

The Periodic Table of Behavior

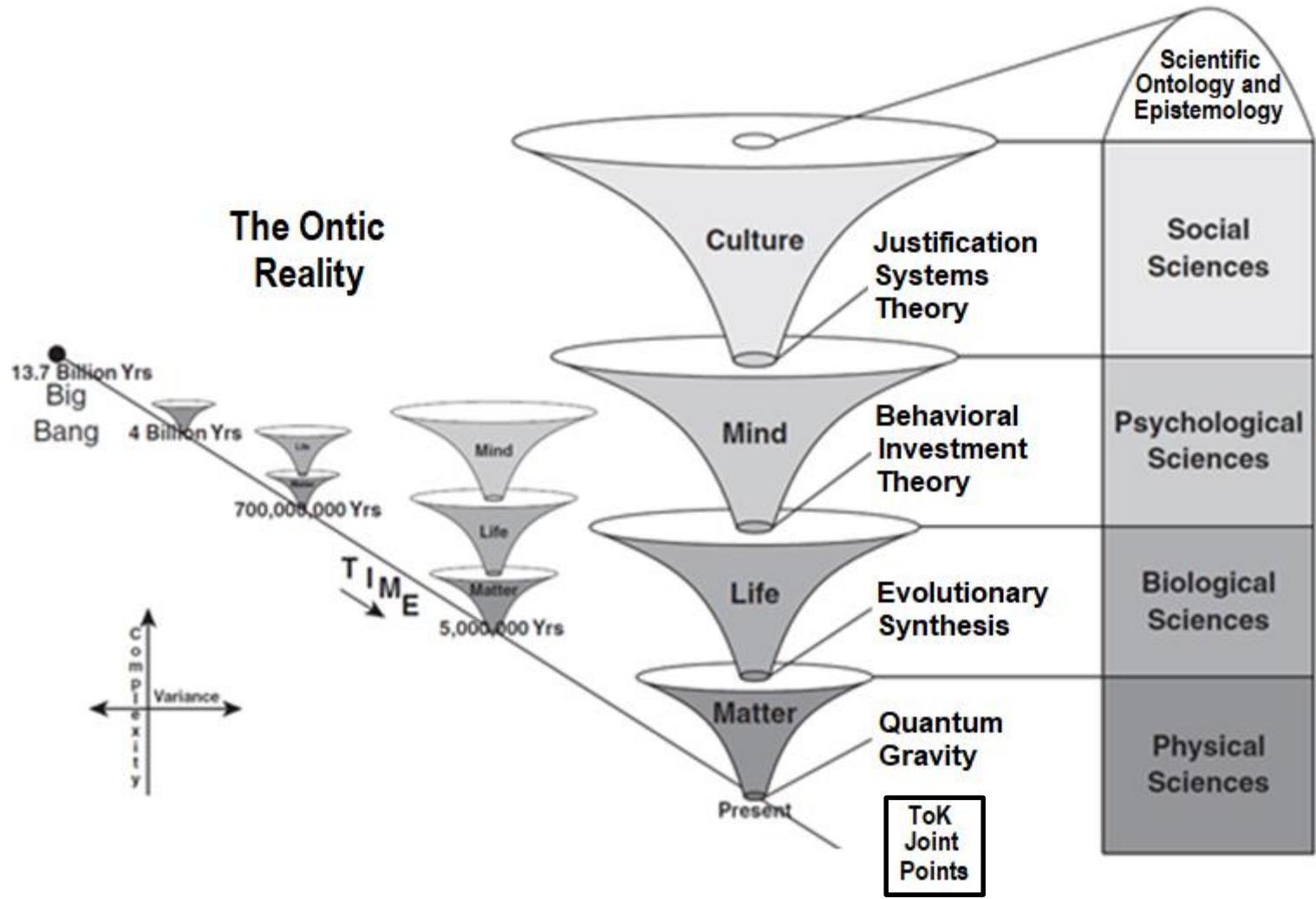
Dimensions of Complexity

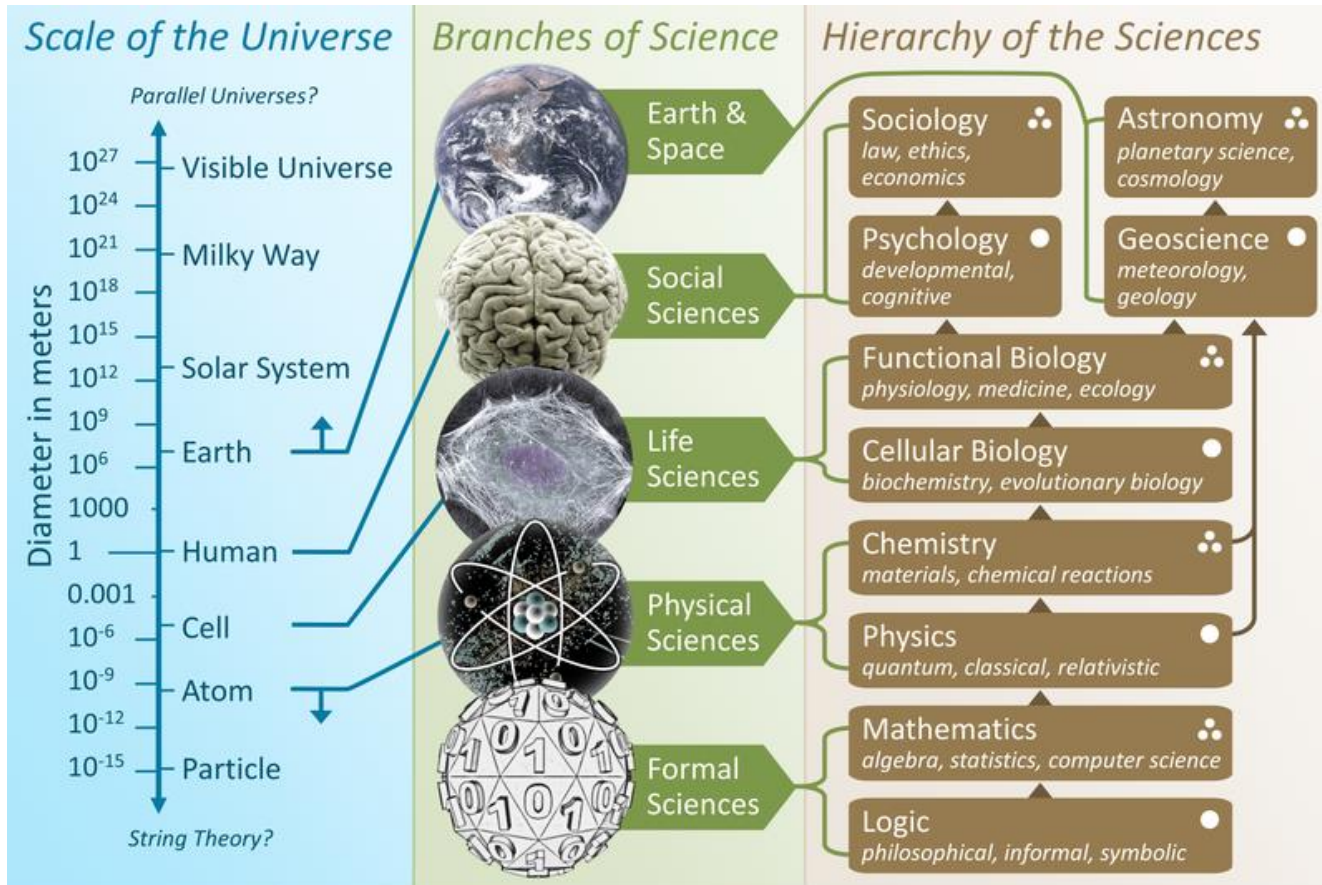
		MATTER	LIFE	MIND	CULTURE
		Physical	Biological	Psychological	Social
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The Periodic Table of Behavior

An emergent, naturalistic, universal behavioral view of reality and scientific ontology and epistemology.

The Periodic Table of Behavior is Grounded in the Tree of Knowledge System



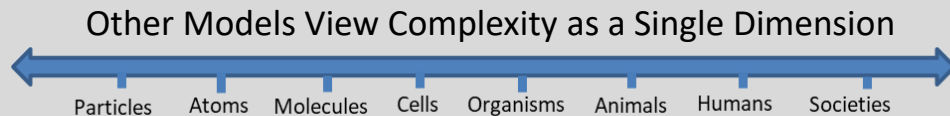


Standard maps of science, such as shown here, fail to appreciate the relationship between parts and wholes, and different kinds of behavioral complexity. They also fail to solve the problems of: (a) mind versus behavior; (b) objectivity versus subjectivity; and (c) objects versus organisms versus animals versus persons. This failure is evidenced by the profound “problem of psychology” (Henriques, 2008). The ToK System leads to a new, Periodic Table of Behavior that resolves the issues.

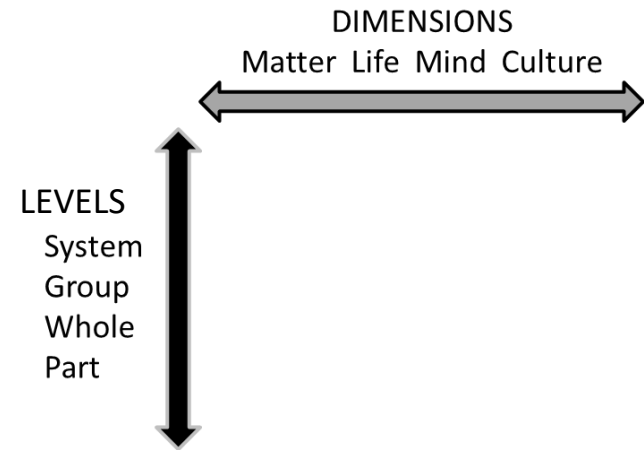
Levels of Analysis *and* Dimensions of Behavioral Complexity

It succeeds where other maps of science fail because, unlike other systems, the ToK System differentiates *levels of analysis* from *dimensions of behavioral complexity*.

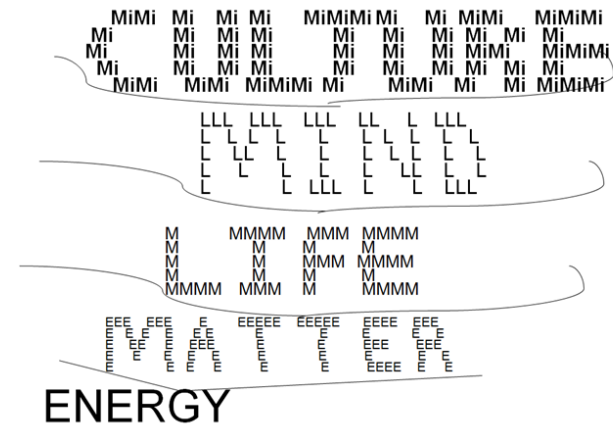
The level of analysis refers to whether one is looking at a part, a whole, a group or the entire system. The dimensions of behavioral complexity refer to different complex adaptive planes of behavior. Following Matter, Life, Mind and Culture emerge as a function of different information processing and communication systems.



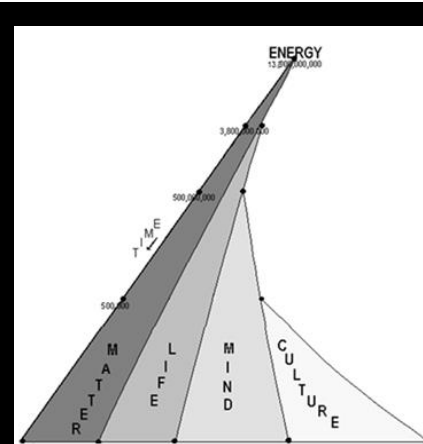
A LEVELS x DIMENSION view is needed



Because there are four different dimensions of existence



The LEVELS X DIMENSIONS in the ToK view gives rise to a new taxonomy of behavioral kinds that maps both ontic reality and scientific ontology and epistemology called the Periodic Table of Behavior which organizes scientific inquiry.



The Periodic Table of Behavior

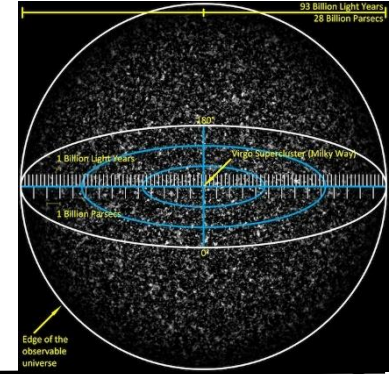
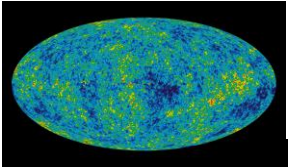
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It is an objectivist or exterior, third person worldview that is compatible with an interior, first person view of the lifeworld.

Big Bang

Physical Sciences

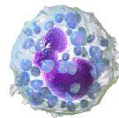
Visible Universe



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Time
13.8 billion

Scale



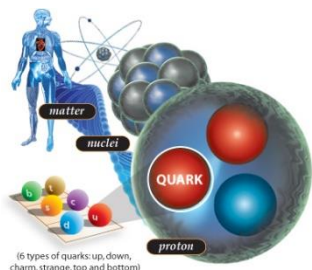
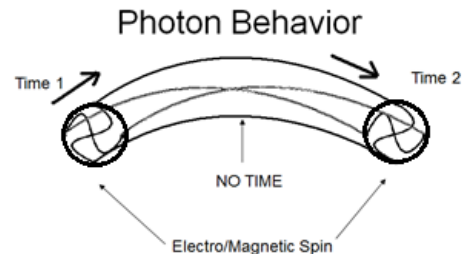
Quantum



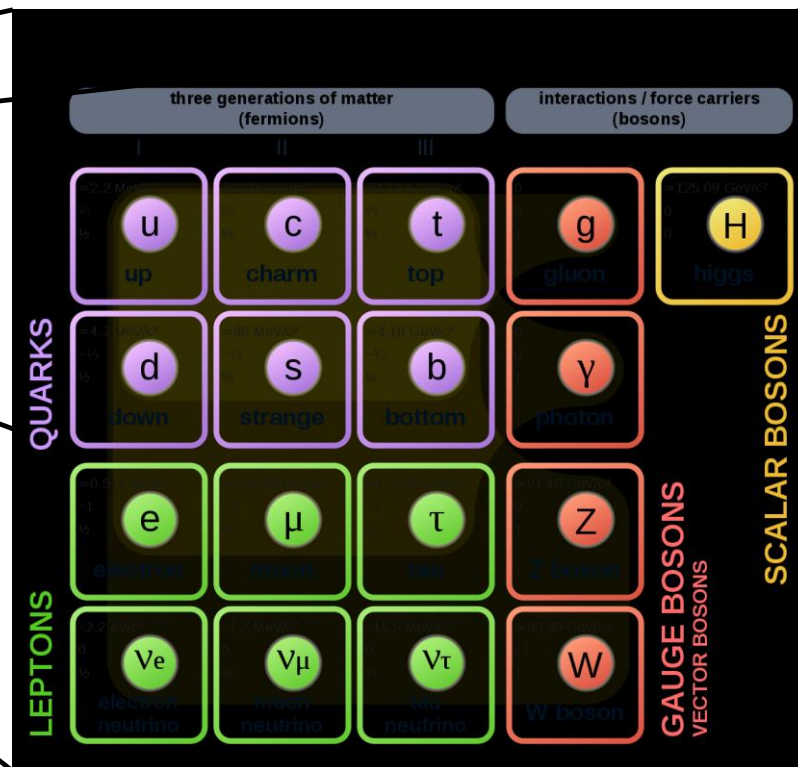
Standard Model of Particle Physics

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(6 types of quarks: up, down, charm, strange, top and bottom)



Periodic Table of the Elements

The Periodic Table of Behavior

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Iron
Transition metal

Symbol: **Fe** Neutrons: **30**
Atomic number: **26** Energy levels: **4**
Atomic weight (amu): **55.84**
Atomic weight (g/mol): **55.84**
Protons/Electrons: **26**

Shell structure: 2, 8, 14, 2

Atomic orbitals: [Ar] 3d⁶ 4s²

Orbital types: s, p, d, f

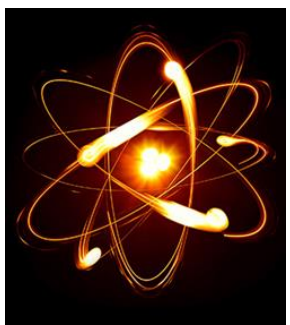
Iron valence orbitals: 4s, 3d, 4p

Periodic Table of the Elements

1 IIA 1A
2 IIA 2A
3 IIIB 3B
4 IVB 4B
5 VB 5B
6 VIB 6B
7 VIIB 7B
8 VIII 8
9 VIII 8
10 VIII 8
11 IB 1B
12 IIB 2B
13 IIIA 3A
14 IVA 4A
15 VA 5A
16 VIA 6A
17 VIIA 7A
18 VIIIA 8A

1 H Hydrogen 1.00794
2 He Helium 4.002602
3 Li Lithium 6.941
4 Be Beryllium 9.012182
5 B Boron 10.811
6 C Carbon 12.011
7 N Nitrogen 14.00644
8 O Oxygen 15.9994
9 F Fluorine 18.998403
10 Ne Neon 20.1797
11 Na Sodium 22.98976928
12 Mg Magnesium 24.304
13 Al Aluminum 26.9815385
14 Si Silicon 28.0855
15 P Phosphorus 30.973762
16 S Sulfur 32.06
17 Cl Chlorine 35.4527
18 Ar Argon 39.948
19 K Potassium 39.0983
20 Ca Calcium 40.078
21 Sc Scandium 44.955912
22 Ti Titanium 47.88
23 V Vanadium 50.9415
24 Cr Chromium 51.9961
25 Mn Manganese 54.938
26 Fe Iron 55.845
27 Co Cobalt 58.9332
28 Ni Nickel 58.6934
29 Cu Copper 63.546
30 Zn Zinc 65.38
31 Ga Gallium 69.723
32 Ge Germanium 72.64
33 As Arsenic 74.921595
34 Se Selenium 78.96
35 Br Bromine 79.904
36 Kr Krypton 83.80
37 Rb Rubidium 85.4678
38 Sr Strontium 87.62
39 Y Yttrium 88.905848
40 Zr Zirconium 91.224
41 Nb Niobium 92.90638
42 Mo Molybdenum 95.94
43 Tc Technetium 98.90625
44 Ru Ruthenium 101.07
45 Rh Rhodium 102.9055
46 Pd Palladium 106.42
47 Ag Silver 107.8682
48 Cd Cadmium 112.411
49 In Indium 114.818
50 Sn Tin 118.710
51 Sb Antimony 121.757
52 Te Tellurium 127.6
53 I Iodine 126.90447
54 Xe Xenon 131.29
55 Cs Cesium 132.90545196
56 Ba Barium 137.327
57-71 Lanthanide Series
57 La Lanthanum 138.90547
58 Ce Cerium 140.116
59 Pr Praseodymium 140.90768
60 Nd Neodymium 144.24
61 Pm Promethium 144.9127
62 Sm Samarium 150.36
63 Eu Europium 151.964
64 Gd Gadolinium 157.25
65 Tb Terbium 158.92534
66 Dy Dysprosium 162.50
67 Ho Holmium 164.93032
68 Er Erbium 167.259
69 Tm Thulium 168.93402
70 Yb Ytterbium 173.054
71 Lu Lutetium 174.967
72 Hf Hafnium 178.49
73 Ta Tantalum 180.94788
74 W Tungsten 183.84
75 Re Rhenium 186.207
76 Os Osmium 190.23
77 Ir Iridium 192.22
78 Pt Platinum 195.084
79 Au Gold 196.966569
80 Hg Mercury 200.59
81 Tl Thallium 204.3833
82 Pb Lead 207.2
83 Bi Bismuth 208.980399
84 Po Polonium 209
85 At Astatine 210
86 Rn Radon 222
87 Fr Francium 223
88 Ra Radium 226
89-103 Actinide Series
89 Ac Actinium 227
90 Th Thorium 232.0377
91 Pa Protactinium 231.03688
92 U Uranium 238.02891
93 Np Neptunium 237.048173
94 Pu Plutonium 244.06422
95 Am Americium 243.061381
96 Cm Curium 247.070351
97 Bk Berkelium 247.070351
98 Cf Californium 251.083288
99 Es Einsteinium 252.083288
100 Fm Fermium 257.1036
101 Md Mendelevium 258.1036
102 No Nihonium 259.1036
103 Lr Lawrencium 260.1036
104 Rf Rutherfordium 261
105 Db Dubnium 262
106 Sg Seaborgium 263
107 Bh Bohrium 264
108 Hs Hassium 265
109 Mt Meitnerium 266
110 Ds Darmstadtium 267
111 Rg Roentgenium 268
112 Cn Copernicium 269
113 Uut Ununtrium 271
114 Uuq Ununquadium 272
115 Uup Ununpentium 273
116 Uuh Ununhexium 274
117 Uus Ununseptium 275
118 Uuo Ununoctium 276

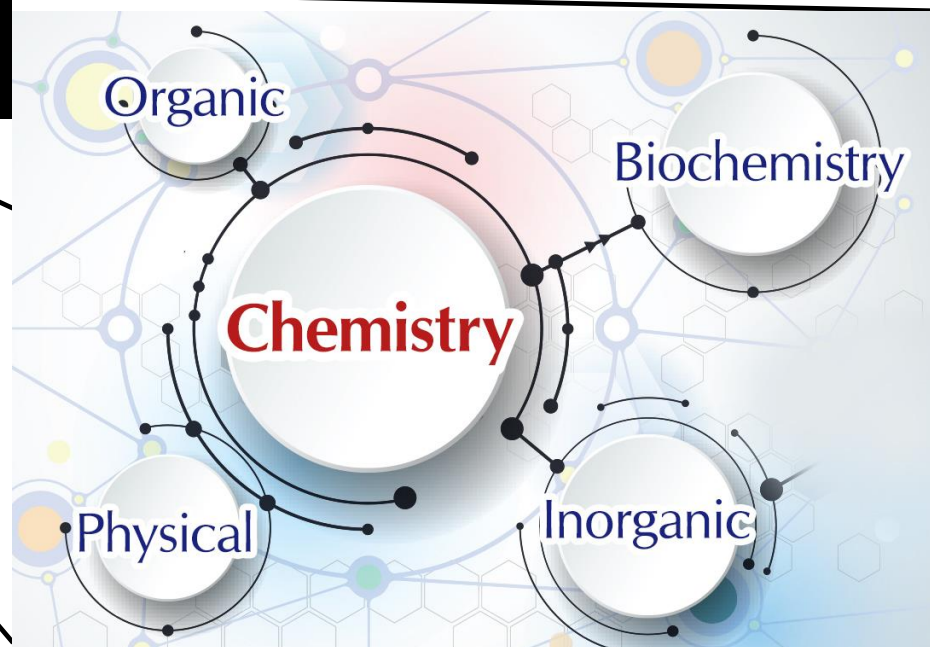
Alkali Metal Alkaline Earth Transition Metal Basic Metal Semimetal Nonmetal Halogens Noble Gas Lanthanides Actinides



Chemistry

(Science of Molecular Behavior)

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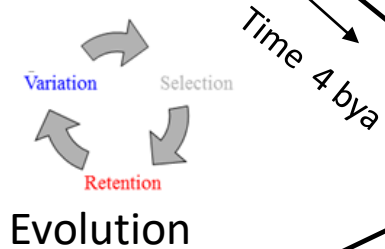
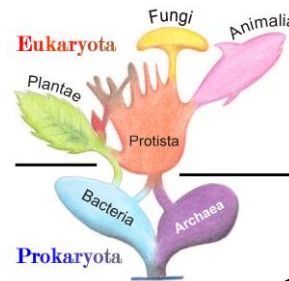
Biological Sciences



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Ecology



Scale



Physiology and Anatomy

Microbiology

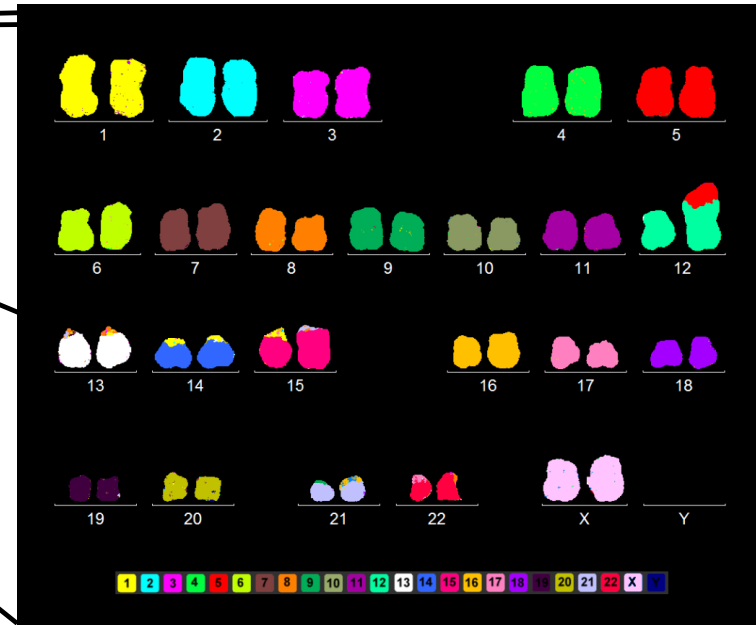


Science of Genetics

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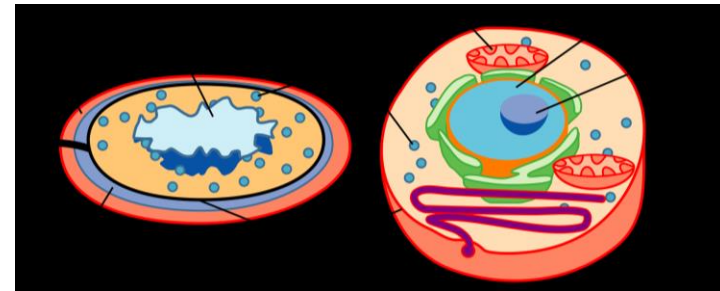
		pollen ♂	
		B	b
pistil ♀	B	BB	Bb
	b	Bb	bb



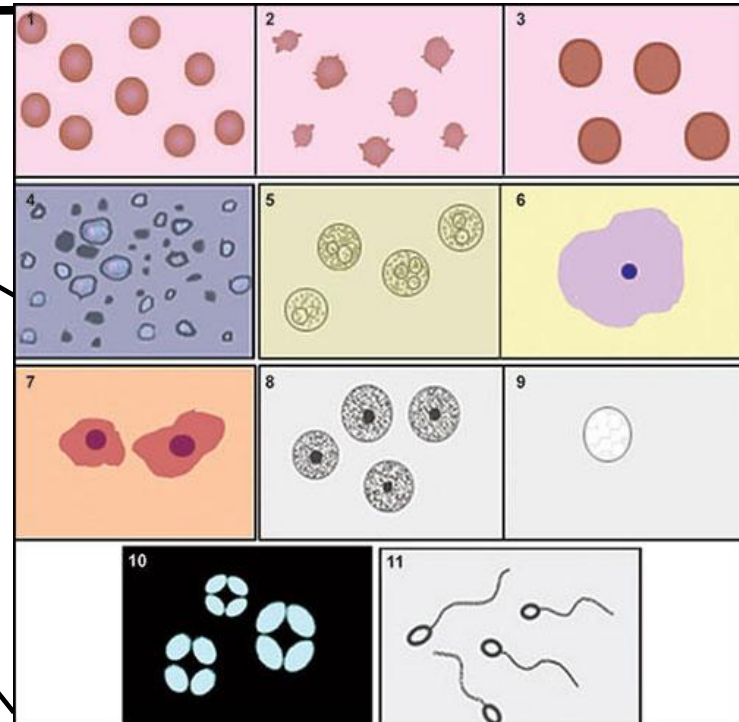
Cytology

Prokaryotes

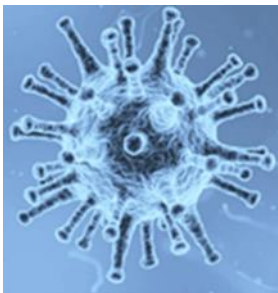
Eukaryotes



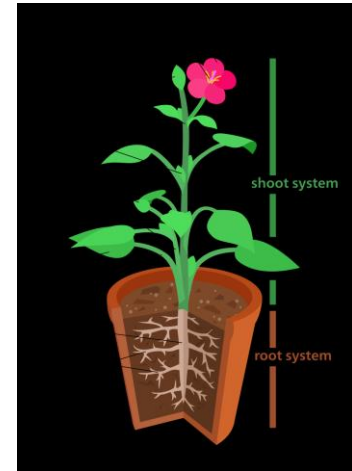
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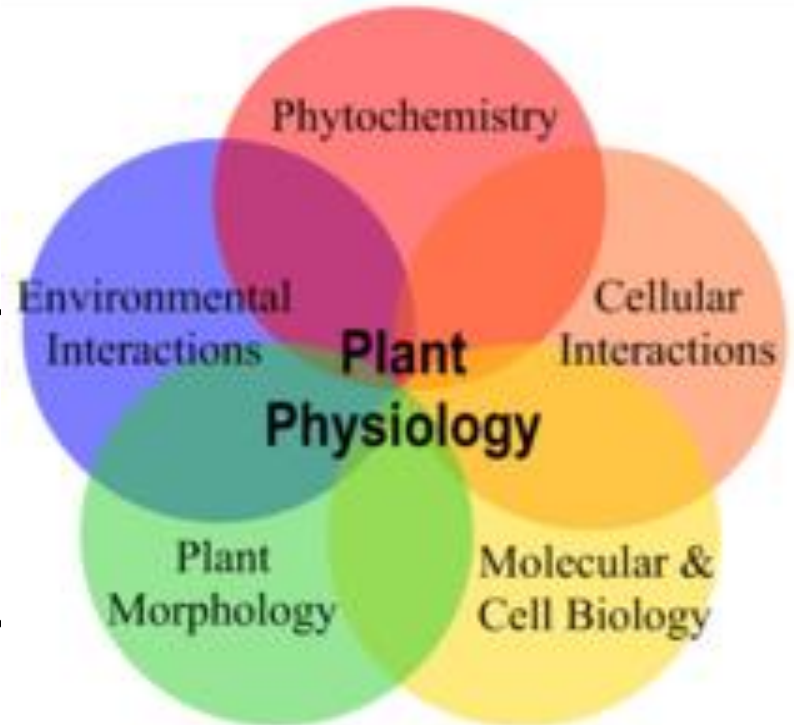
Virology



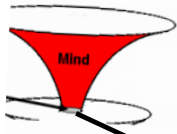
Botany



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Mind, Brain, Animal Behavior Sciences



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Behavioral Ecology



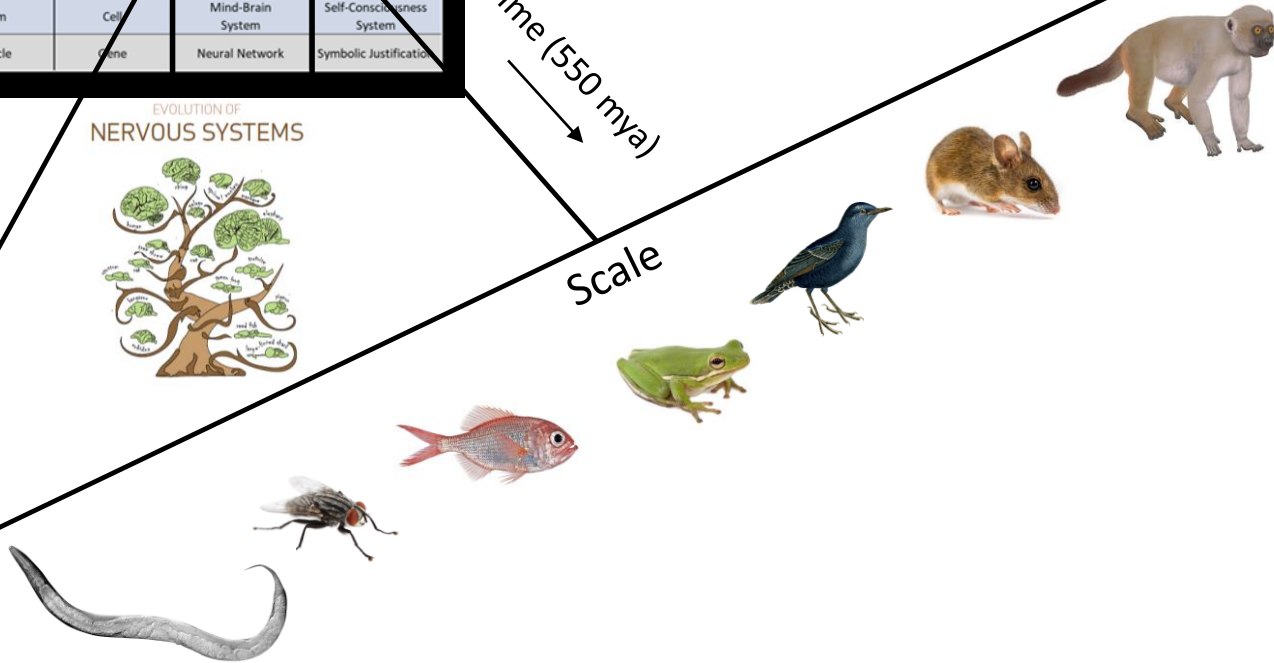
Time (550 mya)

Scale

EVOLUTION OF NERVOUS SYSTEMS



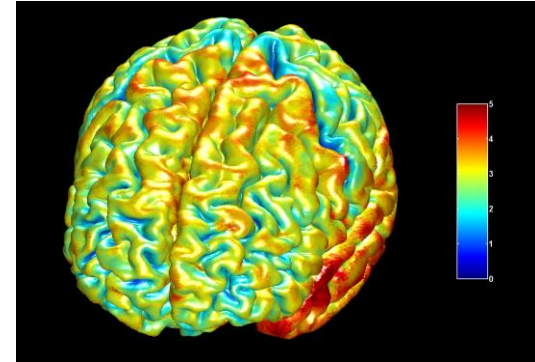
Neuroscience



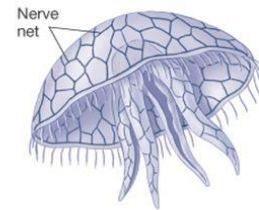
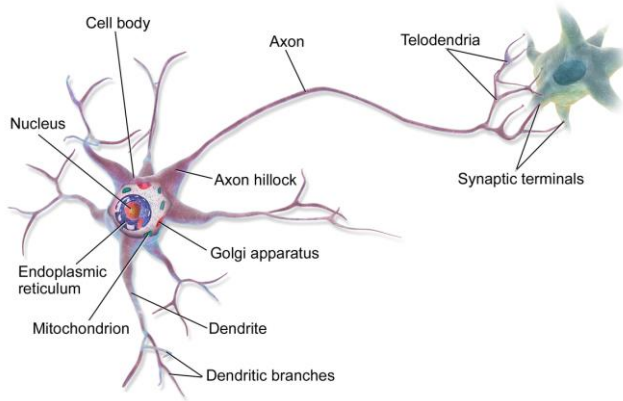
Neuroscience

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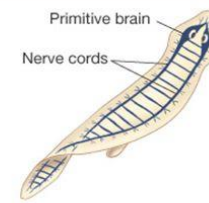
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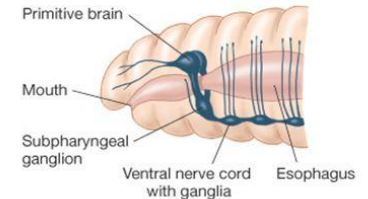
Evolution of the Nervous System



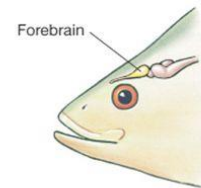
(a) Nerve net of jellyfish



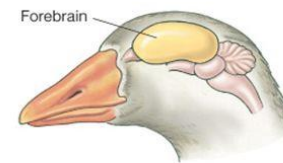
(b) The flatworm nervous system has a primitive brain.



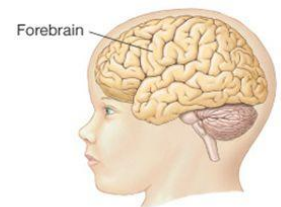
(c) The earthworm nervous system has a simple brain and ganglia along a nerve cord.



(d) The fish forebrain is small compared to remainder of brain.



(e) The goose forebrain is larger.

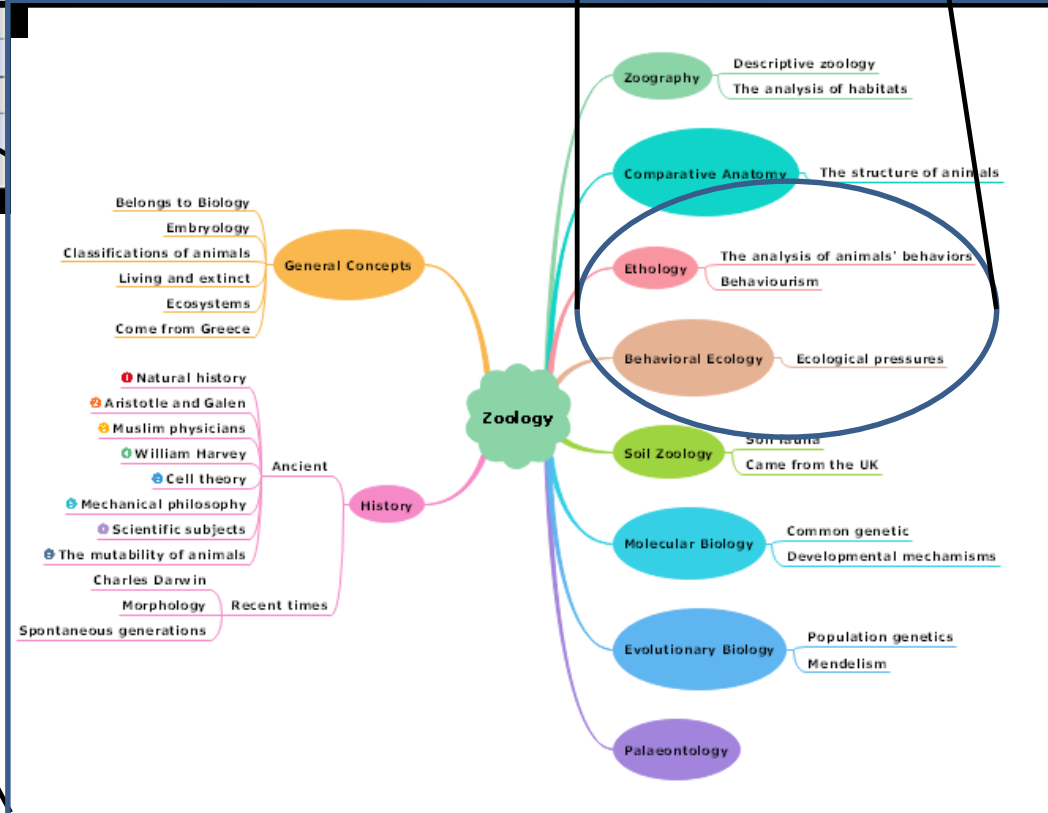


(f) The human forebrain (cerebrum) dominates the brain.

Zoology (Animals as Organisms) and Ethology and Comparative Psychology (Patterns of Animal Behavior in Nature)



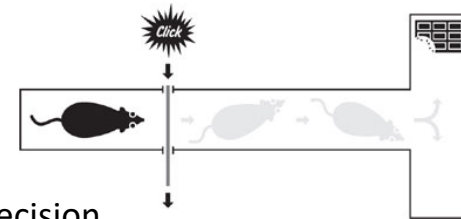
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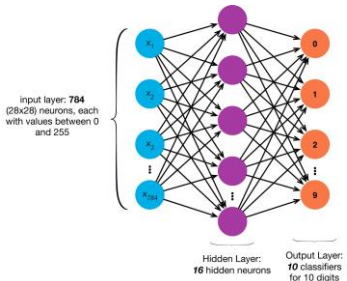
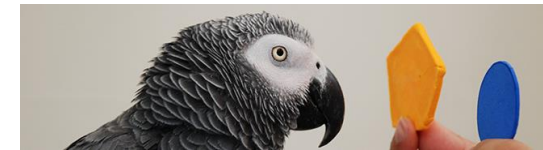
The Cognitive Behavioral Neurosciences (Experimental Analysis of Animal-Mental Behavior)

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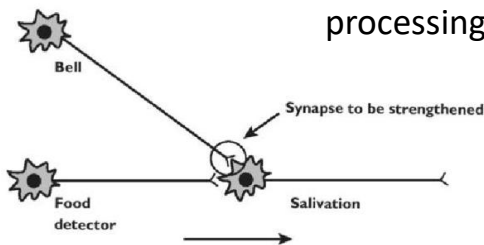
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Decision Making and Higher Cognitive Processes



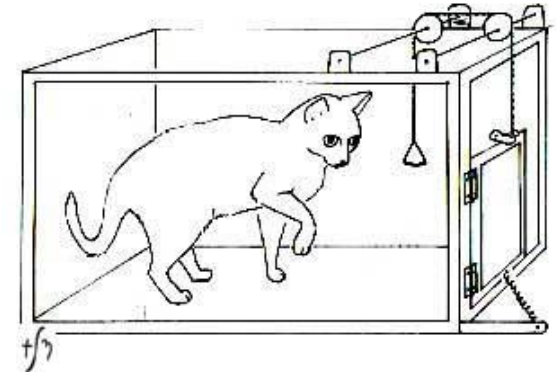
Neural Networks, learning and information processing



Associative Conditioning



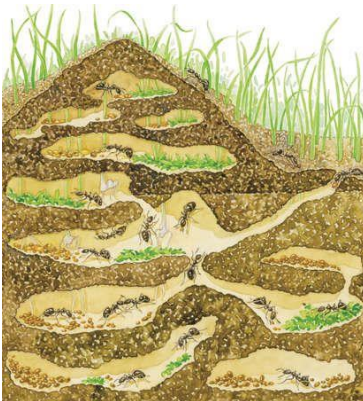
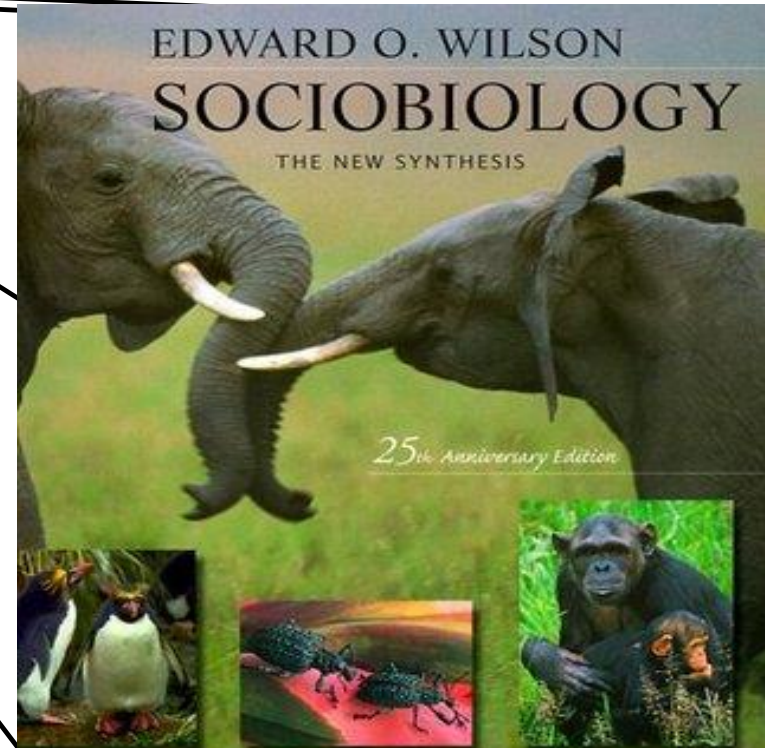
Operant Conditioning



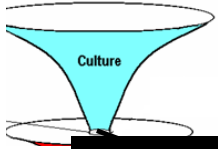
Sociobiology and Group Behavioral Ecology



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	Behavioral Entity	Object	Organism	Animal	Human Person
Three Primary Levels of Object Complexity (Part, Whole, Group)	Groups of Wholes	Molecule	Multicell/Colony	Family-Group	Family-Community, Nation
	Fundamental Whole	Atom	Cell	Mind-Brain System	Self-Consciousness System
	Fundamental Part	Particle	Gene	Neural Network	Symbolic Justification



Human Social Sciences

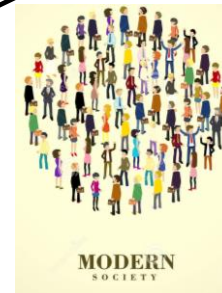
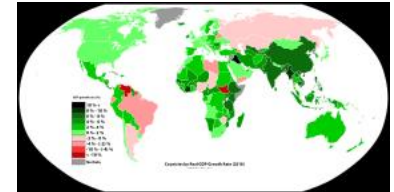


The Periodic Table of Behavior					
Dimensions of Complexity					
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Time
200,000

Scale

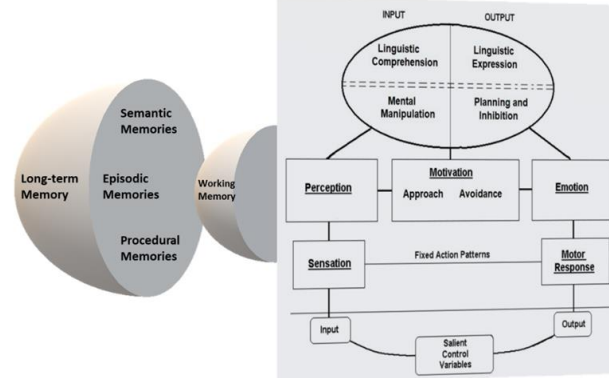


Branches of linguistics



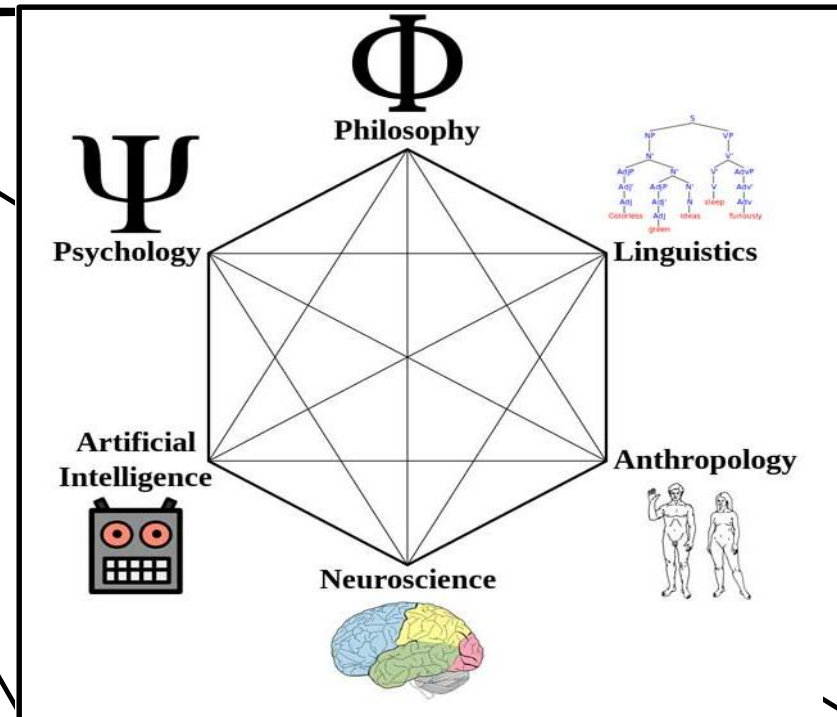
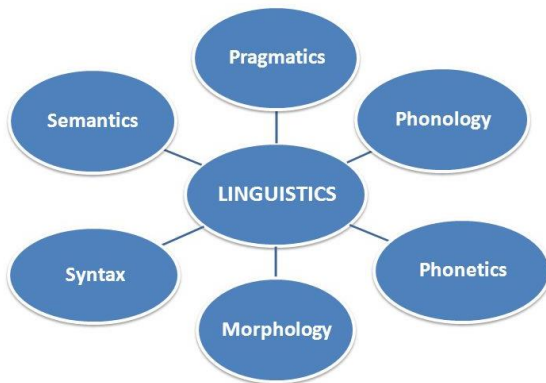
Human Cognitive Science

Architecture of Human Mind



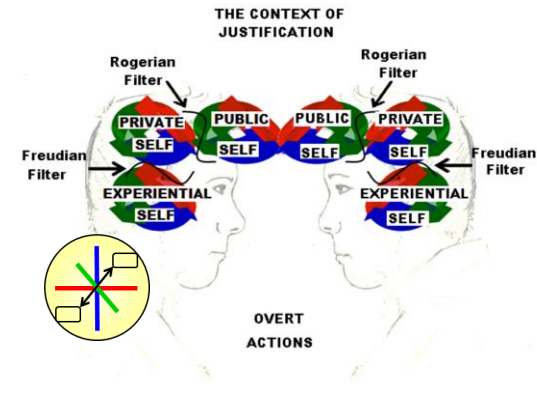
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Branches of linguistics



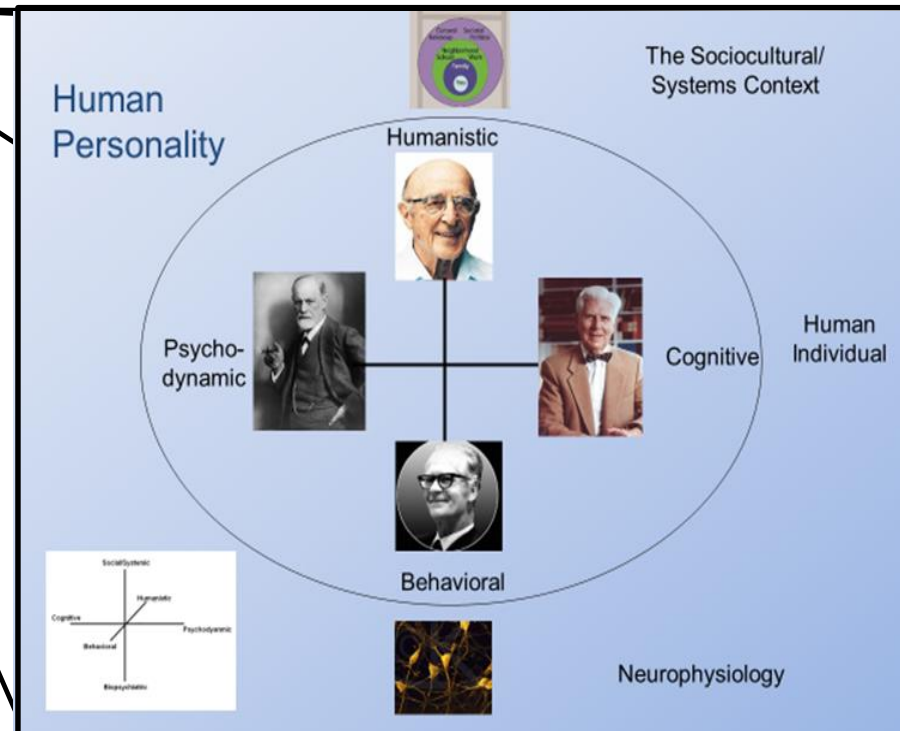
Human Psychology (Development, Personality, Social)

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Erikson's Stages of Psychosocial Development

Approximate Age	Psycho Social Crisis
Infant - 18 months	Trust vs. Mistrust
18 months - 3 years	Autonomy vs. Shame & Doubt
3 - 5 years	Initiative vs. Guilt
5 -13 years	Industry vs. Inferiority
13 -21 years	Identity vs. Role Confusion
21 - 39 years	Intimacy vs. Isolation
40 - 65 years	Generativity vs. Stagnation
65 and older	Ego Integrity vs. Despair

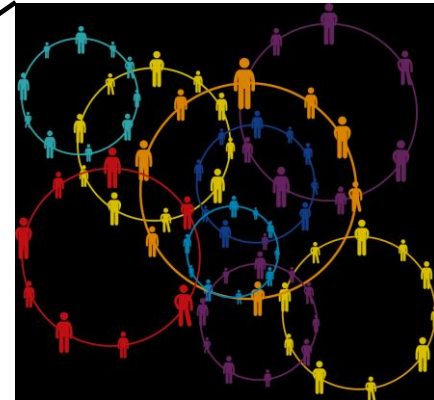


Social Sciences

(Socio-Cultural Group Economic Behavior)

Sociology

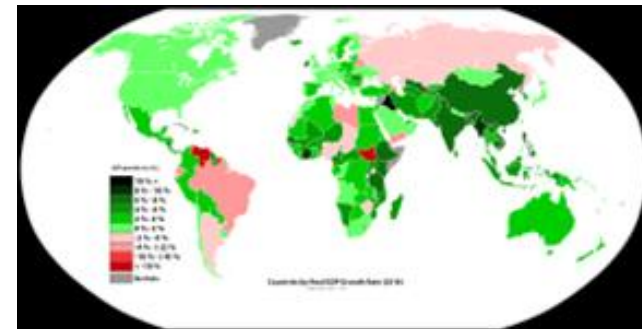
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Anthropology

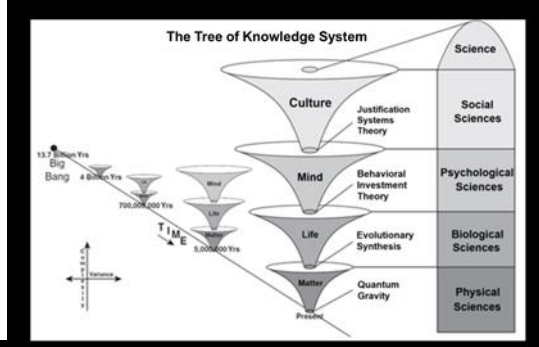


Economics



A Functional Behavioral Phenomenological View

A Third Person Scientific View

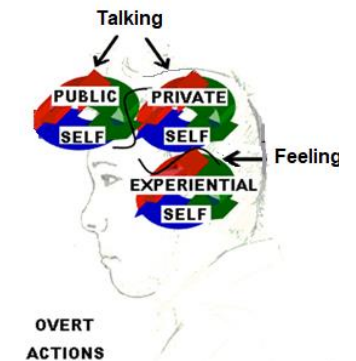


The Periodic Table of Behavior

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The ToK moves across Wilber's epistemological quadrants

I – Why I do How I experience, feel, think, believe, value, grow.	IT – What I do Behaviours, products, measurables
WE – Why we do Relationships, shared values, cultures, norms	ITS – How we do System dynamics, social systems, policy
First Person	Third Person



Energy Singularity

The Path of Emergence

A First Person Phenomenological View