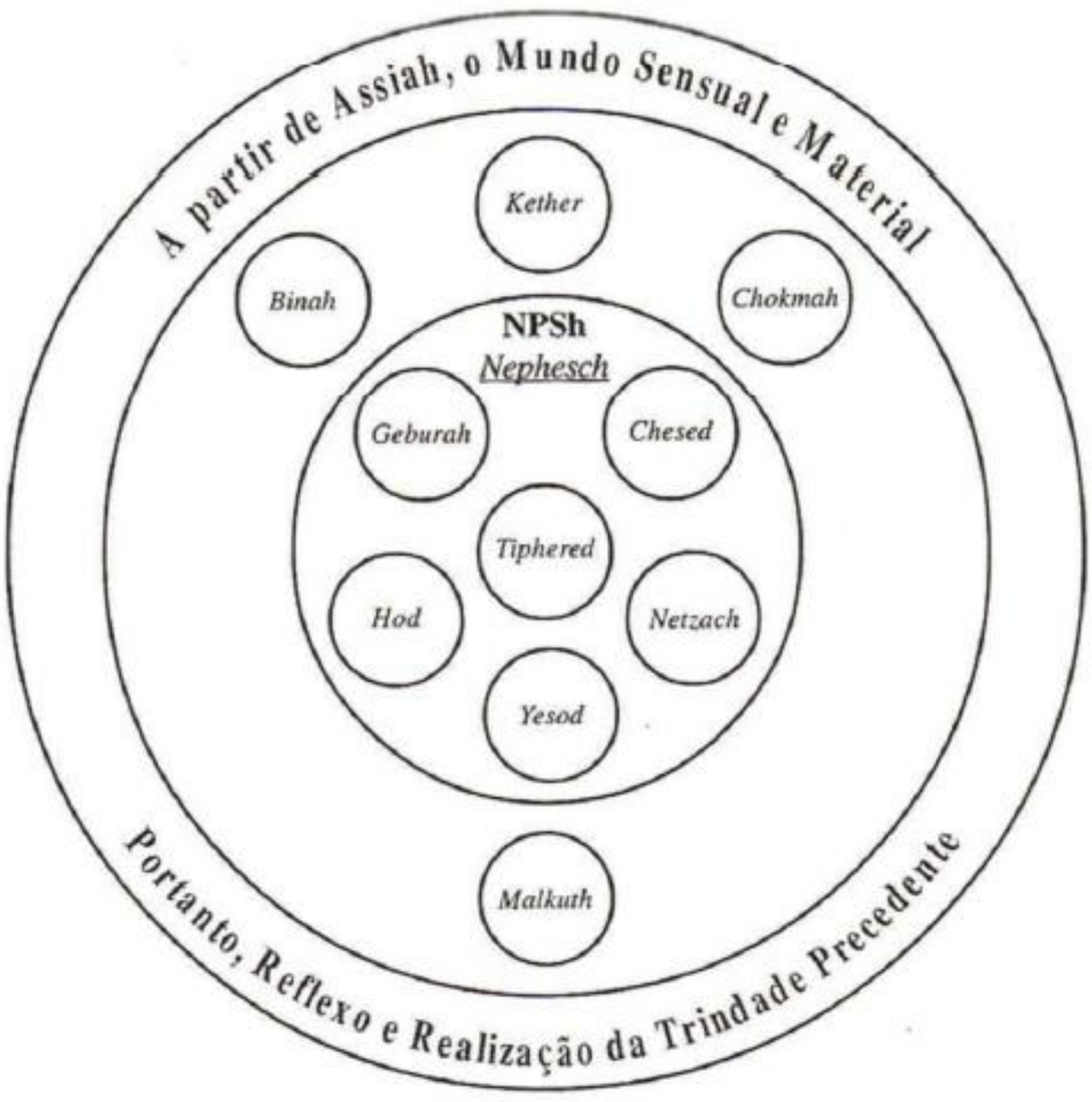


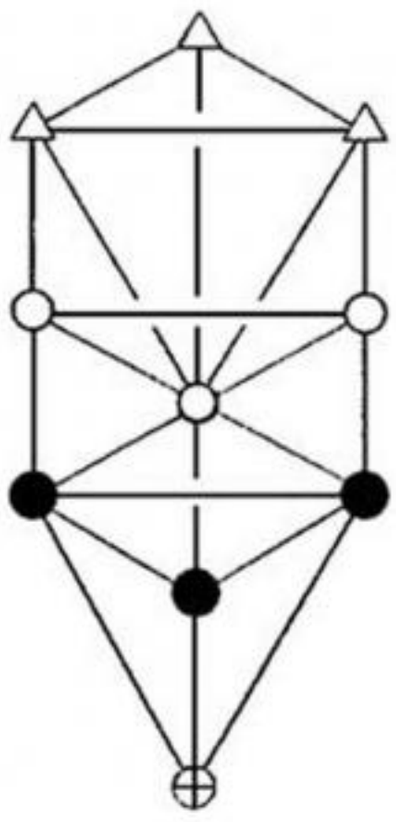





Desired Philosophy Tree v1.1
File Help
The Tree
Circular Figure
Definitions
Rules
Propositions
Questions
The Book
DLIO
Random
Flowers
B. Goodness Difference Potential
C. Greatness Concordance Object
D. Duration Contrariety Memory
E. Power Principle Intention
F. Wisdom Middle Transcendental Point
G. Will End Vacuum
H. Virtue Majority Operation
I. Truth Equality Justice
K. Glory Minority Order
Branches
L. Being that is GOD & Being that is Not GOD
M. Being that is Real & Being that is Fantastic
N. Being that is Genus & Being that is Species
O. Being that is Moving & Being that is Moveable
P. Being that is Unity & Being that is Plurality
Q. Being that is Abstract & Being that is Concrete
R. Being that is Intensive & Being that is Extensive
S. Being that is Likeness & Being that is Unlikeness
V. Being that is Generation & Being that is Corruption
TRUNK
BEING
ROOTS
Spiritual
Composed Of Both
Corporeal
D - Duration is that by reason of which Goodness, Greatness, Power, etc. are lasting.
Contrariety is mutual resistance due to divergent ends.
Memory is the power meant for conserving the species that the intellect reproduces from real things by affirming & negating, & the species that the will reproduces from real things by loving & hating.
Rule Three is about Materiality, & asks the question "Of what?"







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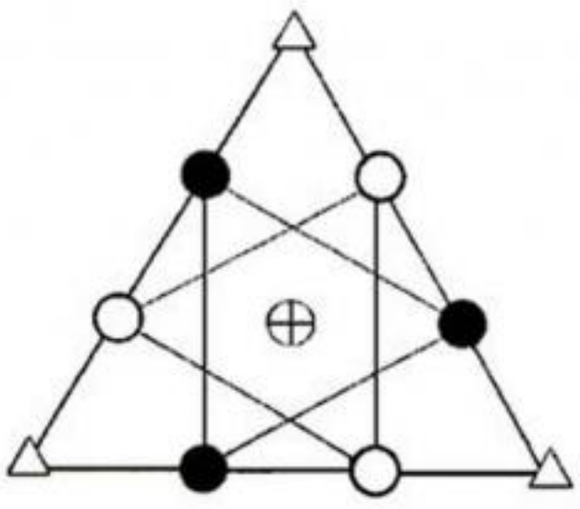
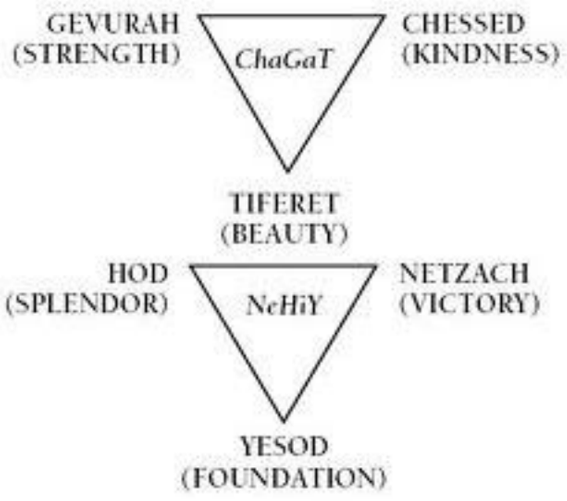
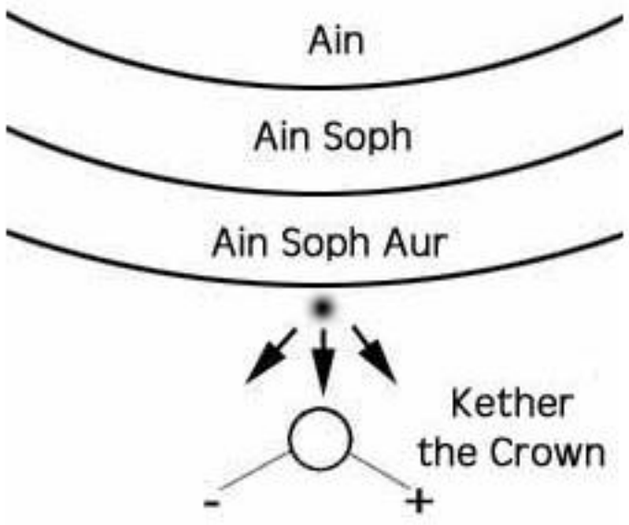






• = I
• • = H I
• • • = V H I
• • • • = H V H I

Character	Numeric Value
י	10
ה	5
ו	6
ה	5

ה	ו	ה	י
י	ה	ו	ה
ה	י	ה	ו
ו	ה	י	ה

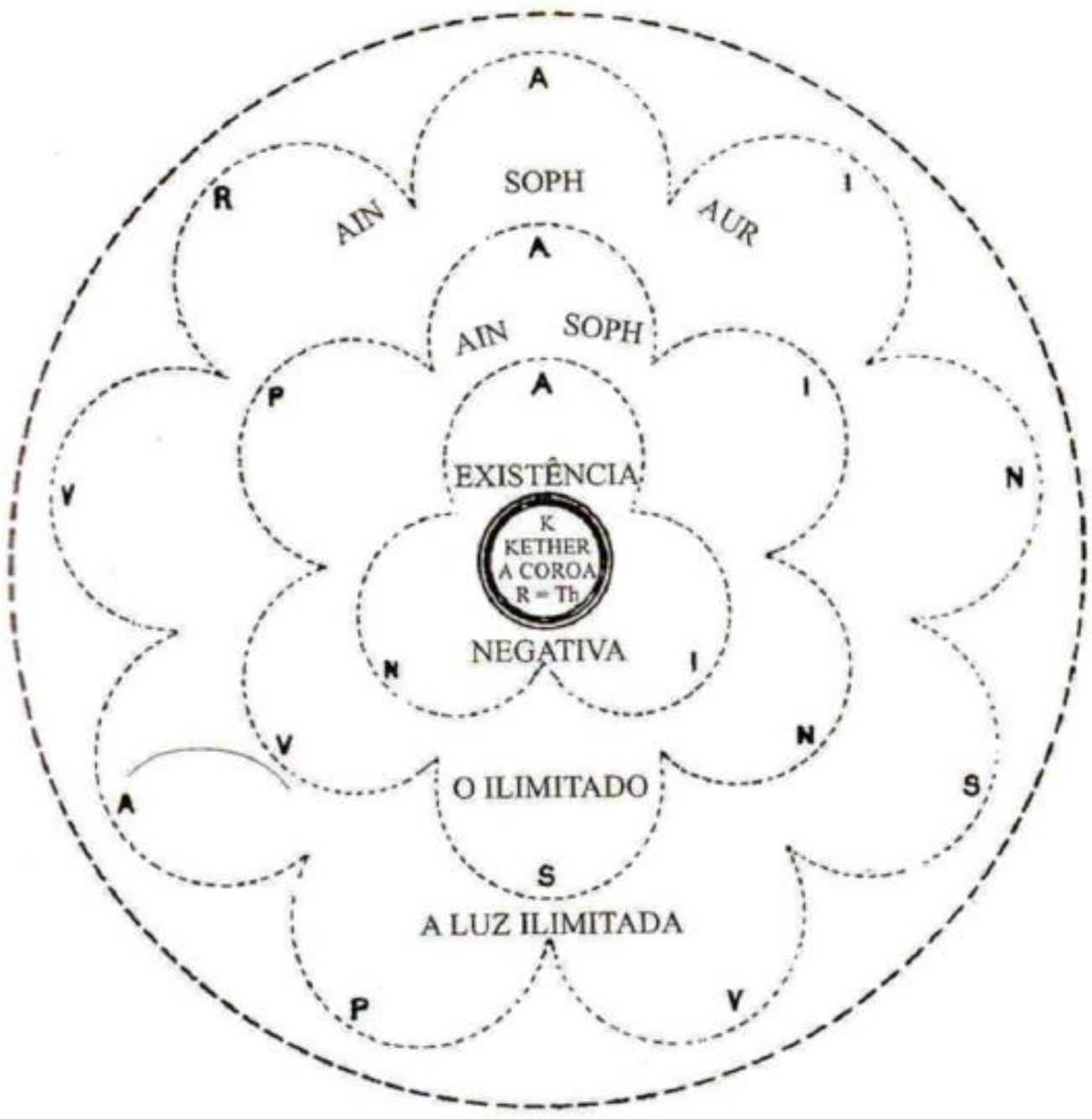
5	6	5	10
10	5	6	5
5	10	5	6
6	5	10	5

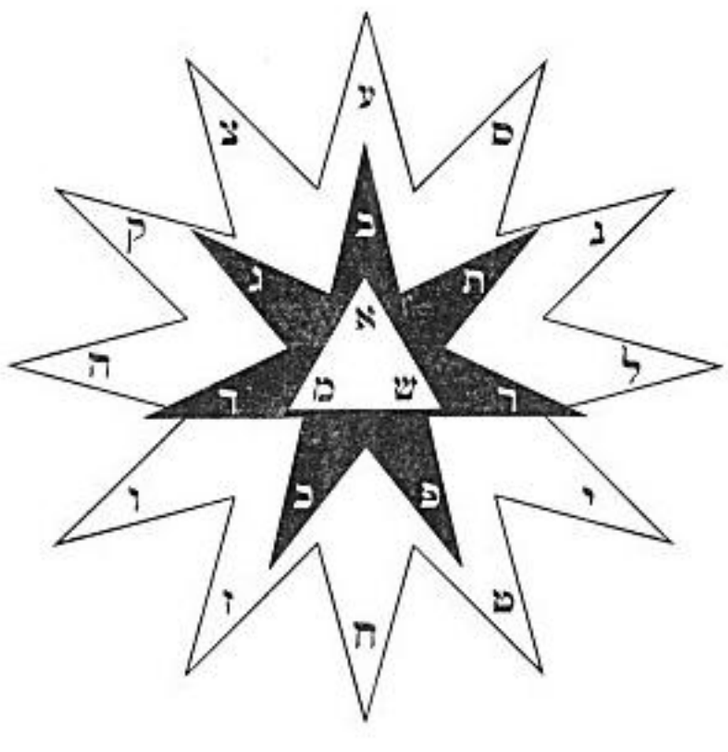
ד	ط	ب
ج	ه	ز
ح	ا	و

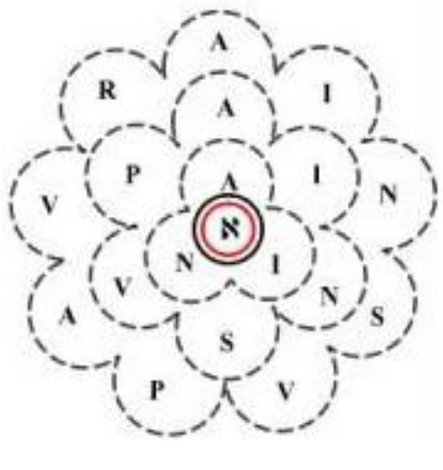
4	9	2
3	5	7
8	1	6

ד	ט	ב
ג	ח	ז
ח	א	ו

Up	*yud-hey-vav*	*King/Daughter United*	There is no separation between God and the Shechinah
Down	*yud-vav-hey*	*King and Daughter*	The King comes first, but now there is separation by *vav*. The Shechinah is in exile.
East	*hey-yud-vav*	*Daughter/King United*	Holiness is diminished because the King comes second.
West	*hey-vav-yud*	*Daughter and King*	The letter *vav* creates separation between the Shechinah and God.
South	*vav-yud-hey*	*United King/Daughter*	With the letter *vav* coming first, both God and the Shechinah are more hidden.
North	*vav-hey-yud*	*United Daughter/King*	With the King coming last, God is in a state of maximum concealment.







The Trinity
one God

Father

Son

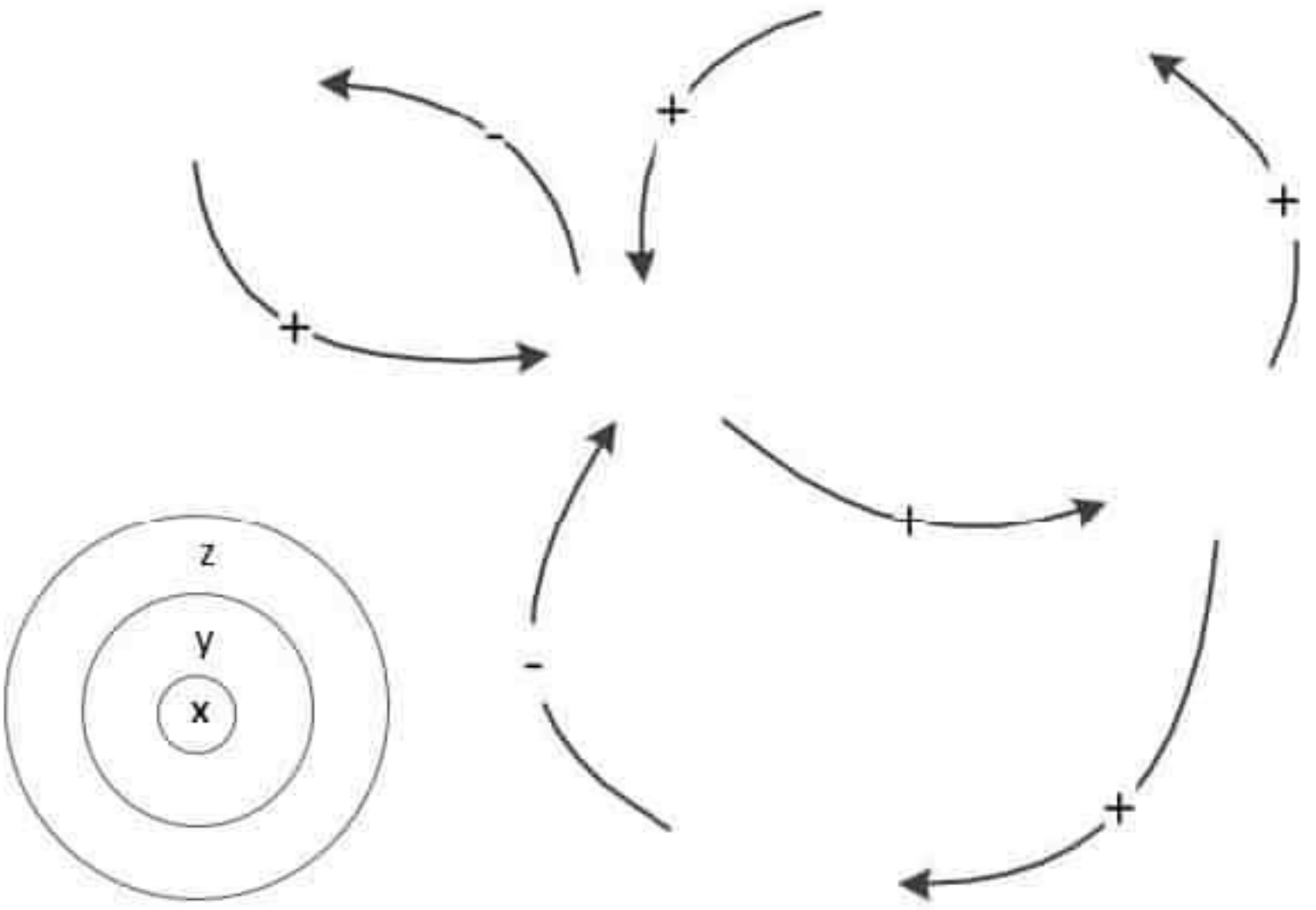
Holy Spirit

Yellow object

Coloured glass

Observer

of through in Whom are all



each of these is

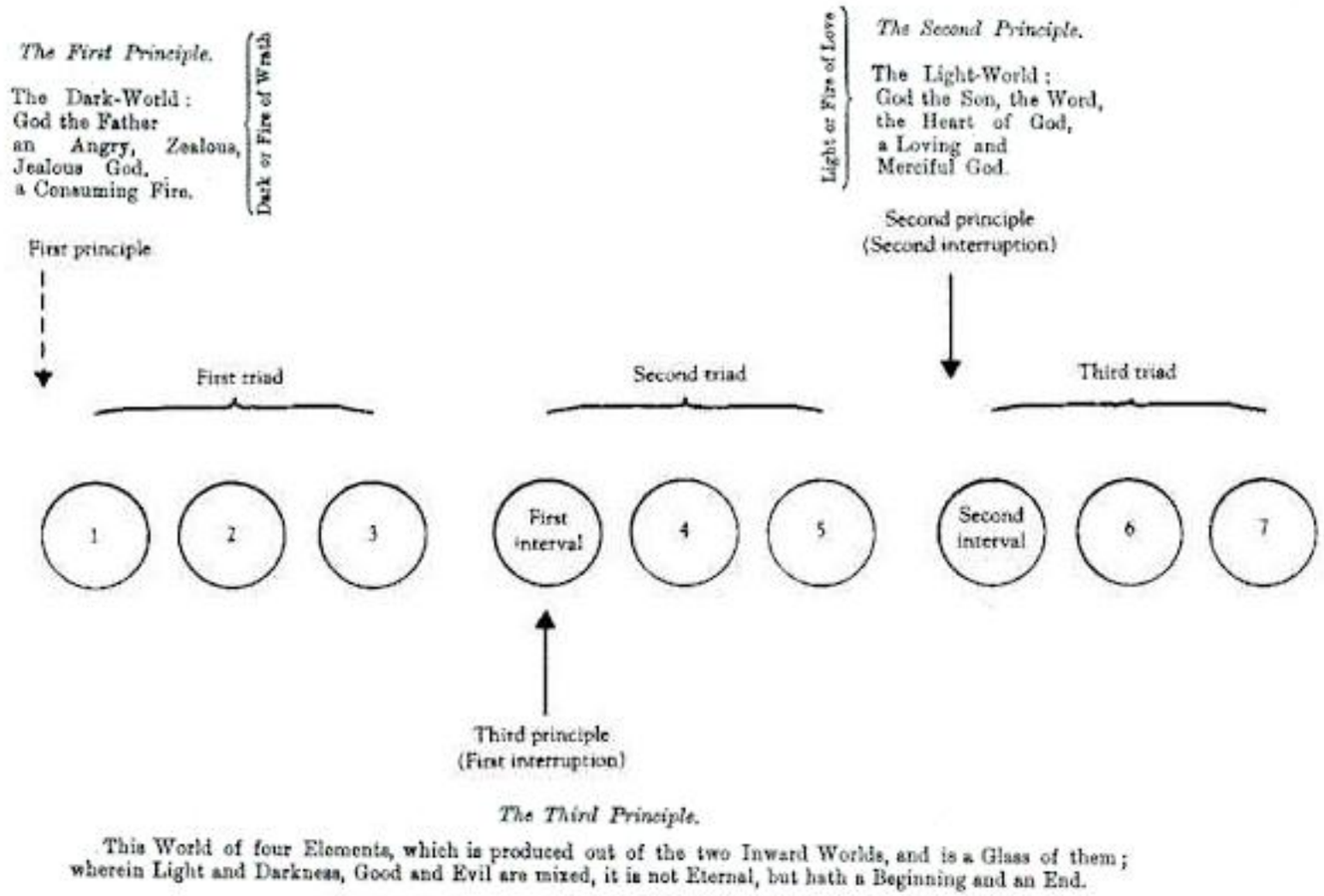
and yet they are all one

To all three belong

eternity unchangeableness majesty power

by the unity in opposition
of Sour and Sweet within Bitter.
Heat is produced
Flash is ignited by Heat;
Love is energized by the Flash
Tone is the "song of Love"
Body, the seventh spirit, encompasses the other six.

With Tone, the life of God is ready for fulfillment:
having given rise to a "speech" (Tone),
the process becomes a thing definite to itself.
the "concretization" of the process
through its self expression.
This concretization is the completion of the cycle,
but as involving the cycle's self-awareness
it includes the cycle as well.



The Seven Forms of Spirits, mentioned Revel. Chap. 1.

♄ ☾ The First	Form	Harsh Desiring Will Bitter or Stinging Anguish, till the Flash of Fire — 1. Dark-World; a similitude of it is a candle.
☿ ♃ Second		
♂ ♀ Third		
☉ Fourth		Fire: Dark-Fire / Light-Fire — 2. Fire-World; a similitude of it is the fire of a candle.
♀ ♂ Fifth		Light or Love, whence the water of Eternal Life floweth Noise, Sound, or Mercury Substance or Nature — 3. Light-World; a similitude of it is the light of a candle.
♃ ☿ Sixth		
☾ ♄ Seventh		

THREE PRINCIPLES

Sulphur Salt Mercury

THE FOUR ELEMENTS

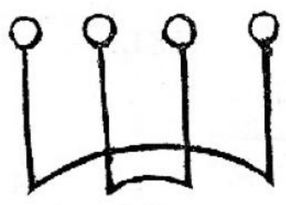
Fire Air Water Earth

PLANETS & METALS

Moon	Mercury	Venus	Sun	Mars	Jupiter	Saturn
Silver	Quicksilver	Copper	Gold	Iron	Tin	Lead

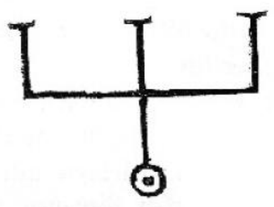
1
2 3
4 6 9
8 12 18 27

PHUL.



Luna

OCH.

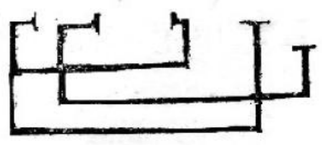


Sol.

PHALEG.

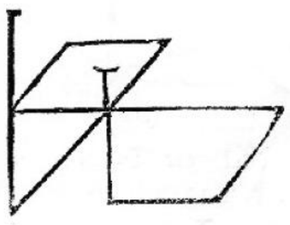
Mars.

BETHOR.



Jupiter.

OPHIEL.



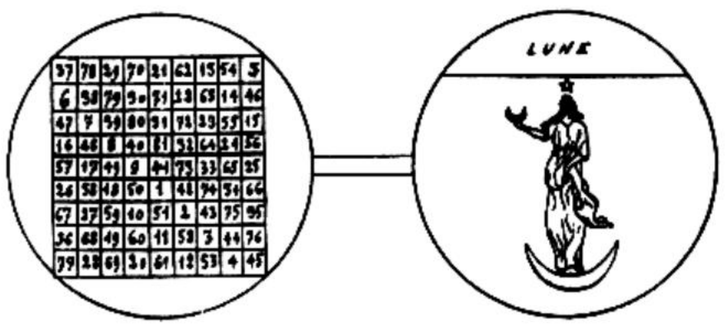
Mercurius.

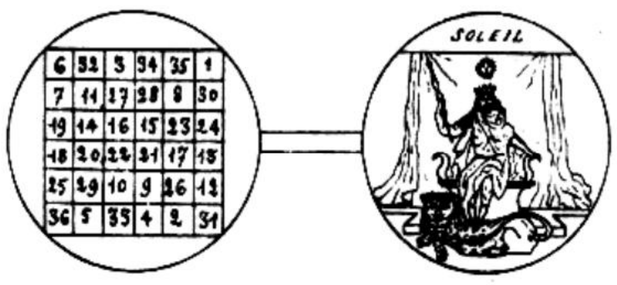
ARATHRON.

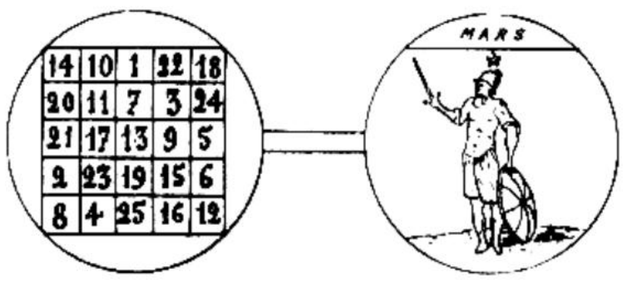
Saturnus.

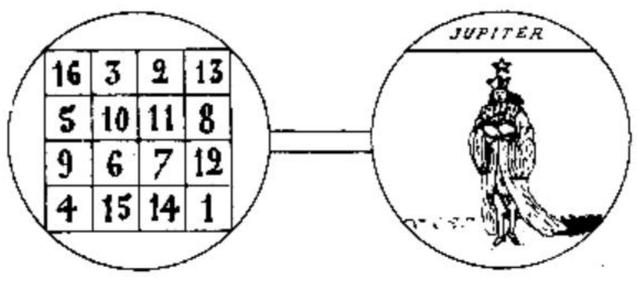
HAGITH.

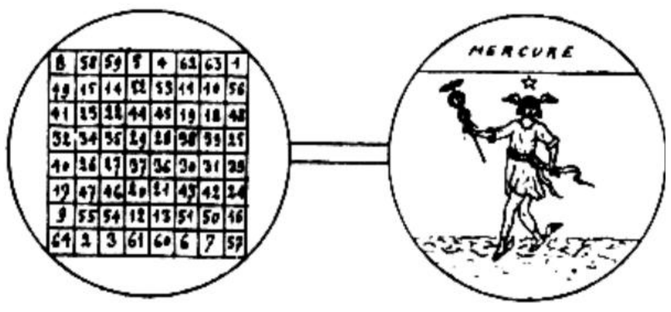
Venus.

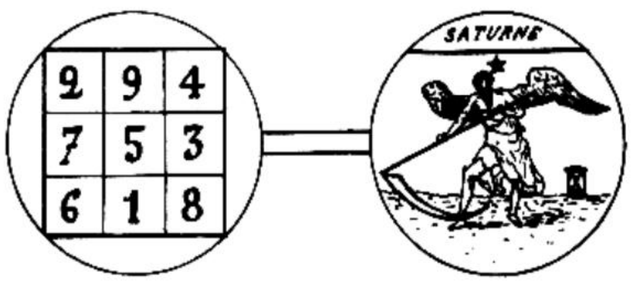


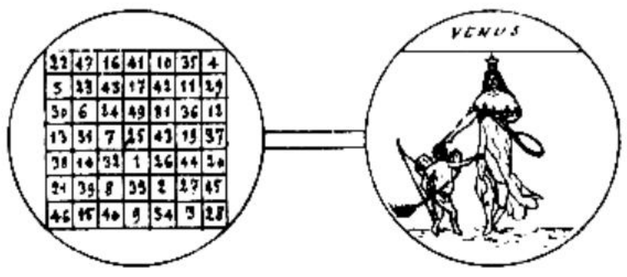












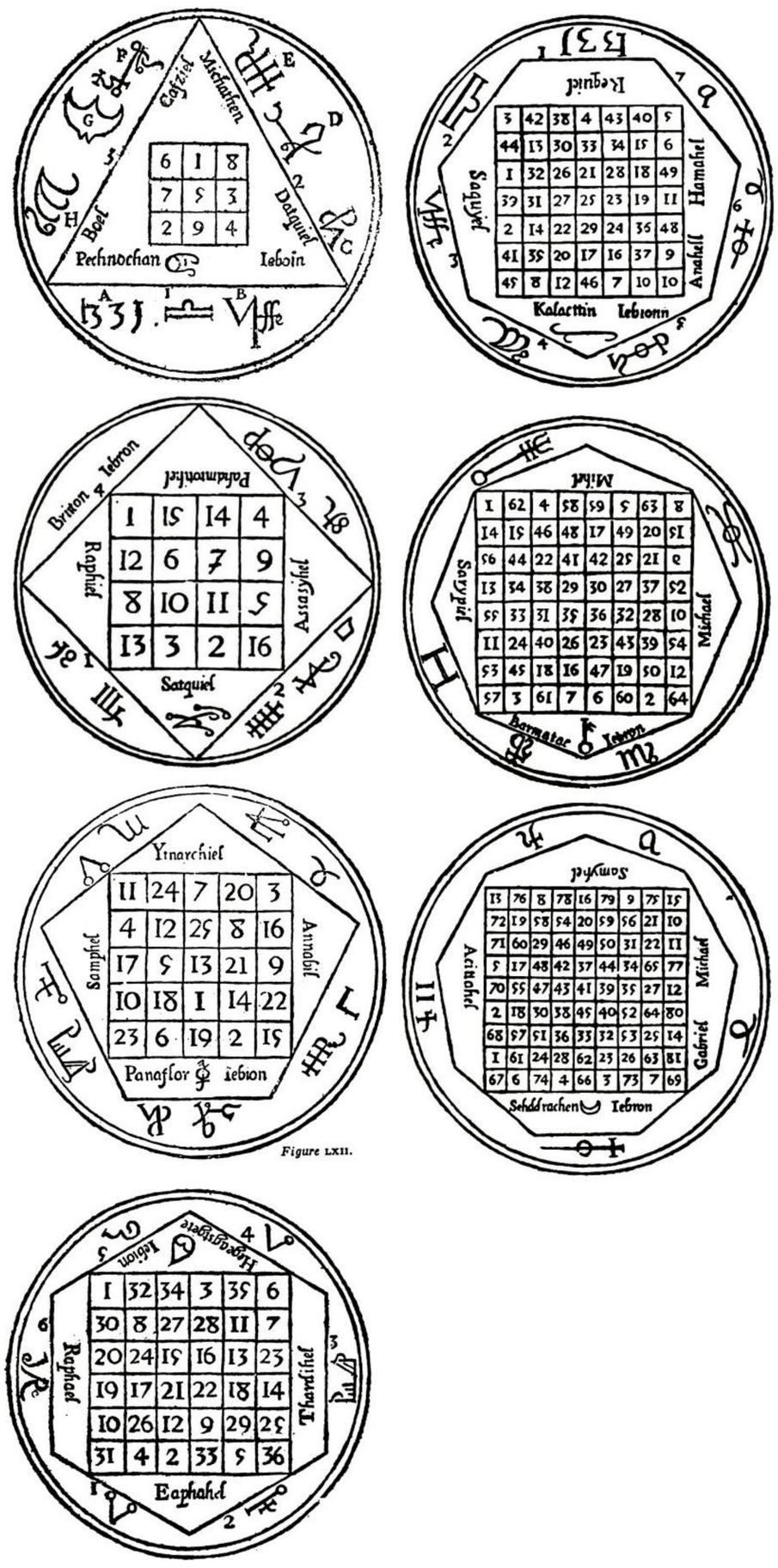


Figure LXII.

Beneath lay a watery Chaos
the First Light came from the Darkness, God the Father, the First Man.
His thought gave rise to His Son, the Second Man.
A third emanation now arose: the Holy Spirit (Female).

The First Man and His Son rejoiced at Her beauty and filled Her with Light,
which generated Christ. the Third Man,

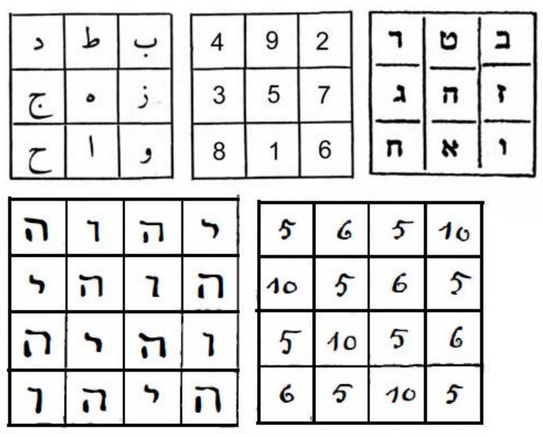
Christ, who was on Her right side,
ascended in the Light
to the level of the First Aeon
alongside God (the First Man).

The Mother could not sustain the Light, which overflowed on Her left side.
The overflowing Light gave rise to seven

Their names were

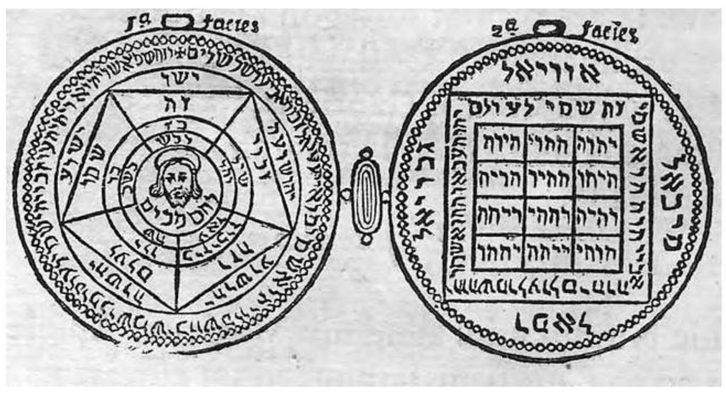
Michael (a lion),	Ialdabaoth (a lion),	Ialdabaoth,
Souriel (a bull),	Iaoth (a snake),	Iao,
Raphael (a snake),	Sabaoth (a bull),	Sabaoth,
Gabriel (an eagle),	Eloaios (an eagle),	Adonai,
	Thauthabaoth (a bear),	Elohim,
	Erathaoth (a dog),	Oreus,
	Oneol or Thartharoath (an ass).	Astapheus,

1. **Ialdabaoth, Lord God of the Fathers.**	Iaoth	Pronoia	Marrow	Moon
2. **Iao—Javeh.**	Iao	Fire	Flesh	Sun
3. **Sabaoth—Hosts.**	Sabaoth	Kingship	Blood	Mars
4. **Adoneus—Lord.**	Adoni	Synesis	Skin	Jupiter
5. **Eloeus—God.**	Eloaios	Divinity	Bones	Mercury
6. **Oreus—Light.**	Sabbataios	Sophia	Hair[38]	Saturn
7. **Astampheus—Crown.**	Astaphaios	Goodness	Sinews	Venus



Character	Numeric Value
י	10
ה	5
ו	6
ה	5

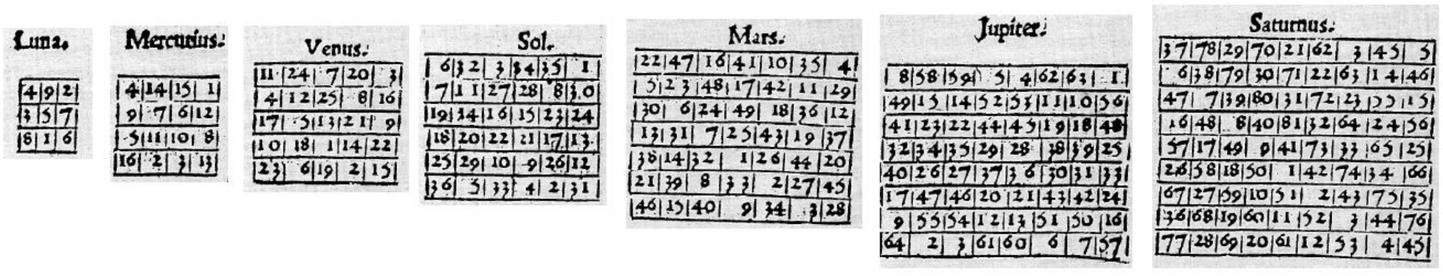
Up	*yud-hey-vav*	*King/Daughter United*	There is no separation between God and the Shechinah
Down	*yud-vav-hey*	*King and Daughter*	The King comes first, but now there is separation by *vav*. The Shechinah is in exile.
East	*hey-yud-vav*	*Daughter/King United*	Holiness is diminished because the King comes second.
West	*hey-vav-yud*	*Daughter and King*	The letter *vav* creates separation between the Shechinah and God.
South	*vav-yud-hey*	*United King/Daughter*	With the letter *vav* coming first, both God and the Shechinah are more hidden.
North	*vav-hey-yud*	*United Daughter/King*	With the King coming last, God is in a state of maximum concealment.

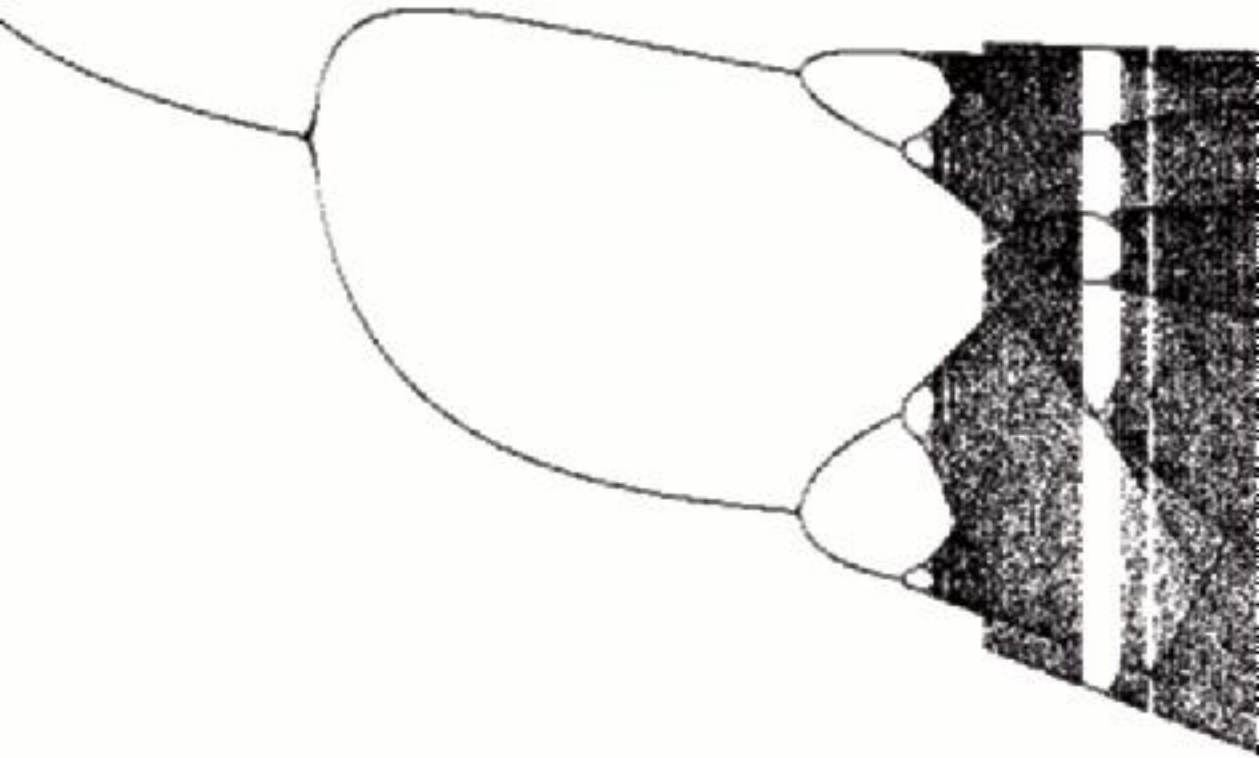


Planet	G.D. transl.	Hebrew	Arab			
Luna	Gabriel	Gabriel	Jibrael	Gabriel	representing	Luna
Sol	Michael	Raphael	Ruqael	Michael	,,	Sol
Mars	Zamael	Samael	Samsamael	Samael	,,	Mars
Jupiter	Sachiel	Tzadqiel	Sarfael	Zachariel	,,	Jupiter
Mercury	Raphael	Michael	Mikael	Raphael	,,	Mercury
Saturn	Cassiel	Qatzphiel	Kasfael	Orifiel	,,	Saturn
Venus	Anael	Anael	Anael	Anael	,,	Venus

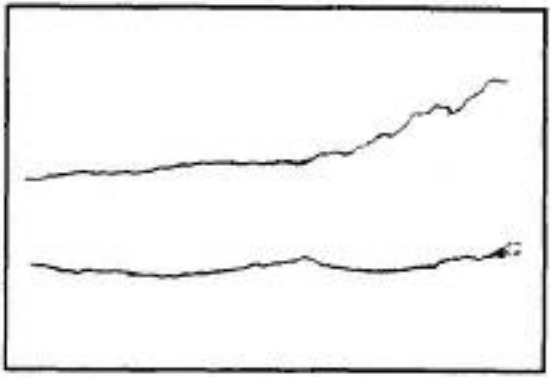
This pleroma, or circle, is acknowledged by the Kabalists as constituting the totality of the Existent. It is sometimes termed Chivth.

8	Origen (1) Leviathan?	Irenaeus	*Orig. World* (Sabaoth)	Brummer Ialdabaoth?	P 20915	*Ap. John* III Ialdabaoth	*Ap. John* BG Ialdabaoth	*Ap. John* II Ialdabaoth	*Pan.* 26 Dragon	*2 Jeu* Great Iao?	Origen (2) Leviathan?
1/7	Ialdabaoth	Ialdabaoth	Ialdabaoth	Ia<ldabaoth?>	[Ialda]baoth	Aoth	Iaoth	Athoth	Ialdabaoth/ Sabaoth	Sabaoth	Michael
2/6	Iao	Iao	Iao	Iao	[S]abaoth	Eloaios	Eloaios	Eloaiou	Ialdabaoth/ Elilaeus	Taricheas	Suriel
3/5	Sabaoth	Sabaoth	Sabaoth	Sabaoth	Adonaio[s]	Astophaios	Astaphaios	Astaphaios	Eloaeus-Adonaeus	Ialthoo	Raphael
4/4	Adonaios	Adonaeus	Adonaios	Adonai	[Iaoth]	Iazo	Iao	Iao	Davides	Samaelo	Gabriel
5/3	Astaphaios	Eloeus	Eloaios	Eloai	[E]loaios	Adonaios	Adonaios	Sabaoth	Seth	Ialdabaoth	Thauthabaoth
6/2	Ailoaios	Oreus	Oraios	Horeos	Oraios	Adonin	Adoni	Adonin	Saklas	?	Erataoth
7/1	Horaios	Astaphaeus	Astaphaios	Astaphaios	A[staphaios]	Sabbadaios	Sabbataios	Sabbede	Iao	?	Thartharaoth





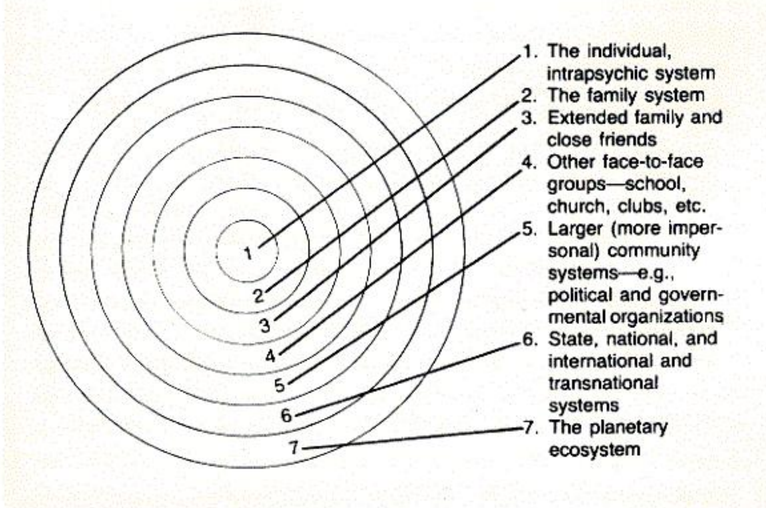
Cloud outlines

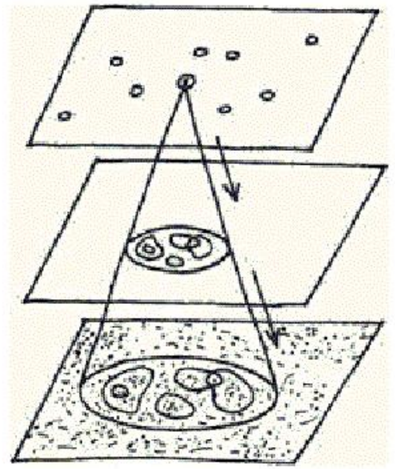


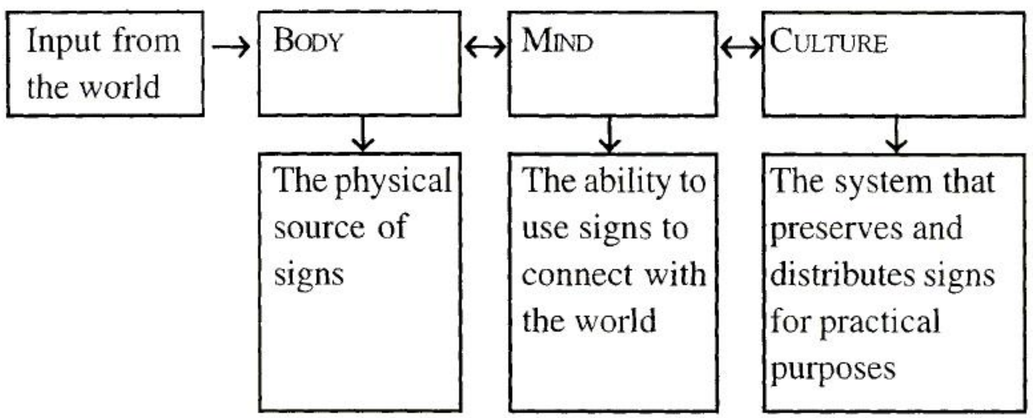
Wall cracks

Hillside skyline

Fern tip







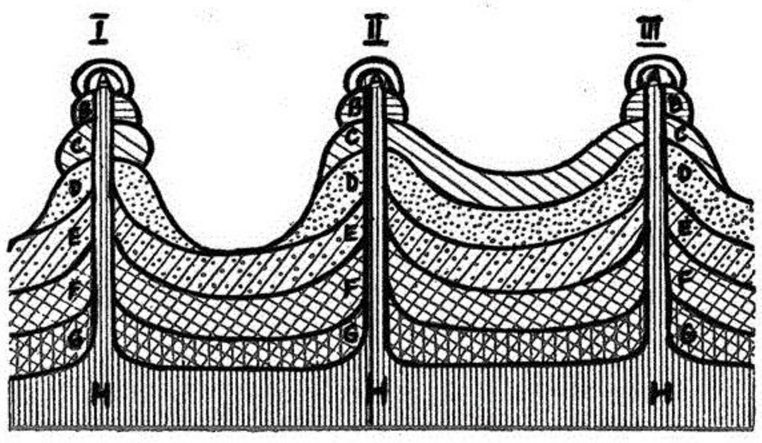
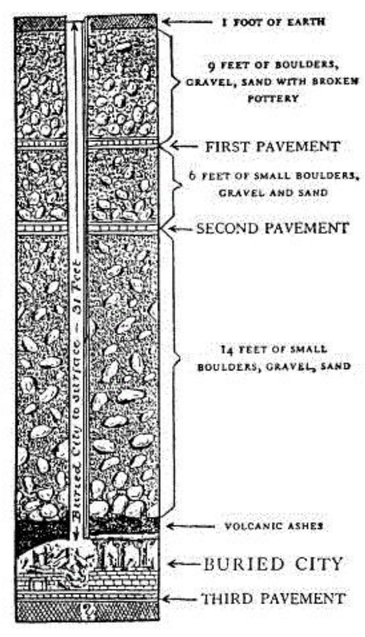


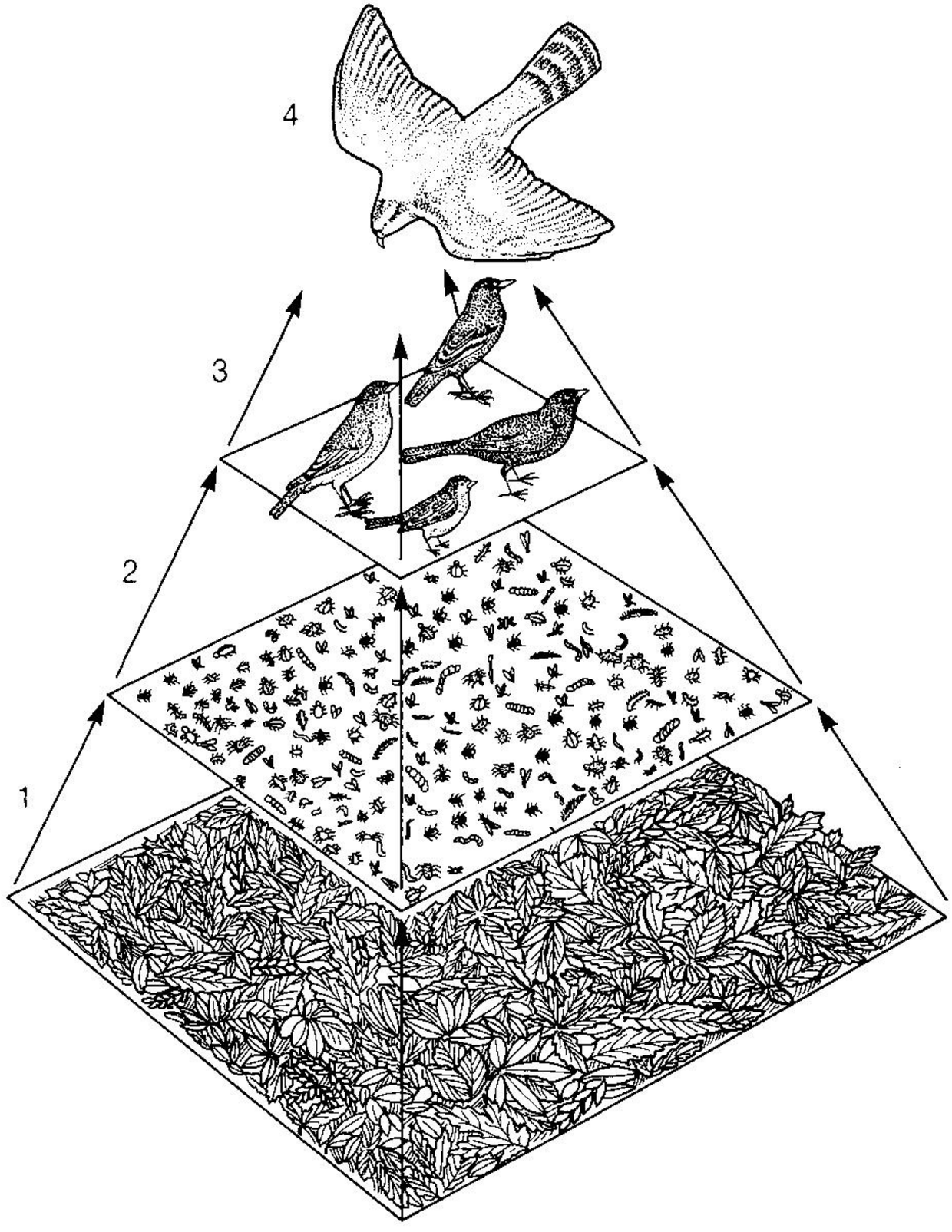
DIAGRAM II

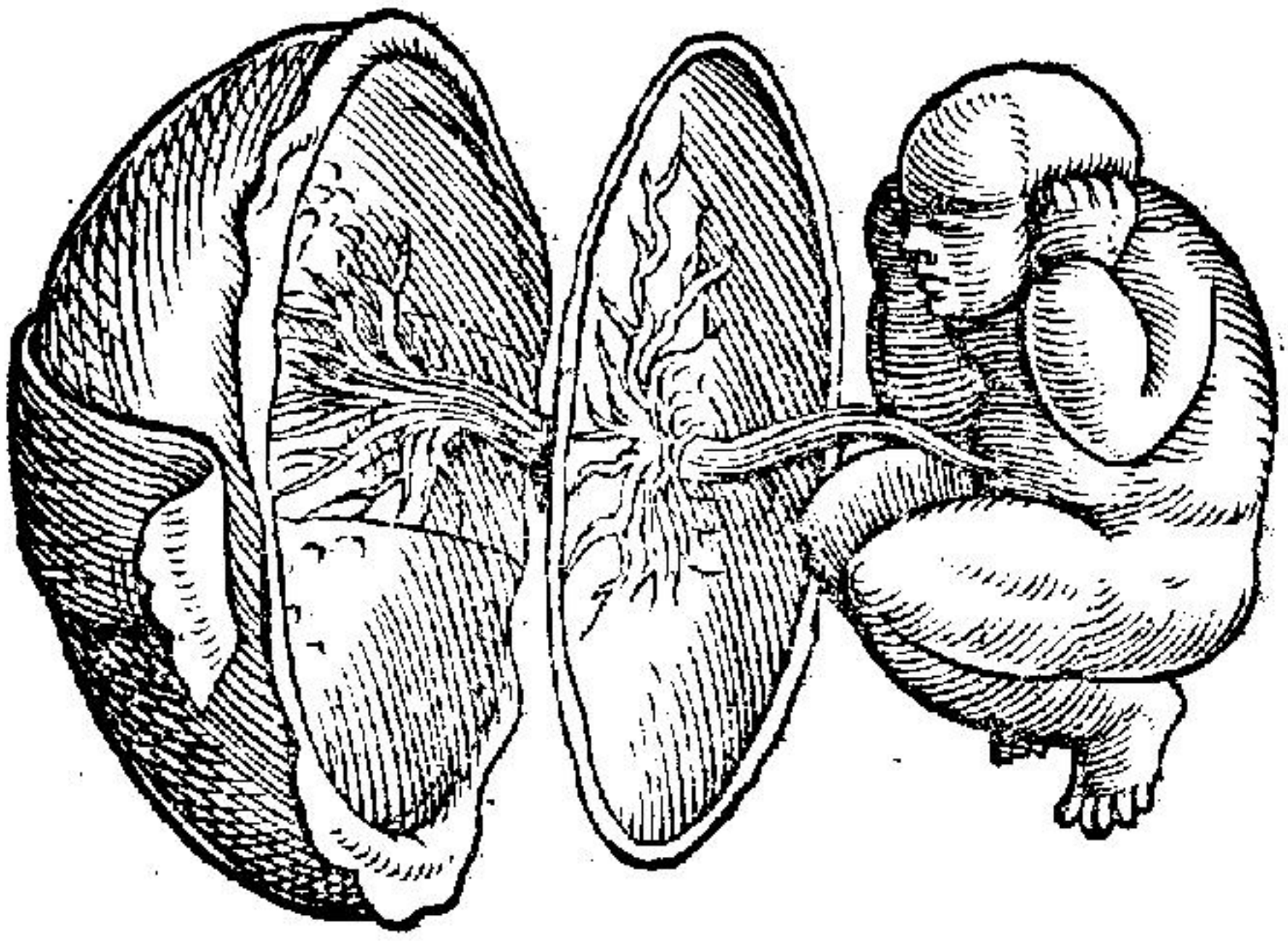
I. Isolated Nations.

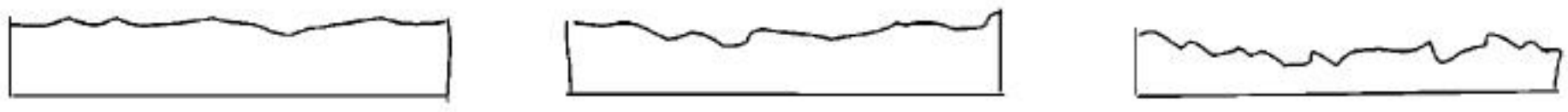
II and III. Groups of Nations (e.g., Europe).

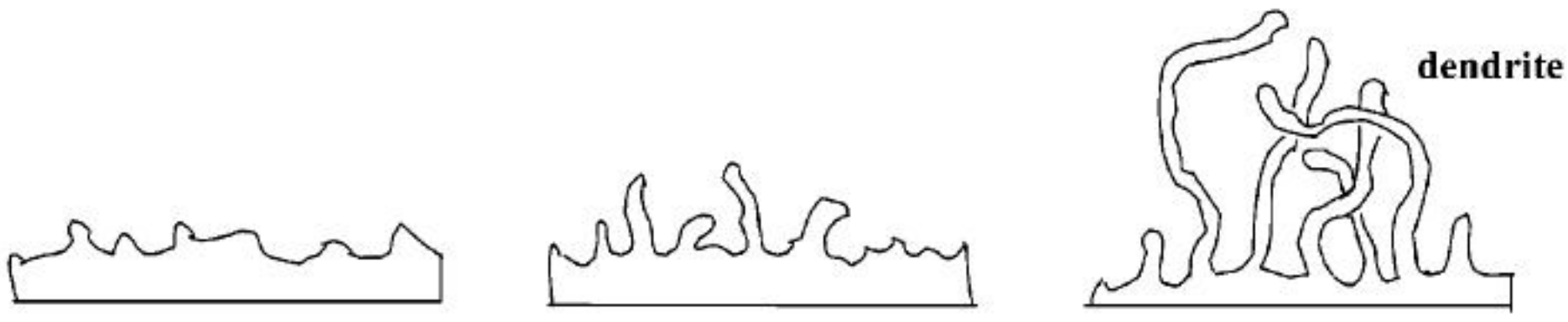
A. Individual.
B. Family.
C. Tribe.
D. Nation.
E. Ethnic Group.
F. Primitive Human Ancestors.
G. Animal Ancestors.
H. Central Energy.

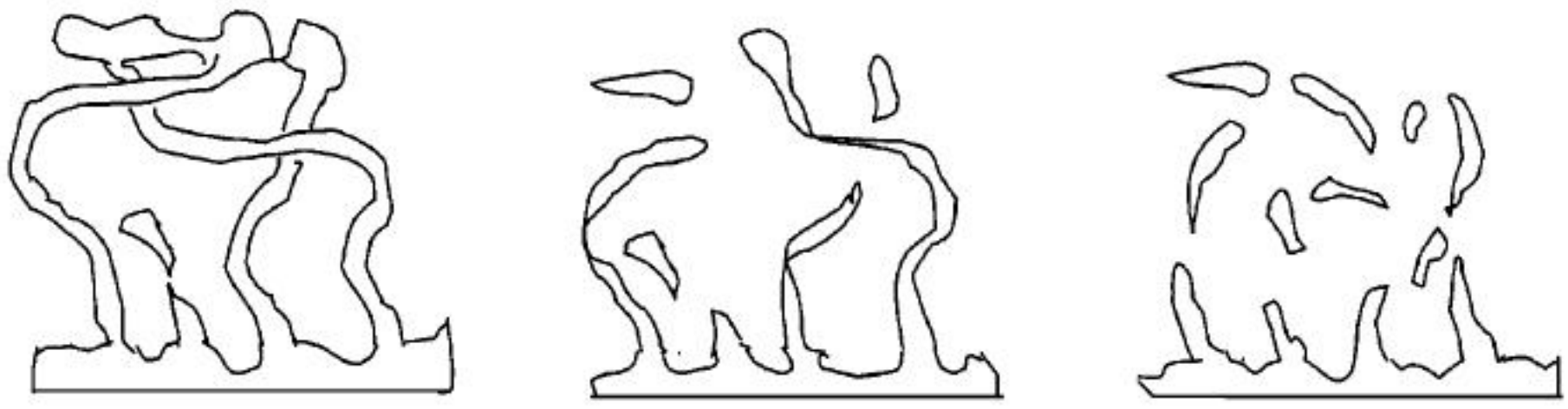


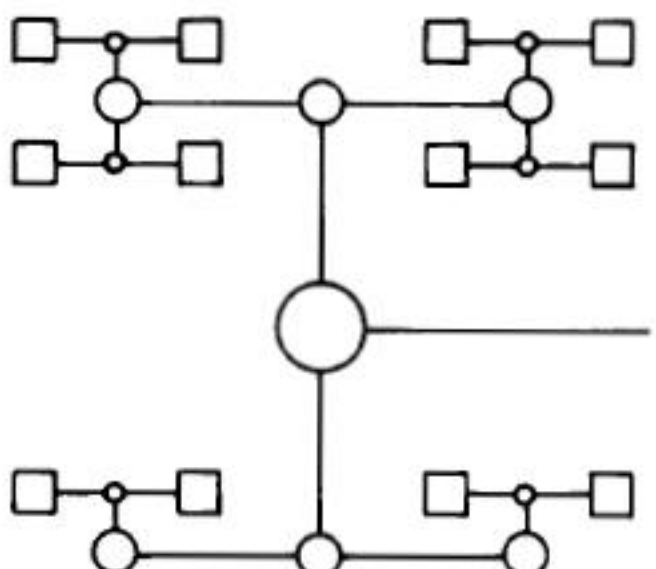


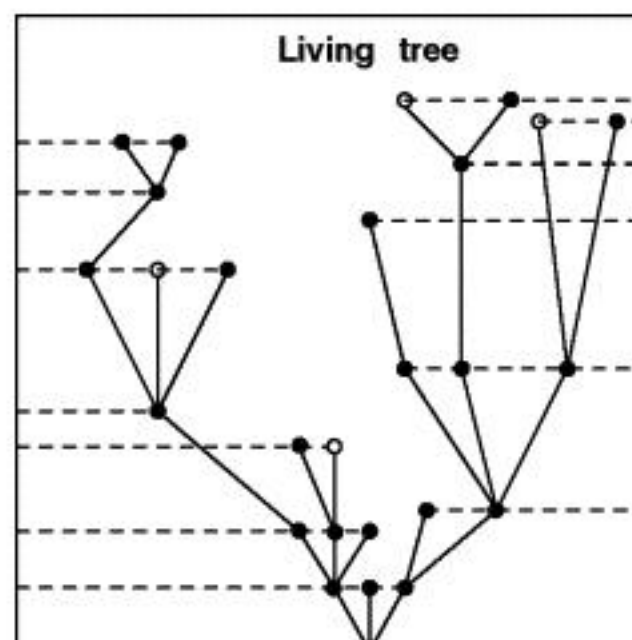


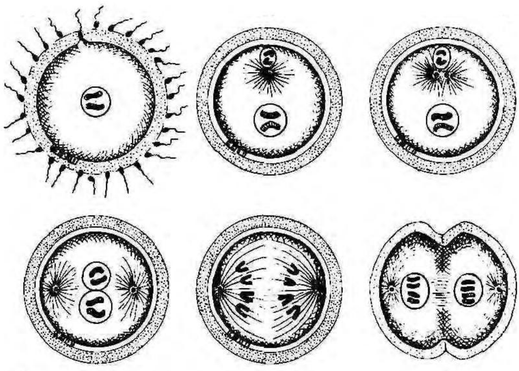


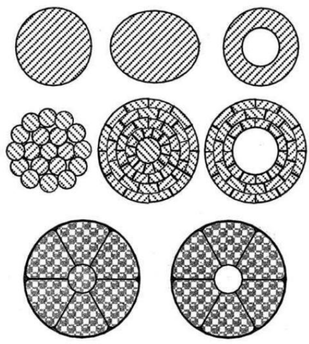

dendrite






Living tree
Root

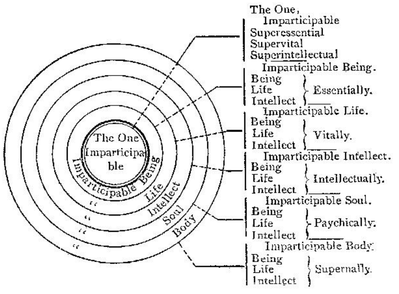




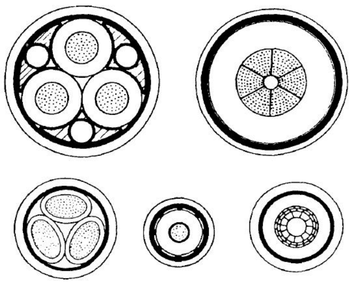
Principles.

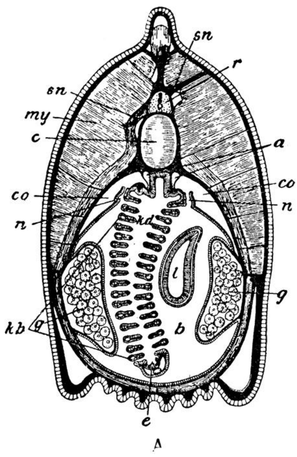
Imparticipable Natures are Unbegotten.

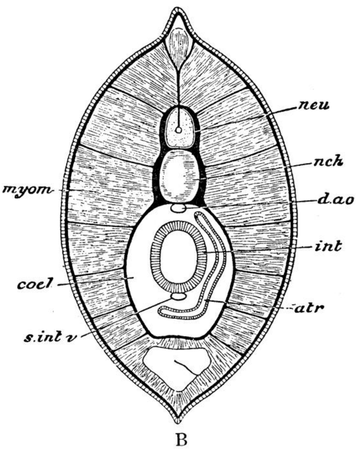
All Imparticipables eminate from the one.

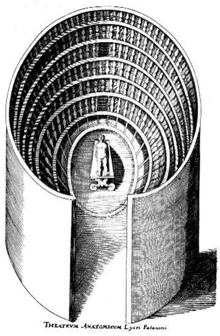


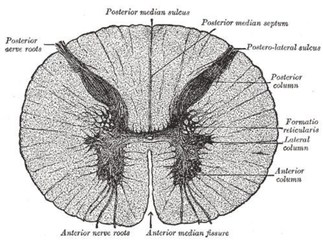
The One, Imparticipable
Superessential
Supervital
Superintellectual
Imparticipable Being.
Being, Life, Intellect — Essentially.
Imparticipable Life.
Being, Life, Intellect — Vitally.
Imparticipable Intellect.
Being, Life, Intellect — Intellectually.
Imparticipable Soul.
Being, Life, Intellect — Psychically.
Imparticipable Body.
Being, Life, Intellect — Supernally.

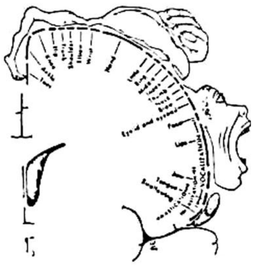


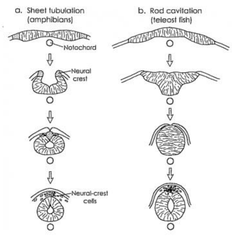


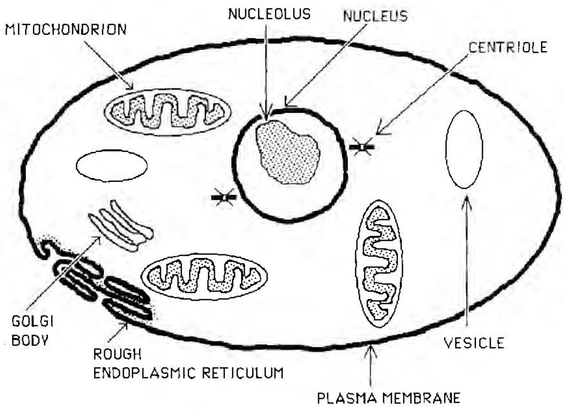


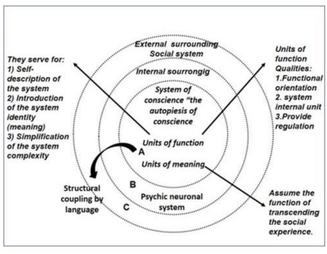


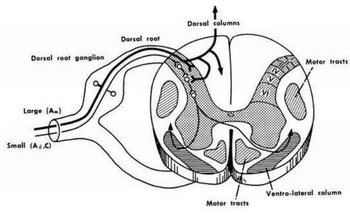


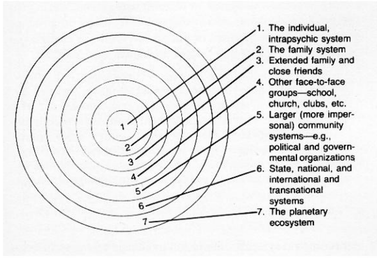


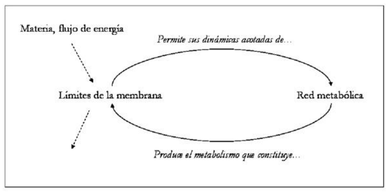


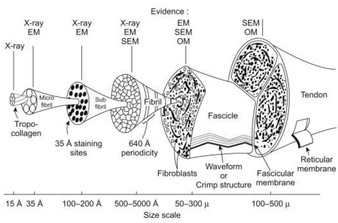


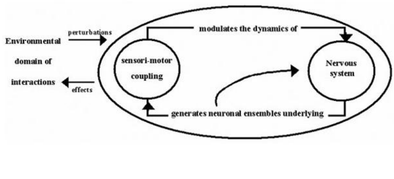


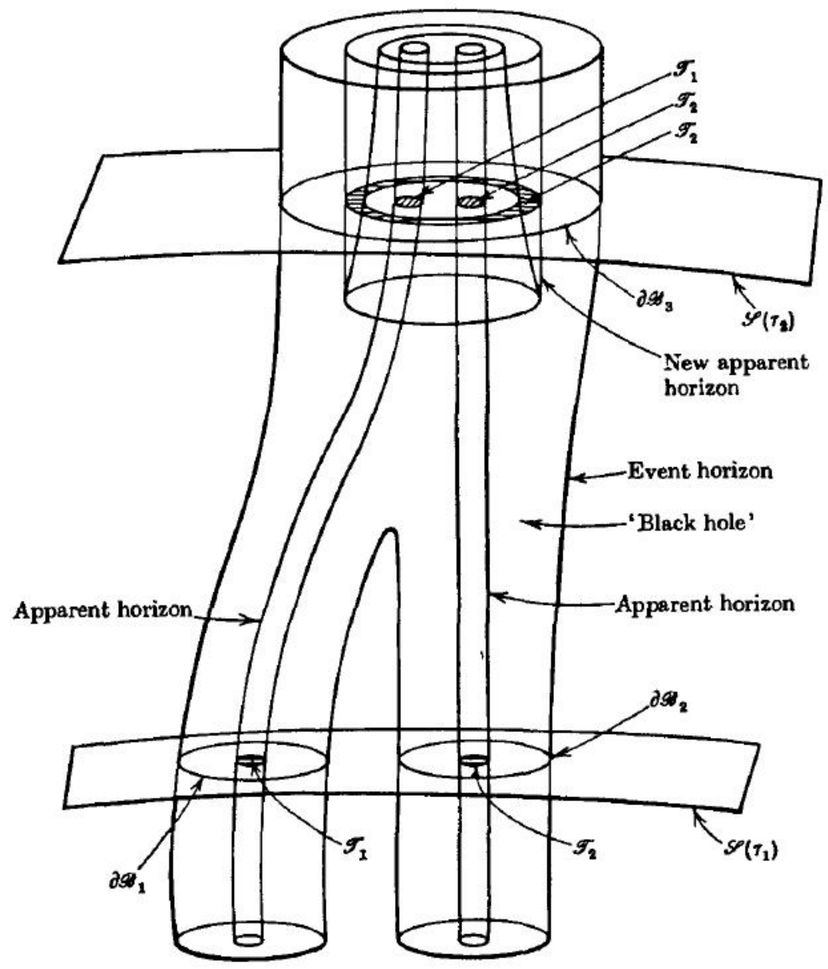


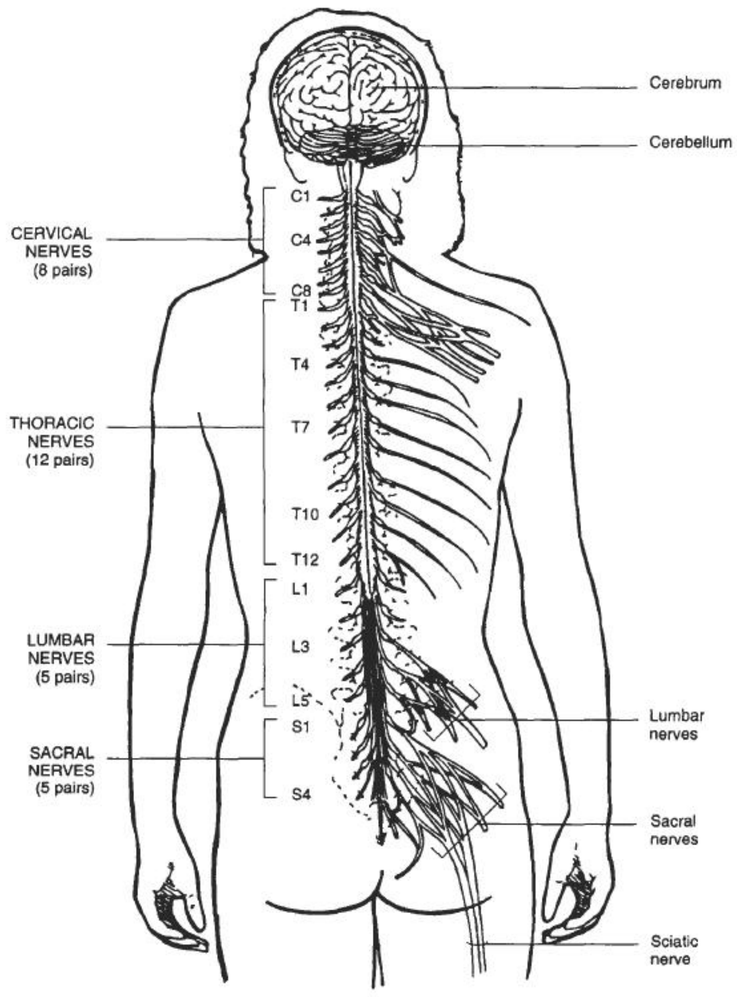


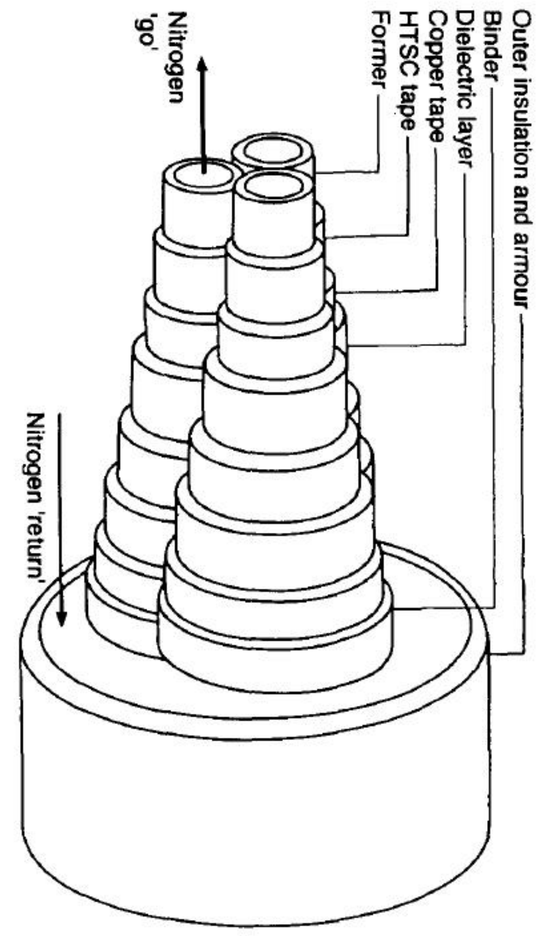


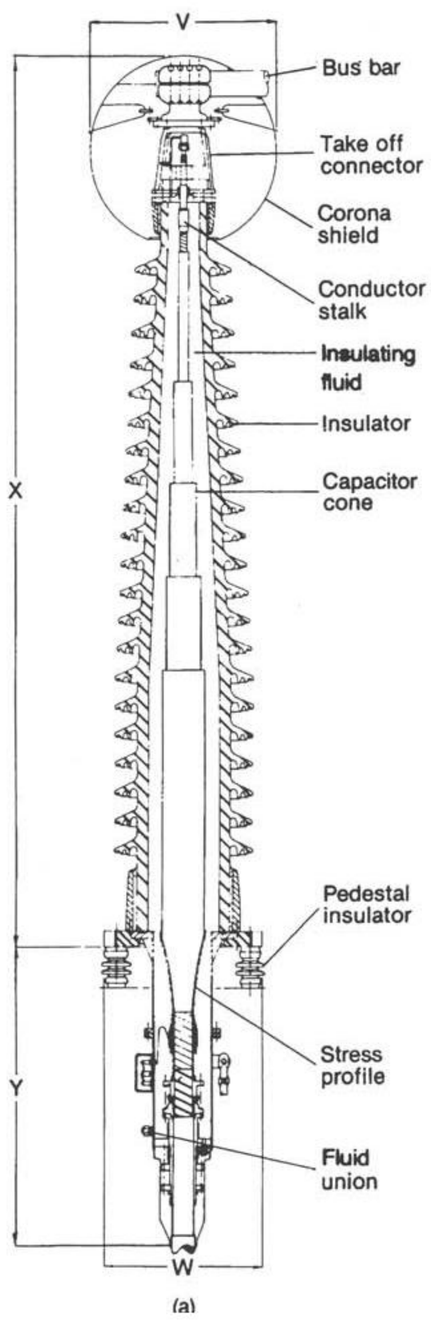


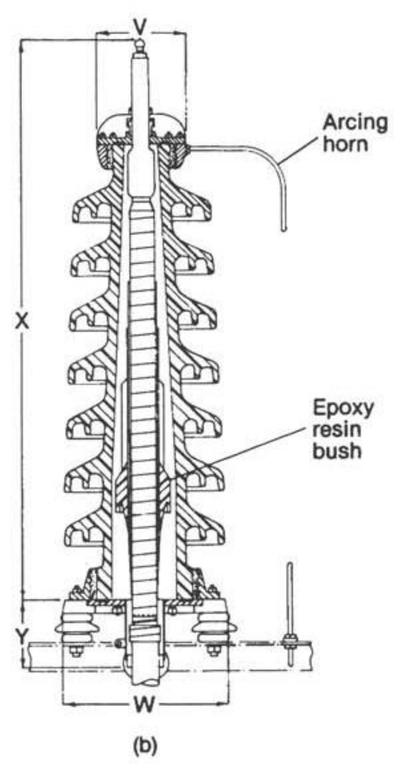


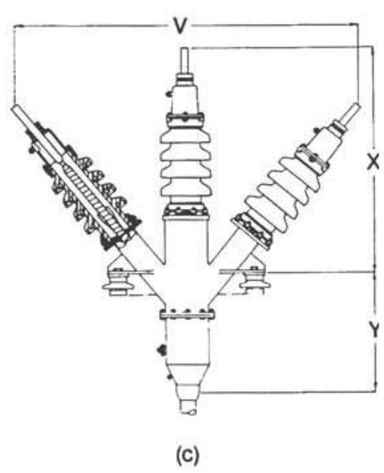

New apparent horizon
Event horizon
'Black hole'
Apparent horizon
Apparent horizon

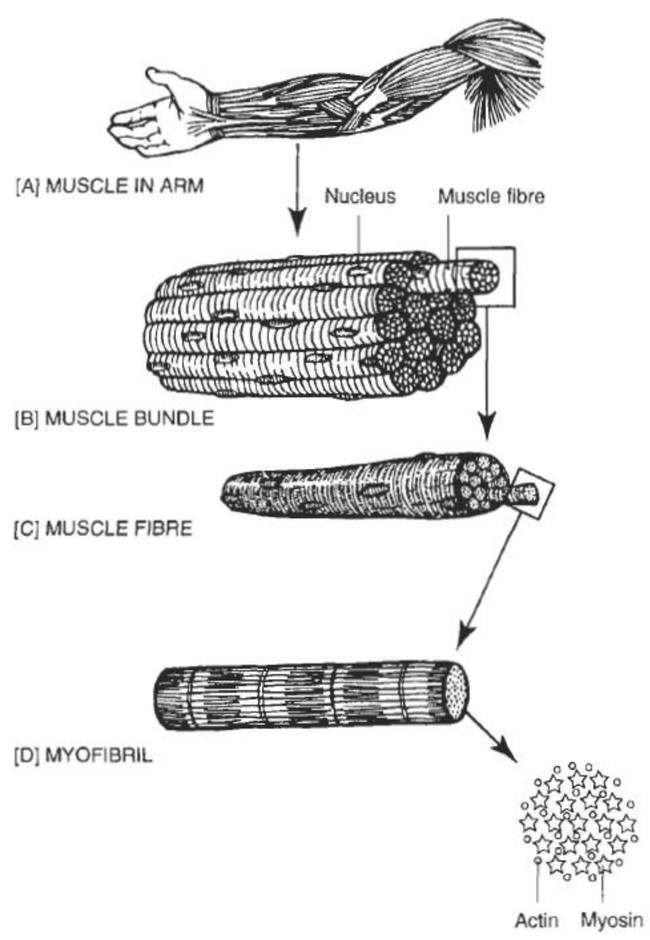

Cerebrum
Cerebellum
CERVICAL NERVES (8 pairs)
THORACIC NERVES (12 pairs)
LUMBAR NERVES (5 pairs)
SACRAL NERVES (5 pairs)
C1
C4
C8
T1
T4
T7
T10
T12
L1
L3
L5
S1
S4
Lumbar nerves
Sacral nerves
Sciatic nerve

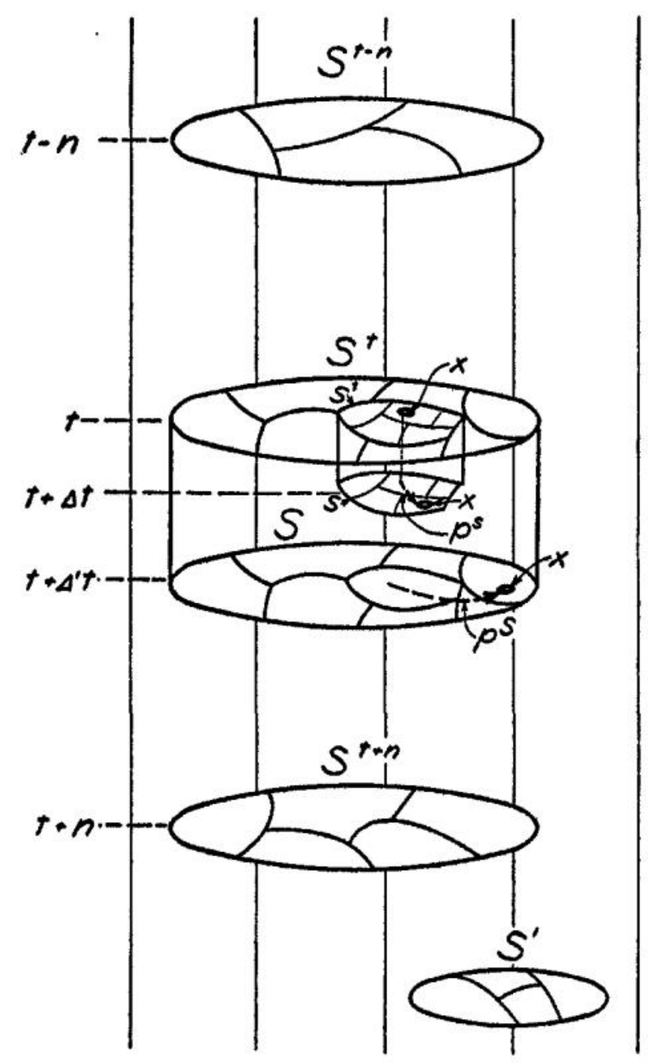

Outer insulation and armour
Binder
Dielectric layer
Copper tape
HTSC tape
Former
Nitrogen 'go'
Nitrogen 'return'

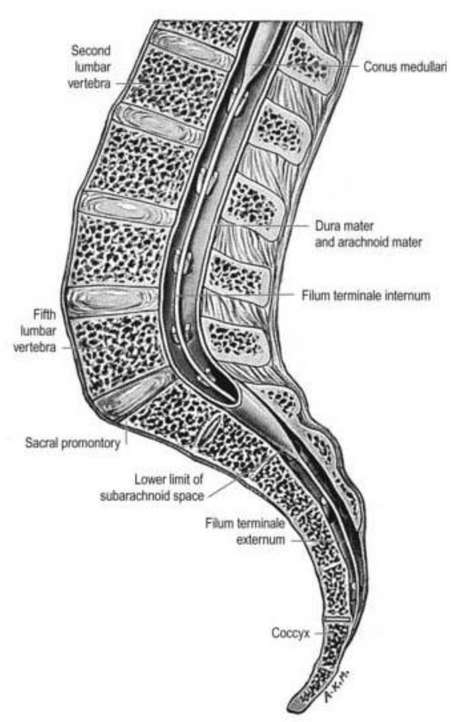

V
Bus bar
Take off connector
Corona shield
Conductor stalk
Insulating fluid
Insulator
Capacitor cone
Pedestal insulator
Stress profile
Fluid union
X
Y
W
(a)

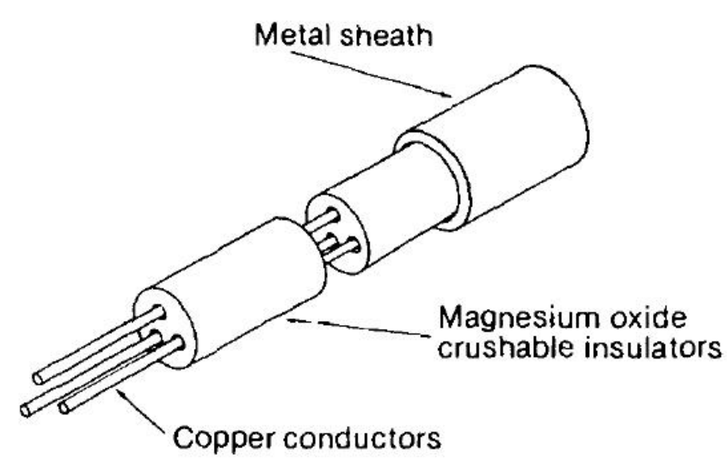

V
Arcing horn
Epoxy resin bush
X
Y
W
(b)

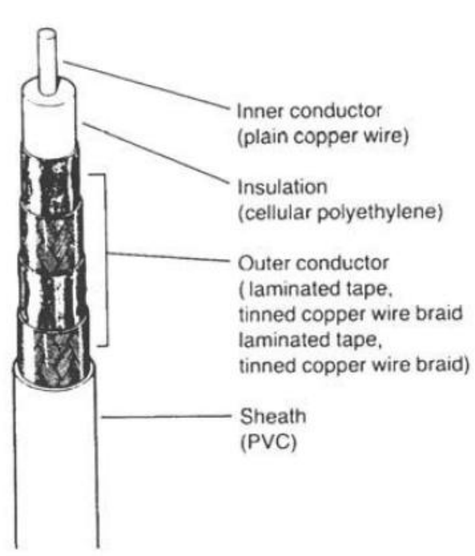

V
X
Y
(c)

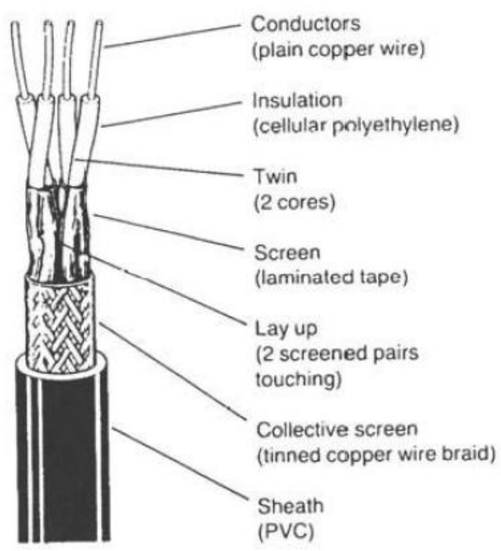

[A] MUSCLE IN ARM
Nucleus
Muscle fibre
[B] MUSCLE BUNDLE
[C] MUSCLE FIBRE
[D] MYOFIBRIL
Actin
Myosin

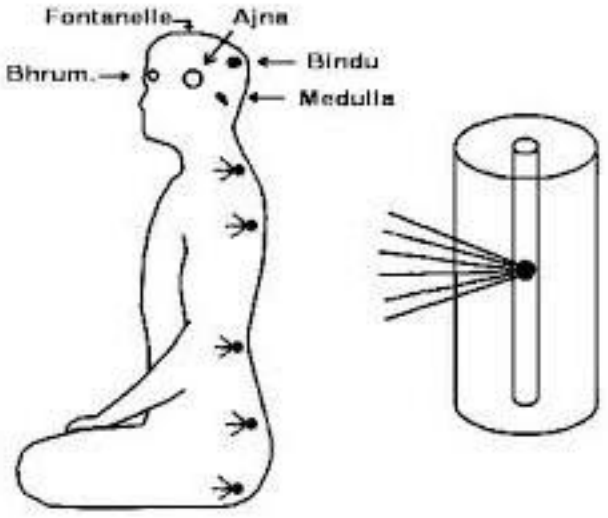


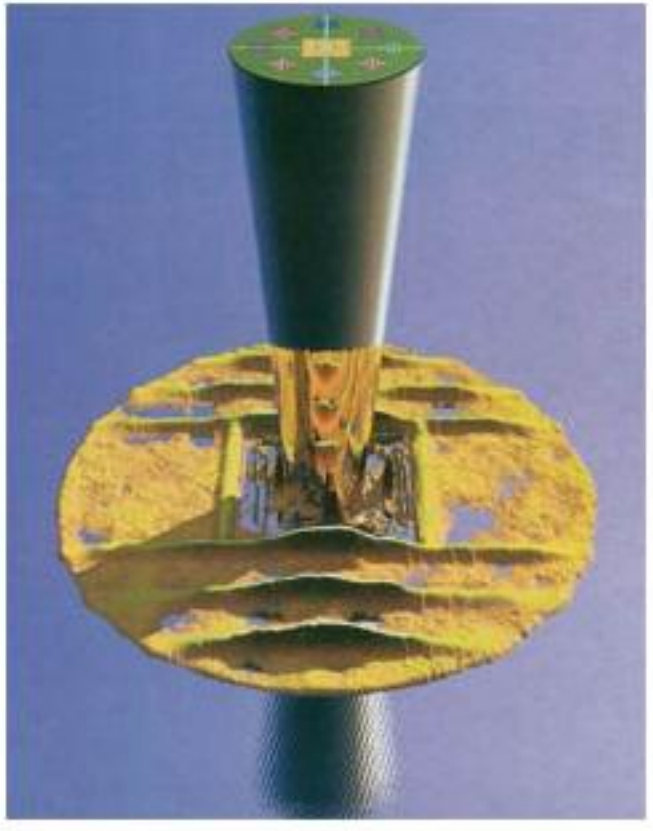

Second lumbar vertebra
Conus medullari
Dura mater and arachnoid mater
Filum terminale internum
Fifth lumbar vertebra
Sacral promontory
Lower limit of subarachnoid space
Filum terminale externum
Coccyx

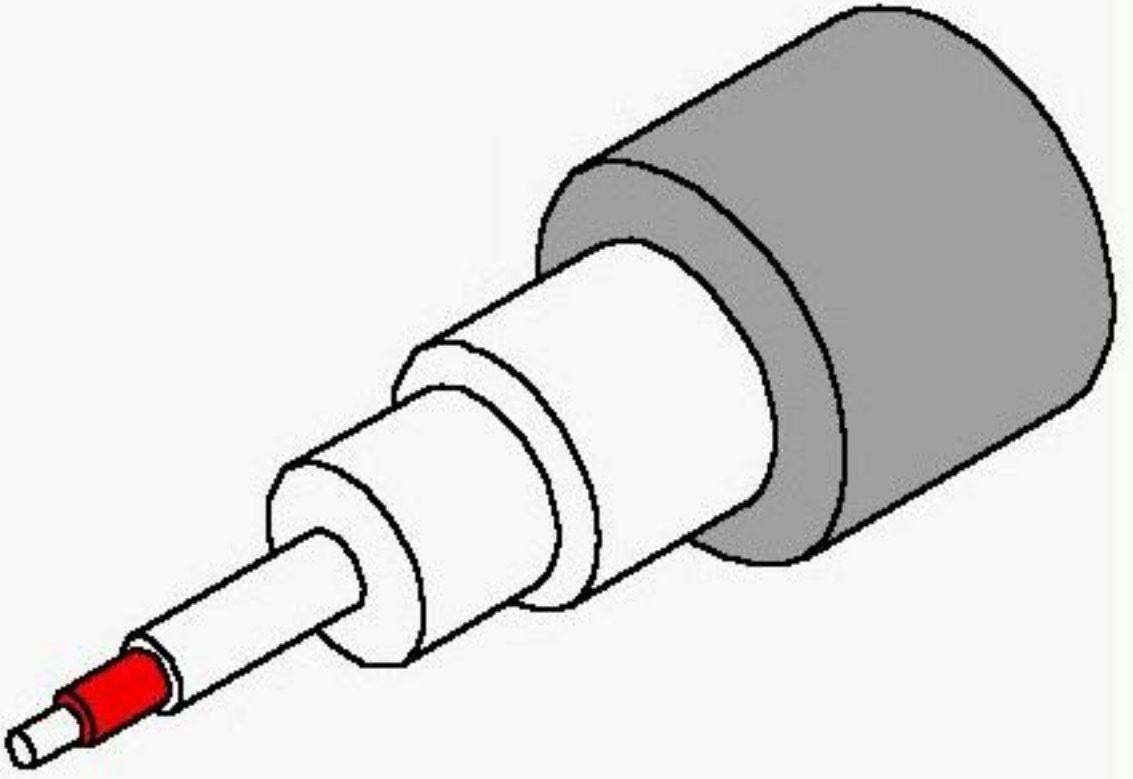

Metal sheath
Magnesium oxide crushable insulators
Copper conductors

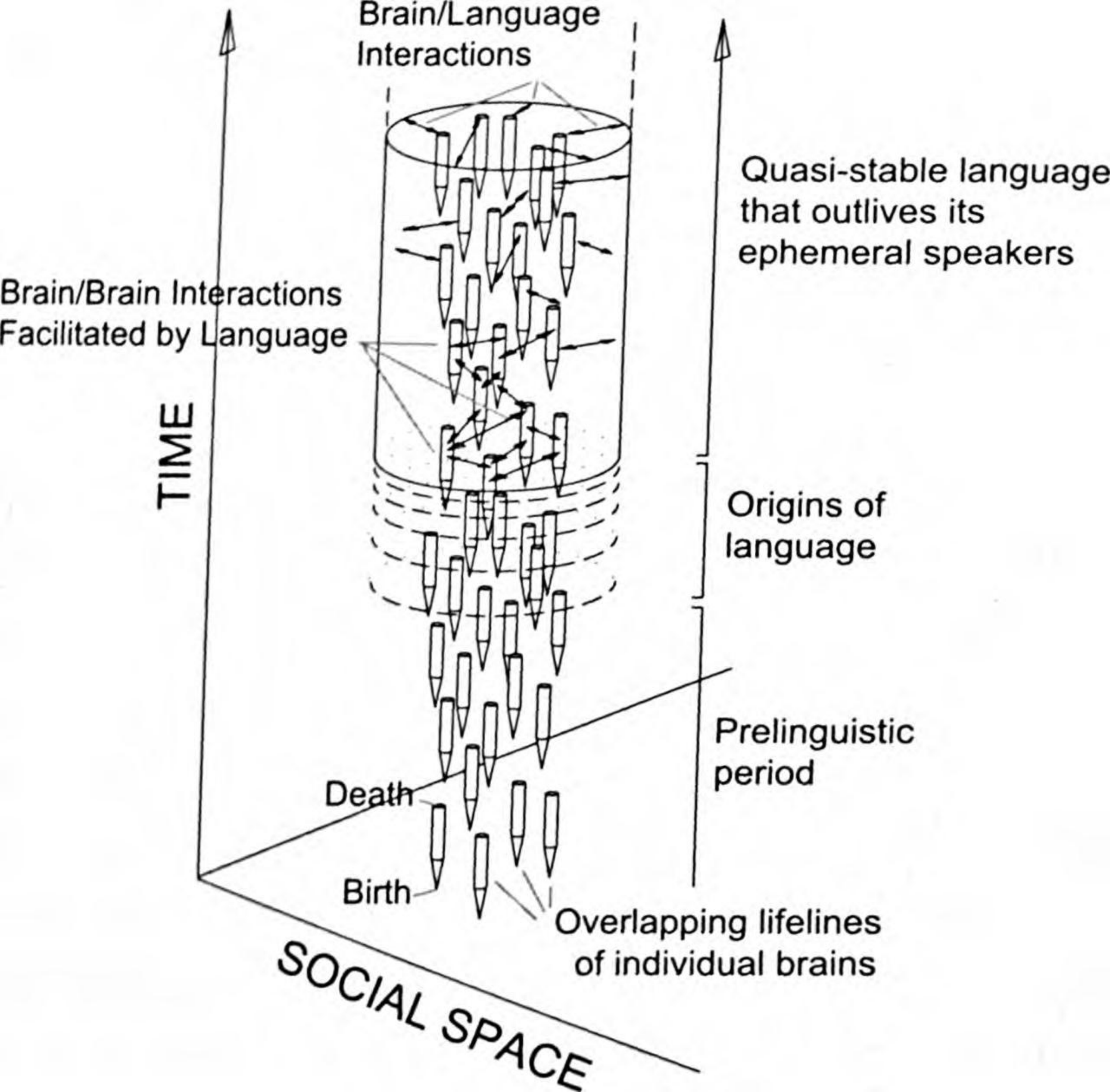

Inner conductor (plain copper wire)
Insulation (cellular polyethylene)
Outer conductor (laminated tape, tinned copper wire braid laminated tape, tinned copper wire braid)
Sheath (PVC)

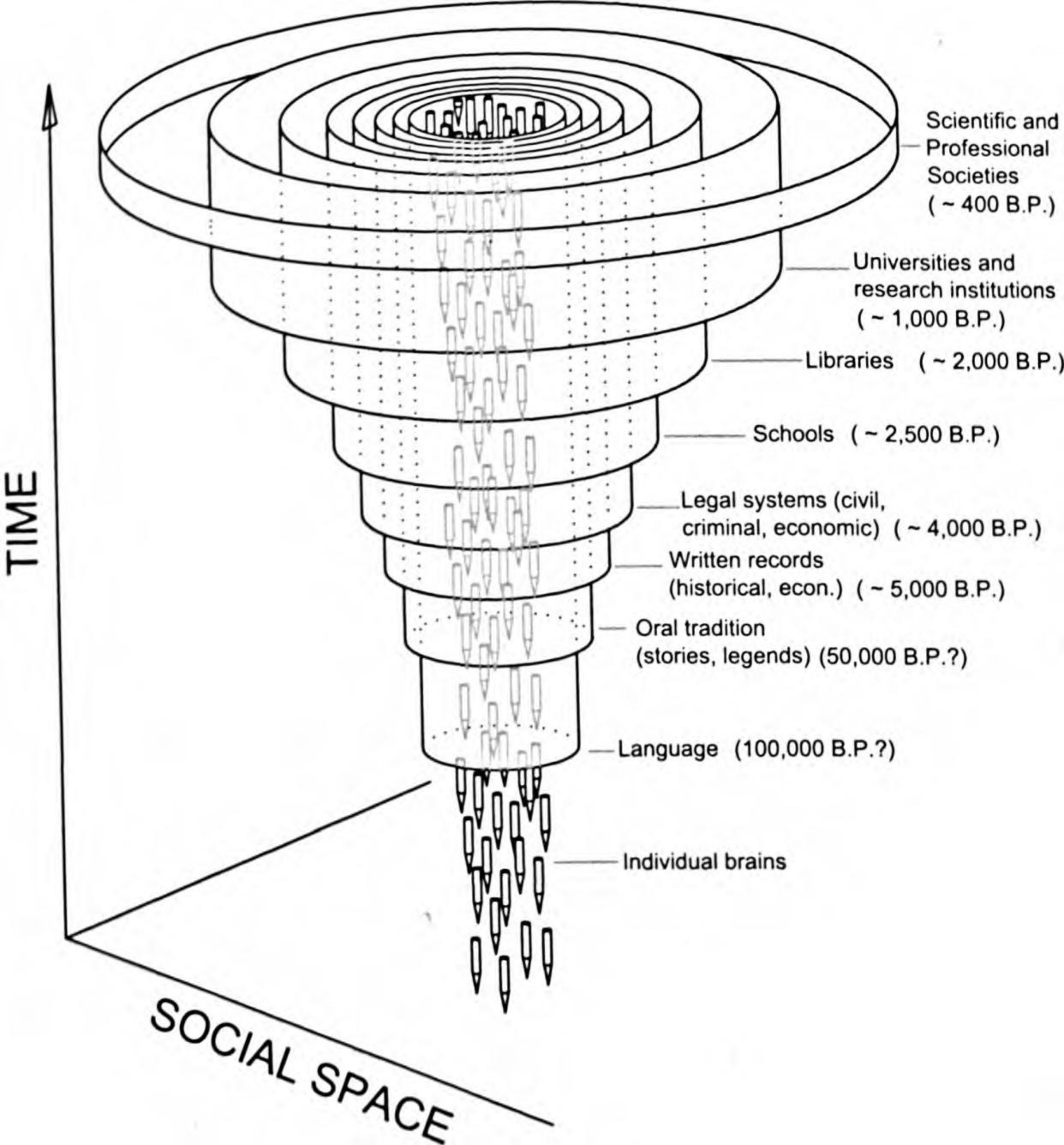

Conductors (plain copper wire)
Insulation (cellular polyethylene)
Twin (2 cores)
Screen (laminated tape)
Lay up (2 screened pairs touching)
Collective screen (tinned copper wire braid)
Sheath (PVC)

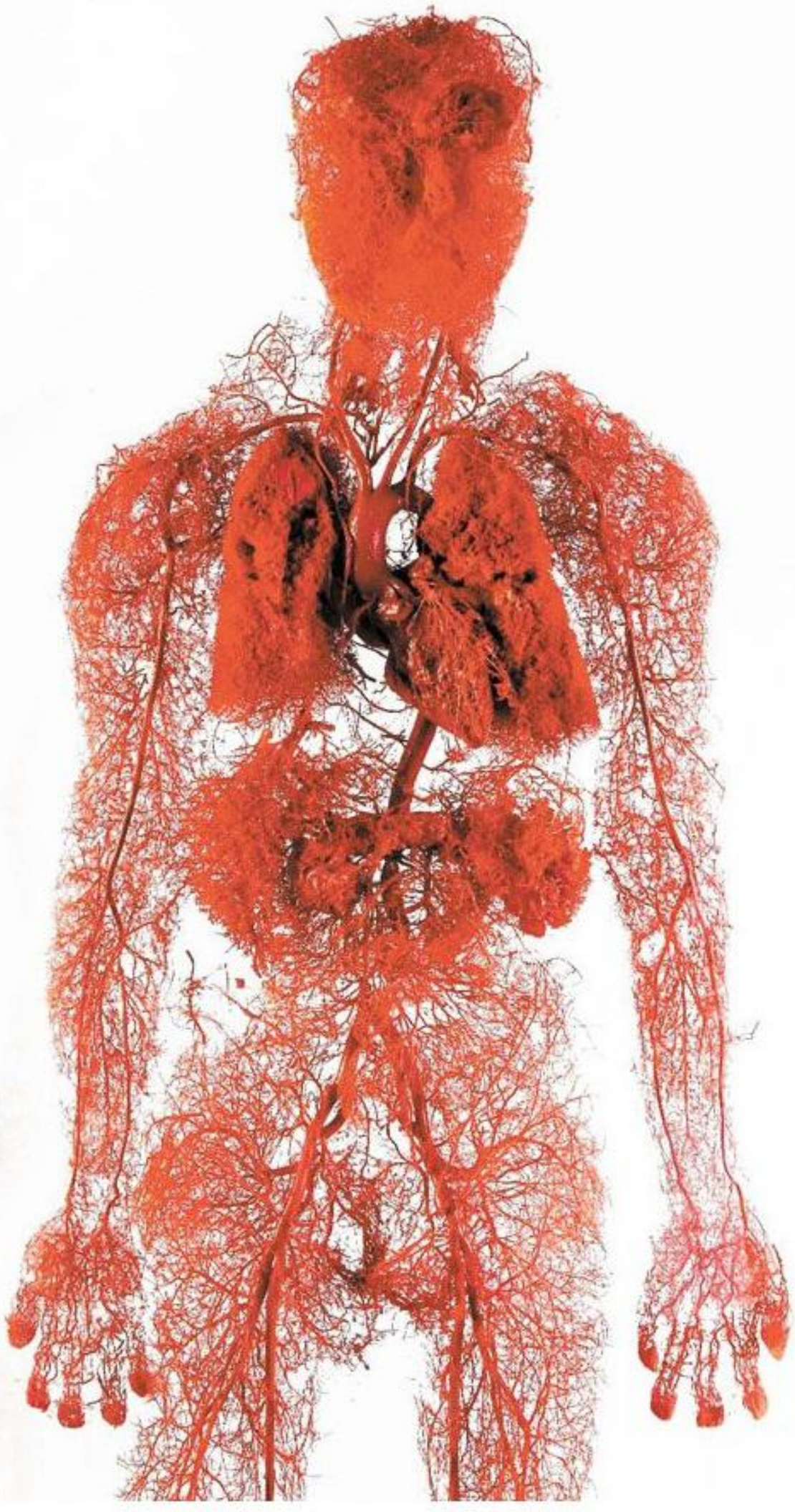

Fontanelle
Ajna
Bindu
Bhrum.
Medulla

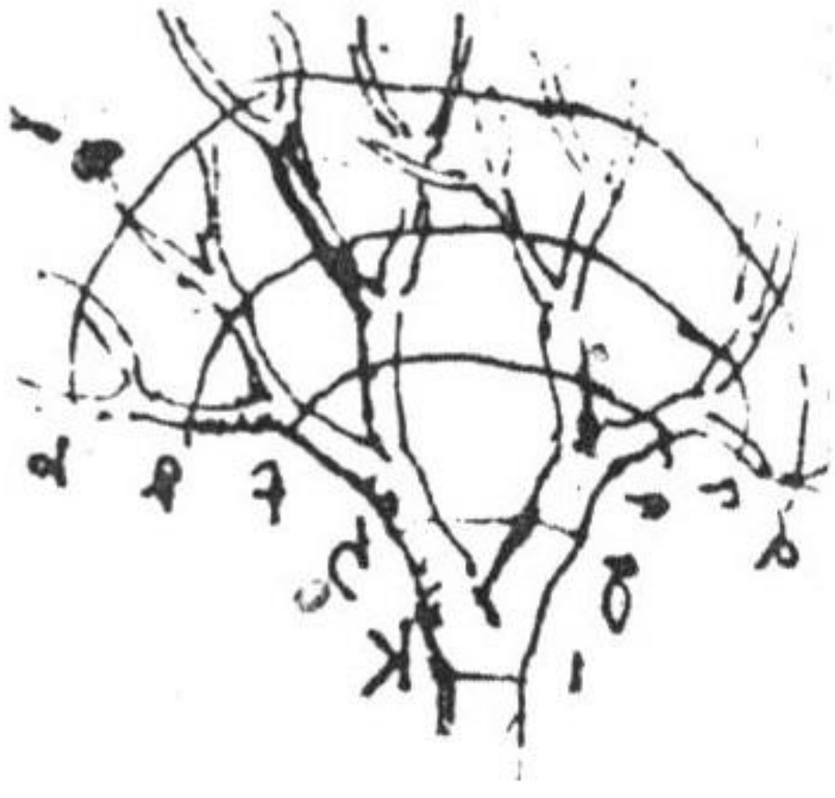


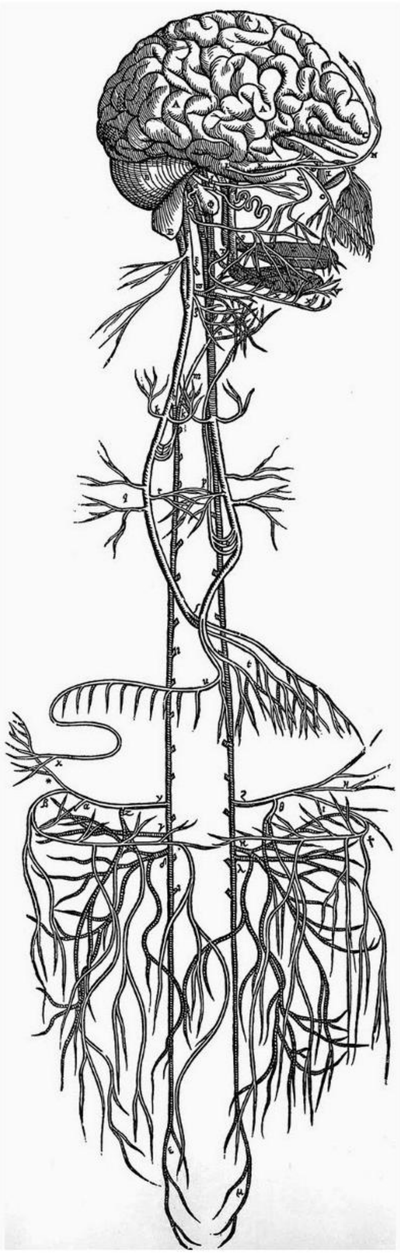


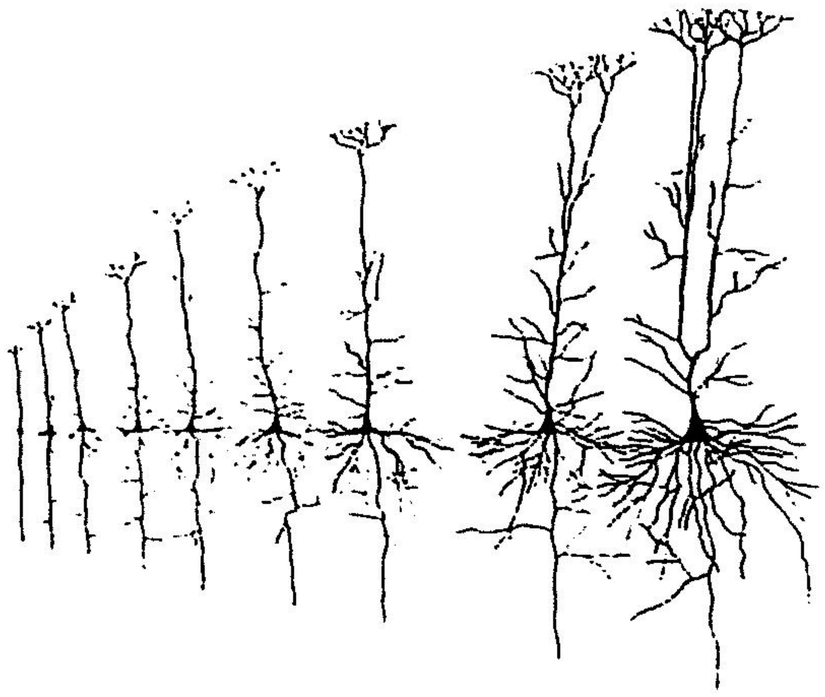

Brain/Language
Interactions
Quasi-stable language
that outlives its
ephemeral speakers
Brain/Brain Interactions
Facilitated by Language
TIME
Origins of
language
Prelinguistic
period
Death
Birth
Overlapping lifelines
of individual brains
SOCIAL SPACE

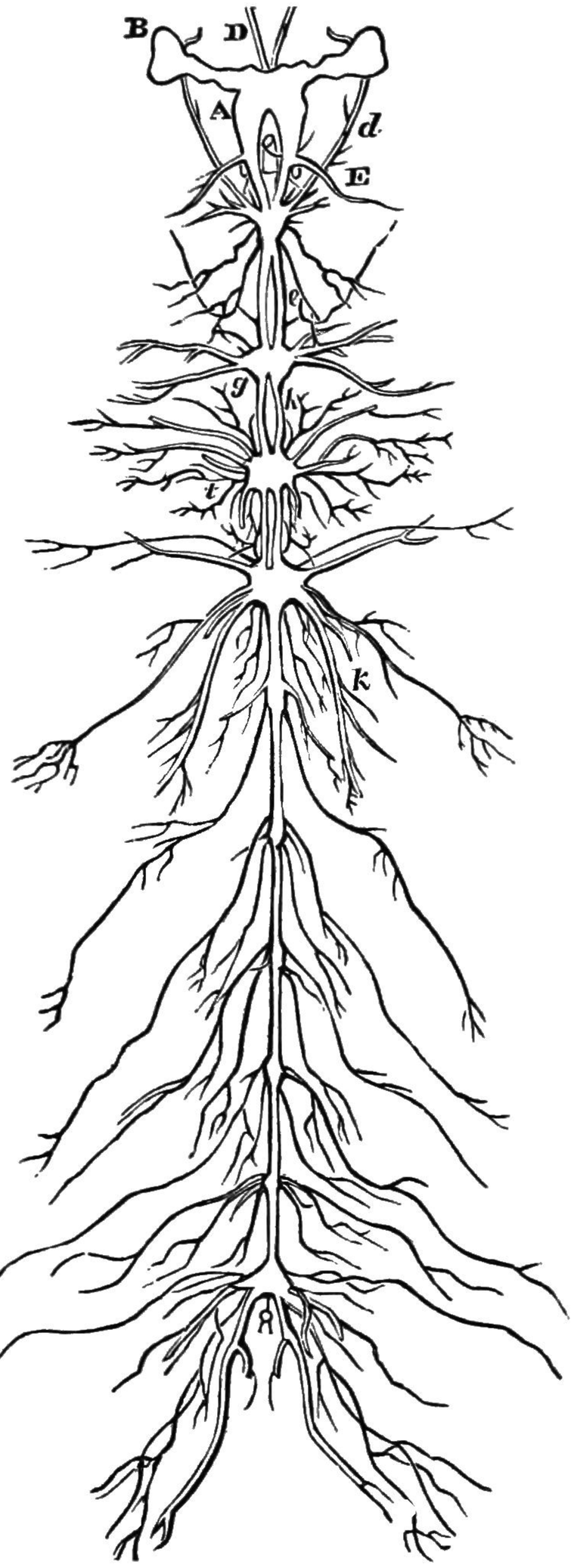

Scientific and Professional Societies (~ 400 B.P.)
Universities and research institutions (~ 1,000 B.P.)
Libraries (~ 2,000 B.P.)
Schools (~ 2,500 B.P.)
Legal systems (civil, criminal, economic) (~ 4,000 B.P.)
Written records (historical, econ.) (~ 5,000 B.P.)
Oral tradition (stories, legends) (50,000 B.P.?)
Language (100,000 B.P.?)
Individual brains
TIME
SOCIAL SPACE

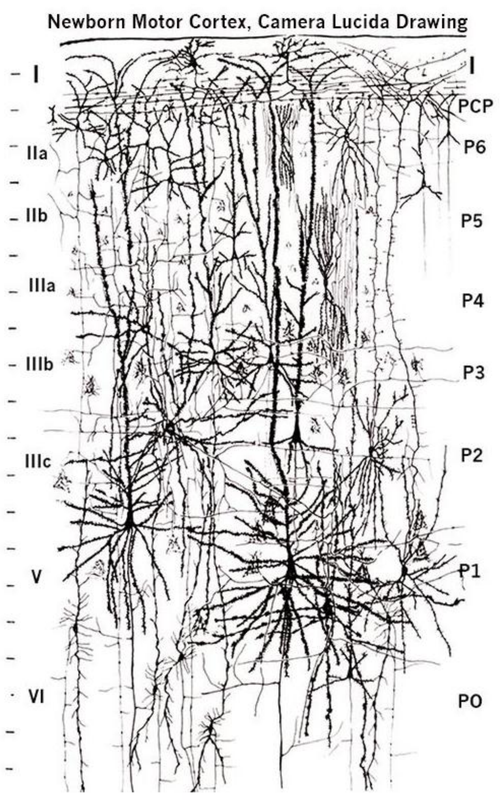


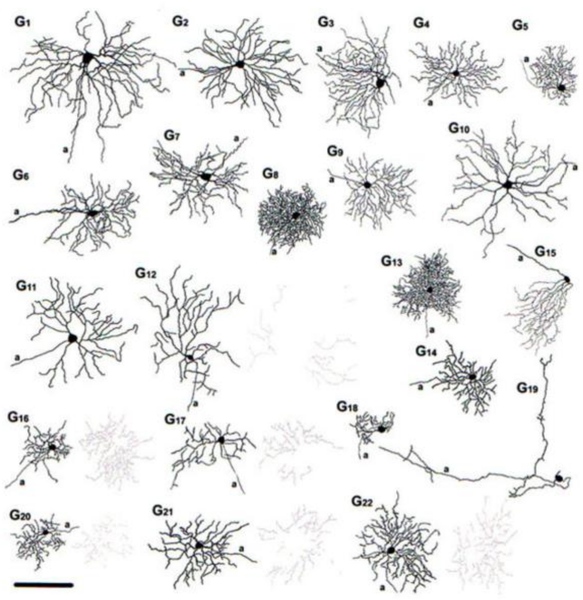












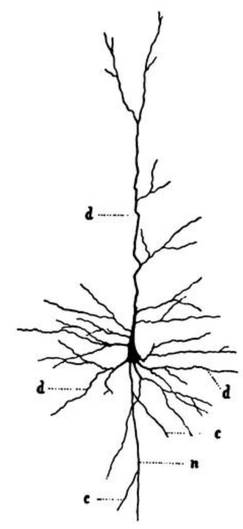
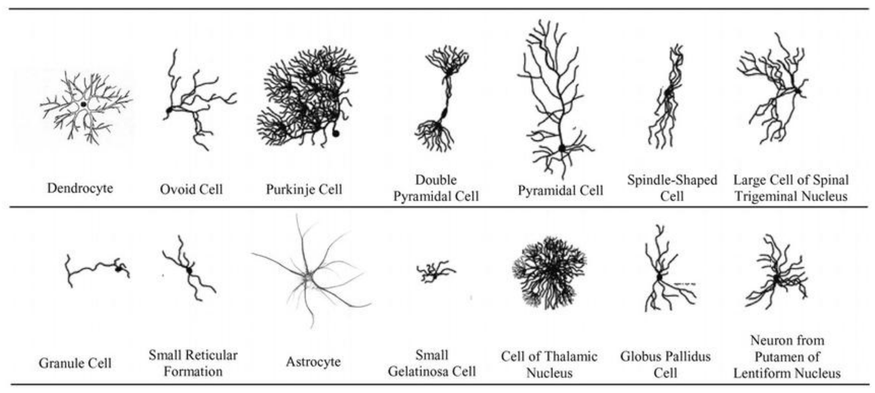
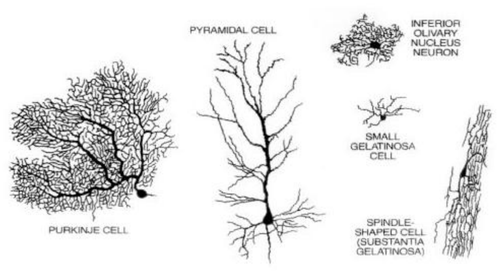


Fig. 33.—A pyramidal cell of the cerebral cortex of man. × 90. *c*, Collaterals; *d*, dendrites; *n*, neuraxis.





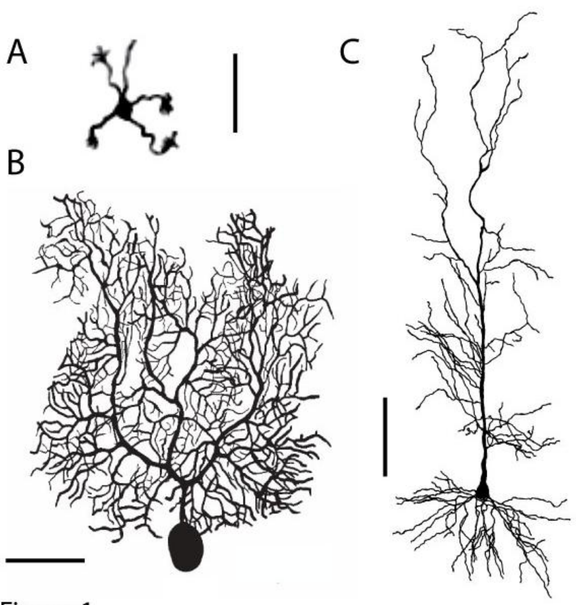
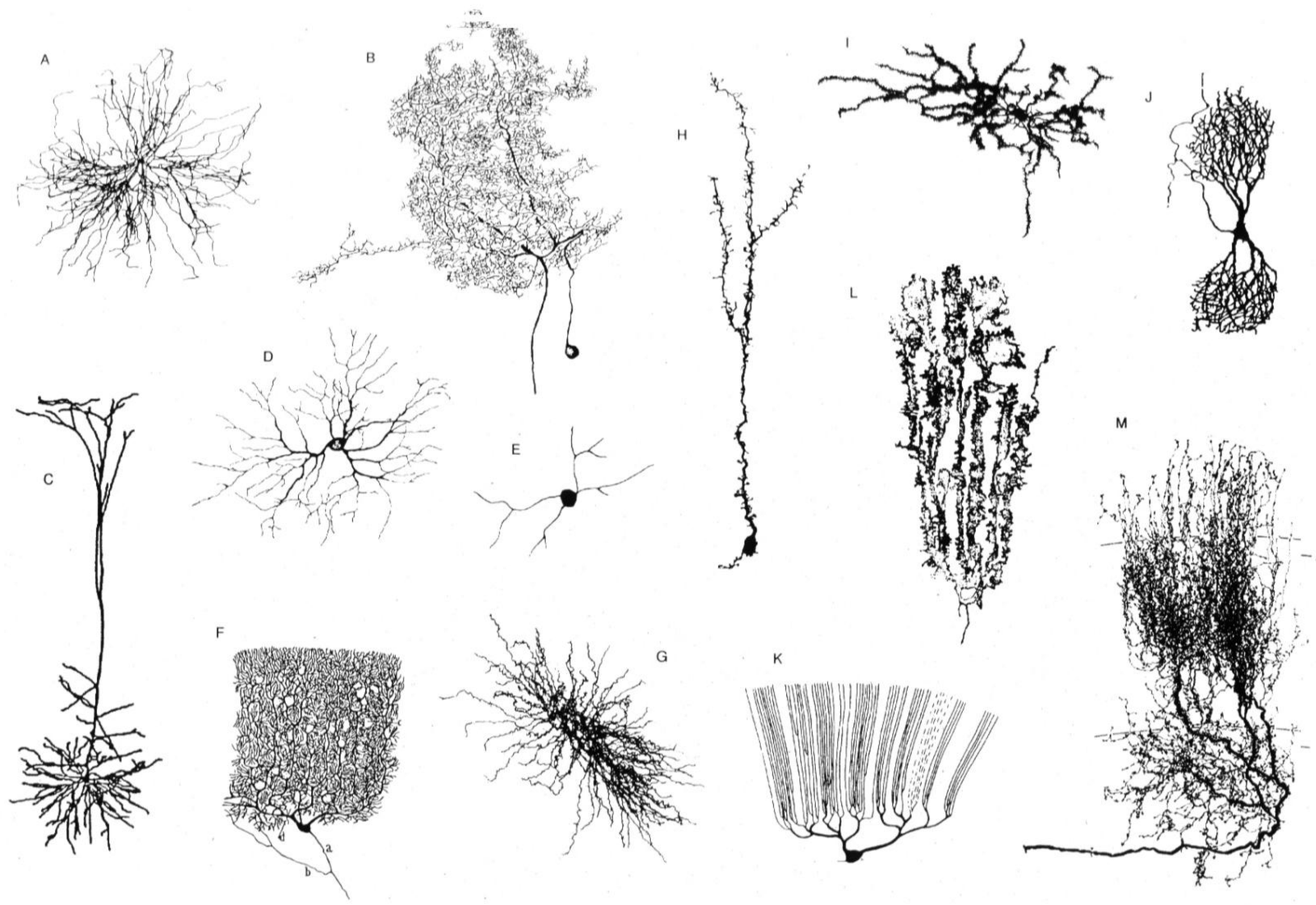
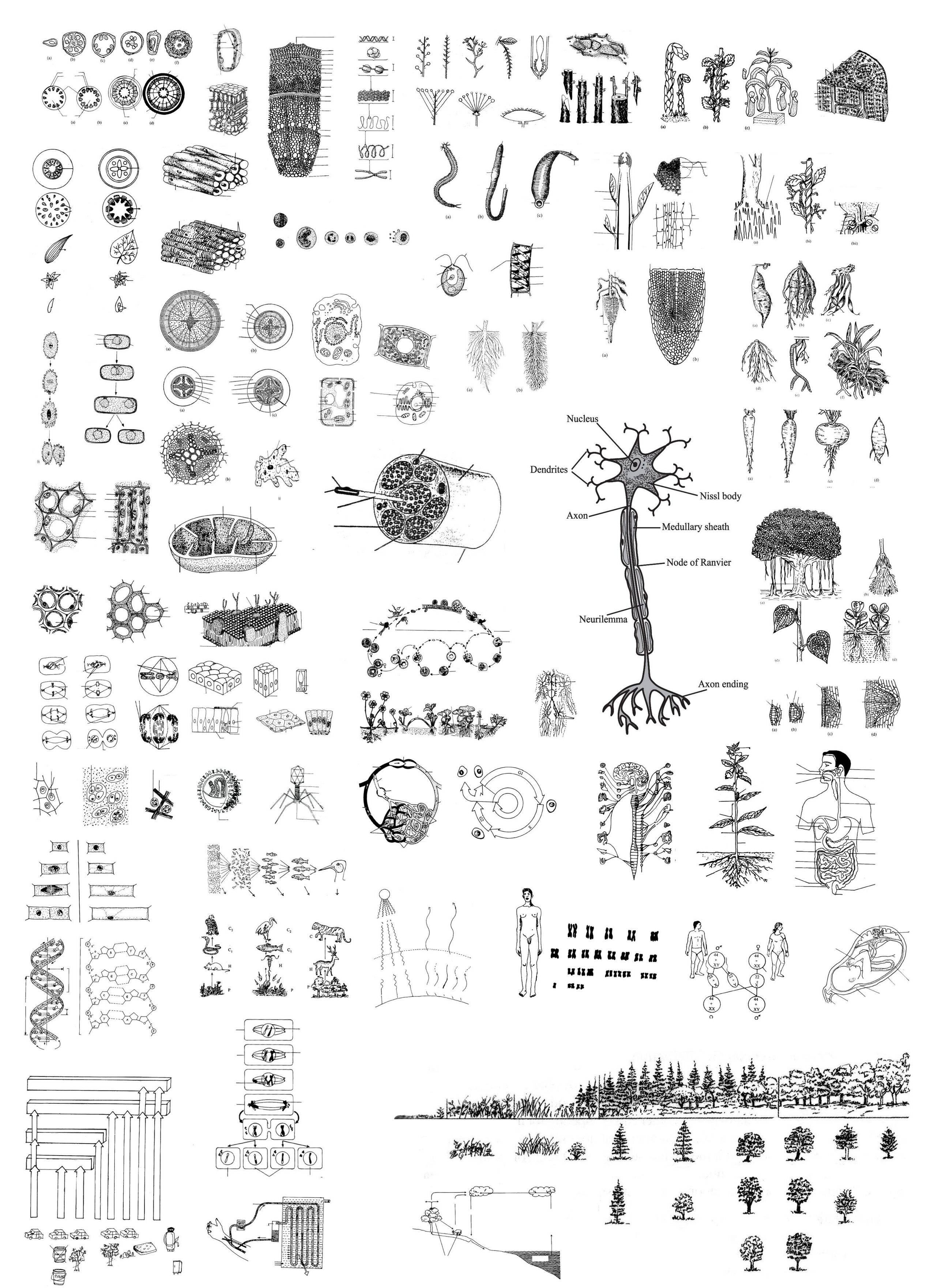


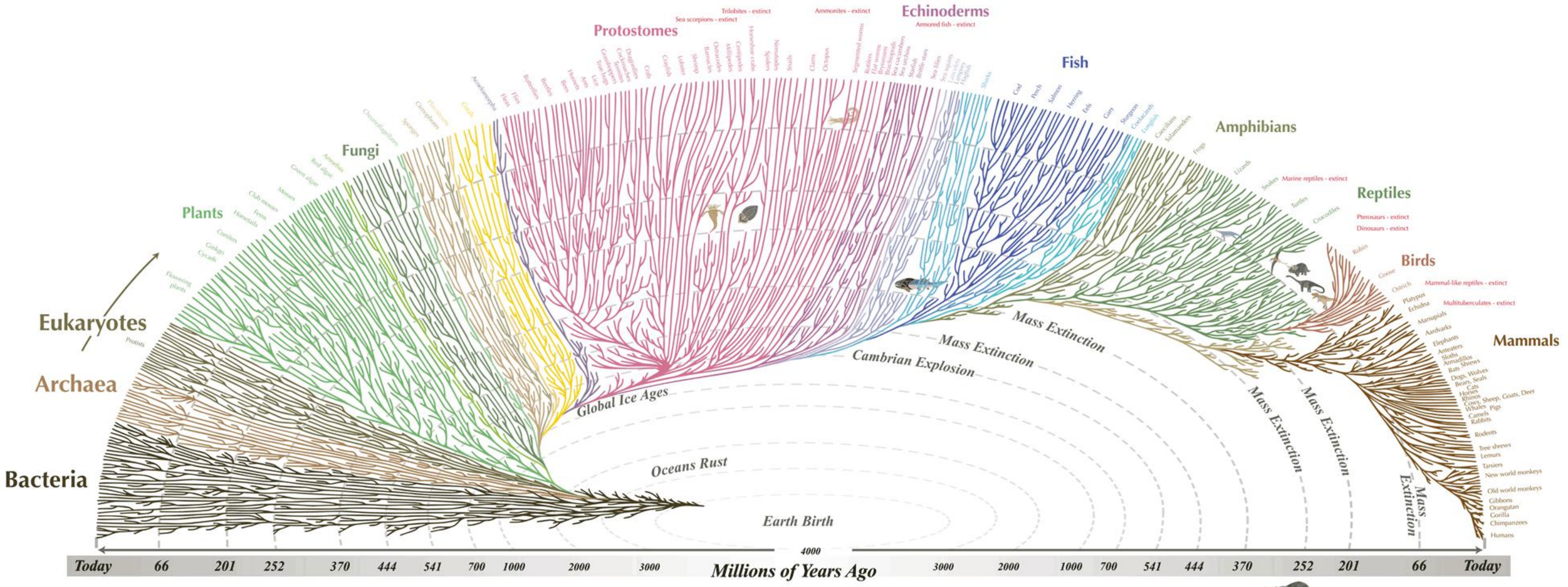
Figure 1

A. Cerebellar granule cell. Scale bar ~25 µm.
From wikipedia.
B. Cerebellar Purkinje cell. Scale bar 50 µm.
From Vetter et al., J. Neurophysiol. 85: 926-37, 2001.
C. Hippocampal CA1 pyramidal cell. Scale bar 100 µm.
From Golding et al., J. Neurosci. 19: 8789-98, 1999.



Dendrites, Oxford University Press, 2015; Modified from Mel, B.W. Neural Computation, 1994.


Nucleus
Dendrites
Nissl body
Axon
Medullary sheath
Node of Ranvier
Neurilemma
Axon ending



All the major and many of the minor living branches of life are shown on this diagram, but only a few of those that have gone extinct are shown. Example: Dinosaurs - extinct

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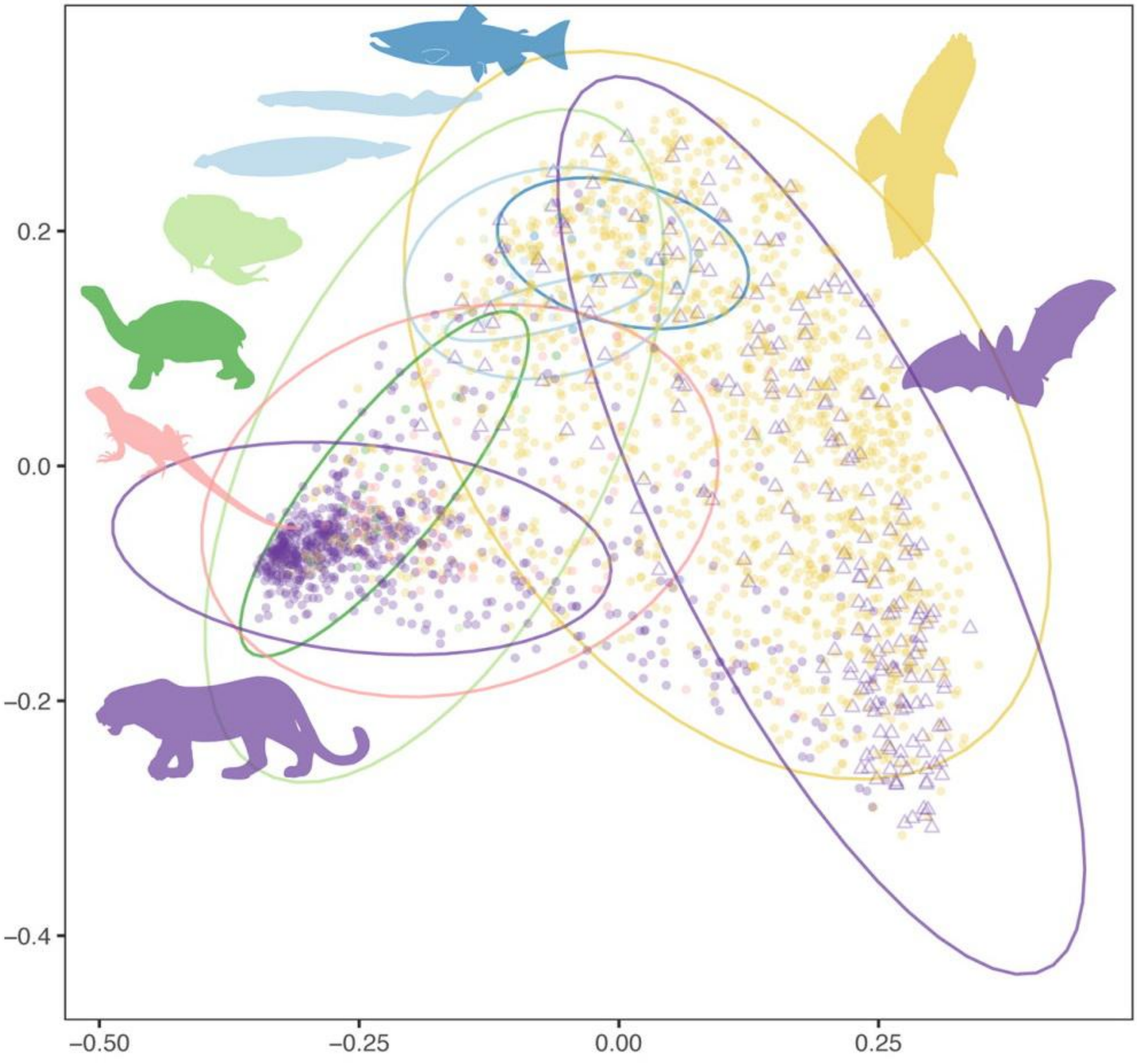
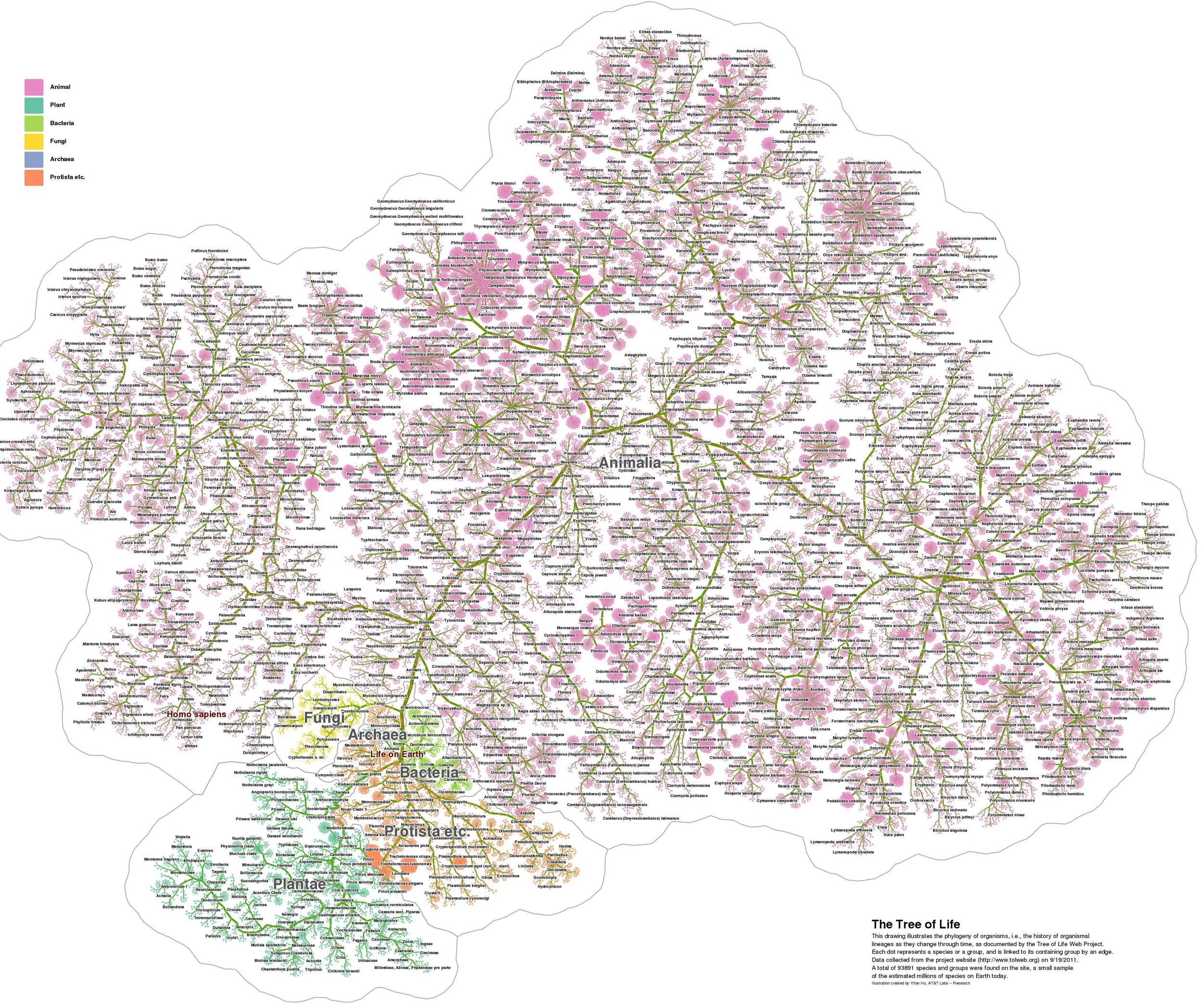
evogeneao.com

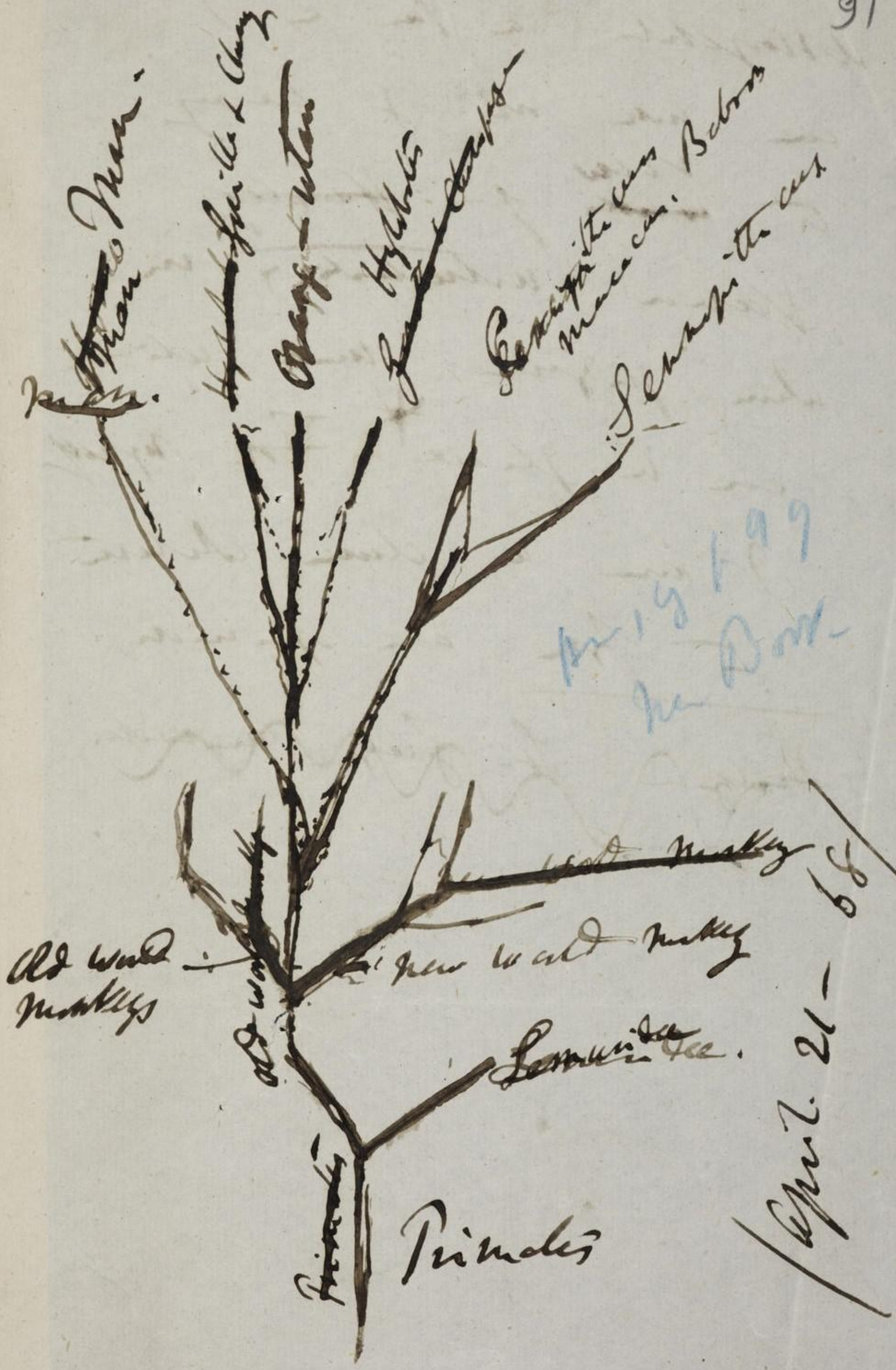

0.2
0.0
−0.2
−0.4
−0.50
−0.25
0.00
0.25

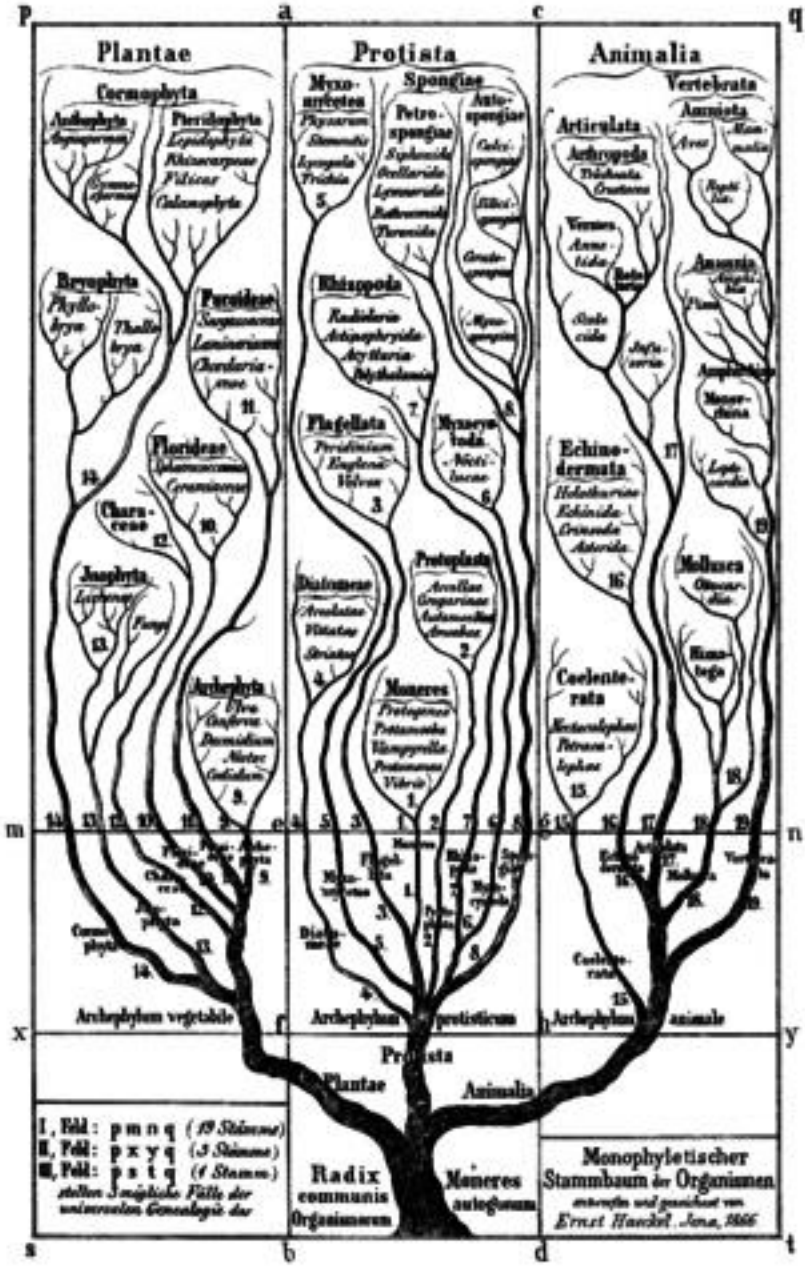


The Tree of Life

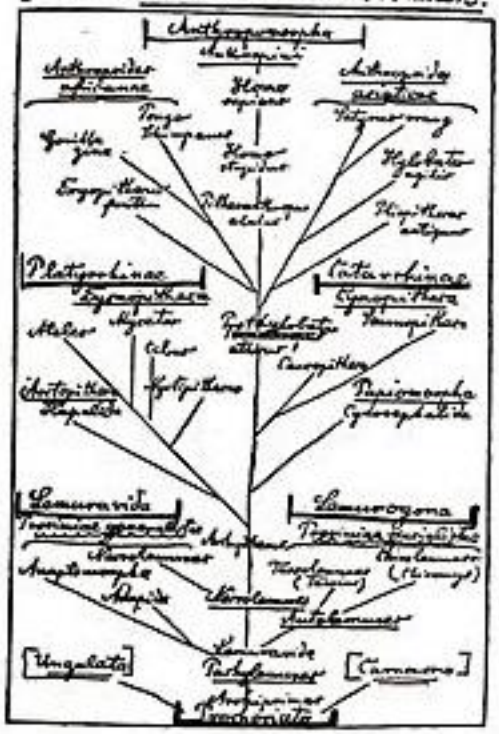
This drawing illustrates the phylogeny of organisms, i.e., the history of organismal lineages as they change through time, as documented by the Tree of Life Web Project. Each dot represents a species or a group, and is linked to its containing group by an edge. Data collected from the project website (http://www.tolweb.org) on 9/19/2011. A total of 93891 species and groups were found on the site, a small sample of the estimated millions of species on Earth today.

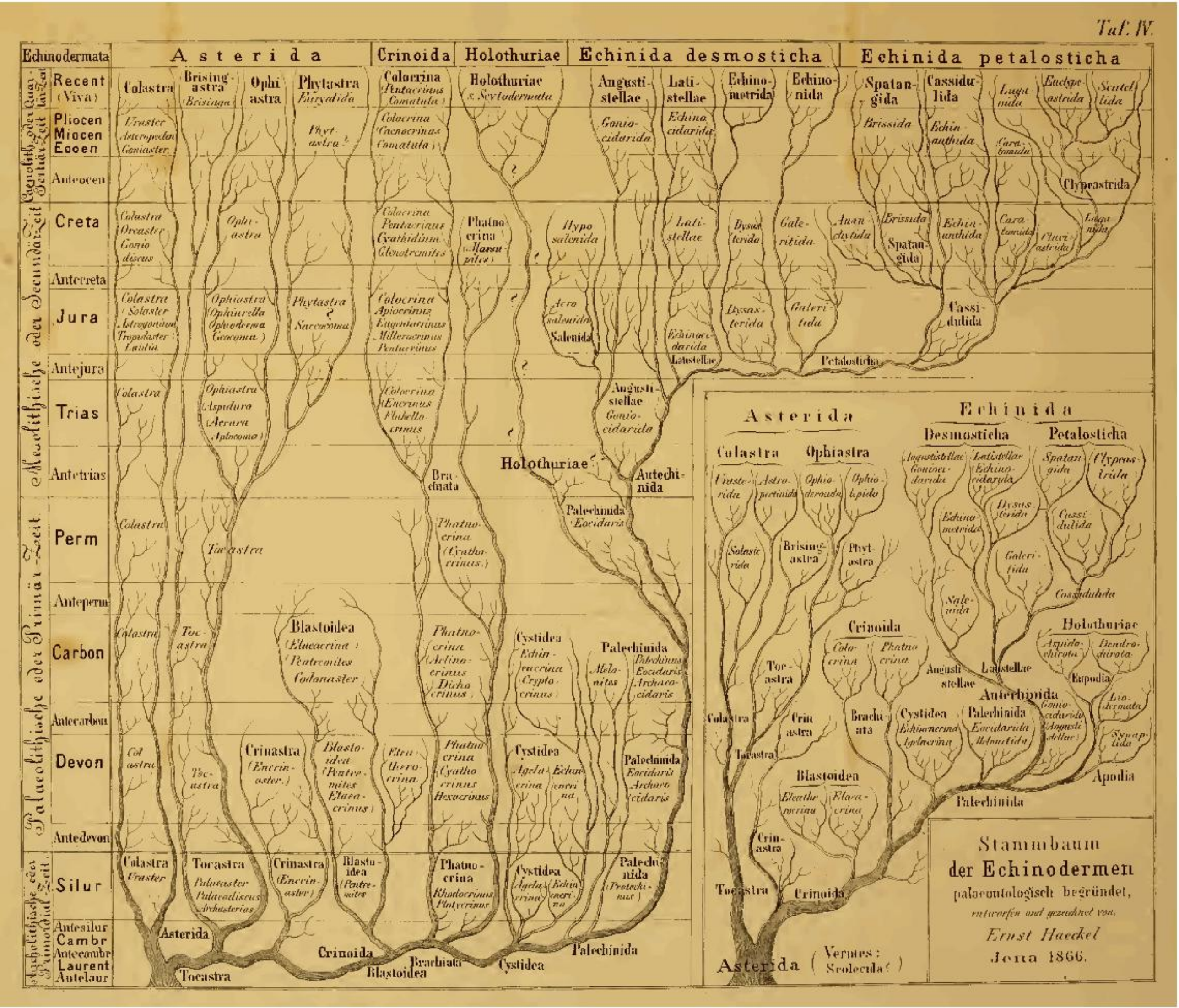
Illustration created by Yifan Hu, AT&T Labs – Research

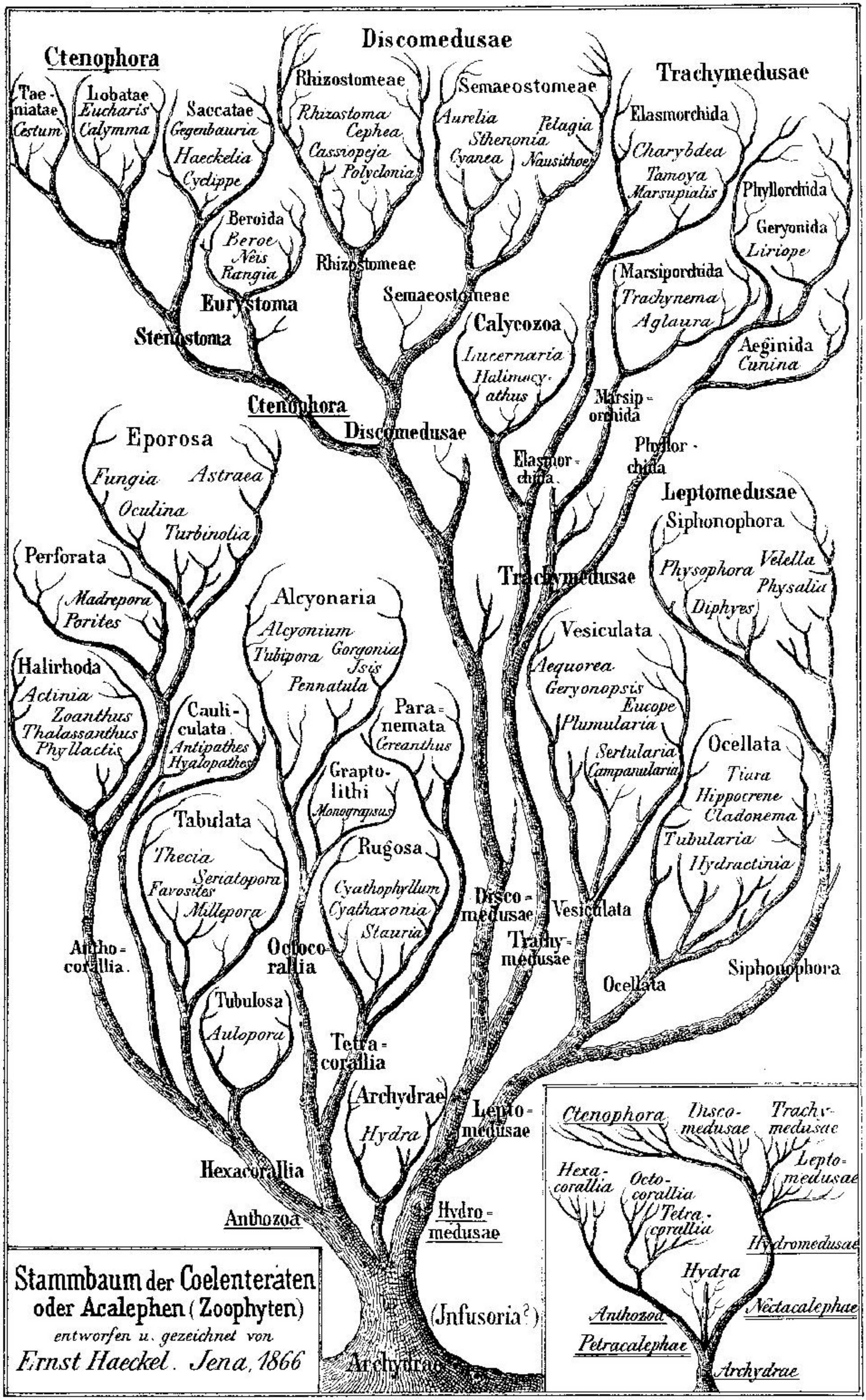

Thorn
Hillsborough & Clay
Grant
Hyphalotis
Senecio
Senecio
Old wood
Primulas
Old wood
Primulas
Primulas
Primulas



§ 437. Stammbaum der Primaten.



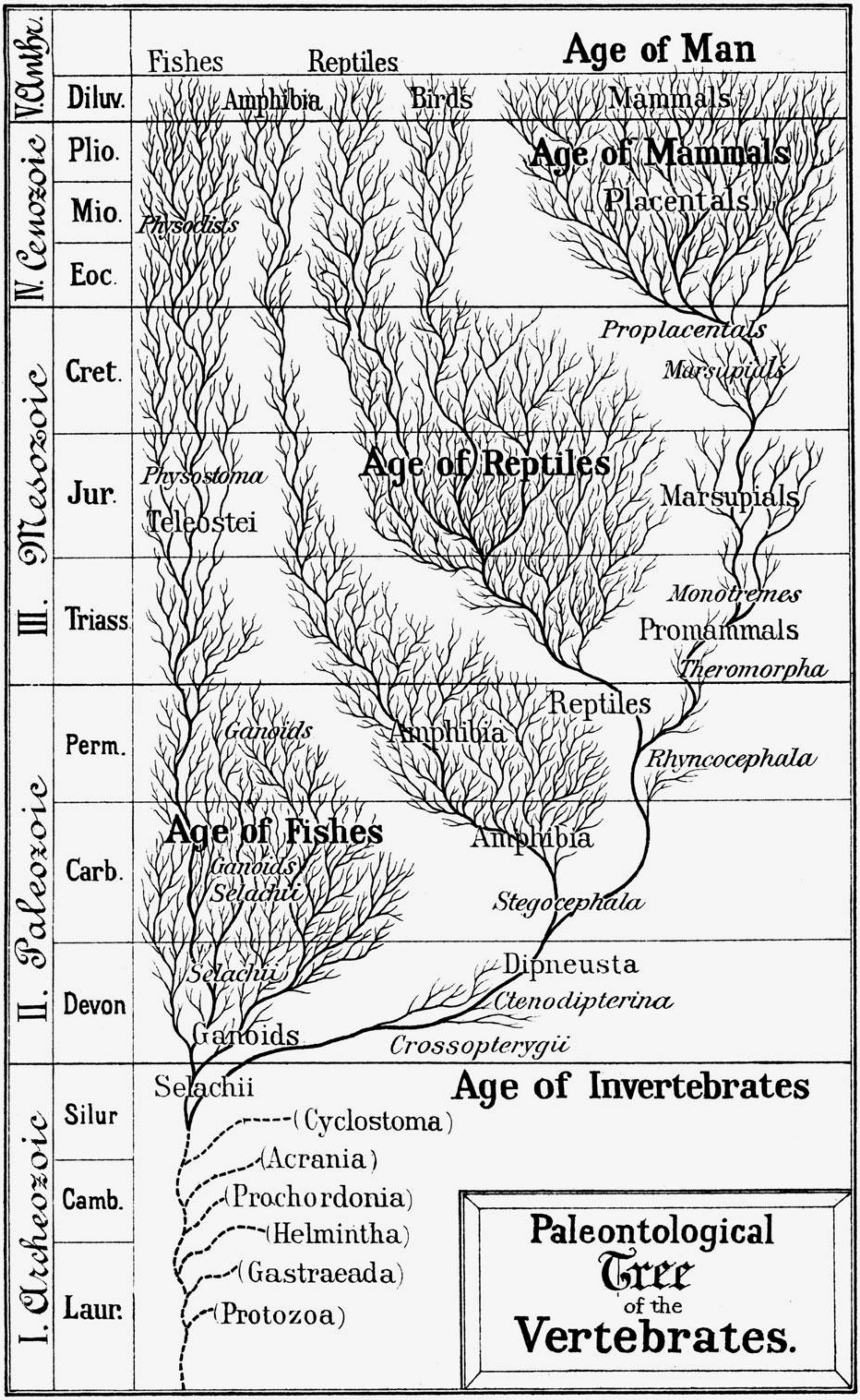

Echinodermata
Asterida
Crinoida
Holothuriae
Echinida desmosticha
Echinida petalosticha
Cenolithische oder Quartär- und Tertiär-Zeit
Mesolithische oder Secundär-Zeit
Palaeolithische oder Primär-Zeit
Archolithische oder Cambrium-Zeit
Recent (Viva)
Pliocen
Miocen
Eocen
Antieocen
Creta
Antecreta
Jura
Antejura
Trias
Antetrias
Perm
Antiperm
Carbon
Antecarbon
Devon
Antedevon
Silur
Antesilur
Cambr
Antecambr
Laurent
Antelaur
Colastra
Brisingastra
Ophiastra
Phytastra
Colocrina
Holothuriae
Angustistellae
Latistellae
Echinometrida
Echinonida
Spatangida
Cassidulida
Clypeastrida
Brachiata
Palechinida
Blastoidea
Cystidea
Crinastra
Torastra
Asterida
Crinoida
Tocastra
Vermes
Stammbaum der Echinodermen
palaeontologisch begründet,
entworfen und gezeichnet von
Ernst Haeckel
Jena 1866.



Stammbaum der Coelenteraten oder Acalephen (Zoophyten)

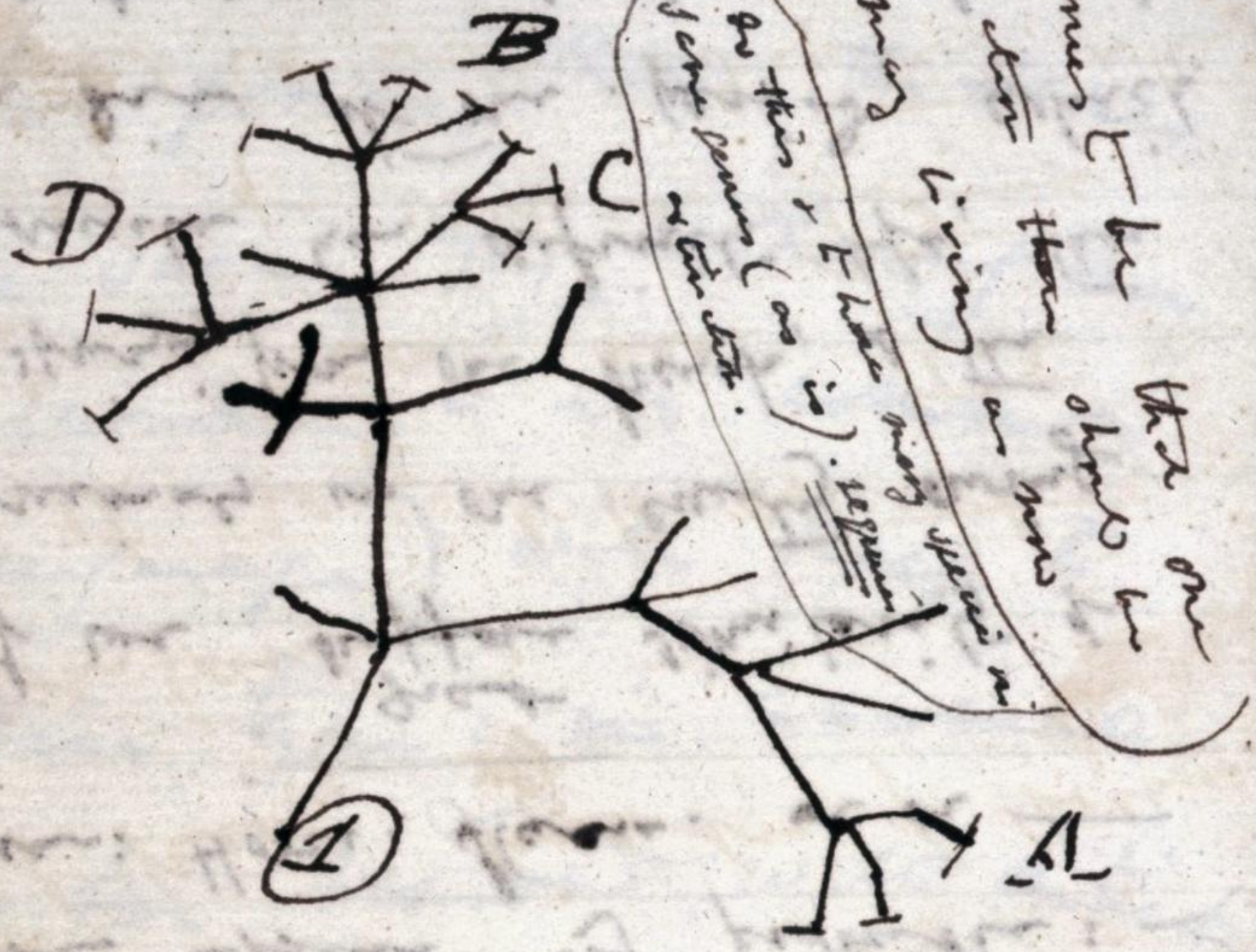
entworfen u. gezeichnet von

Ernst Haeckel. Jena, 1866



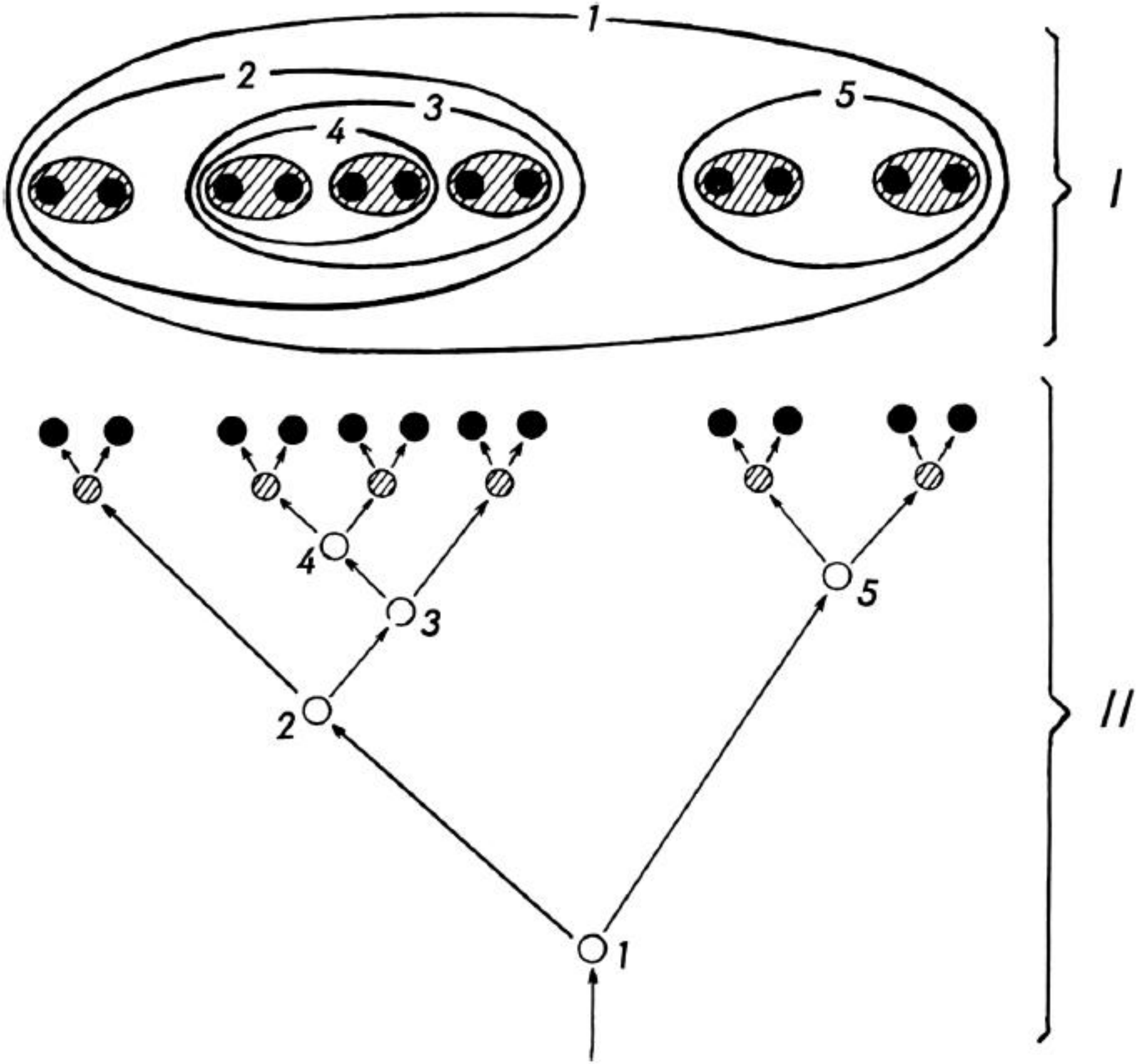
E. Haeckel del.

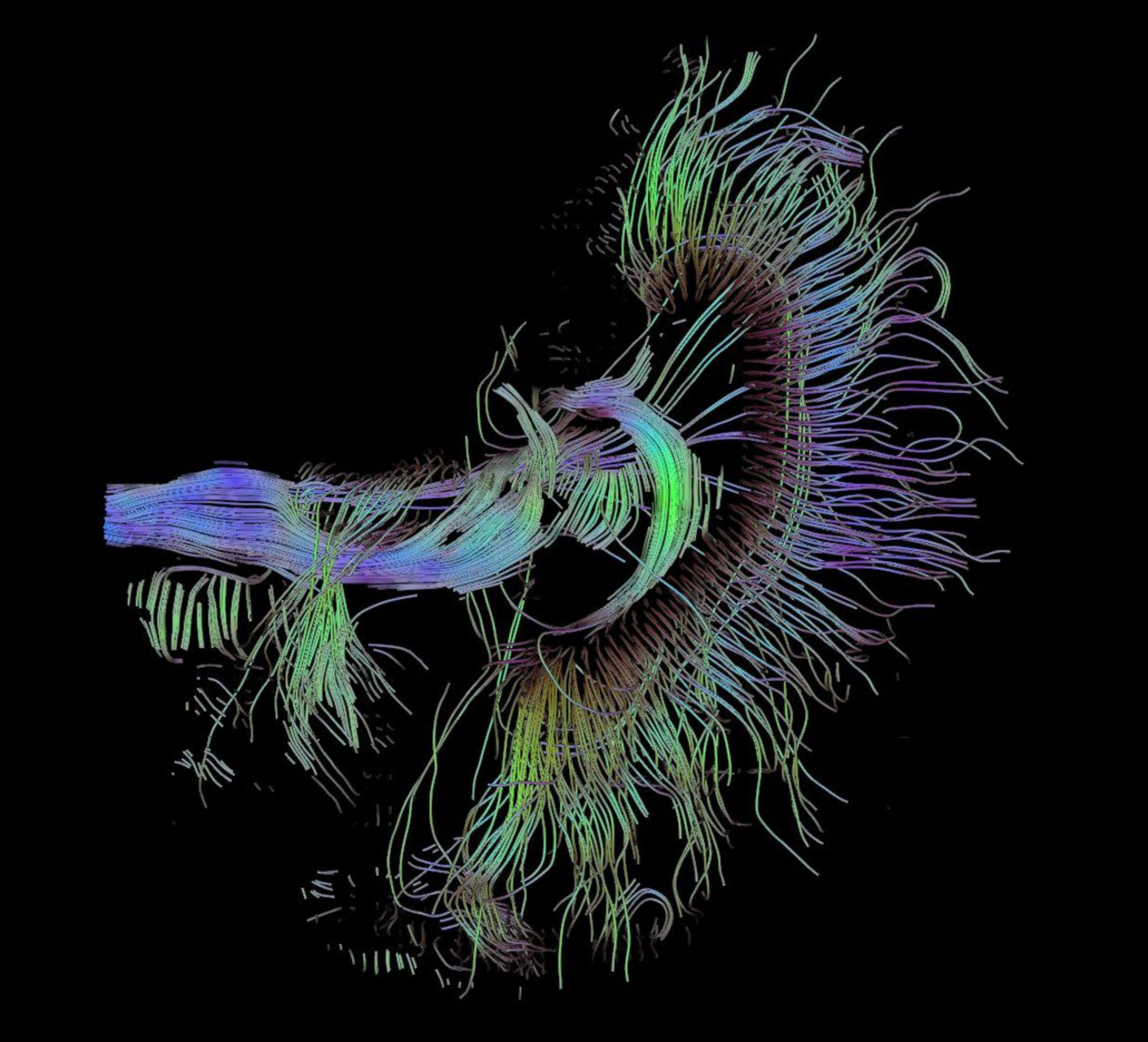
I think

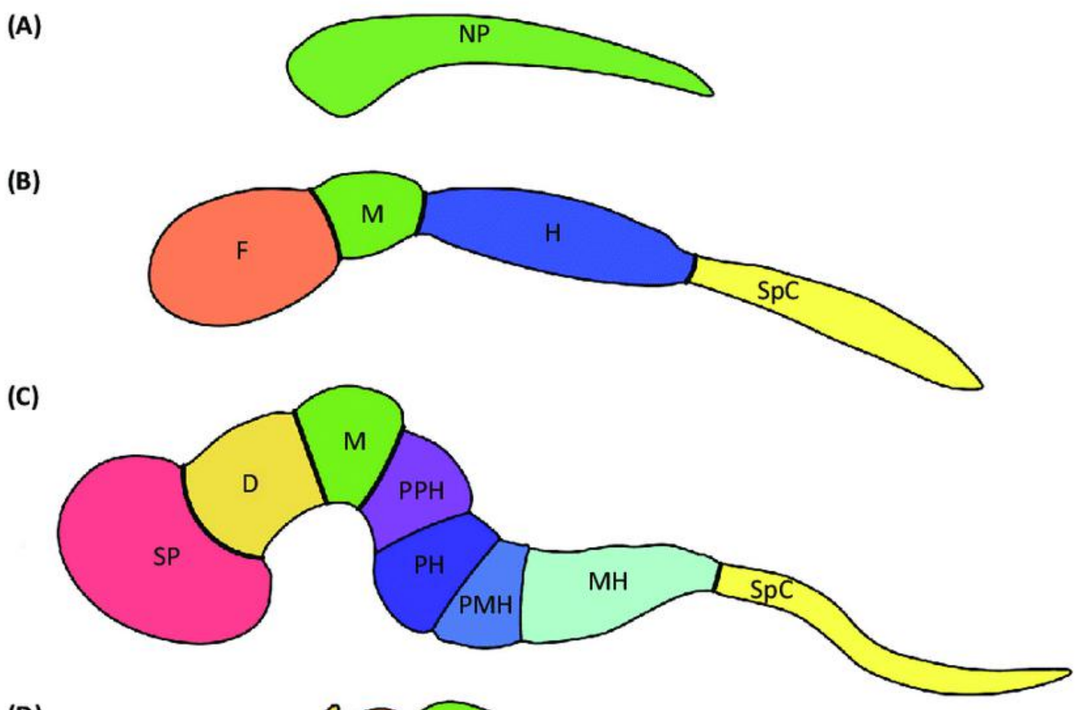


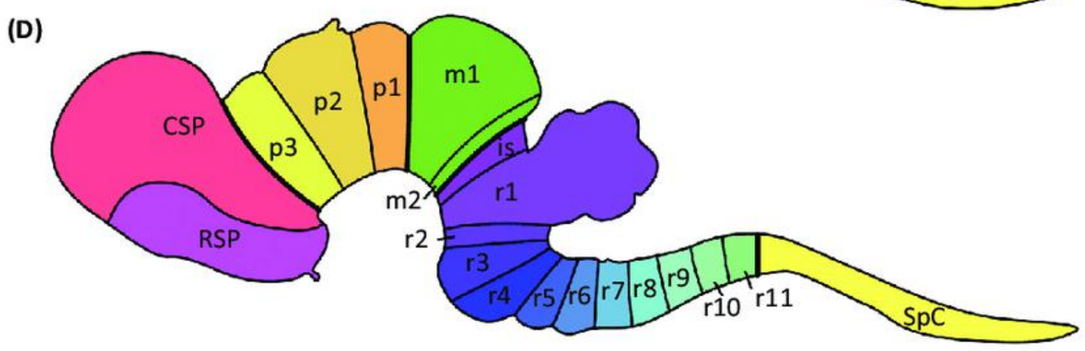
Can men be the only human species in the universe? Is there any species in nature (as in) ~~the~~ Do we think I can perceive such a thing.

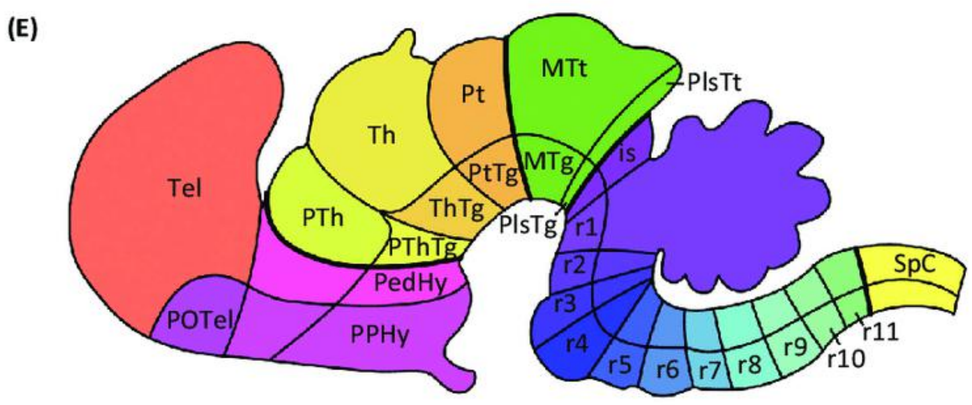
There between A & B. Variations not of relation. C & B. The first gradation, B & D rather greater distinction. Then genera would be formed. – bearing relation

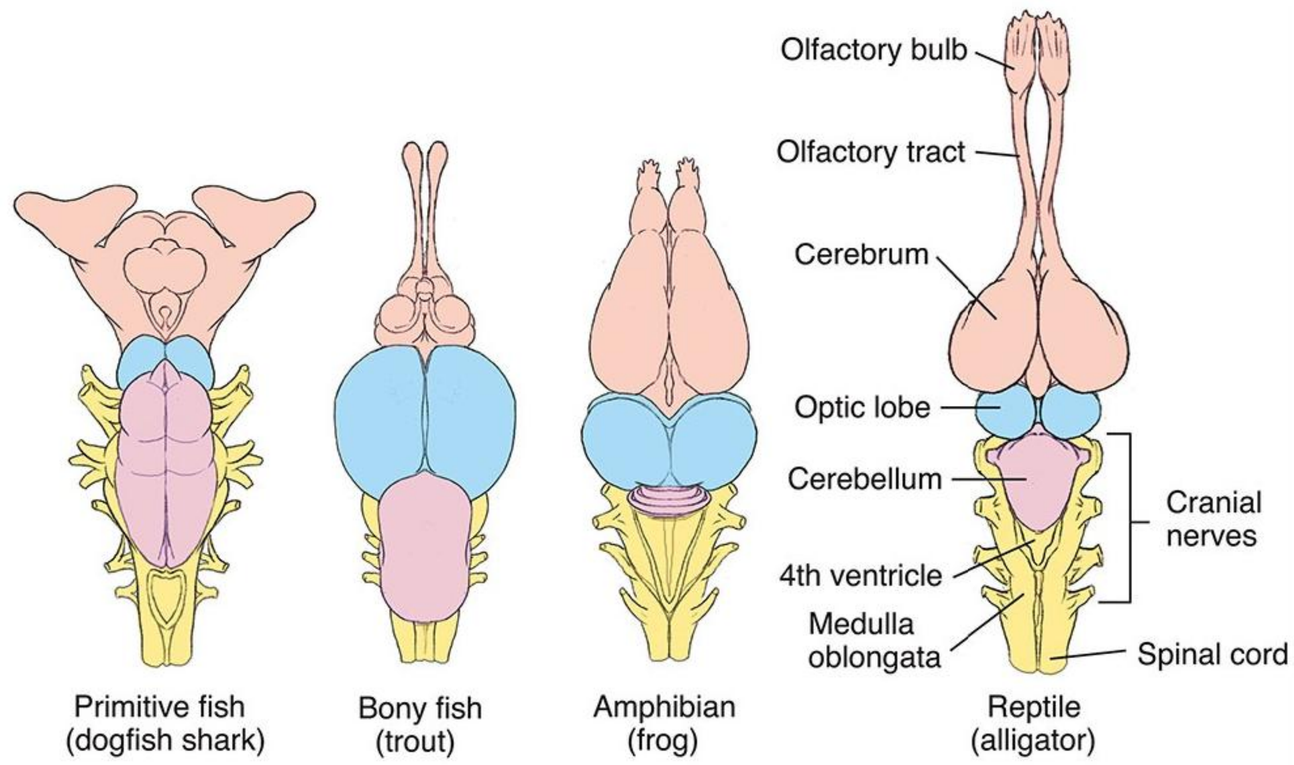

1
2
3
4
5
I
4
3
5
2
1
II

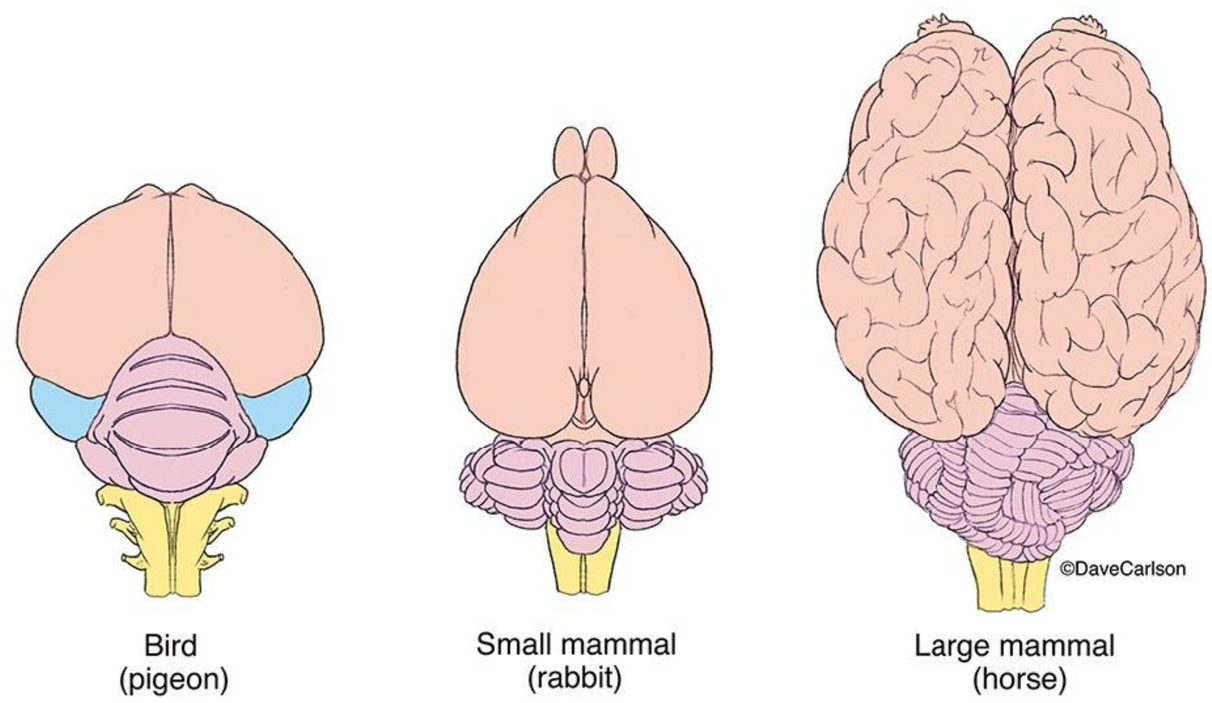


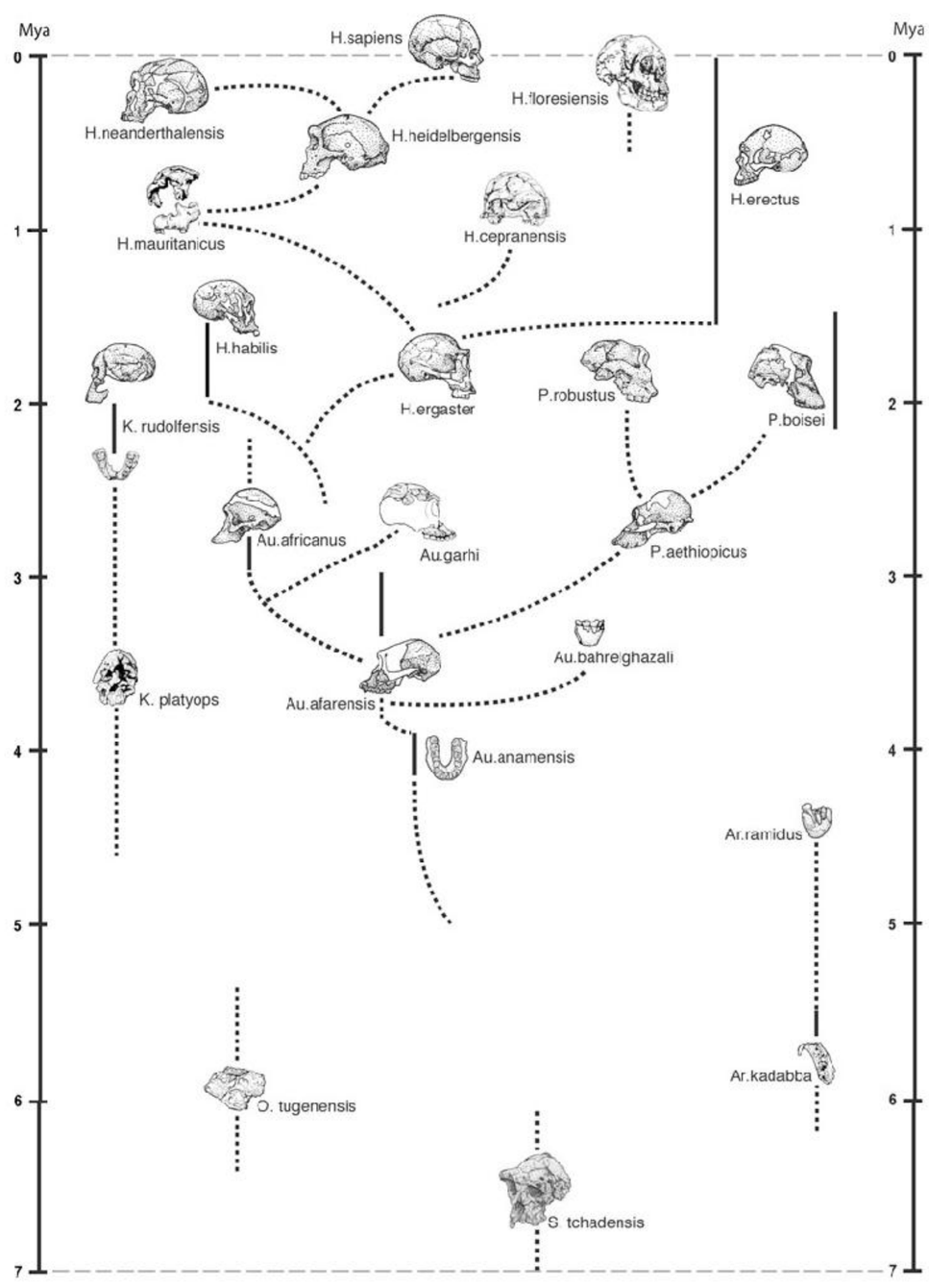

(A)
NP
(B)
F
M
H
SpC
(C)
SP
D
M
PPH
PH
PMH
MH
SpC

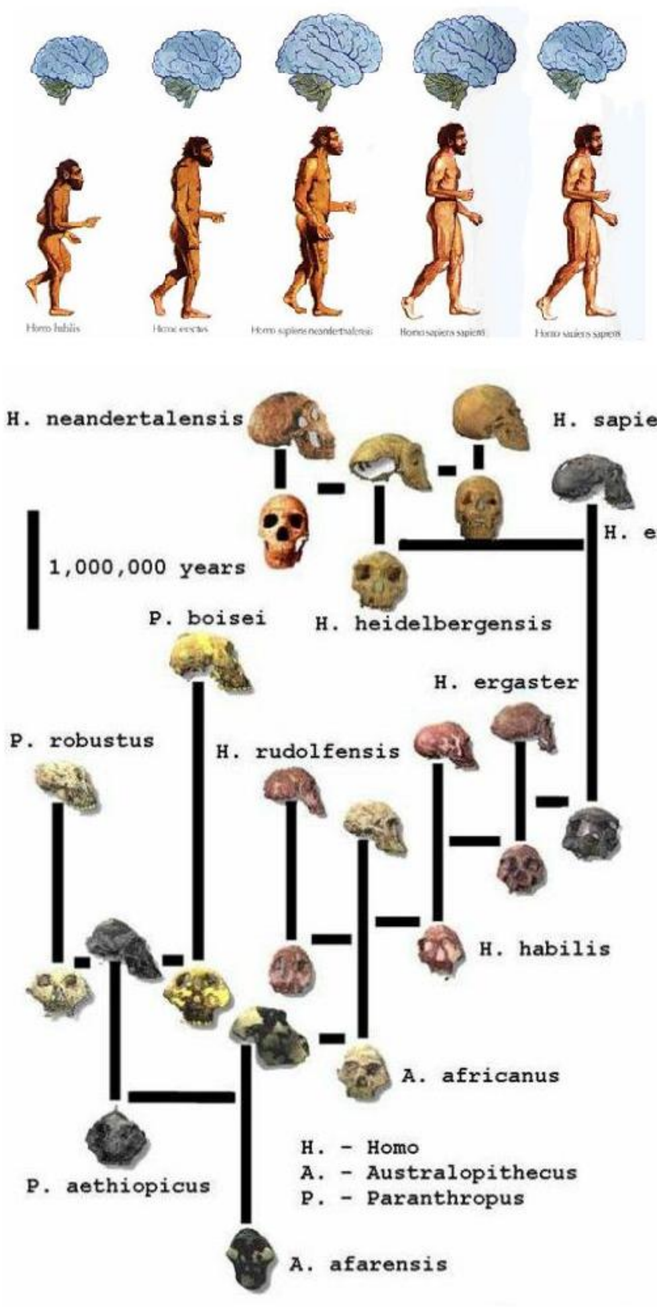

(D)
CSP
RSP
p3
p2
p1
m1
m2
is
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
SpC

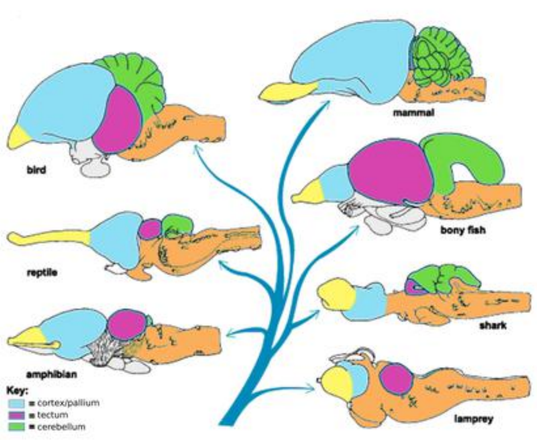

(E)
Tel
POTel
PTh
Th
Pt
MTt
PlsTt
PtTg
MTg
ThTg
PlsTg
PThTg
PedHy
PPHy
is
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
r11
SpC

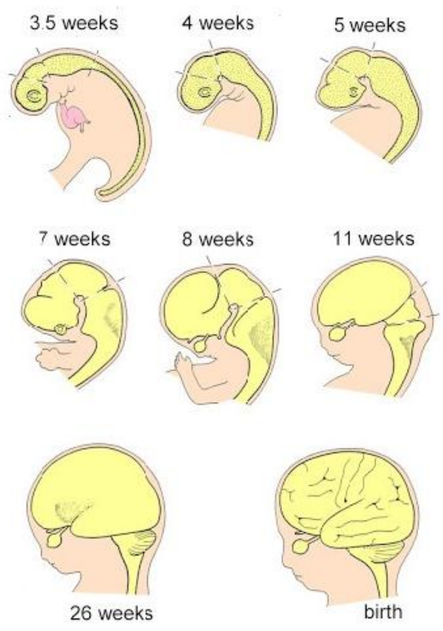

Olfactory bulb
Olfactory tract
Cerebrum
Optic lobe
Cerebellum
4th ventricle
Medulla oblongata
Cranial nerves
Spinal cord
Primitive fish (dogfish shark)
Bony fish (trout)
Amphibian (frog)
Reptile (alligator)

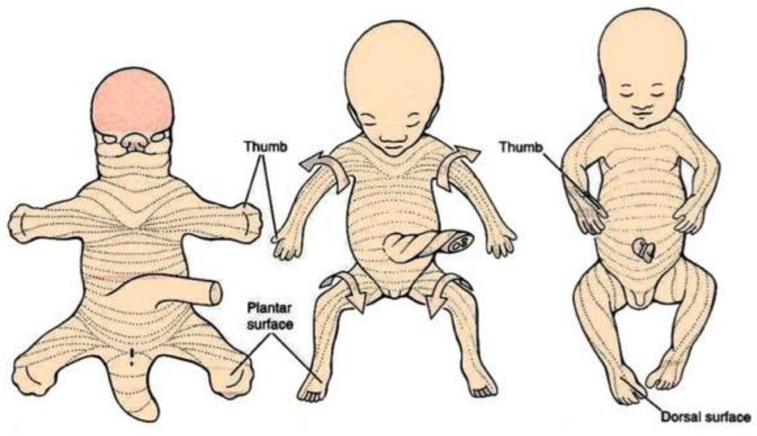

©DaveCarlson
Bird (pigeon)
Small mammal (rabbit)
Large mammal (horse)

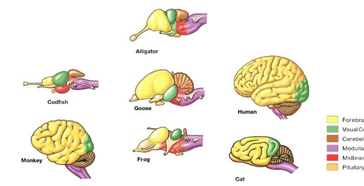

Mya
Mya
0
1
2
3
4
5
6
7
H.sapiens
H.neanderthalensis
H.heidelbergensis
H.floresiensis
H.erectus
H.mauritanicus
H.cepranensis
H.habilis
H.ergaster
P.robustus
P.boisei
K.rudolfensis
Au.africanus
Au.garhi
P.aethiopicus
Au.bahrelghazali
K.platyops
Au.afarensis
Au.anamensis
Ar.ramidus
Ar.kadabba
O.tugenensis
S.tchadensis

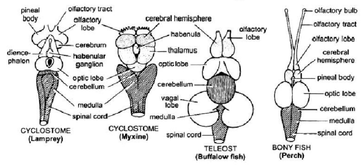

H. neandertalensis
H. sapiens
H. erectus
1,000,000 years
P. boisei
H. heidelbergensis
H. ergaster
P. robustus
H. rudolfensis
H. habilis
A. africanus
P. aethiopicus
H. - Homo
A. - Australopithecus
P. - Paranthropus
A. afarensis

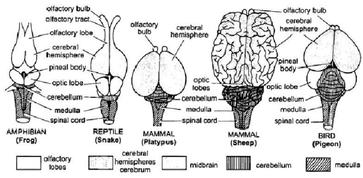

mammal
bird
bony fish
reptile
shark
amphibian
lamprey
Key:
cortex/pallium
tectum
cerebellum

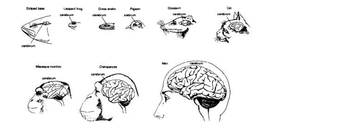

3.5 weeks
4 weeks
5 weeks
7 weeks
8 weeks
11 weeks
26 weeks
birth


Thumb
Thumb
Plantar surface
Dorsal surface







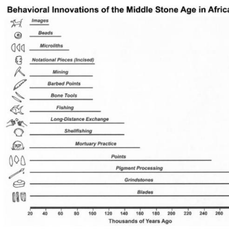


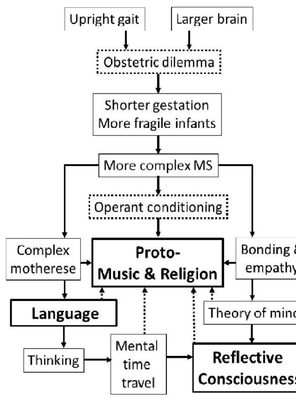
Comparison of the basic components of the two evolutionary processes that we propose are productively understood in terms of autocatalytic models. OOL refers to 'origin of life' and OOC refers to 'origin of culture'.

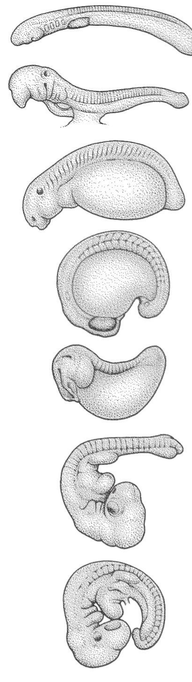
Component	OOL	OOC
Food set	Original polymers	Innate concepts
Reactants	Polymers	Mental representations
Products	Polymers	Mental representations
Reactions	Ligation and cleavage	Learning and reflection
Catalysts	Polymers	Stimuli and catalytic mental representations
Autocatalytic sets	Chemical RAFs	Cognitive RAFs

Summary comparison of the episodic mind of *Homo habilis*, the mimetic mind of *Homo erectus*, and the mind of a young child.

Variable (Symbol)	Variable (In Words)	Homo habilis	Homo erectus	Young Child
N	MR richness	Low	High	High
X	Set of existing MRs	Large	Large	Small
P	Reactivity	Fixed	Tuned to N	Tuned to N
λ	Catalysis rate	Small	Larger	Small
W_t	Working memory	Small	Larger	Small
L_t	Long-term memory	Small	Much larger	Small
M_t	Memory (W_t and/or L_t)	Small	Much larger	Small
CCPs	Streams of thought	Absent	Present	Absent
C	Conceptual Closure	Absent	Present	Absent

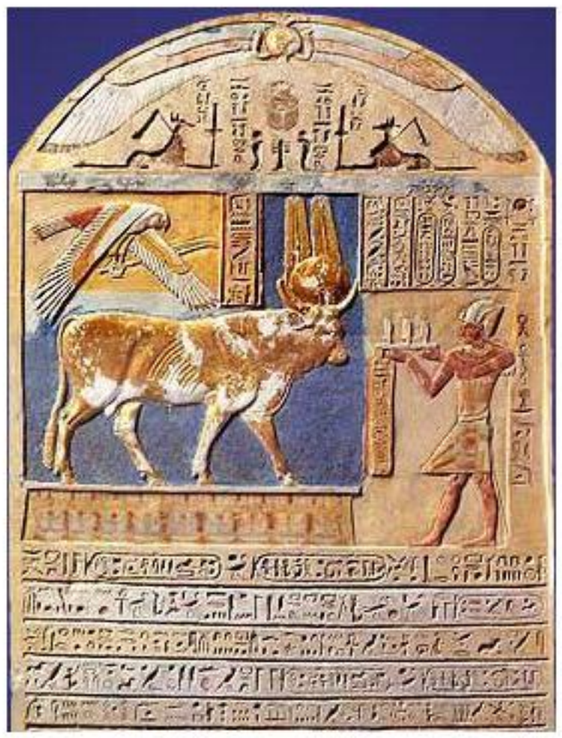






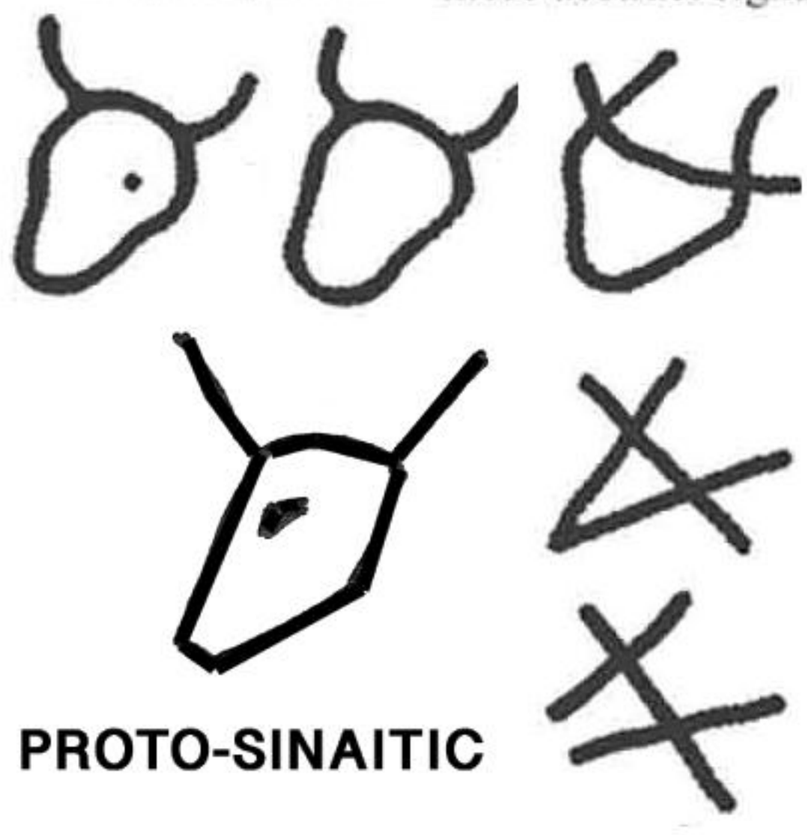
EGYPTIAN

c. 3000 BC



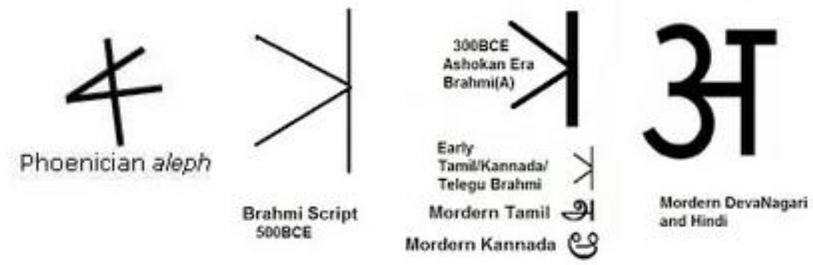
proto-Semitic visual alphabet

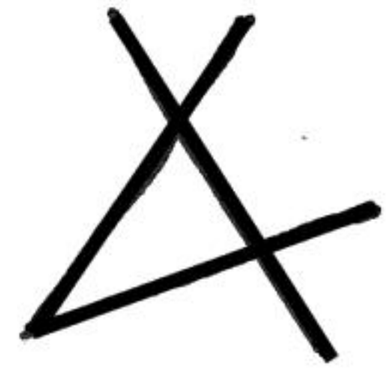
paleo-Semitic more abstract signs



PROTO-SINAITIC

c.1750 BC



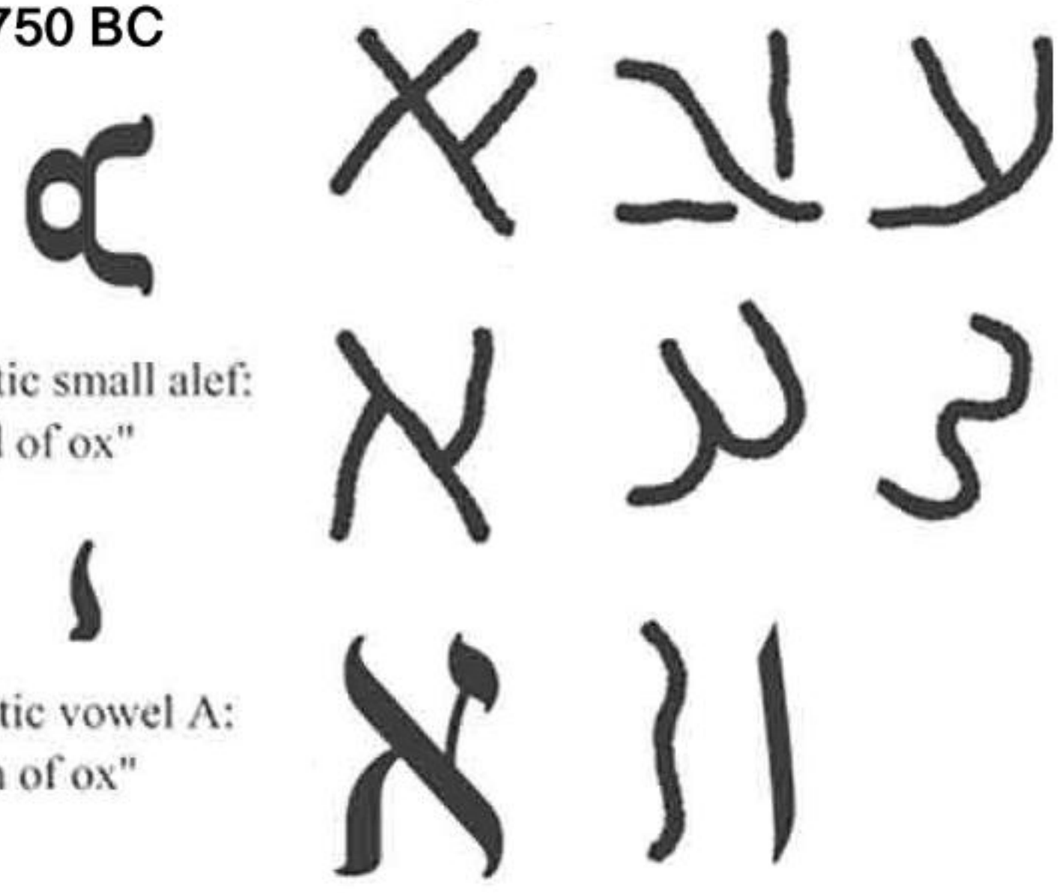


PHOENICIAN

c. 1000 BC

GREEK

c. 750 BC



Semitic small alef: "head of ox"

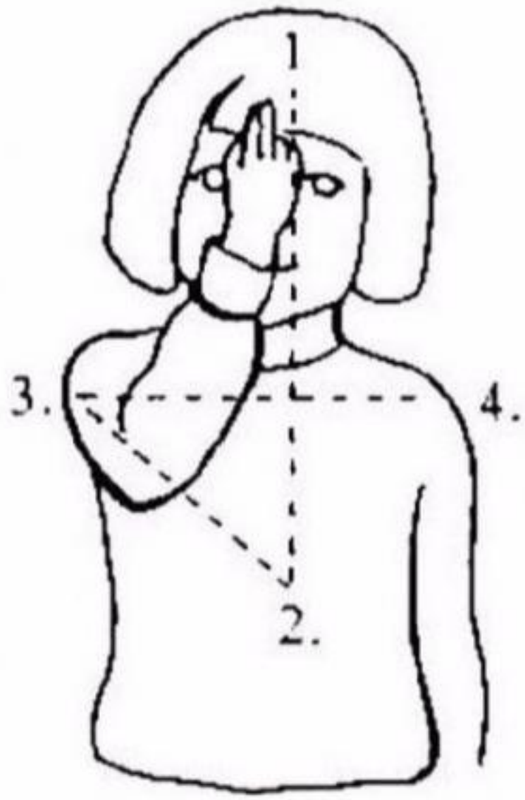
Semitic vowel A: "horn of ox"

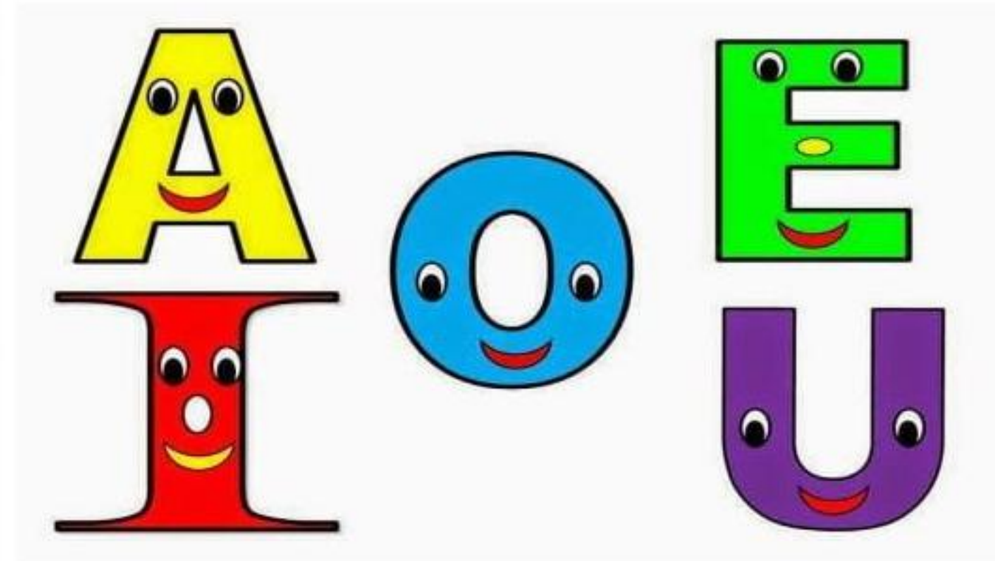
modern Hebrew abstract sign Alef

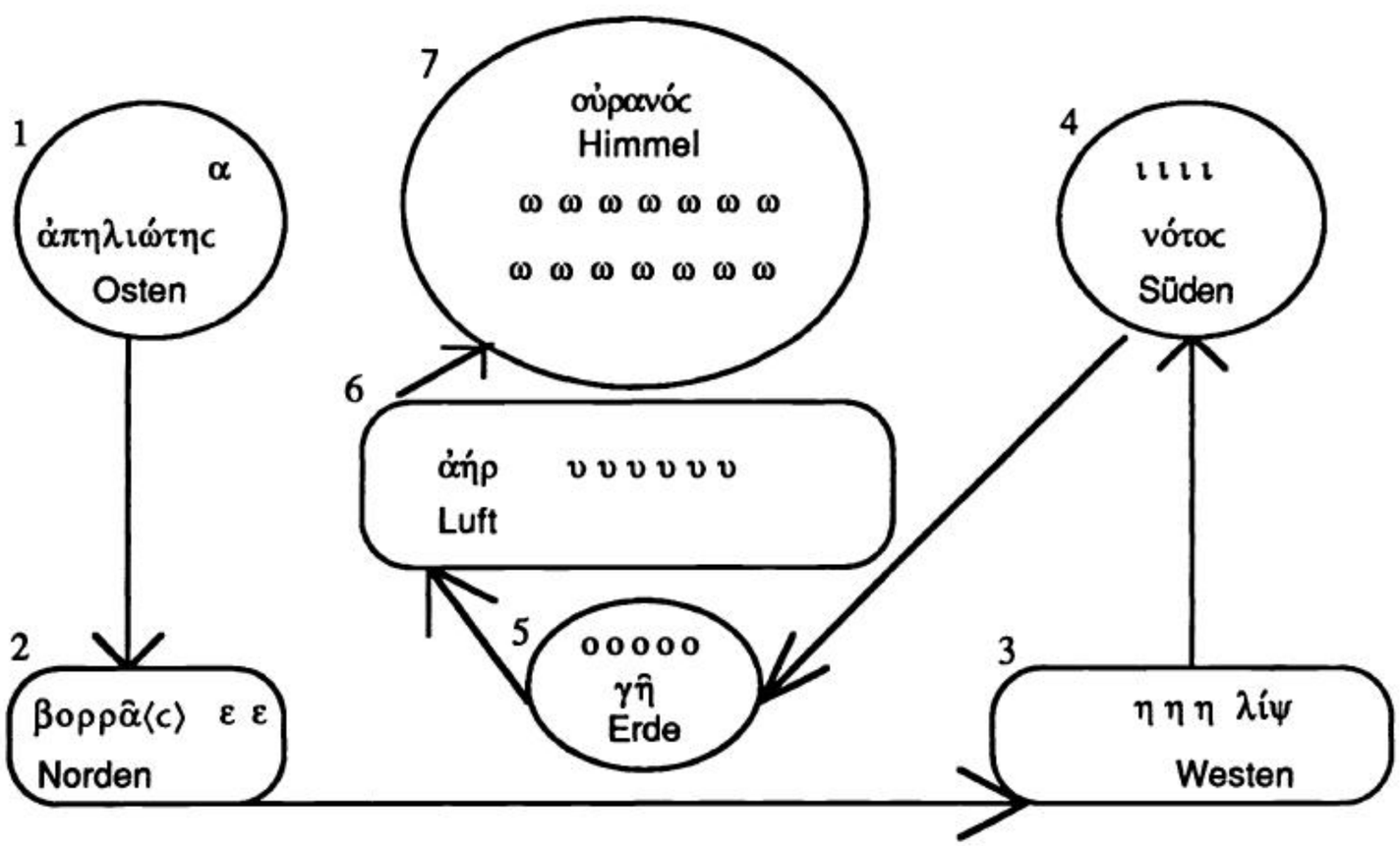
modern Arabic abstract sign Alif

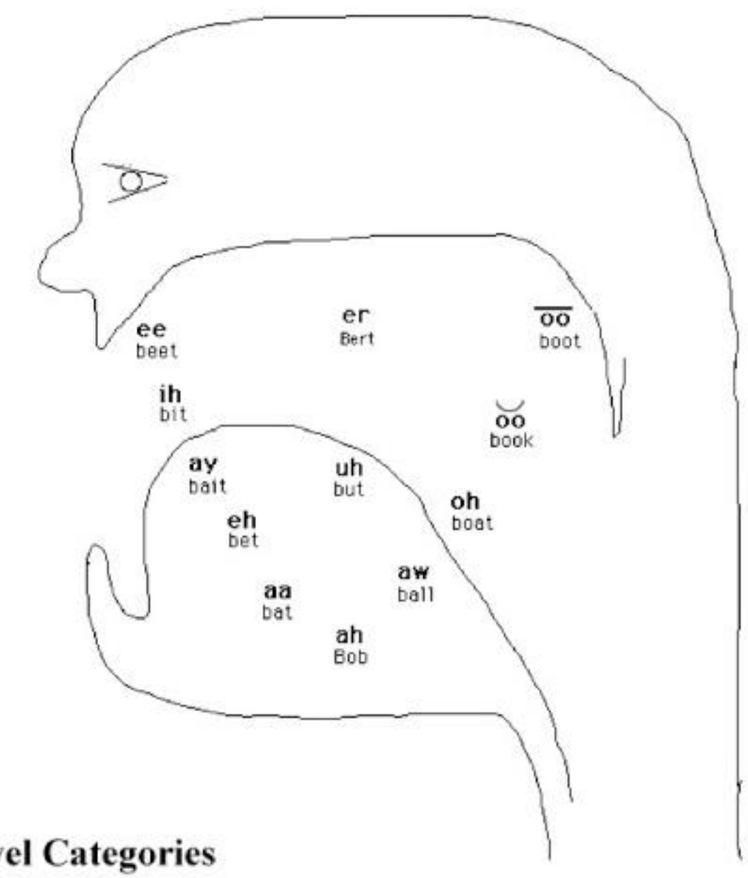
ROMAN

Arabic version of Semitic small alif: "horns of ox"



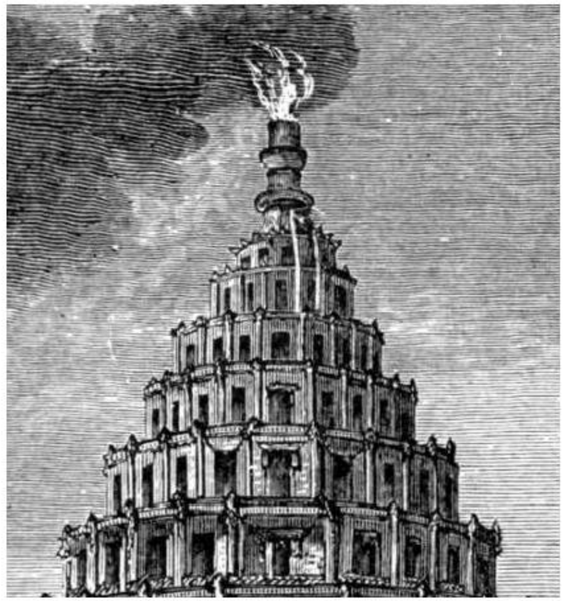


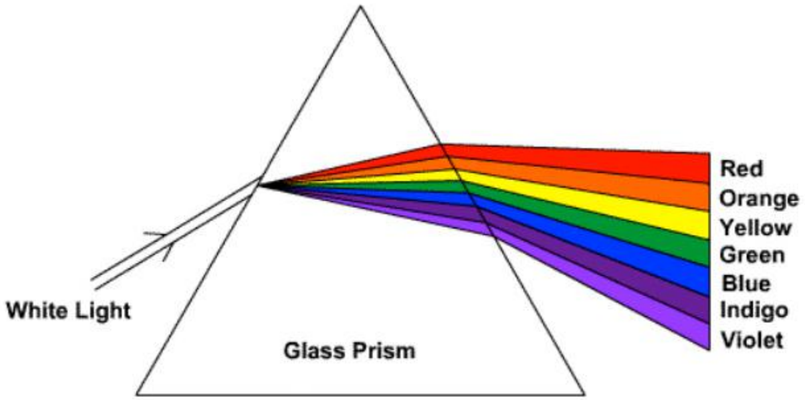




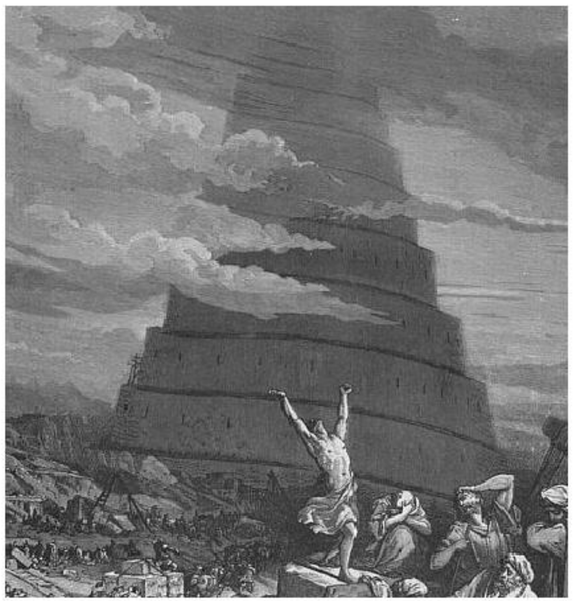
Vowel Categories

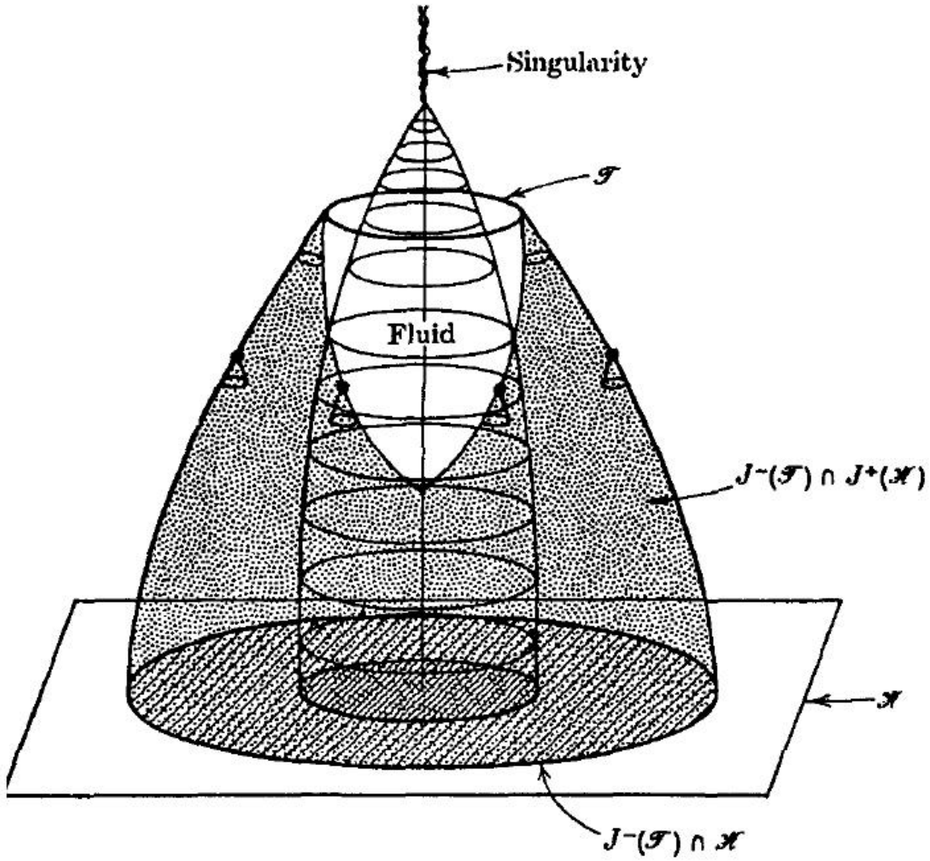
5 FRONT VOWELS					3 MIDDLE			4 BACK VOWELS			
ee	ih	ay	eh	aa	ah	uh	er	aw	oh	ŏŏ	ōō
Pete	Jim	Dave	Ted	Dan	Bob	Bud	Bert	Claude	Joe	Woody	Lew

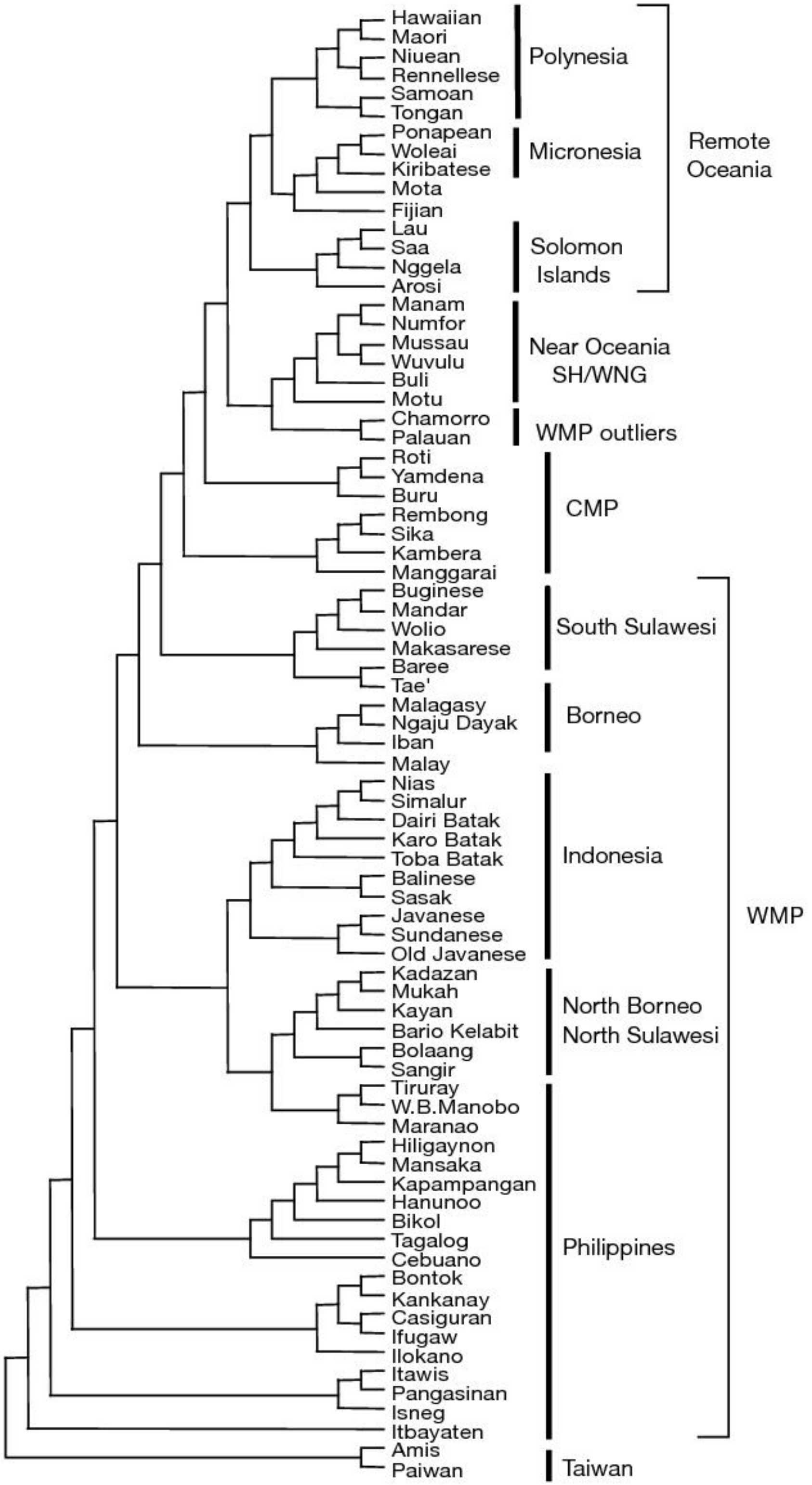




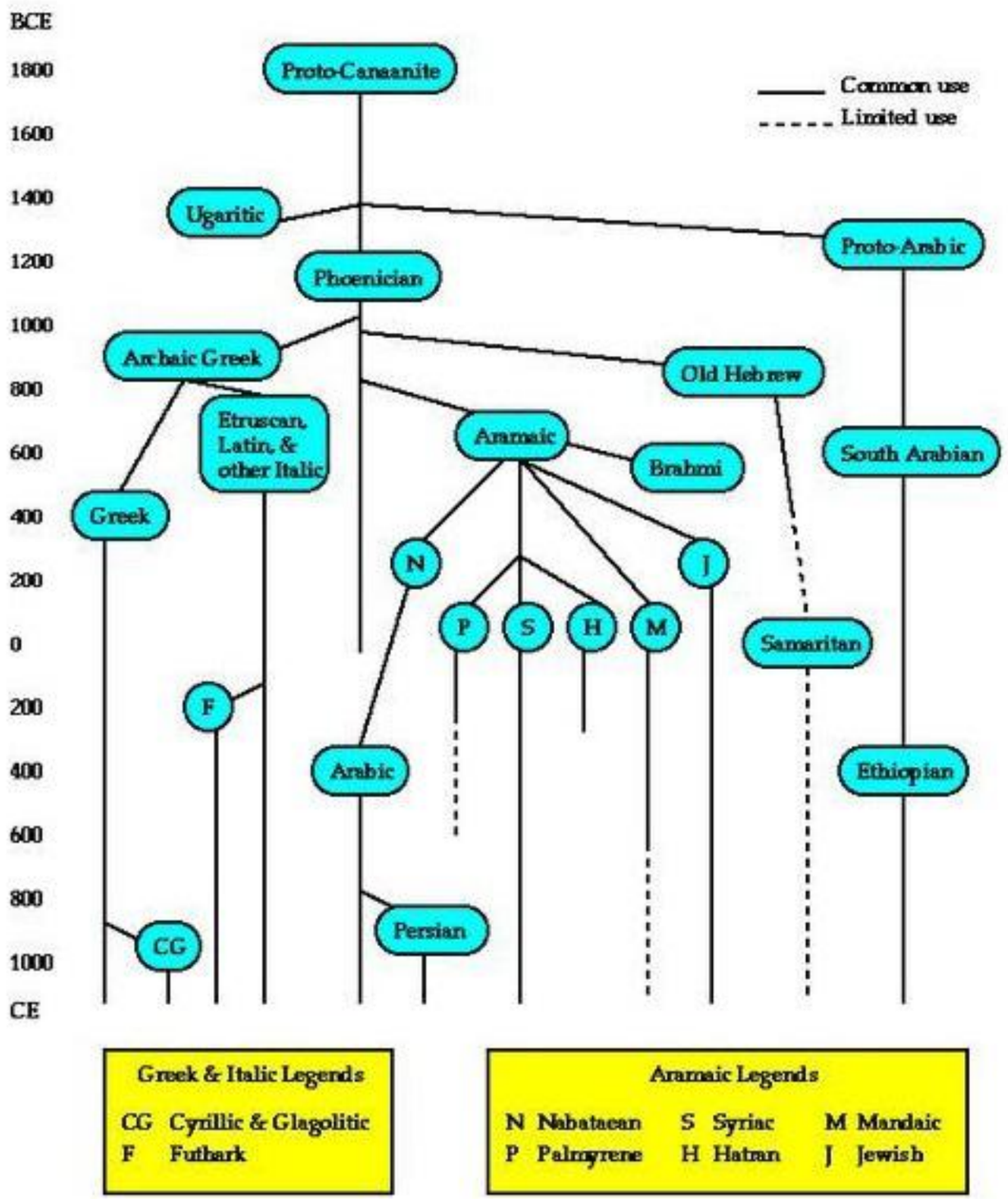
alexandria breaks out into babel or falls in and collapses in on itself

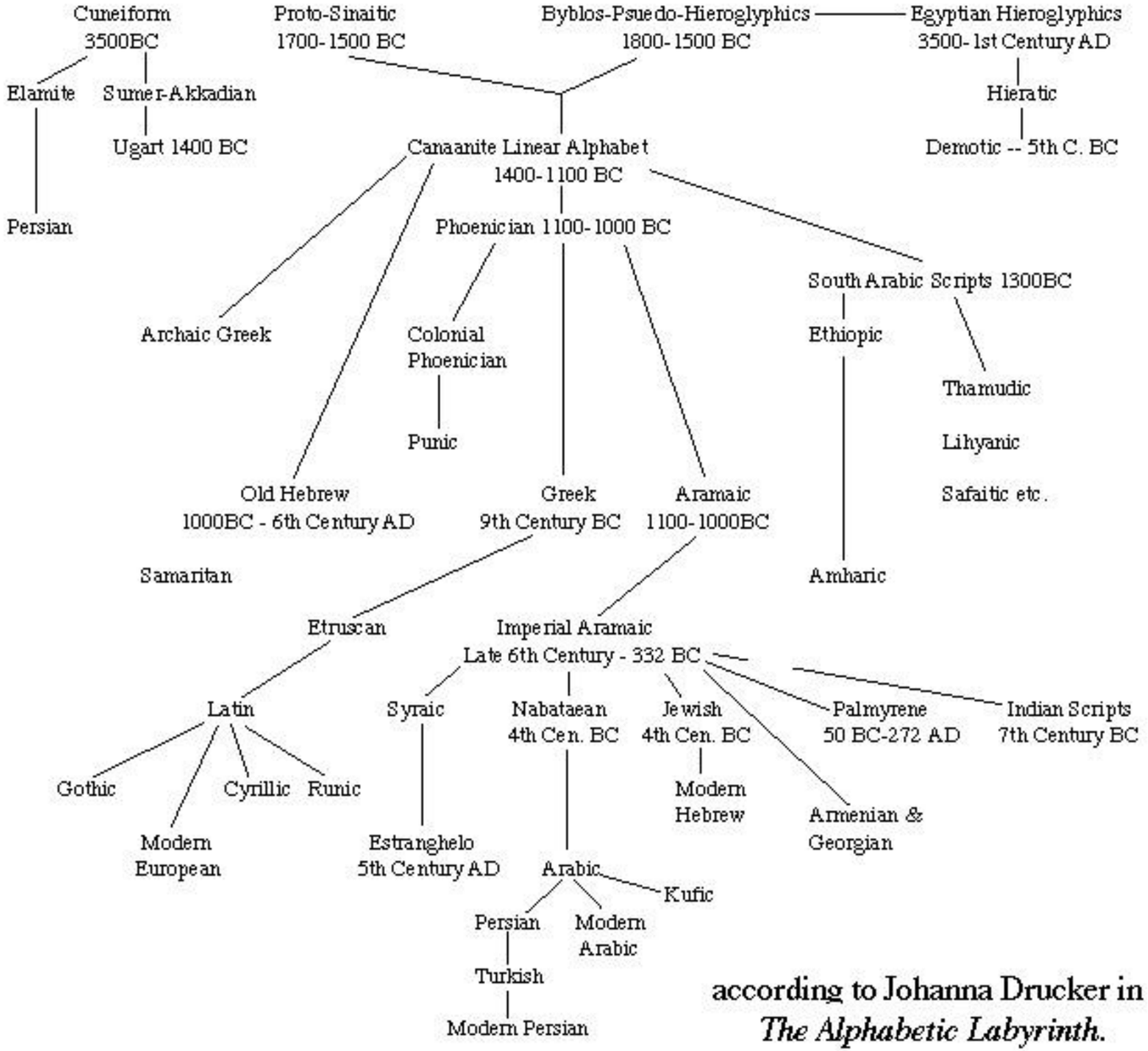




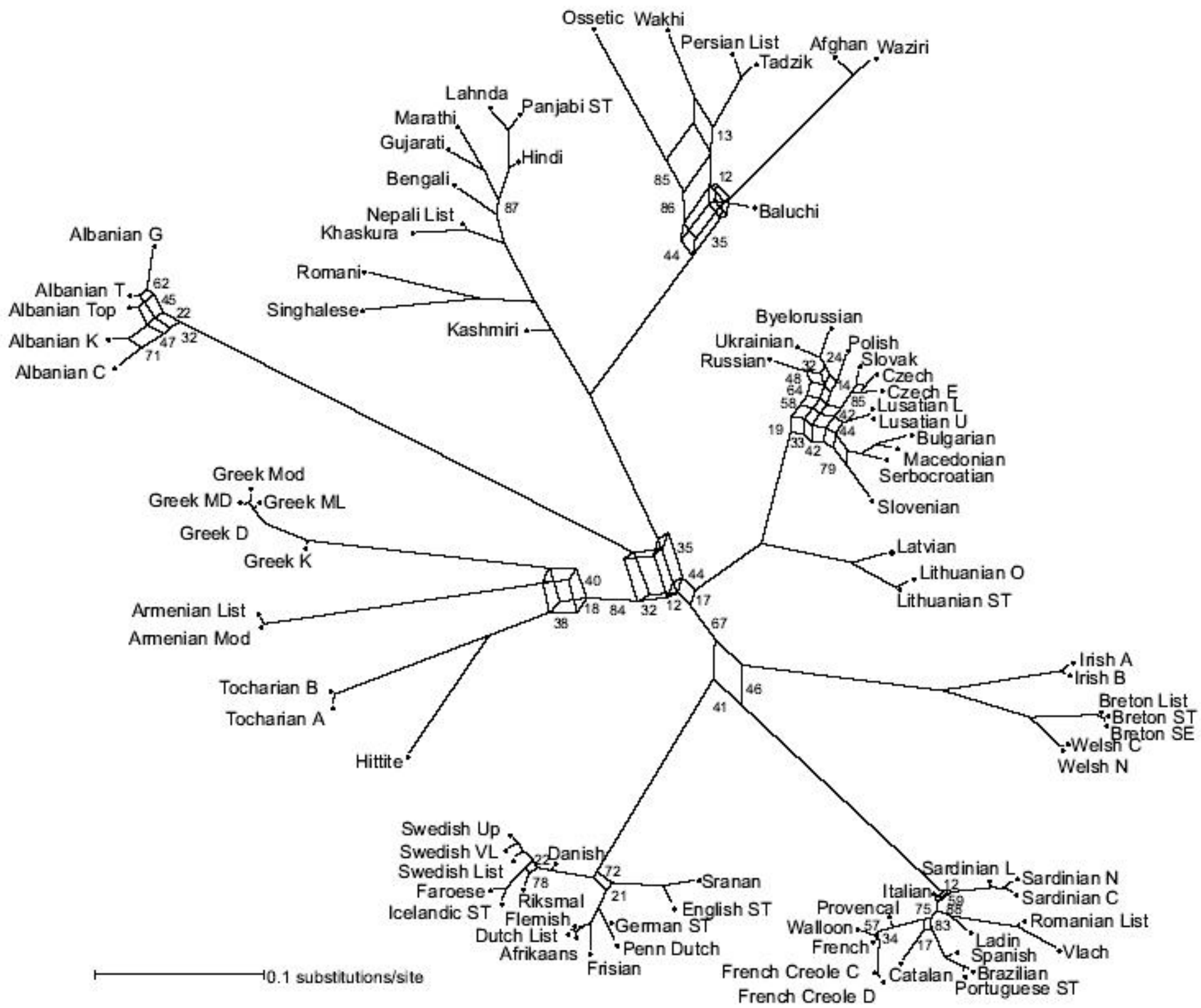

Hawaiian
Maori
Niuean
Rennellese
Samoan
Tongan
Polynesia
Ponapean
Woleai
Kiribatese
Mota
Fijian
Micronesia
Remote Oceania
Lau
Saa
Nggela
Arosi
Solomon Islands
Manam
Numfor
Mussau
Wuvulu
Buli
Motu
Near Oceania SH/WNG
Chamorro
Palauan
WMP outliers
Roti
Yamdena
Buru
Rembong
Sika
Kambera
Manggarai
CMP
Buginese
Mandar
Wolio
Makasarese
Baree
Tae'
South Sulawesi
Malagasy
Ngaju Dayak
Iban
Malay
Borneo
Nias
Simalur
Dairi Batak
Karo Batak
Toba Batak
Balinese
Sasak
Javanese
Sundanese
Old Javanese
Indonesia
Kadazan
Mukah
Kayan
Bario Kelabit
Bolaang
Sangir
North Borneo
North Sulawesi
Tiruray
W.B.Manobo
Maranao
Hiligaynon
Mansaka
Kapampangan
Hanunoo
Bikol
Tagalog
Cebuano
Bontok
Kankanay
Casiguran
Ifugaw
Ilokano
Itawis
Pangasinan
Isneg
Itbayaten
Philippines
WMP
Amis
Paiwan
Taiwan

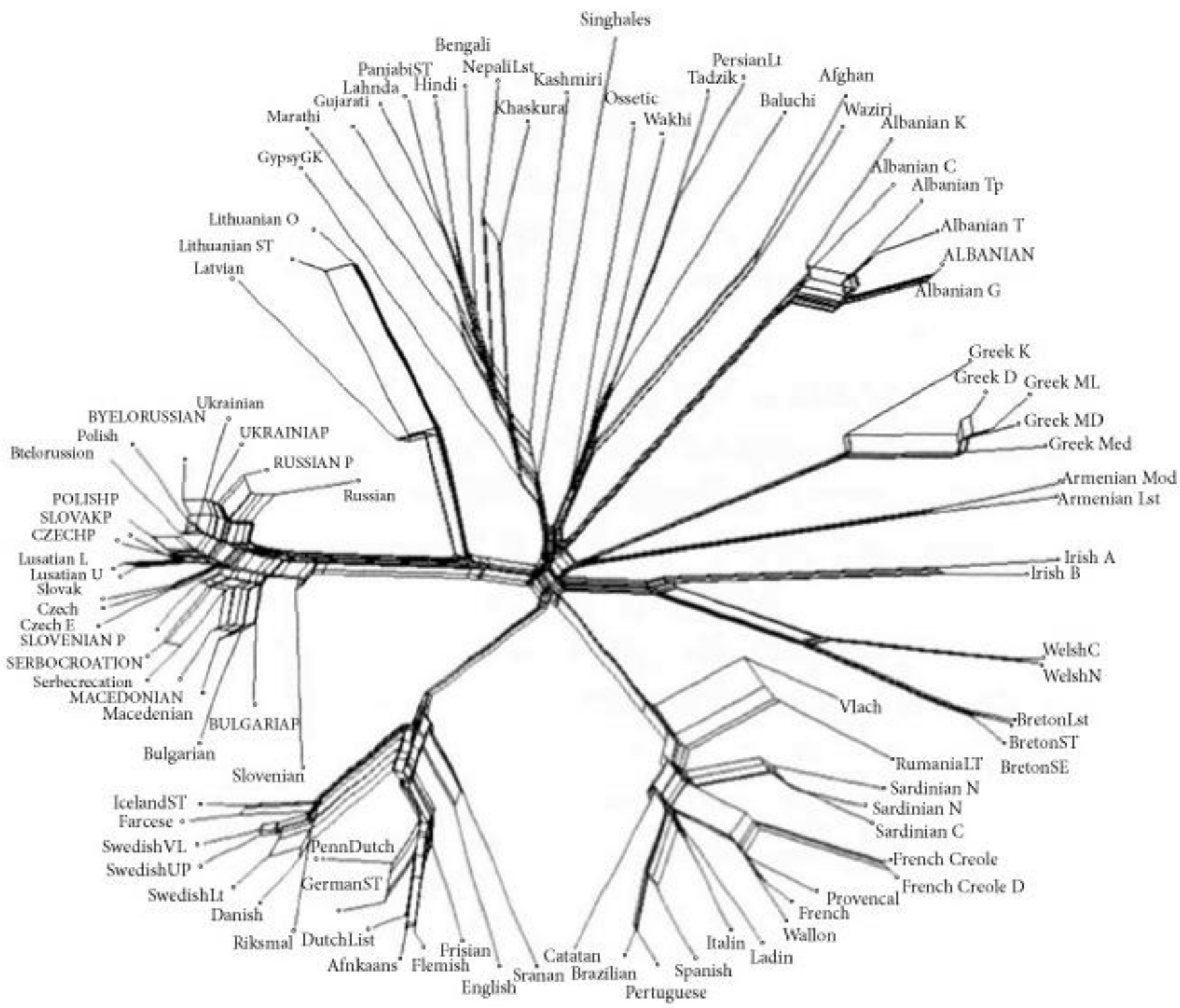
Major Alphabets

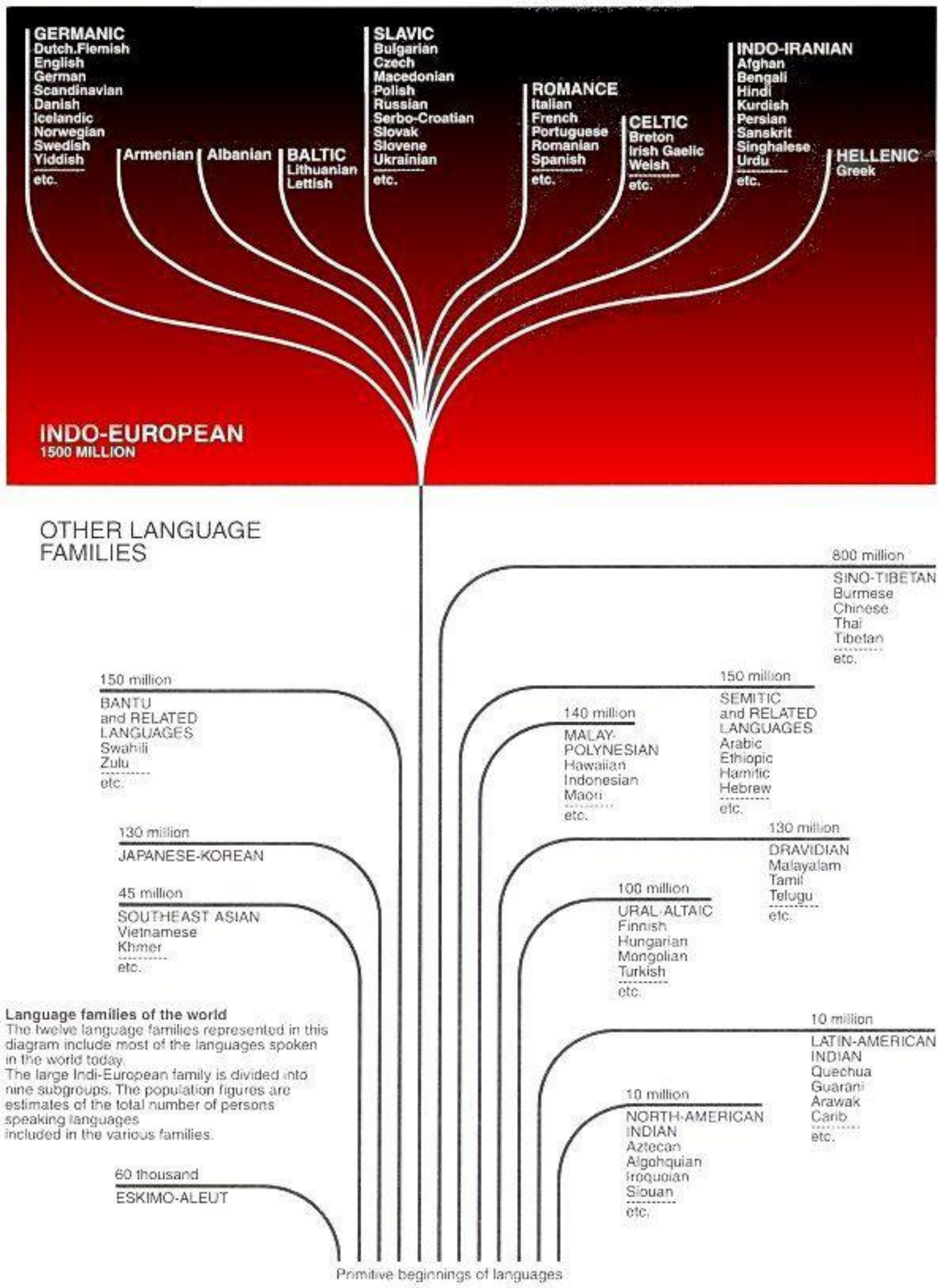




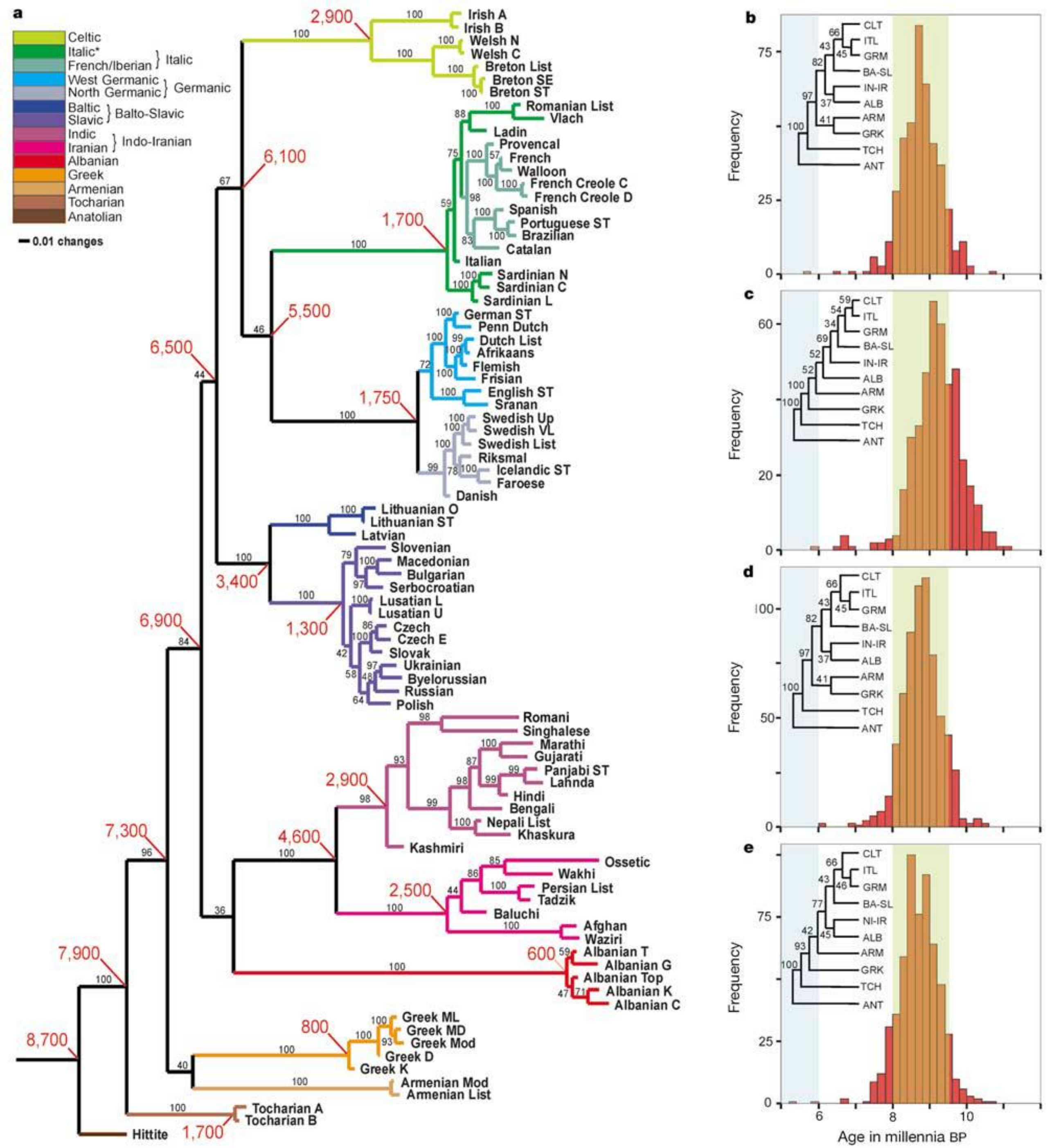
according to Johanna Drucker in *The Alphabetic Labyrinth.*

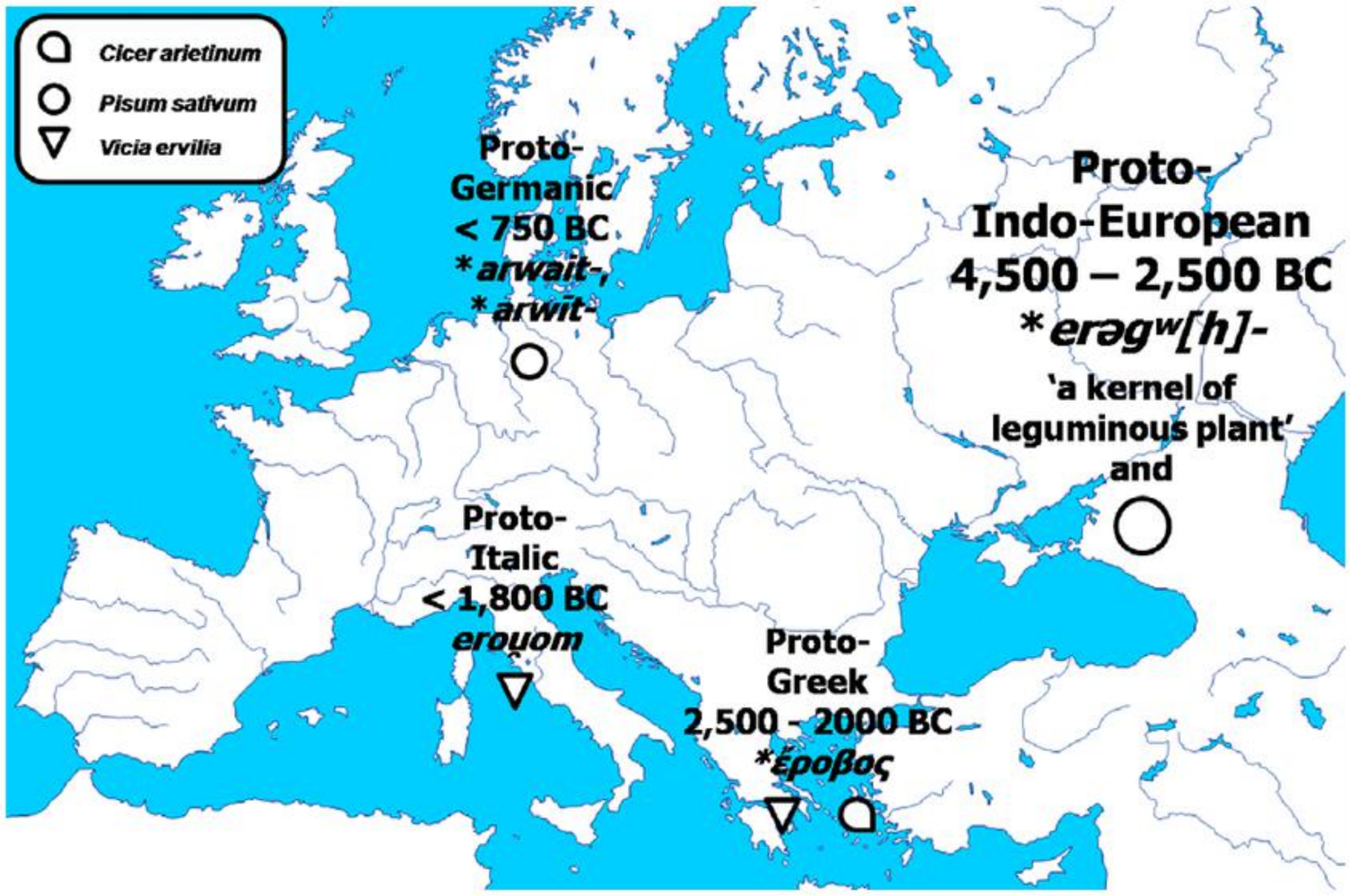

Ossetic
Wakhi
Persian List
Tadzik
Afghan
Waziri
Lahnda
Panjabi ST
Marathi
Gujarati
Hindi
Bengali
Nepali List
Khaskura
Baluchi
Albanian G
Albanian T
Albanian Top
Albanian K
Albanian C
Romani
Singhalese
Kashmiri
Byelorussian
Ukrainian
Polish
Russian
Slovak
Czech
Czech E
Lusatian L
Lusatian U
Bulgarian
Macedonian
Serbocroatian
Slovenian
Greek Mod
Greek MD
Greek ML
Greek D
Greek K
Latvian
Lithuanian O
Lithuanian ST
Armenian List
Armenian Mod
Tocharian B
Tocharian A
Hittite
Irish A
Irish B
Breton List
Breton ST
Breton SE
Welsh C
Welsh N
Swedish Up
Swedish VL
Swedish List
Danish
Faroese
Icelandic ST
Riksmal
Flemish
Dutch List
Afrikaans
Frisian
Sranan
English ST
German ST
Penn Dutch
Sardinian L
Sardinian N
Sardinian C
Italian
Provencal
Walloon
French
French Creole C
French Creole D
Catalan
Romanian List
Ladin
Spanish
Brazilian
Portuguese ST
Vlach
0.1 substitutions/site

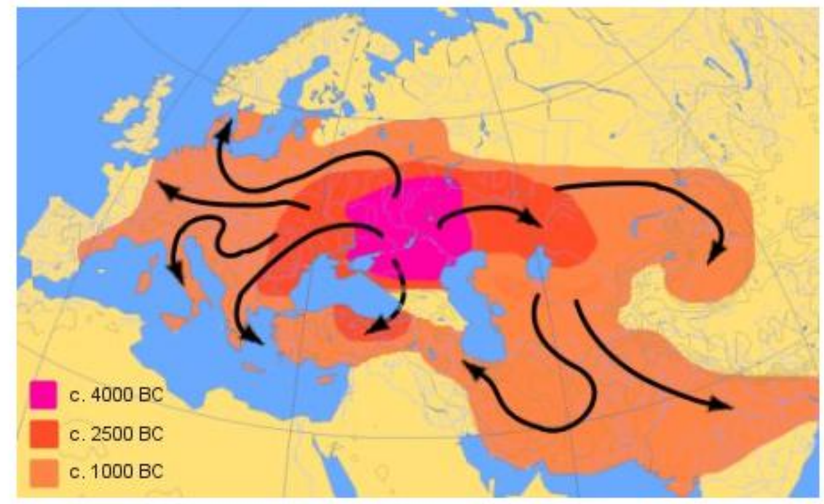

Singhales
Bengali
PanjabiST
NepaliLst
Kashmiri
Lahnda
Hindi
Gujarati
Khaskura
Ossetic
Tadzik
PersianLt
Afghan
Baluchi
Waziri
Marathi
Wakhi
Albanian K
GypsyGK
Albanian C
Albanian Tp
Lithuanian O
Albanian T
Lithuanian ST
ALBANIAN
Latvian
Albanian G
Greek K
Greek D
Greek ML
Greek MD
Greek Med
Ukrainian
BYELORUSSIAN
Polish
UKRAINIAP
Bielorussion
RUSSIAN P
Russian
Armenian Mod
Armenian Lst
POLISHP
SLOVAKP
CZECHP
Lusatian L
Lusatian U
Slovak
Czech
Czech E
SLOVENIAN P
SERBOCROATION
Serbecrecation
MACEDONIAN
Macedenian
BULGARIAP
Bulgarian
Slovenian
Irish A
Irish B
WelshC
WelshN
Vlach
BretonLst
BretonST
BretonSE
RumaniaLT
Sardinian N
Sardinian N
Sardinian C
IcelandST
Farcese
SwedishVL
SwedishUP
SwedishLt
Danish
Riksmal
PennDutch
GermanST
DutchList
Afnkaans
Flemish
Frisian
English
Sranan
Catatan
Brazilian
Pertuguese
Spanish
Italin
Ladin
Wallon
French
Provencal
French Creole
French Creole D



Language families of the world
The twelve language families represented in this diagram include most of the languages spoken in the world today.
The large Indi-European family is divided into nine subgroups. The population figures are estimates of the total number of persons speaking languages included in the various families.


a
Celtic
Italic*
French/Iberian
Italic
West Germanic
North Germanic
Germanic
Baltic
Slavic
Balto-Slavic
Indic
Iranian
Indo-Iranian
Albanian
Greek
Armenian
Tocharian
Anatolian
0.01 changes
Irish A
Irish B
Welsh N
Welsh C
Breton List
Breton SE
Breton ST
Romanian List
Vlach
Ladin
Provencal
French
Walloon
French Creole C
French Creole D
Spanish
Portuguese ST
Brazilian
Catalan
Italian
Sardinian N
Sardinian C
Sardinian L
German ST
Penn Dutch
Dutch List
Afrikaans
Flemish
Frisian
English ST
Sranan
Swedish Up
Swedish VL
Swedish List
Riksmal
Icelandic ST
Faroese
Danish
Lithuanian O
Lithuanian ST
Latvian
Slovenian
Macedonian
Bulgarian
Serbocroatian
Lusatian L
Lusatian U
Czech
Czech E
Slovak
Ukrainian
Byelorussian
Russian
Polish
Romani
Singhalese
Marathi
Gujarati
Panjabi ST
Lahnda
Hindi
Bengali
Nepali List
Khaskura
Kashmiri
Ossetic
Wakhi
Persian List
Tadzik
Baluchi
Afghan
Waziri
Albanian T
Albanian G
Albanian Top
Albanian K
Albanian C
Greek ML
Greek MD
Greek Mod
Greek D
Greek K
Armenian Mod
Armenian List
Tocharian A
Tocharian B
Hittite
2,900
6,100
1,700
5,500
6,500
1,750
3,400
1,300
6,900
2,900
4,600
2,500
600
7,300
7,900
800
8,700
1,700
b
c
d
e
CLT
ITL
GRM
BA-SL
IN-IR
ALB
ARM
GRK
TCH
ANT
Frequency
Age in millennia BP





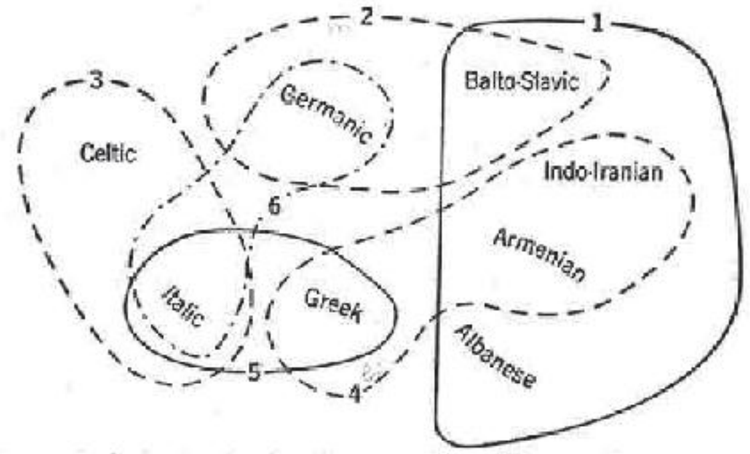
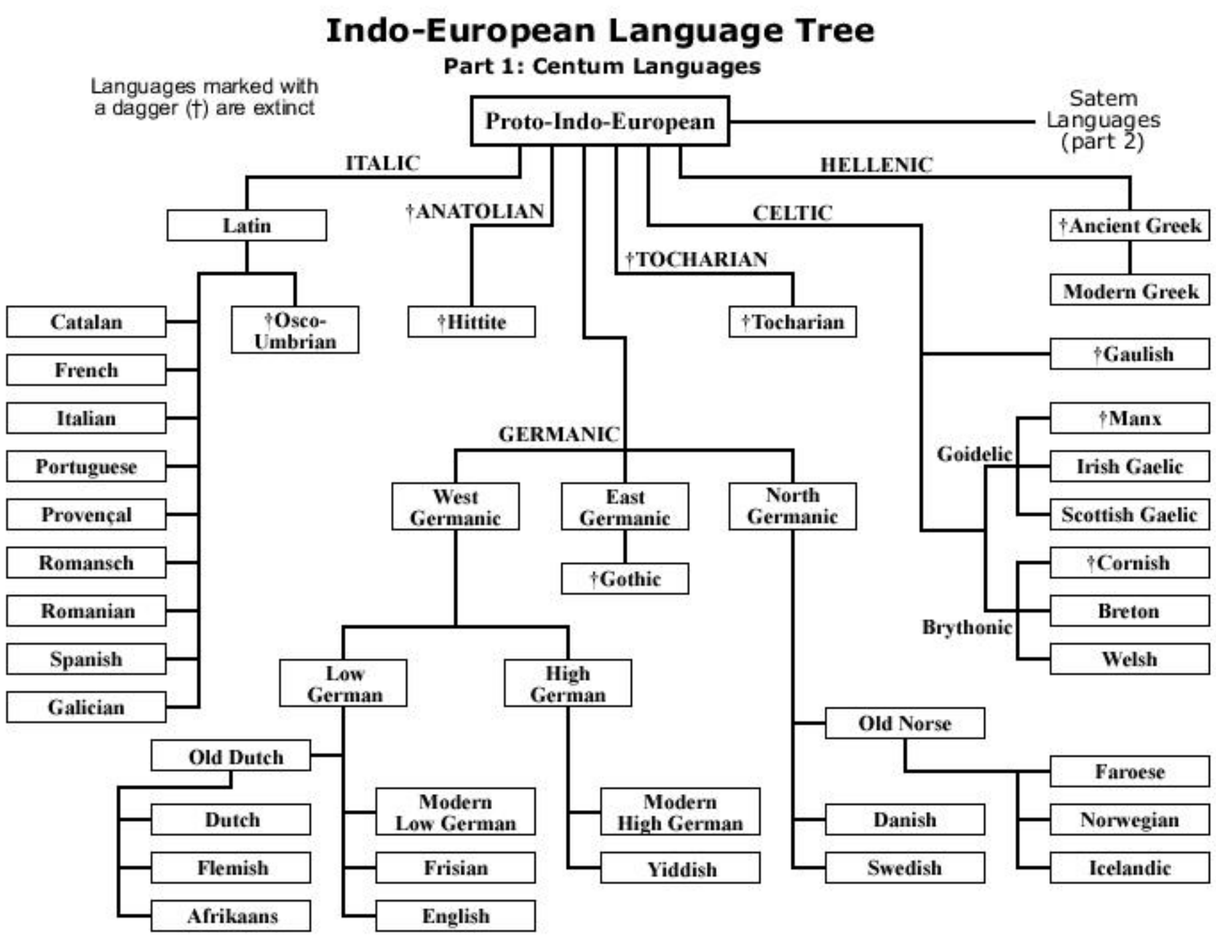
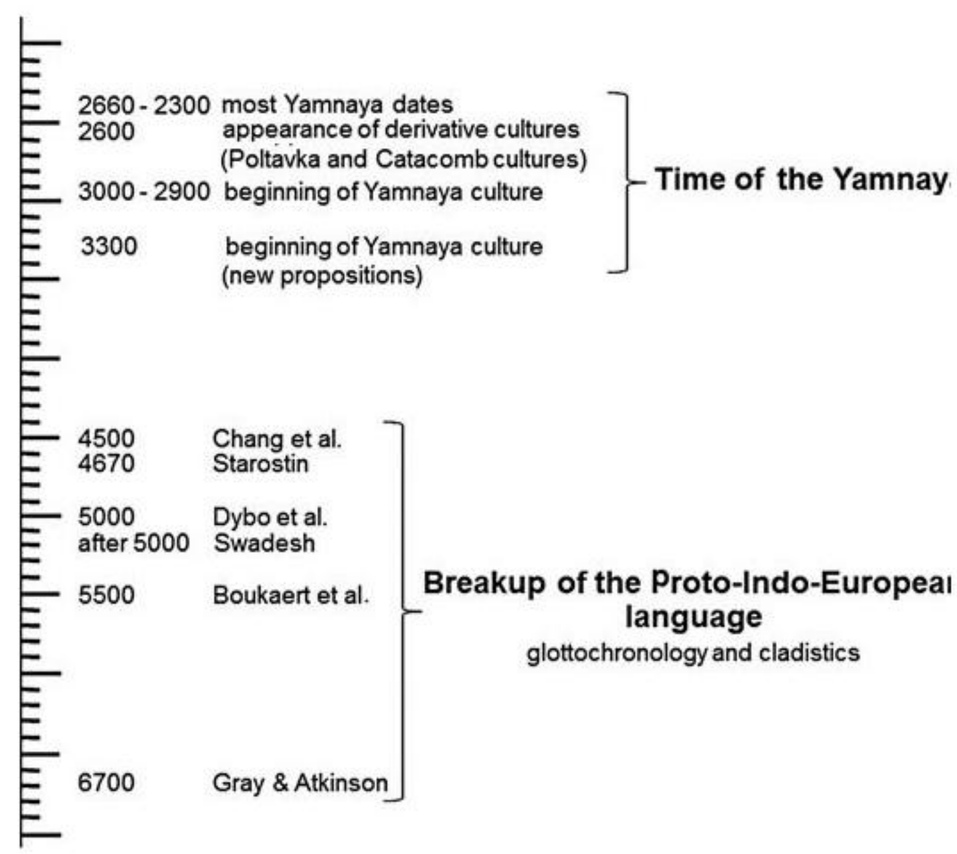
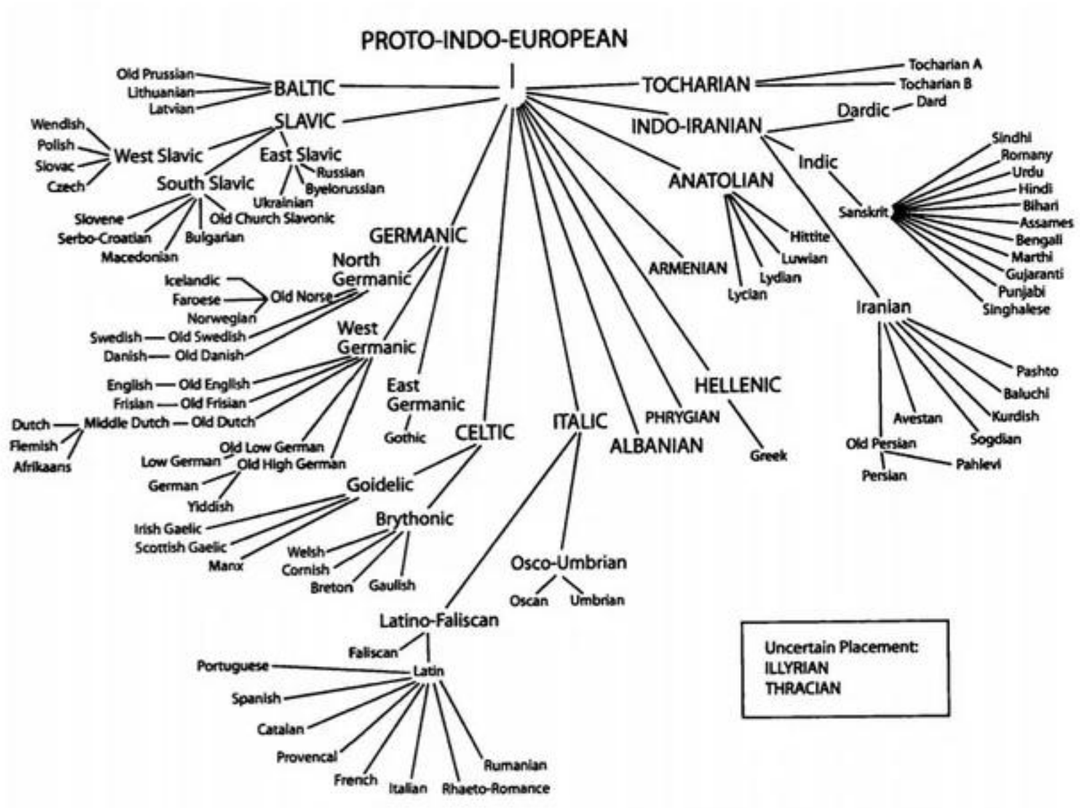


FIGURE 3. Some overlapping features of special resemblance among the Indo-European languages, conflicting with the family-tree diagram. — Adapted from Schrader.

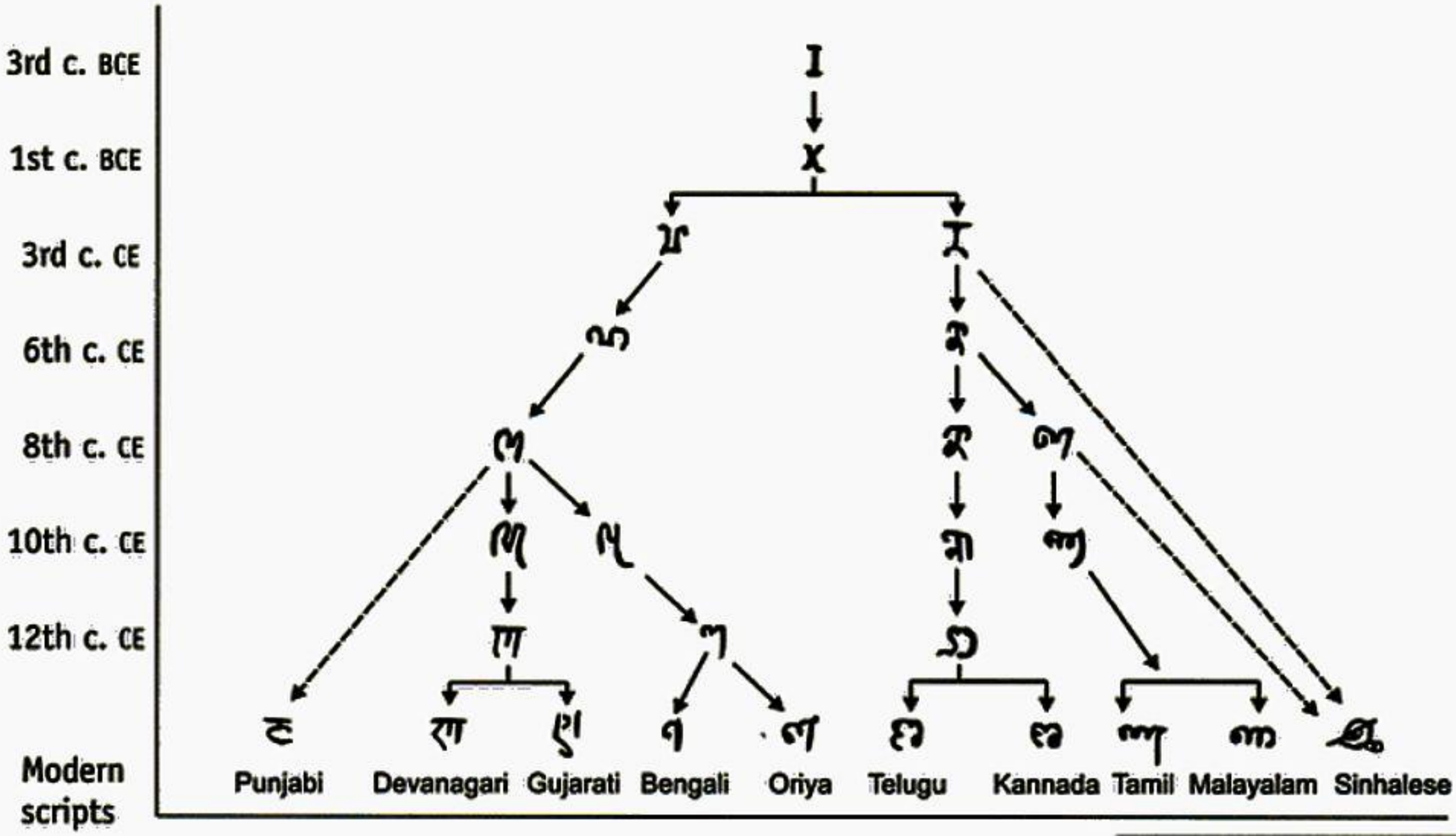
1. Sibilants for velars in certain forms.
2. Case-endings with [m] for [bh].
3. Passive-voice endings with [r].
4. Prefix ['e-] in past tenses.
5. Feminine nouns with masculine suffixes.
6. Perfect tense used as general past tense.

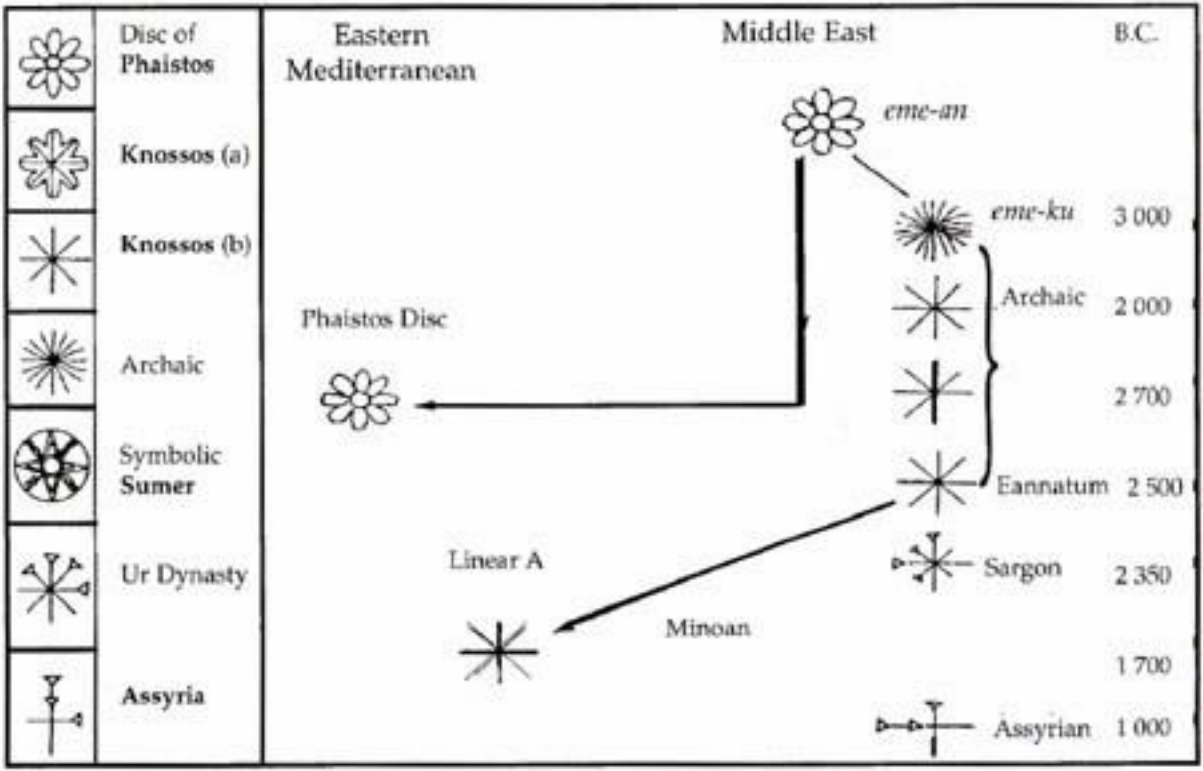


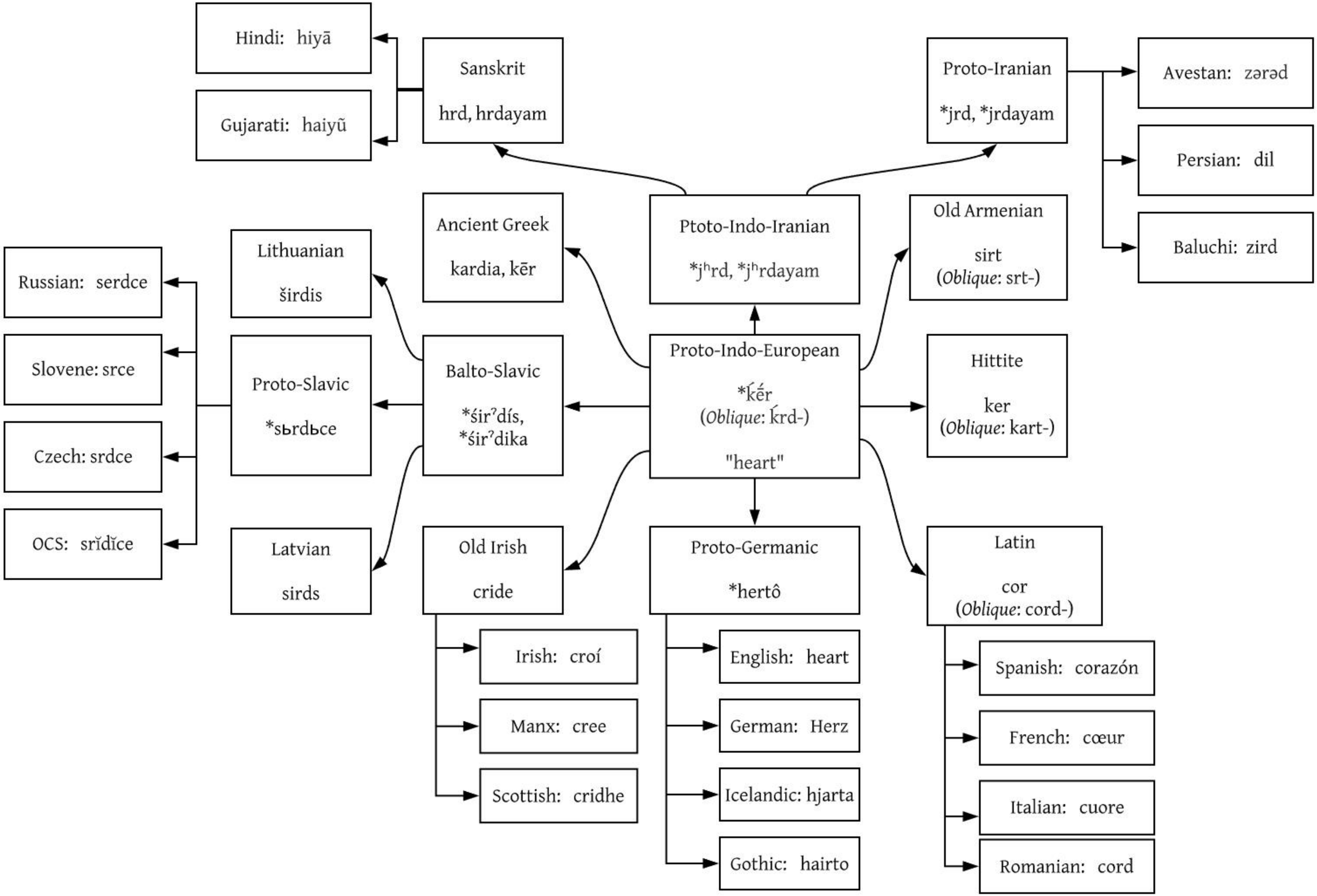




Development of the letter *ṇa* in Brahmi and its derivative scripts




Disc of Phaistos
Knossos (a)
Knossos (b)
Archaic
Symbolic Sumer
Ur Dynasty
Assyria
Eastern Mediterranean
Middle East
B.C.
eme-an
eme-ku
3 000
Archaic
2 000
2 700
Phaistos Disc
Eannatum
2 500
Linear A
Sargon
2 350
Minoan
1 700
Assyrian
1 000


Hindi: hiyā
Gujarati: haiyũ
Sanskrit
hrd, hrdayam
Proto-Iranian
*jrd, *jrdayam
Avestan: zərəd
Persian: dil
Baluchi: zird
Ancient Greek
kardia, kēr
Ptoto-Indo-Iranian
*jʰrd, *jʰrdayam
Old Armenian
sirt
(Oblique: srt-)
Lithuanian
širdis
Russian: serdce
Slovene: srce
Czech: srdce
OCS: srĭdĭce
Proto-Slavic
*sьrdьce
Balto-Slavic
*śirʔdís,
*śirʔdika
Proto-Indo-European
*ḱḗr
(Oblique: ḱrd-)
"heart"
Hittite
ker
(Oblique: kart-)
Latvian
sirds
Old Irish
cride
Proto-Germanic
*hertô
Latin
cor
(Oblique: cord-)
Irish: croí
Manx: cree
Scottish: cridhe
English: heart
German: Herz
Icelandic: hjarta
Gothic: hairto
Spanish: corazón
French: cœur
Italian: cuore
Romanian: cord

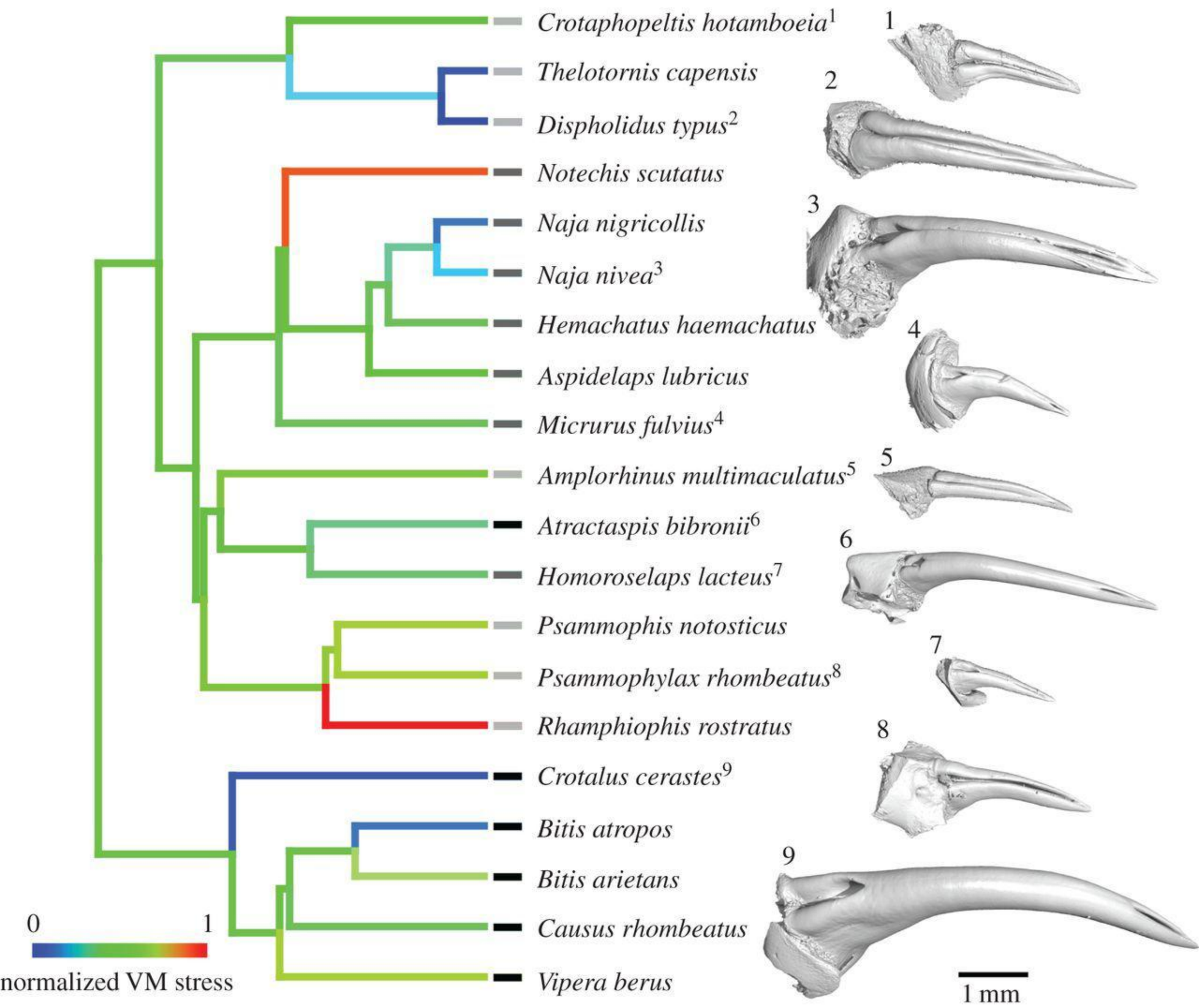
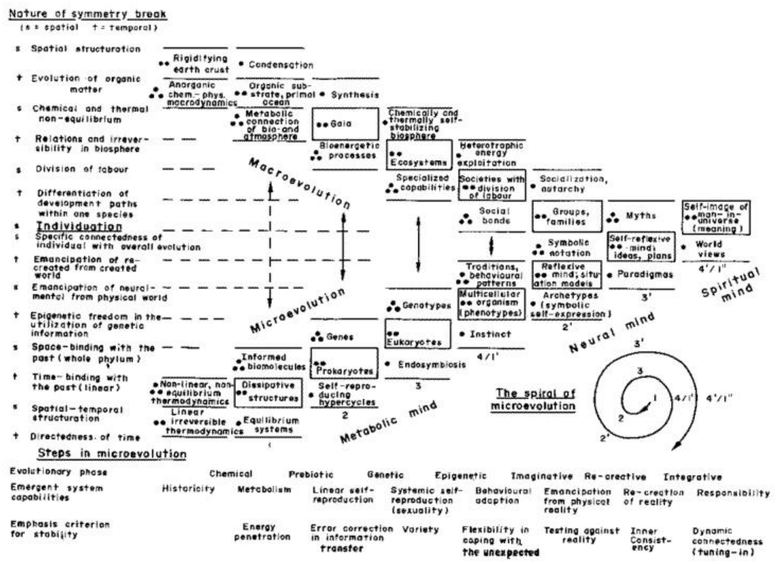
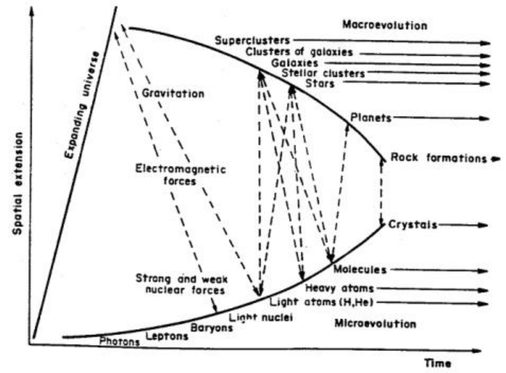
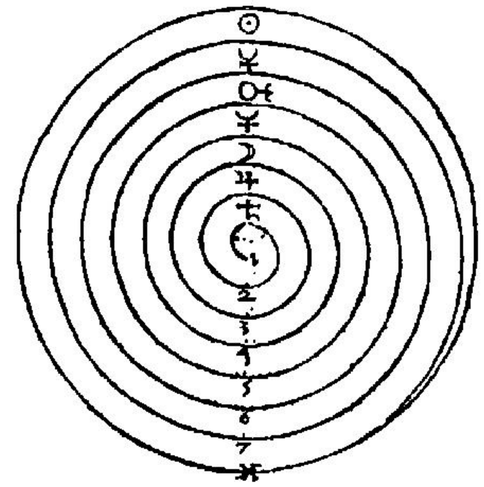
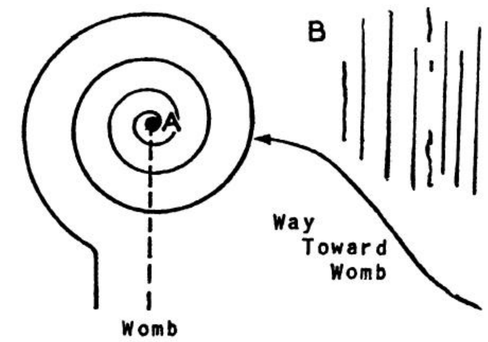

Crotaphopeltis hotamboeia[1]
Thelotornis capensis
Dispholidus typus[2]
Notechis scutatus
Naja nigricollis
Naja nivea[3]
Hemachatus haemachatus
Aspidelaps lubricus
Micrurus fulvius[4]
Amplorhinus multimaculatus[5]
Atractaspis bibronii[6]
Homoroselaps lacteus[7]
Psammophis notosticus
Psammophylax rhombeatus[8]
Rhamphiophis rostratus
Crotalus cerastes[9]
Bitis atropos
Bitis arietans
Causus rhombeatus
Vipera berus
1
2
3
4
5
6
7
8
9
0
1
normalized VM stress
1 mm

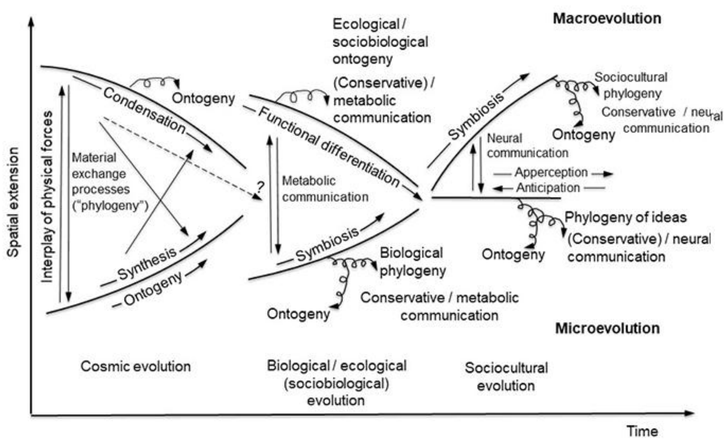
Fig. 144.

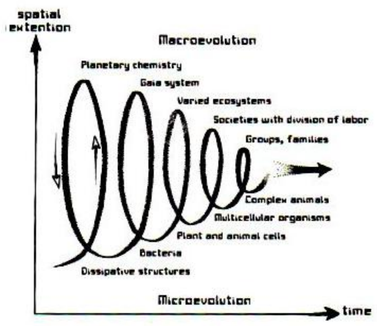


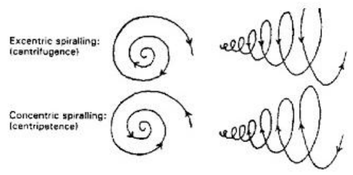






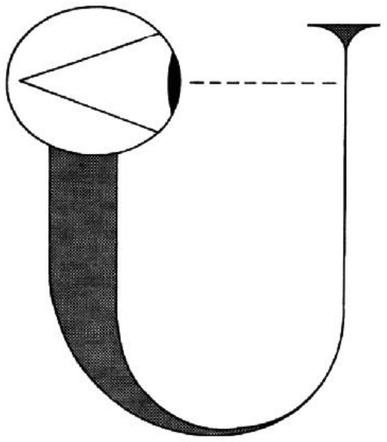


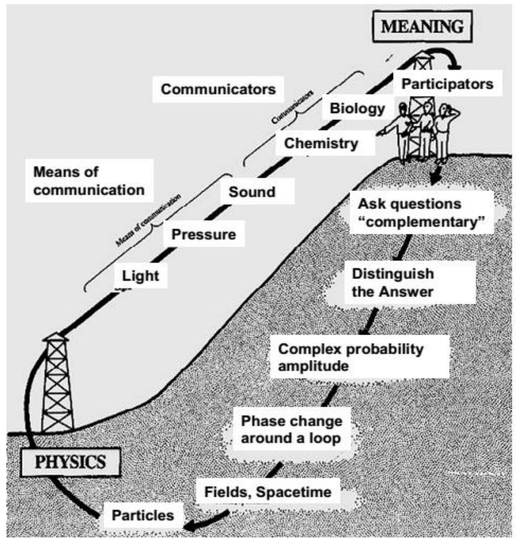


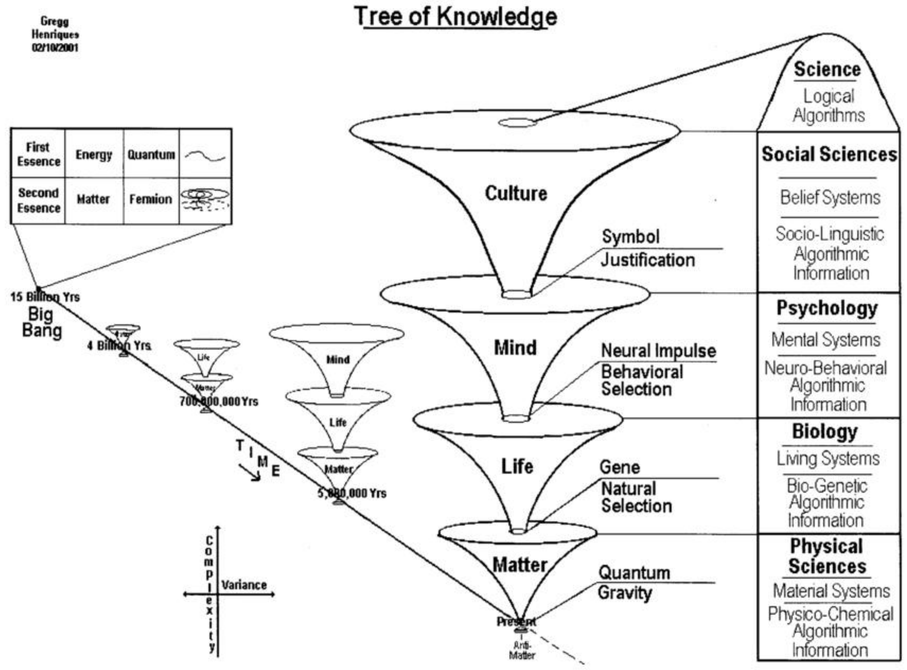


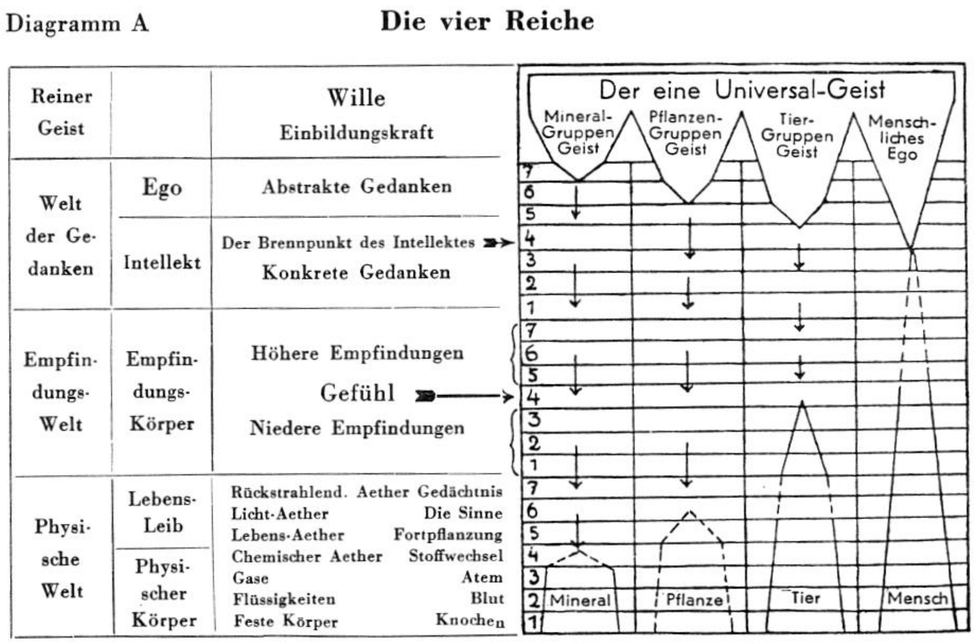
John Wheeler's Participatory Universe:

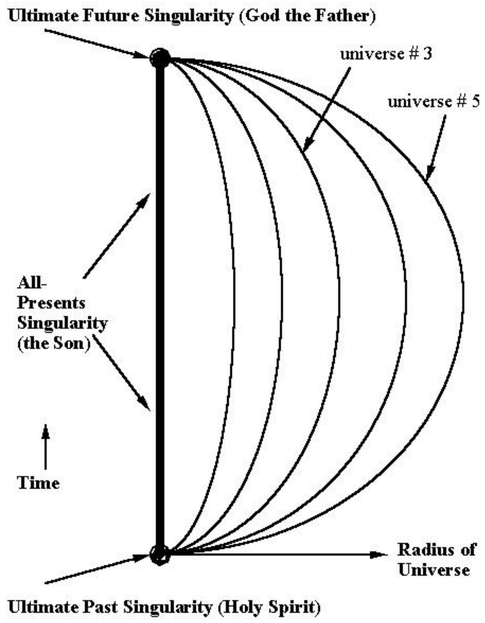
The world viewed as a self-synthesizing system of existences, operating as a closed loop

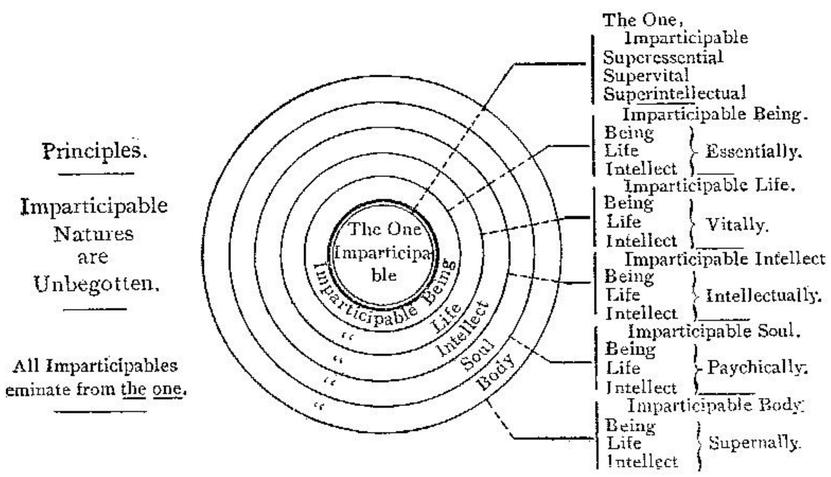


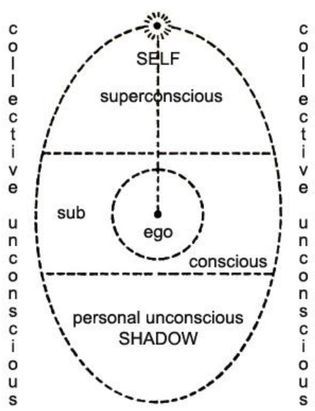


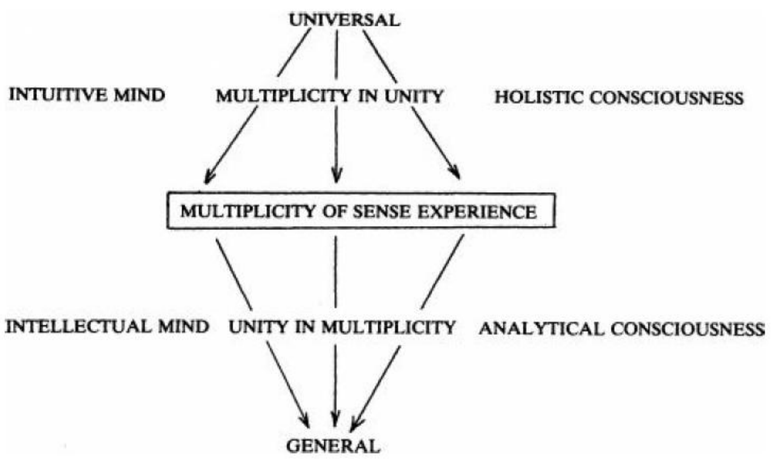


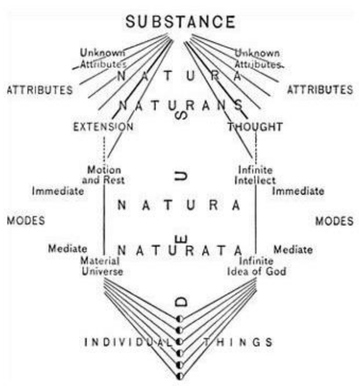




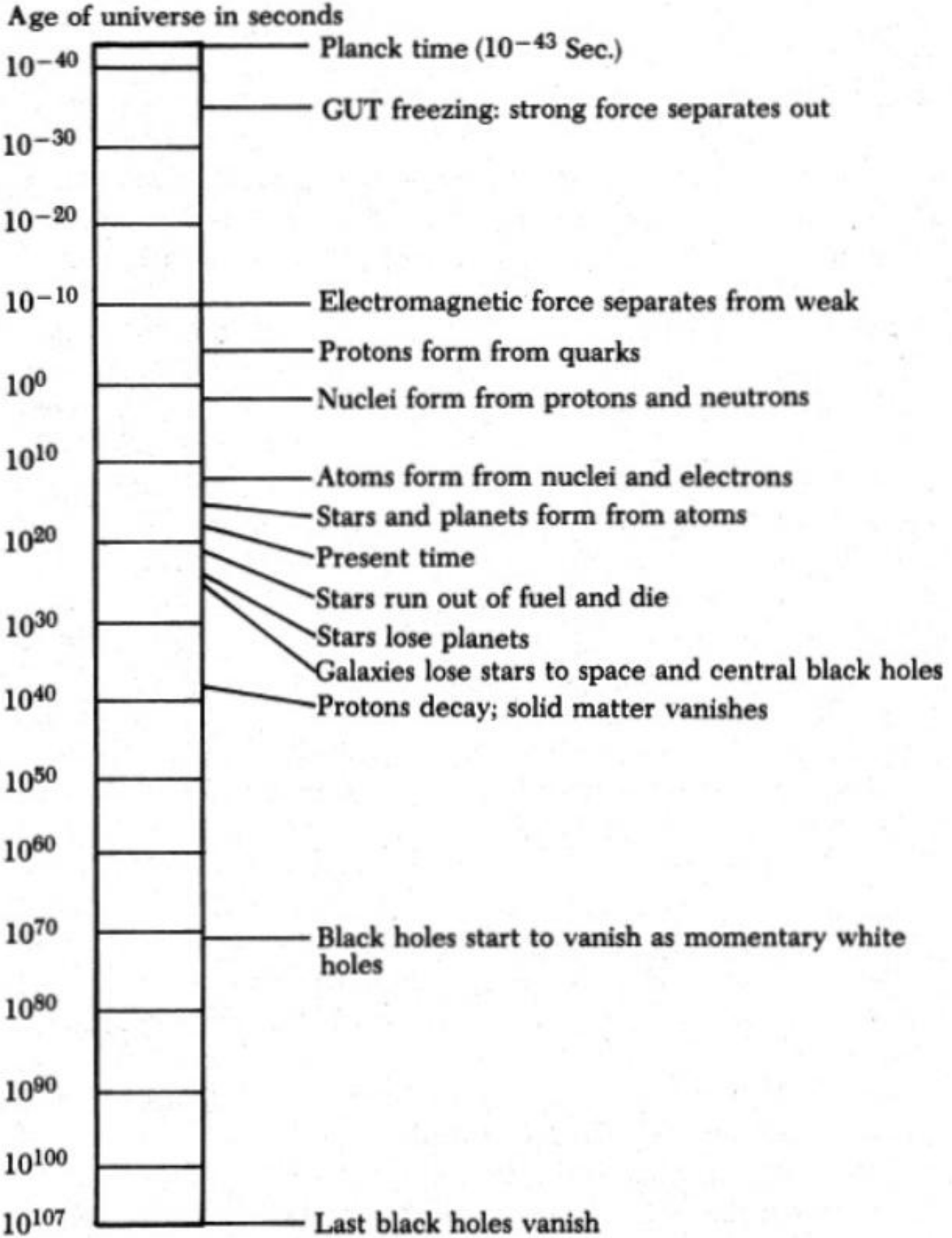


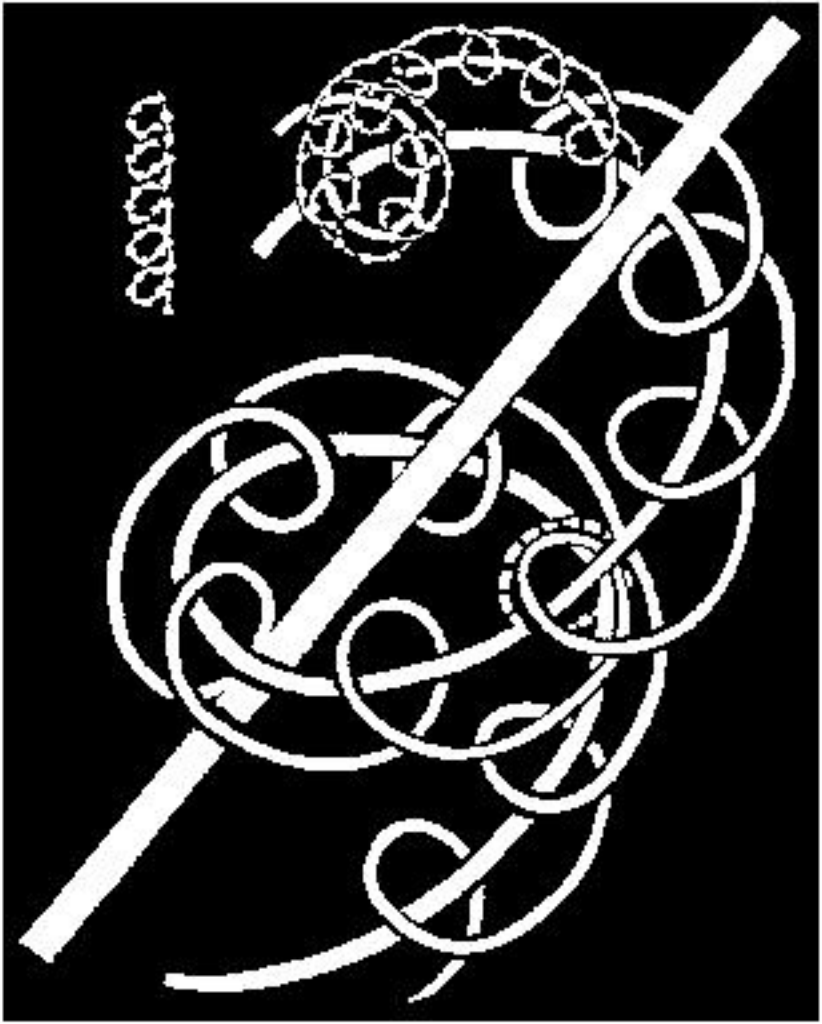






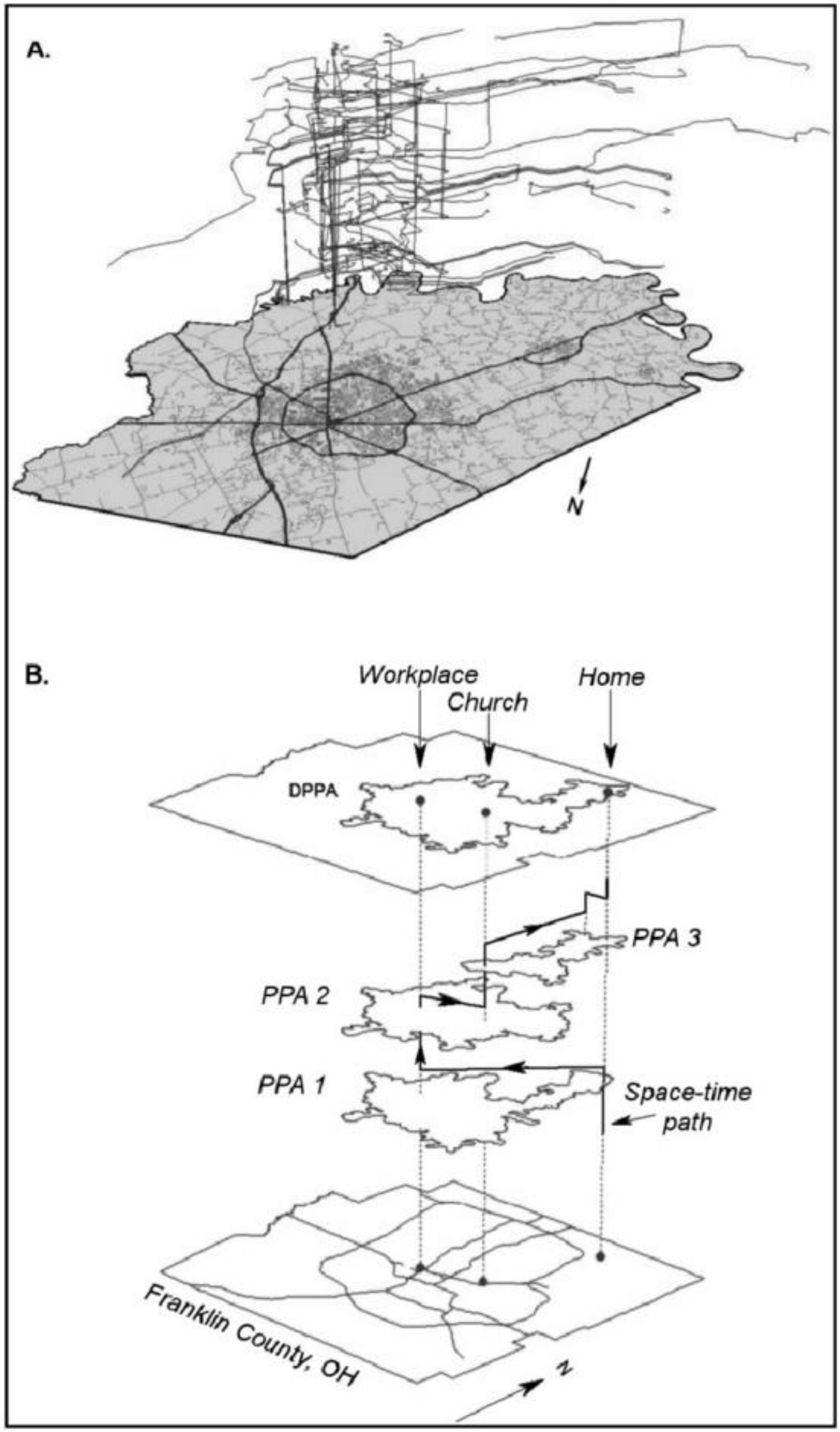
Cosmic Time Scale

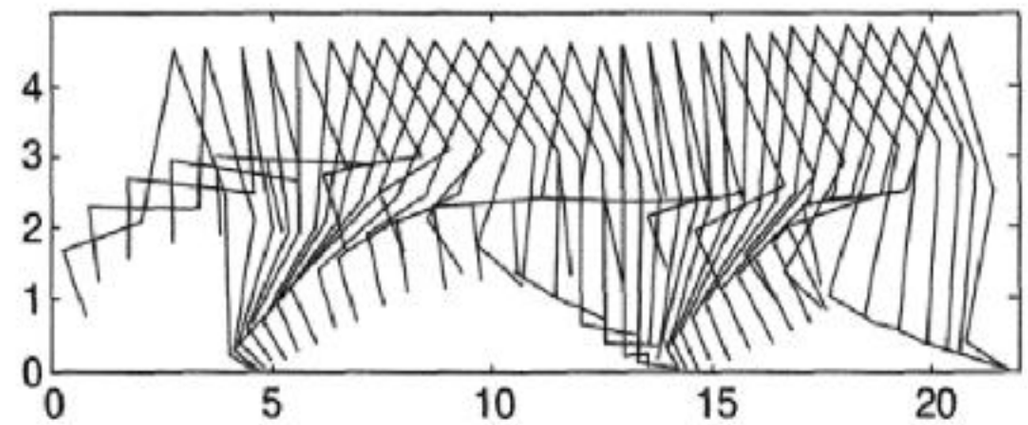


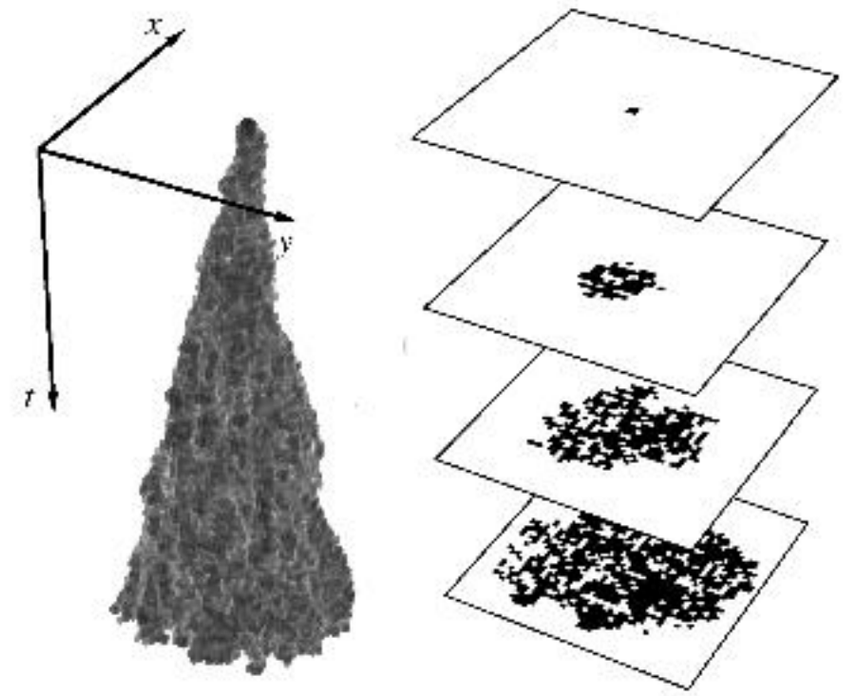


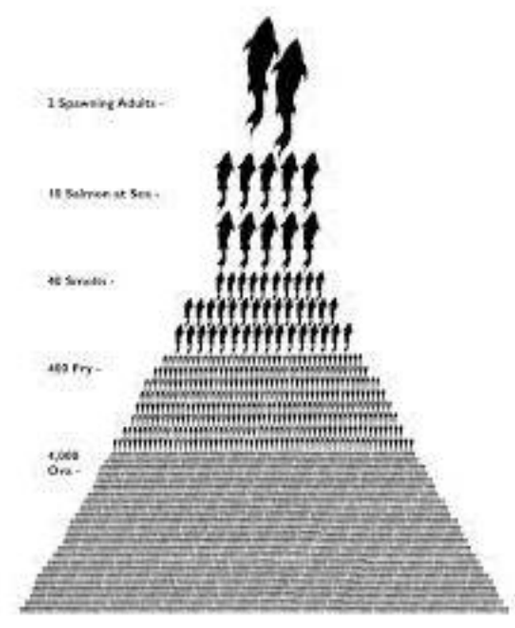
worldline

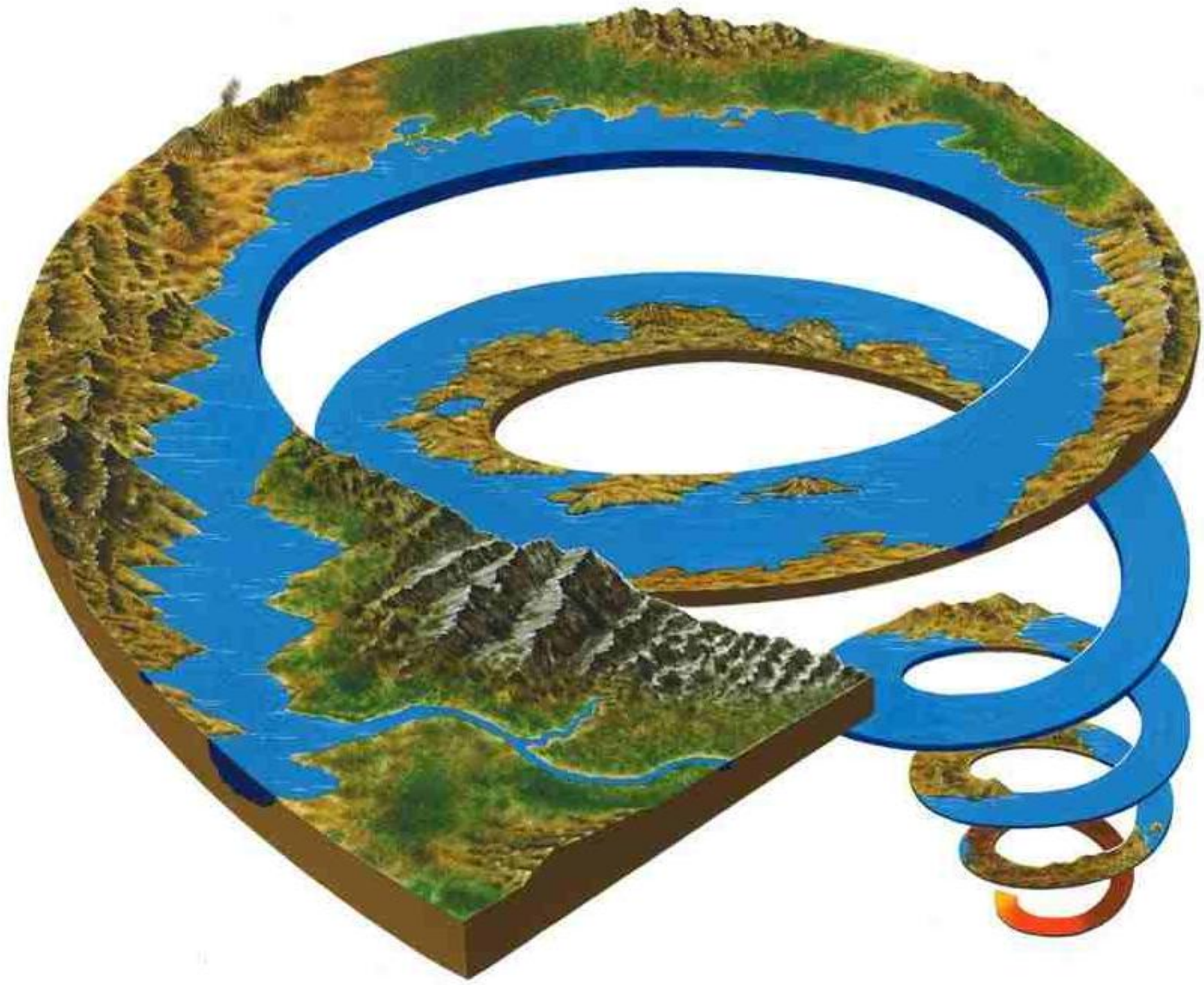
The path of an object through space-time.

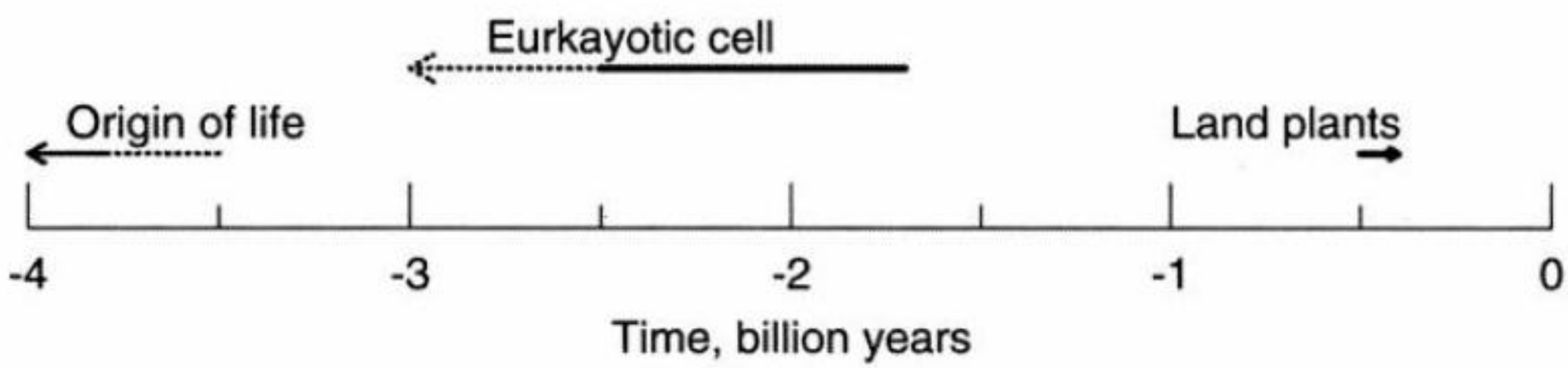

A.
N
B.
Workplace
Church
Home
DPPA
PPA 3
PPA 2
PPA 1
Space-time
path
Franklin County, OH
N


0
1
2
3
4
0
5
10
15
20


x
y
t



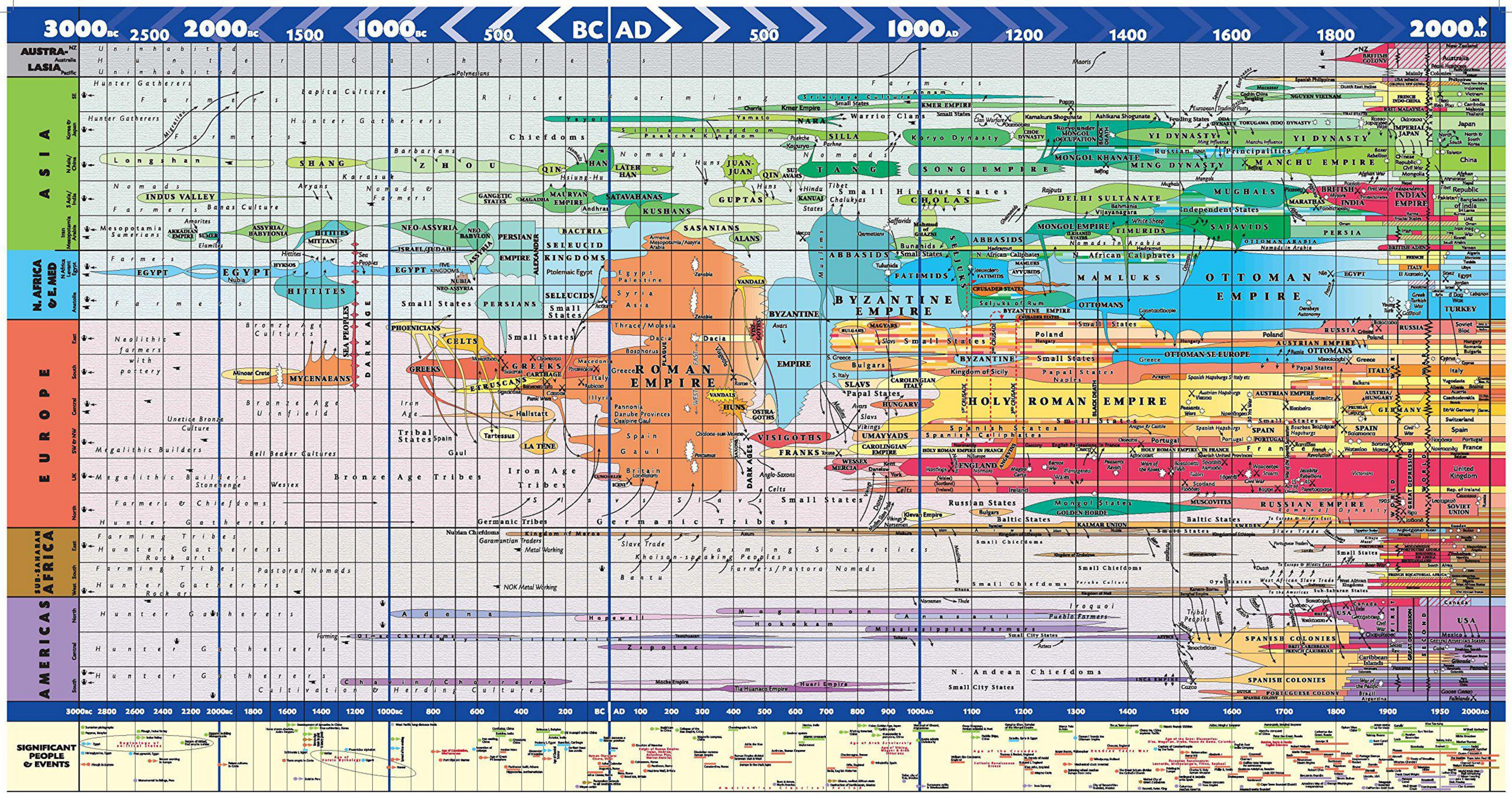



Eurkayotic cell
Origin of life
Land plants
-4
-3
-2
-1
0
Time, billion years

MATHEMATICIAN		PLACE	PERIOD	AREAS OF MATHEMATICAL WORKS	REMARKS
	VEDAS / VEDANGAS	BHARAT	OLDER THAN 10000BC	RIG VEDA YAJUR-VEDA (Satpatha Brahmana/Taittiriya Samhita) ATHARVA-VEDA VEDANGAS (Shiskha/Chandas/Kalpa/Jyotisha)	VEDAS are well preserved by *Shruti* and predate 10000 BC however mathematical Treatised based of them before 800 BC are Lost.
	BAUDHAYANA (INDIA)	BHARAT	800BC	PREDATED PYTHAGOREAN THEOREM, SULABH SUTRAS, SQUARE ROOTS, AREA OF TRIANGLE ,	TREATISE- Baudhāyana Sulbasūtra
	PINGALA (Attock, present PAKISTAN)	BHARAT	500BC	BINOMIAL NUMBERS AND WORKS PREDATED FIBNOCCI SERIES, PREDATES PASCALS TRIANGE	TREATISE-ChandraSastra
	PYTHAGORAS (Samos, GREECE)	GREEK	570-495BC	COPIED PYTHAGOREAN THEOREM AFTER VISIT TO INDIA TO LEARN MATHEMATICS	HE USED THE EXISTING INDIAN WORKS OF BAUDHAYAN & PINGALA
	EUCLID (Alexandria, EGYPT)	EGYPT	400-300BC	ELEMENTS BOOK ON GEOMETARY, PRIME NO, ARITHMETIC HEAVILY USED WORKS OF INDIAN MATHEMATICS	HE USED THE EXISTING INDIAN WORKS OF PINGALA/PANINI / BAUDHYANA
	VARAHAMIHIRA (Malwa, M.P.)	BHARAT	505-587AD	PLANETARY MOTION, ECLIPSES, SEASONS, ARCHITECTURE, TRIGONOMETRY, OPTICS, PERMUTATION/COMBINATION	TREATISE-Brihat-Samhita Pancha-Siddhantika
	ARYABHATA (Patna, BIHAR)	BHARAT	476-550AD	PLACE VALUE SYSTEM, ALGEBRA, HELIOCENTRISM, MENSURATION, ARITHMETIC, TRIGNOMETRY, SINE TABLES, CALCULUS, GEOMETRIC PROGRESSIONS, POWER SERIES, CONTINUOUS FRACTIONS, DAYS OF YEAR, AREA OF TRIANGLE, EARTH IS ROUND,QUADRATIC EQUATIONS, PLANETARY MOTION & PLANES, ECLIPSES	TREATISE- Aryabhatiya *- Gitikapada* *-Ganitapada* *-Kalakriyapada* *-Golapada*
	BRAHMAGUPTA (Jalore, RAJSTHAN)	BHARAT	598-668AD	MATHEMATICAL OPERATIONS WITH ZERO AND NEGATIVE NUMBERS, FRACTIONS, SUM OF FIRST N NATURAL NOS, GRAVITY, LINEAR EQUATIONS, LEMMA, PREDATES PELL'S EQUATION, TRIGNOMETRY, ALGEBRA,	TREATISE- Brāhmasphuṭasiddhānta Khaṇḍakhādyaka
	BHASKARA I (Parbhani, MAHARASHTRA)	BHARAT	600-680AD	POPULARIZED BRAHMI NUMERALS (MODERN DAY (0,1,2,9) SYMBOL FOR ZERO,PRIME NUMBER THEORY, DECIMAL SYSTEM, DEVELOPED WORKS OF ARYABHATTA ON TRIGNOMETRY, PI, AND EQUATIONS	TREATISE- Āryabhaṭīyabhāṣya Mahābhāskarīya Laghubhāskarīya
	AL-KHWARIZMI (Khwarazm, PERSIA), IRAN	MIDDLE-EAST	780-850AD	INDIAN NUMBER SYSTEM, ALGEBRA, ALGORITHM, TRIGNOMETRY, PLANETARY MOTIION	HE USED THE EXISTING INDIAN WORKS OF WORKS OF BRAHMGUPTA, ARYABHATTA, BHASKARA
	VIRASENA (KARNATAKA)	BHARAT	792-853AD	LOGARTIHMS, *PI* BETTER APROXIMATION, ELABORATED WORKS OF ARYABHATTA.	TREATISE- Dhavala Jayadhavalaa
	AL-BIRUNI (Kath, PERSIA) IRAN	MIDDLE-EAST	973-1050AD	BOOK- TARIKH AL-HIND (HISTORY OF INDIA)- ON PLANETARY MOTION & MATHEMATICS- TRANSLATING ARYABHATTA WORKS.	HE USED THE EXISTING INDIAN WORKS OF WORKS OF BRAHMGUPTA, ARYABHATTA, BHASKARA
	HEMACHANDRA (Ahmedabad, GUJRAT)	BHARAT	1087-1172AD	GRAMMAR & PREDATED FIBONACCI SEQUENCE	TREATISE-Chandonushasana
	BHASKARA II (Bijapur, KARNATAKA)	BHARAT	1114-1185AD	ALGEBRA, CALCULUS, ARITHMETIC, TRIGNOMETRY, QUADRATIC, CUBIC EQUATIONS, INFITNITESIMAL & INTEGRAL CALCULUS, DIFFERENTIAL CALCULUS, NUMBER THEORY	TREATISE- The Siddhanta-Shiromani *- Lilavati* *-Bijaganita* *-Grahaganita*
ROBERT OF CHESTER / ROBERT OF KETTON/GHERAD OF CREMONA and many other English Arab Men during 12th Century (1140-1150) translated many Middle East Arabic Works to LATIN (Dominant European Language). Including Indian Mathematics, Mettalurgy, Sciences Learnt by Middle East from India					
	FIBONACCI (Pisa, ITALY)	EUROPE	1170-1250AD	BOOK- MODUS INDORUM (METHODS OF INDIANS). INTRODUCED PLACE VALUE, FIBONACCI SERIES BASED ON INDIAN WORKS	HE USED THE EXISTING INDIAN WORKS OF HEMACHANDRA & PINGALA
	MADHAVA (Sangamagrama, Cochin, KERALA)	BHARAT	1340-1425AD	INFINITE SERIES, CALCULUS, TRIGONOMETRY, PLANETARY MOTION, GEOMETRY, AND ALGEBRA, VALUE OF PI 3.14159265359	TREATISE: Golavāda Madhyāmanayanaprakāra Veṇvāroha Sphuṭacandrāpti
	NILKANTHA (Tirur, KERALA)	BHARAT	1444-1544AD	HELIOCENTRIC MODEL, PLANTERY MOTIONS, TRIGNOMETRY, ALGEBRA, SPHERICAL GEOMETRY,	TREATISE: Tantrasamgraha Golasara Candrachayaganita Aryabhatiya-bhashya
	COPERNICUS (Torun, POLAND)	EUROPE	1473-1543AD	HELIOCENTRISM, PLANETARY MOTIONS	HE USED THE EXISTING INDIAN WORKS OF BRAHMGUPTA, ARYABHATA, BHASKARA2, VIRASENA, MADHAVA, NILKANTHA
	JOHN NAPIER (Edinburg, UK)	EUROPE	1550-1617AD	LOGARITHMS	HE USED THE EXISTING INDIAN WORKS OF VIRASENA
	GALILEO (Pisa, ITALY)	EUROPE	1564-1642AD	HELIOCENTRISM, PLANETARY MOTIONS	HE USED THE EXISTING INDIAN WORKS OF BRAHMGUPTA, ARYABHATA, BHASKARA2, VIRASENA, MADHAVA, NILKANTHA
	DESCARTEZ (Descartez, FRANCE)	EUROPE	1596-1650AD	ALGEBRA, GEOMETRY, EQUATIONS	HE USED THE EXISTING INDIAN WORKS OF BRAHMGUPTA, ARYABHATA, BHASKARA2, VIRASENA, MADHAVA, NILKANTHA
	ISSAC NEWTON (Lincolnshire, UK)	EUROPE	1643-1727AD	CALCULUS, LAWS OF MOTION, PLANETARY MOTION, OPTICS (APPLE FALL FOR GRAVITY IS A FABLE. INDIA ALREADY KNEW IT AS गुरुत्वाकर्षण)- *Refer BhramGupta*	HE USED THE EXISTING INDIAN WORKS OF BRAHMGUPTA, ARYABHATA, BHASKARA2, MADHAVA, NILKANTHA
	LEIBNIZ (Leipzig, GERMANY)	EUROPE	1646-1716AD	GEOMETRY, CALCULUS, NOTATIONS IN CALCULUS, LIMITS, INTEGRALS, PERMUTATIONS COMBINATIONS	HE USED THE EXISTING INDIAN WORKS OF BRAHMGUPTA, ARYABHATA, BHASKARA2,MADHAVA, NILKANTHA
	EULER (Basel, SWITZERLAND)	EUROPE	1707-1783AD	EXPONENTIAL, NOTATIONS, LOGARITHMIC FUNCTIONS, NUMBER THEORY, GEOMETRY	HE USED THE EXISTING INDIAN WORKS OF BRAHMGUPTA, ARYABHATA, BHASKARA2, VIRASENA, MADHAVA, NILKANTHA

Palma de Mallorca
Shinto 128
I Ching 64
Ilm Al Raml 16
Rig Veda 240
IFA 256

PERSIA
AFGHANISTAN
EGYPT
ARABIA
INDIA



World History Timeline

Simple hunter gatherer, farming or nomadic societies without developed political structure

Migration or invasion

Civil war or insurrection

Internal strife

Conquest or battle

Attack and counter attack across territorial border

Long distance movement across non-contiguous regions

Metal working commences

Pottery commences

Pan-continental event (named)

Pan-continental event - conflict area

It is impossible to show everything that has happened in world history on a small poster. The main part of this Chart shows the rise and fall of the great empires and nations through history. It is arranged according to continents, and where possible continents that are next to each other on the globe are next to each other on the chart. It shows how people moved out of their homelands to conquer new territories, sometimes far from home. Each continent is shown in a limited colour range, for example Europe is red-orange-yellow. You can easily see where a European state took control of a country outside Europe, because its colour remains "European" even though it is outside Europe. The length of the colour shows the length of time the empire lasted and the width shows how extensive was the territory they controlled.

Aggressive states were not present everywhere at all times. In many parts of the world people lived in small groups without the need to make big conquests. While the conquering nations are shown with bold colours, the peaceful people are shown in lighter colours. You will see that some of them existed for many hundreds of years.

The further we go back in time, the less we know about what happened. That is partly because until writing was invented between 5000 and 4000 years ago (or much later in some areas), nobody was able to record events. This is the period we call "prehistory", where archaeology (digging up actual remains) is the main source of our knowledge. There were probably just as many interesting events and people then, but the chart has more empty spaces, because information about them is lost.

For this reason, the space allowed for each century gets smaller as we go back in time. Also, the space allowed for each continent is not proportional to its actual size - more space is given where most of the recorded history took place. Can you imagine what the Chart would look like if we allowed exactly the same space for each century and allowed space for each continent according to its actual area?

Below the main chart is a Timeline of important events and personalities in the past. These people and events have all had some influence on our world today - even though many of them are far distant in time. They include kings and queens, politicians, religious and cultural leaders and inventors.

Here you can also find some of the different "Ages" that you learn about in history. The colours show which continent the event or person belongs to, as used on the main chart. The dots indicate that something happened at a single point in time, and the bars show the active lifetime of a person or the time span of an event. You can find out more about these people and events by looking in an encyclopaedia or on the Internet.

Schofield&Sims

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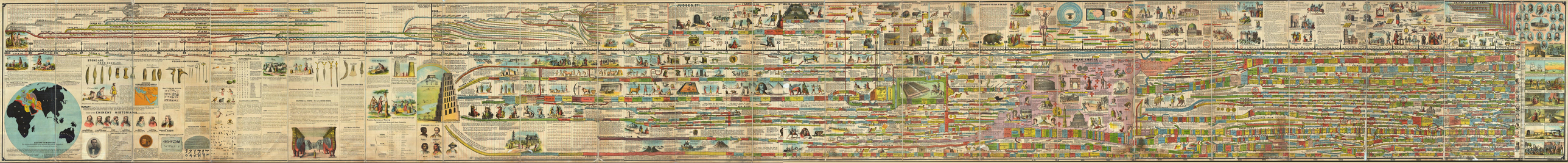
www.schofieldandsims.co.uk


JUDGES 371
STONEHENGE
EMINENT HISTORIANS
ROMAN EMPIRE
ATLANTIS

CAUSE OF THE RISE AND FALL OF CIVILIZATIONS

CYCLE OF IMMATURITY

HINDUISM

ADAM 9000-8000 BC · ENOCH 2968 BC · NOAH 2500 BC · HUD · SALEH · MELCHIZEDEK 2300 BC · ABRAHAM 2200 BC · QUARALLAH

SEED IDEA — ABR. OF SALVATION — FAITH — ONE GOD

IMMORTALITY
KNOWLEDGE OF GOD AND EVIL

KRISHNA 1500 BC — BHAGAVAD-GITA — DETACHMENT

(SIZE OF CANDLE = EXTENT OF INFLUENCE ON CIVILIZATION)

ADAM, EVE, CAIN, ABEL, SETH, TREE OF GOOD AND EVIL, GARDEN OF EDEN, MAN IS GROSSLY SELFISH, EVIL, CORRUPT.

SPIRITUAL — AWE OF THE UNKNOWN, WORSHIP OF ANIMALS, HUMAN SACRIFICE.

MELCHIZEDEK, THE ANCIENT OF DAY 2300 BC. ABRAHAM BLESSED BY GOD. BANISHMENT, KATURAH & SONS: ISAAC, JACOB, 12 SONS, 1 DAUGHTER, 70 TRIBES OF ISRAEL.

PANTHEISTIC RELIGIOUS BELIEFS. WORSHIPED BAAL, ASTARTE, ETC.

NEW IDEAS OF CREATION, DELUGE.

MELCHIZEDEK AND ABRAHAM TAUGHT WORSHIP ONE GOD. FAITH

SLOW DEVELOPMENT OF LANGUAGE. USE OF STONE TOOLS.

TOWER OF BABEL (GATE TO GOD) GREAT CONFUSION.

INTELLECTUAL — HIEROGLYPHICS, CUNEIFORM, BEGINNING OF ALPHABET, AND WRITTEN LANGUAGE.

MORAL — LOW MORALITY.

POLYNESIAN ORIGINS. CHINESE CIVILIZATION. SUMERIAN, EGYPTIAN HISTORY.

HISTORICAL — NOAH FLOOD, MT. ARARAT. SLAVONIC, SANSKRIT, GERMAN.

TRADITIONAL PERIOD. TRIBAL LIFE TO EARLY COMMUNITY LIFE. CLAY VILLAGES.

SEMITIC — HEBREW, PHOENICIAN, ARAMAIC, ARABIC, ASSYRIAN, ETHIOPIAN.

TURANIAN — MONGOLIAN, TURKISH, MONGOL.

ASSYRIAN EMPIRE RISE TO POWER. FOUNDATION OF HEBRAIC MONARCHY.

POLITICAL — RISE OF BABYLONIAN EMPIRE. SUMARIAN CIVILIZATION. BEGINS.

EXPANSION OF BABYLONIAN EMPIRE. CANAANITES. ASSYRIANS. SLAVERY. HEARTLESS.

KING HAMMURABI 2100 BC.

PROGRESS — MAN EVOLVES FROM A PSYCHIC TO A MATERIAL CONDITION.

PROGRESS IN BUILDING. INCREASING EMPIRES AND MONARCHIES.

JUDAISM

MOSES — TORAH — 1300 BC — JUSTICE

LORD KRISHNA THE ONE GOD 1700 BC. PRINCE ARJUNA REFLECTING HIS LIGHT. BHAGAVAD-GITA, MESSAGE OF THE MASTER — FORETOLD ONE TO COME.

POLYTHEISM PREVALENT. IDOLATRY GROWS GREATER. HINDUISM, BRAHMISM, JAINISM, BORN IN INDIA.

OCCULTISM BEGINS. CASTE SYSTEM PREVAILS. GREAT IGNORANCE.

DEGRADED WOMANHOOD. CEREMONIAL MAGIC. EARLY SUPERSTITION, POVERTY.

HIGHER STONE TEMPLES. BEGINNERS OF ARCHITECTURE. CRUDE ART AND MUSICAL INSTRUMENTS. HINDU ART AND LITERATURE AT PEAK 300-400 BC.

NEW CONSTITUTION PERMITS CASTE SYSTEM PROVIDES FOR EDUCATION OF THE "UNTOUCHABLES" LIN 1900

EARLY - LITTLE PROGRESS. LATER - PROGRESS IN ARTS AND CRAFTS. ISLAM WAS INTRODUCED IN INDIA IN 712 AD

SLOWLY TO RAISE LEVEL OF MORALITY. AMENHOTEP ABUNKEYEN 1400-1375 B.C. KING OF EGYPT. KRISHNA TAUGHT HIGHER STANDARDS.

EARLY - LOW MORALS, POVERTY, DISEASE. KRISHNA TAUGHT HIGHER STANDARDS.

MOSES' INTERLOCUTOR WITH GOD 1571.

EMPHASIS ON JEHOVAH THE ETERNAL. TEN COMMANDMENTS. GOLDEN RULE.

AN ETHICAL MONOTHEISM. MT. SINAI.

GOD SPOKE TO MOSES IN BURNING BUSH.

IMMORTALITY OF THE SOUL. NO SACRAMENTS. ORTHODOX REFORM CONSERVATIVE DIVISIONS OF JUDAISM.

TRADE SPREADS IDEAS AND CULTURES.

500 ADDED LAWS PUNISHED BY DEATH, AT TIME OF CHRIST. FIVE POINTED STEEPLE.

INTELLECTUAL PROGRESS IDOLATRY PREVALENT. FORETOLD ONE TO COME.

PYTHAGORAS 569-500 BC. MADE GREAT BASIC MATHEMATICAL DISCOVERIES, FOUNDER OF RELIGIOUS BROTHERHOOD. ELIGIBLE BY BAHAULLAH.

TEN PLAGUES IN EGYPT - 1491 B.C.

THE EXODUS. ISRAELITES DELIVERED FROM BONDAGE 1491, 1896, 1948.

INFLUENCE OF DAVID AND SOLOMON. 1000 BC. GLORY OF JERUSALEM AND TEMPLE.

TEN TRIBES TAKEN INTO CAPTIVITY BY ASSYRIA IN 722 B.C.

BUILDING OF CARTHAGE 800 B.C.

ROME BUILT 753 B.C. BY THE TWINS.

SAUL FIRST KING OF ISRAEL 1040 B.C.

ISRAEL PROMISED TO BE PRESERVED AS A NATION.

MOSAIC CODE BUILDING JUSTICE.

DEVELOPMENT OF ARCH 4000 B.C. PROGRESS IN GOVERNMENT, JUSTICE AND CAPACITY TO LEARN. LETTER OF THE LAW USURPS SPIRITUAL VALUES.

ZOROASTRIANISM

ZOROASTER 1000 BC — ZEND AVESTA

PURITY OF MIND

ZOROASTER THE PURE ONE 800 BC. THE GREAT ZARATHUSTRA.

MITHRAISM: GERIBERS PARSEES. IDOLATRY CONTINUES. SYMBOL OF FIRE. FORETOLD THE ONE TO COME.

PERSIAN CULTURE ROSE HIGH AFTER ZORDASTER.

SPREAD OF HEBREW AND GREEK CULTURES.

PROPHECIES OF DANIEL CLOSED UNTIL THE TIME OF THE END.

GREAT LIBRARY OF NINEVEH BUILT 760 BC. LOOTED BURNED 612 BC. BY THE MEDES CUNEIFORM.

STRICT ETHICAL DUALISM: STRUGGLE BETWEEN THE GOOD SPIRIT AHURA-MAZDA AND EVIL SPIRIT ANGRA-MAINYA.

CONFUCIUS 551-479 BC. GREAT CHINESE PHILOSOPHER. STRESSED KNOWLEDGE MYSTICAL ELEMENTS FROM HIGHER SOURCES AND OPPOSED SUPERSTITIONS. LAO TSE, SOCRATES, PLATO, ARISTOTLE COMMENDED BY BAHAULLAH FOR THEIR STEPS OF PROGRESS. HIGHER IDEALS BEGAN OF SACRIFICE. ABOLISHED HUMAN SACRIFICE. TOLERANCE BEGAN.

BUDDHISM

BUDDHA 568-488 BC. GOTAMA. THE ENLIGHTENED ONE. EIGHT FOLD PATH. POWERFUL CASTE SYSTEM. INFLUENCE OF LAO TSE AND CONFUCIUS. MIXTURE OF RITUAL, PHILOSOPHY AND TRADITION. BELIEVE VIRGIN BIRTH. MYSTICAL ILLUMINATION, DEVIL, HEALING, KARMA, NIRVANA, PEACE WITHIN. JAINISM.

FORETOLD ONE TO COME.

KINGS DOCTRINES CARVED ON WALLS. BUDDHISM REJECTS CASTE. ESSENES BROTHERHOOD OF MAN. MANY DIVISIONS. PURE BUDDHISM DISAPPEARED. EMPHASIS ON INDIVIDUAL INTERPRETATION.

INFLUENCE OF MAHAVIRA GANDHI 1869-1948. FRUIT OF BUDDHA'S TEACHING. ALSO KRISHNA.

IRAQ LEGENDARY CRADLE OF CIVILIZATION. BUILDING GREAT WALL OF CHINA 214 B.C. REPRESSION OF WOMEN.

ROSETTA STONE 2000 B.C. CARVED.

BUDDHA'S INFLUENCE MANIFEST MORE IN CHINA.

INDIVIDUALISM DECREASE. IN IDOL WORSHIP. POWER OF CASTE SYSTEM.

CYCLE OF MATURITY

CHRISTIANITY

CHRIST — FOUR GOSPELS AND BOOK OF REVELATION — 1 AD

SALVATION, LOVE. BIRTH OF SPIRITUAL CONSCIOUSNESS.

ADVENT OF CHRIST IN JESUS. 4 BC-33 AD. MESSIAH, REDEEMER. "SON OF GOD." SEAL OF THE PROPHETS. MECCA, MEDINA. CRUCIFIXION, PARABLES. BOOK OF REVELATION. LORDS PRAYER. SYMBOLS. CROSS OF CHRIST. HEROD-MONOPOLY. PONTIUS PILATE - AUTHORITY. SADDUCEES - ZEALOTS - FANATICISM. PHARISEES - HYPOCRISY, SADDUCEES - SKEPTICISM. ESSENES - SPIRITUALITY. CHRIST PREACHES LOVE AND SERVICE. THAT YE LOVE ONE ANOTHER. REDEMPTION, IMMORTALITY. ONE TO COME IN THE GLORY OF THE FATHER. BAHAULLAH.

SPREAD OF MONASTICISM. REVERENCE AND DEVOTION GROWING.

CORRUPTION OF CHRISTIAN CHURCH. THINGS OF HUMAN ORIGIN PREVAIL. DECLINE OF SPIRITUALITY IN ROME AND EUROPE. 14TH CENTURY. INCREASING CEREMONIES. RENEWING ANCIENT RITUALS.

CHRISTIANITY REACHES HIGHEST IN 14TH CENTURY.

APOSTLE PAUL - THE HEBREWS LETTERS. CONSTANTINE CONVERTED. COUNCIL OF NICEA 325 AD. MONASTICISM 1124. LEONARDO DE VINCI 1452. RENAISSANCE IN EUROPE. 1452-1600. RISE OF UNIVERSITIES AND SCHOOLS. ART, ARCHITECTURE, COMMERCE, LEARNING FLOURISHED.

"PERIOD OF DISCOVERY, COLLAPSE OF HOLY ROMAN EMPIRE 1804. DECAY OF CIVILIZATIONS. DECAY OF CHURCH, MORALS, MANNERS, CULTURES. REIGN OF TERROR 1793.

MARTIN LUTHER PROTEST IN WITTENBURG 1517.

MONUMENTS TEMPLES PROVE ADVANCED CIVILIZATIONS IN SOUTH AMERICA BEFORE HISTORIC PERIOD. FRANCE, SPAIN, GREAT BRITAIN, ROME, GREAT CIVILIZATIONS. GREECE. POOR AND SICK UNDERVALUED. POPE'S CONQUERED PARTS OF SOUTH AMERICA & CHRISTIAN CRUSADES LASTING 200 YEARS 1095-1291. LIN 1483-1531.

ARTS CRAFTS, TRADE EXPANDED. CHIVALRY CRYSTALLIZED.

CALIMAH, DUST IN ARABIA 1300. MOSES BEN MAIMONIDES 1135-1204. BAGHDAD CAPITAL OF ARAB CULTURE FOR 100 YEARS. YOUNGER DOWNTREE LAW. JUSTINIAN CODIFIED CIVIL LAW 529 AD. MOSES BEN NAHMAN 1194. ASTRONOMICS COSMOGONY, INVENTION, MEDICINE, MATHEMATICS. SAINT BERNARD. CONTROL OF NATURAL FORCES. APOCALYPTIC UNIVERSALS. FROM WORLD MATERIAL TO SPIRITUALITY. DISCOVERY OF THE ENTIRE PLANET.

RULE-DOM OF MAN. WILL-DOM OF GOD. A NEW SPIRIT HATH BEEN BREATHED IN THE DEAD BODY OF THE WORLD. PROMOTE UNITY, PEACE, LIBERTY, EQUITY, EQUALITY, ETC. 6. TRUTHFULNESS: 7. TRUTHFULNESS: 8. UNITY, 9. DESIRE TO SERVE.

ROME 753 B.C. STRENGTH DECREASED 1812, ENTIRETY. ITALY 1861-1865. TRUTHFULNESS IN WILL TO THE EDUCATION IN 1093.

BAHA'I TEMPLE IN WILMETTE. DEDICATION IN 1953.

UNIVERSAL EDUCATION OF GOD. BAHA'U'LLAH. DISINTEGRATION OF CIVILIZATIONS. CONTROLLING OF THE GREAT BAHA'I CYCLE OF LIGHT. INTERNATIONAL BANK, COURTS, ARMY, NAVY, AIR FORCE. THE KITAB-I-AQDAS. LESSER AND MOST GREAT PEACE. NATIONAL ASSEMBLIES. UNIVERSAL HOUSE OF JUSTICE. HANDS OF THE CAUSE. BEGINNING TO LAST AND HIGHEST STAGE IN THE STUPENDOUS EVOLUTION OF MAN'S COLLECTIVE LIFE ON THIS PLANET. UNFOLDING THE LAST AND HIGHEST PHASE OF THE PROMISE TO ISRAEL FULFILLED IN 1948.

EXPANSION, UNIFICATION, AND GROWTH OF SPIRITUAL MENTAL PHYSICAL PROGRESS. WORLDS UNSPEAKABLY GLORIOUS. THE SPIRITUAL WORLD. "THIS IS THE DAY THAT SHALL NOT BE FOLLOWED BY NIGHT." BAHA'U'LLAH.

ISLAM

MUHAMMAD — KORAN — 622 AD

SUBMISSION TO THE WILL OF GOD

MUHAMMAD "THE BELOVED" 570-632. SEAL OF THE PROPHETS. MECCA, MEDINA. "SON OF THE PROPHETS." ALLAH TO PRAYER. ONE TO COME. SUBMISSION TO THE WILL OF GOD. FASTING.

THERE IS NO GOD BUT ALLAH AND MUHAMMAD. 5 HIS PRAYERS! ALL TO PRAYER! ALL TO PRAYER! PILGRIMAGE TO MECCA. MUHAMMAD STRESSED STATION AND MISSION OF CHRIST.

REFORMATION AND CONTER-REFORMATION 1517.

MUHAMMAD TAUGHT. IN EUROPE CRYSTALLIZATION OF CHIVALRY 1066. SOME VISIONS OF DIVINE SERVICE. MORAL AND DIVINE LAWS PRACTICES. LIQUOR ABOLISHED. PRAYER FIVE TIMES PER DAY. FASTING. GOOD WORKS. BITTER DIVISION BETWEEN SUNNITES AND SHIITES. DANTE 1265. LORD BACON 1561. MICHELANGELO 1564. LEONARDO DE VINCI 1452. RENAISSANCE IN EUROPE. 1452-1600. RISE OF UNIVERSITIES AND SCHOOLS. ART, ARCHITECTURE, COMMERCE, LEARNING FLOURISHED.

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CYCLE OF MATURITY

THE BAHA'I WORLD FAITH

BAHA'I — ABDUL-BAHA — KITAB-I-AQDAS — 1921 — 1957 — UNIVERSAL HOUSE OF JUSTICE — 1963

BAYAN — THE BAB — BAHAULLAH — 1844 — 1892 — UNIVERSALITY — UNITY

DARK AGES

FORETOLD NEW DAY.

BAHAULLAH - THE GLORY OF GOD 1817-1892.

THE BAB - THE GATE - 1819-1850. NEW AGE DECLARATION OF THE BAB 1844.

NEW REVELATION. 2 BASIC PRINCIPLES FOR NEW CIVILIZATION. THE WORLD OF GOD FORETOLD ONE TO COME IN 1000 YEARS. ONENESS OF ALL THE PROPHETS AND OF MANKIND. ALL THINGS WITHIN THE "SECOND DISPLAY" DIVINELY APPOINTED-SUCCESSOR-HIS SON-ABDU'L-BAHA 1844-1921 "EXEMPLAR." BAHIYYIH KHANUM-GREATEST HOLY LEAF 1846-1932. AND GRANDSON SHOGHI EFFENDI 1896-1957. "GUARDIAN." BAHA'I WORLD FAITH. 1844 TURNING POINT IN WORLD HISTORY. SPIRITUAL CONQUEST OF THE PLANET. BAHAU'LLAH STRESSED STATION AND MISSION OF ALL PROPHETS. PRAYER UNITY OF GOD OF THE PROPHETS AND OF ALL CREATION. PROBLEMS OF CLIMATE, DISEASE, TRAFFIC, HUMAN LIVING SOLVED. BAHA'I WORLD CITY. INDUS, "UHJ-THE LAST REMAINING CITADEL FOR A GETTERING WORLD." HIGHER INTELLECTUAL AND MORAL LEVELS. LOFTIER IDEALS AND CULTURES. UNIVERSAL HOUSE OF JUSTICE. WORKS OF PROGRESSIVE REVELATION AND EVOLUTION - THE COMING OF AGE OF THE HUMAN RACE. INTERCONTINENTAL BAHA'I CONFERENCES FAITH ESTABLISHED ABOUT WORLD. HIGHER LEVELS OF SPIRITUAL CONSCIOUSNESS. 12. BASIC PRINCIPLES FOR PROGRESS REVEALED BY BAHAULLAH. 1. THE ONENESS OF MANKIND. 2. INDEPENDENT INVESTIGATION OF TRUTH. 3. THE FOUNDATION OF ALL RELIGIONS IS ONE. 4. RELIGION MUST BE THE CAUSE OF UNITY. 5. RELIGION MUST BE IN ACCORD WITH SCIENCE AND REASON. 6. EQUALITY BETWEEN MAN AND WOMAN. 7. PREJUDICE OF ALL KINDS MUST BE PERSONAL. 8. UNIVERSAL EDUCATION. 9. SPIRITUAL SOLUTION OF ECONOMIC PROBLEMS. 10. A UNIVERSAL LANGUAGE. 11. AN INTERNATIONAL TRIBUNAL. GOD'S IMMUTABLE PURPOSE FOR MANKIND IN THIS DAY IS THE FULFILLMENT OF THE GOLDEN AGE.

HEROIC AGE — ON GOAT AGE TO SPACE AGE.

FORMATIVE AGE — MATERIAL PROGRESS, EXTRASENSORY PERCEPTION, PSYCHOLOGICAL CHEMISTRY. BY SCIENCE, ATOMIC, ELECTRONIC, SUPERSONIC, NUCLEAR SPACE. ASTRONOMICS COSMOGONY, INVENTION, MEDICINE, MATHEMATICS. MOSES BEN MAIMONIDES 1135-1204. BY ATOMIC BOMB TESTS. "FORETELLING THE OTHER."

MOSES BEN NAHMAN 1194.

NORSE VOYAGES TO AMERICA BY LIEF ERICKSON 1000.

MAGNA CHARTA SIGNED 1215. BIRTH OF USA. 1776.

BEGINNING OF RUSSIAN EMPIRE 1000. THE BIRTH OF ISRAEL 1948.

DESTRUCTION OF BABYLON 539. FOUNDING OF NEW EMPIRE 1917-1918.

NATION BUILDING. 1861-1865. CIVILIZATIONS INDUS 1861-1865. RISE OF ITALY. STRENGTH DECREASED 1812, ENTIRETY.

ROSETTA STONE DECIPHERED IN 1799. KEY TO ARCHAEOLOGY, PARTY.

DAWNING OF ARCHAEOLOGY. SEPOY REBELLION IN 1874.

RELIGIOUS CONTROVERSY, GREAT PERSECUTION.

BRITISH CONTROL FROM 1784. MAHATMA GANDHI LED.

DYZANTINE EMPIRE 1000. NATIONALIST MOVEMENT 1900-1950. INDIA AND PAKISTAN DIVIDED IN 1947.

BEGINNING OF UNIVERSITIES LIBRARIES, ART, ARCHITECTURE. THE KINGDOM OF GOD. UNION OF MINORITY GROUPS.

MINGLING OF PEOPLES AND CULTURES, RELIGIOUS FEEDBACK. A NEW SPIRIT OF INDIVIDUALISM AND ANTI-CHRISTIANITY.

GOTHIC ARCHITECTURE 1200 AD. SLOW AND GRADUAL SPIRITUAL CONSCIOUSNESS, WITH DEVOTION AND REVERENCE BUT GROWING CONFUSION OF BELIEFS AND DISUNITY.

CONTINUOUS STRUGGLE BETWEEN CHURCH AND STATE. POWER OF FEUDALISM IN EUROPE. EMPHASIS ON IMPERIAL PATRONAGE, THINGS OF DOUBTFUL ORIGIN.

EMPHASIS ON INDIVIDUAL INTERPRETATION. ALEXANDER THE GREAT 327 B.C. PERSIAN WARS 546-466 B.C. POWER THROUGH FORCE. GOOD KING ASOKA REIGNED 264-226 B.C. DECAY OF PERSIAN EMPIRE. MOSLEM INVASION OF INDIA FOR 500 YEARS.

PERIOD OF EMPIRE BUILDING. SPREAD OF CULTURES. USE OF METALS.

~SOURCE MATERIAL~

THE BIBLE. KORAN. BUDDHA. BHAGAVAD-GITA. TEACHINGS FROM THE WRITINGS. BAHA'I WORLD FAITH. BAHA'I WORLD FOUNDATION OF WORLD UNITY. SECRET OF DIVINE CIVILIZATION. SOME ANSWERED QUESTIONS. TABLETS BY ABDU'L-BAHA.

GOD PASSES BY. WORLD CYCLES OF BAHA'I WORLD. THE PROMISED DAY IS COME. MESSAGES TO AMERICA. ADVENT OF DIVINE JUSTICE.

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HISTORY OF THE WORLD. BY H.G. WELLS.

HISTORY OF THE WORLD. BY WILL DURANT.

HISTORY OF THE ISLAMIC PEOPLES. BY BROCKELMAN.

BAHAU'LLAH. THE KING IS HERE. BY JULIE ROSE HOLT.

CHRIST AND BAHA'U'LLAH. BY DR. GEORGE TOWNSEND.

TOMORROW AND TOMOGRAPH. BY DR. STANWOOD COBB.

~BASIC NEW AGE QUALITIES ~

TRUTHFULNESS.
TRUSTWORTHINESS.
PURITY OF HEART.
BROTHERHOOD.
PEACE. PRESENCE.
COMPLETE HONESTY.
JUSTICE.
HUMILITY.
LOVE OF GOD.
"YOUR EYE BE CHASTE
YOUR HAND FAITHFUL
YOUR HEART ENLIGHTENED
YOUR SPIRIT PRAYERFUL."

VITAL PREREQUISITES OF THE WORLD OF BAHA'U'LLAH TO ESTABLISH THE KINGDOM OF GOD ON THE EARTH. EACH SOUL MUST....

I. GO THROUGH THE VALLEY AND LEAN THE MOUNTAIN OF EARNEST SEARCH.
2. ...THE FIRST OF RELIGIONS LOVE.
3. ...THE KNOWLEDGE OF REVELATION.
4. UNITY MEETING INTERESTS.
5. ...CONTENTMENT & RAPTURE.
6. MODERNISM OF BAHUDDIN.
7. ...POVERTY. ABSOLUTE BOTHINGNESS & OBEDIENCE IN THE LOVE OF GOD.

THESE WILL BRING THE KINGDOM OF GOD UPON THE EARTH.

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