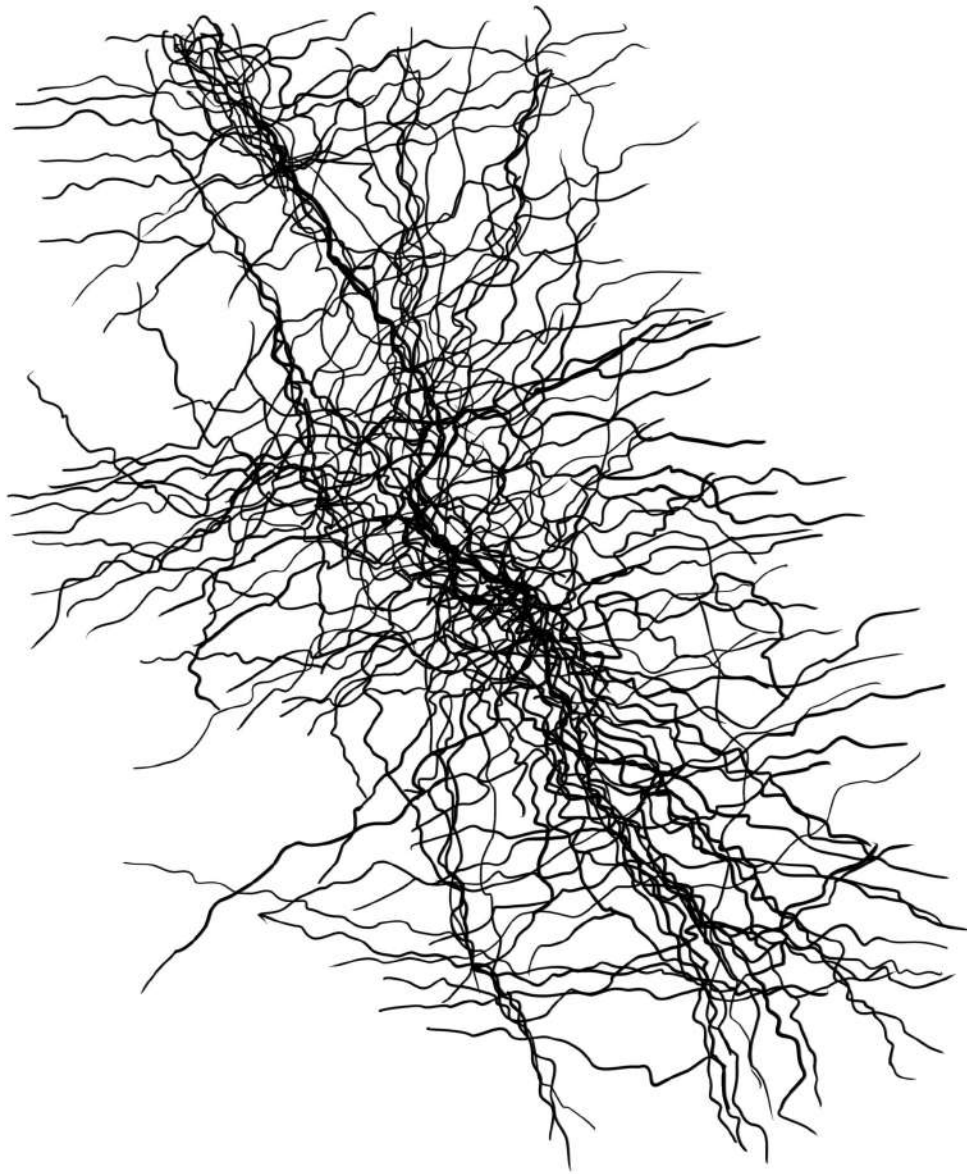
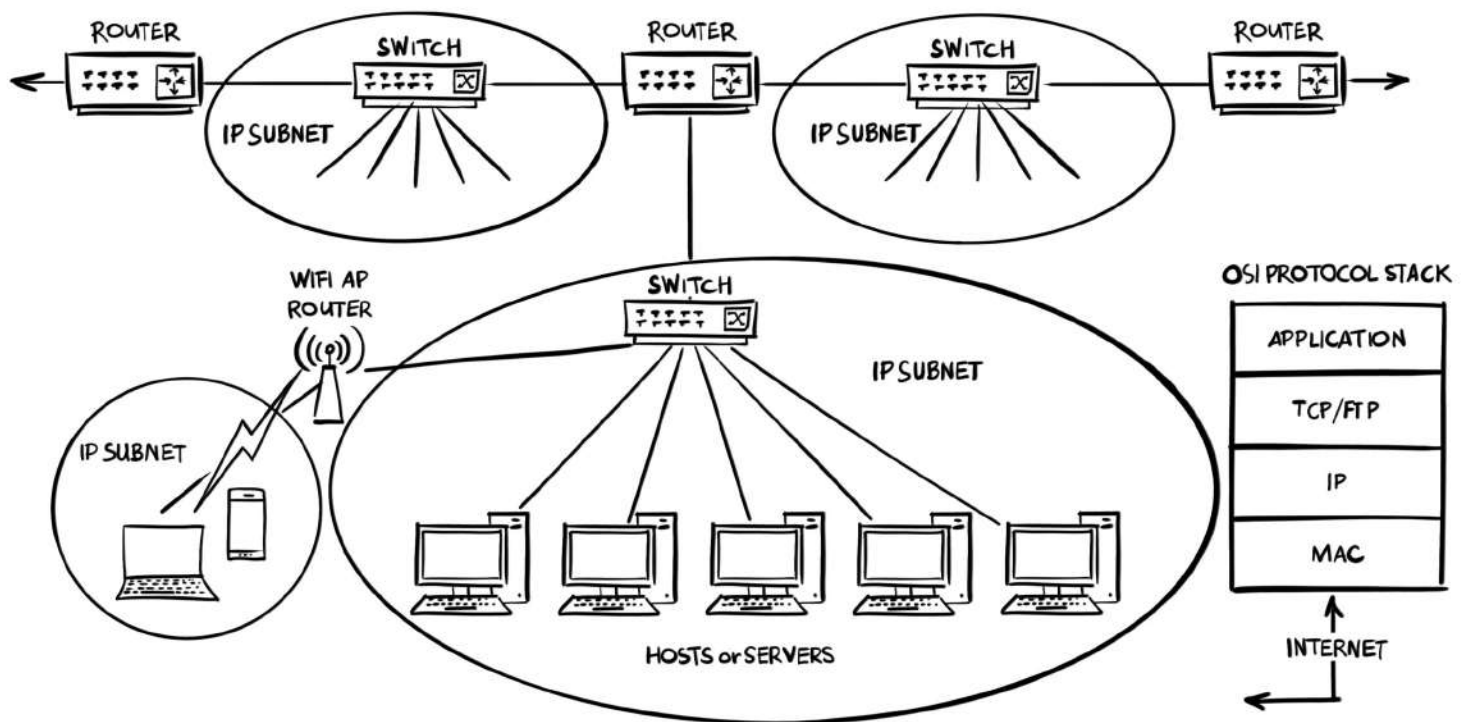
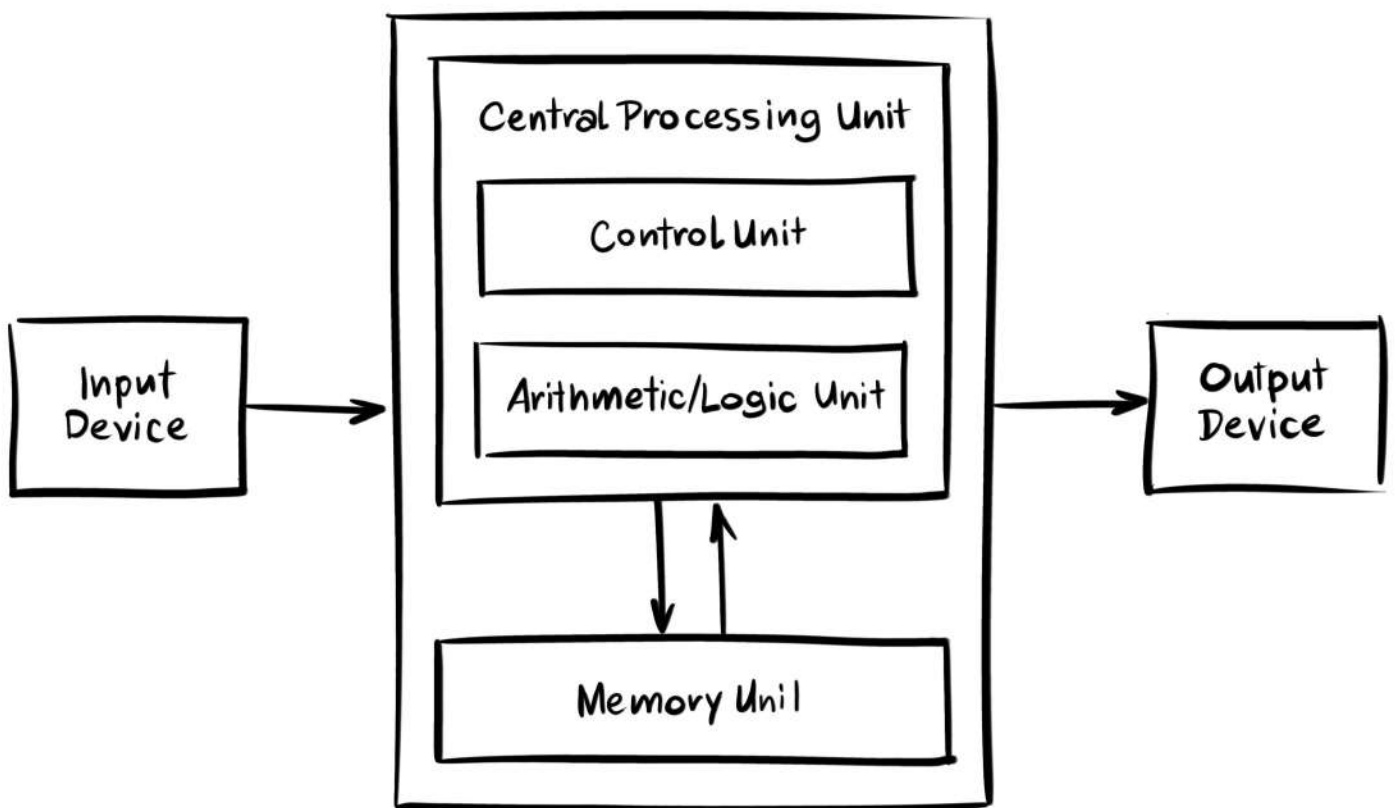
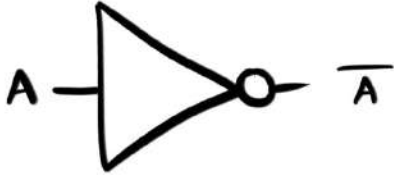
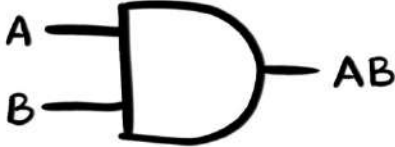
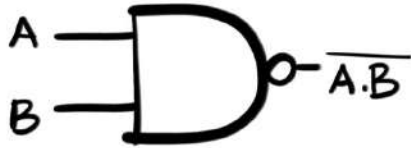
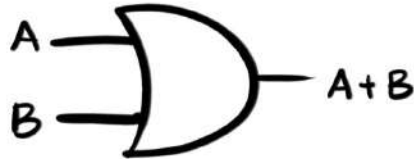
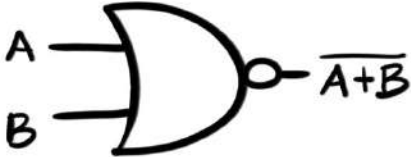
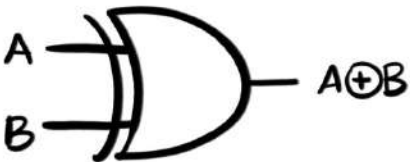
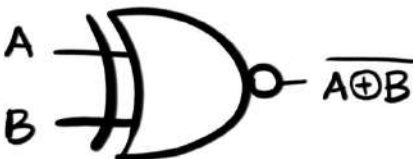


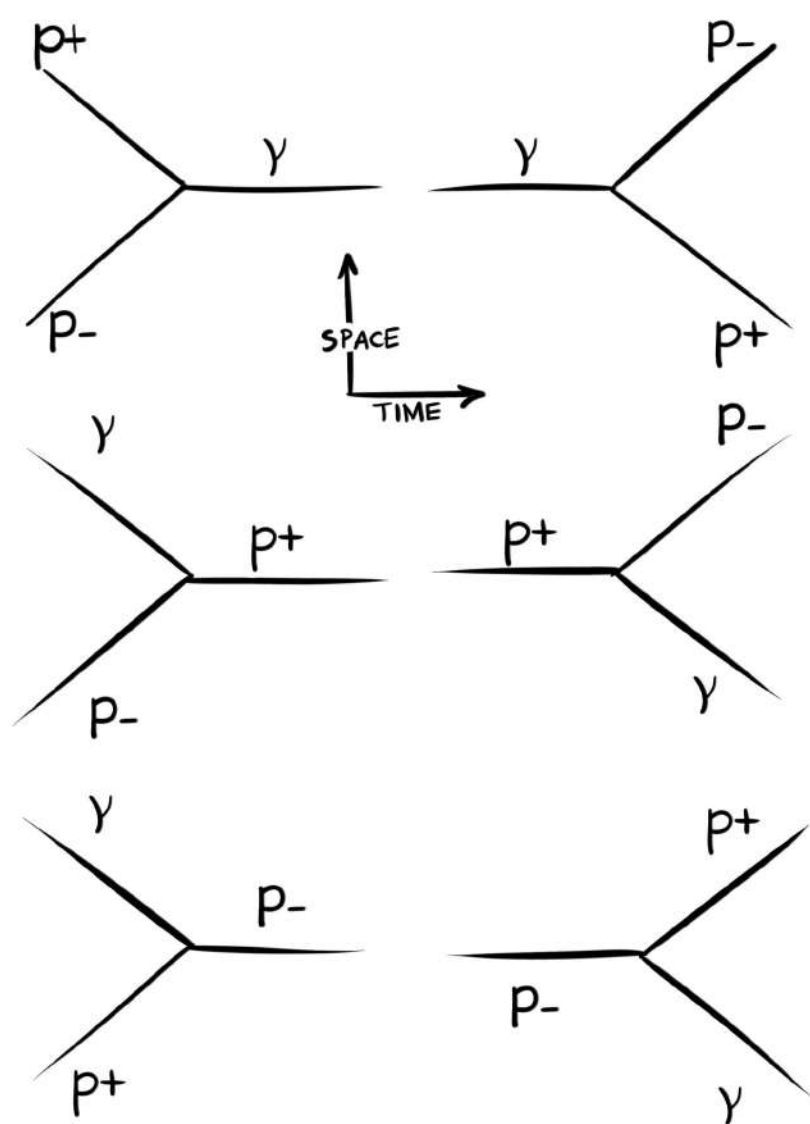


TYPICAL INTERNET TOPOLOGY





Name	Symbol & notation	Explanation
NOT		<p>The inverter</p> <p>NOT simply accepts an input and outputs the opposite.</p>
AND		<p>All inputs must be positive (1) before the output is positive (1 or ON).</p>
NAND *Not AND		<p>Same as AND, but the outcome is the inverse (NOT).</p> <p>So, perform AND first, then apply NOT to the output.</p>
OR		<p>At least one input must be positive (1) to give a positive output (1 or ON).</p> <p>All inputs could also be positive.</p>
NOR *Not OR		<p>Same as OR, but the outcome is the inverse (NOT).</p> <p>So, perform OR first, then apply NOT to the output.</p>
XOR *exclusive OR		<p>Only one input can be positive (1) to give a positive output (1 or ON).</p> <p>If both are positive, the output is negative (0 or OFF)</p>
XNOR *exclusive Not OR		<p>All inputs must be the same (either high or low) for a positive output (1).</p> <p>Otherwise, the output is negative (0 or OFF).</p>



Threat to Survival for OI:

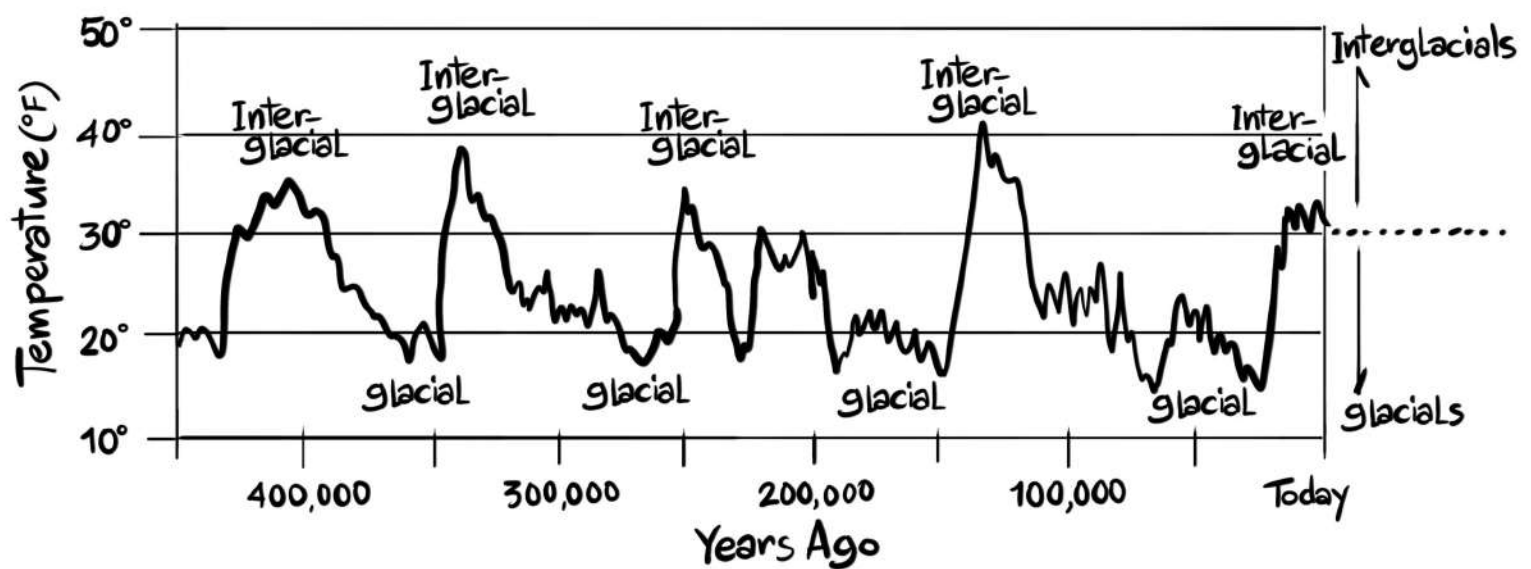
Random = Unpredictable = Luck = God = Magic = Religiosity = Faith = Culture = Belonging = Creating = Happy Life

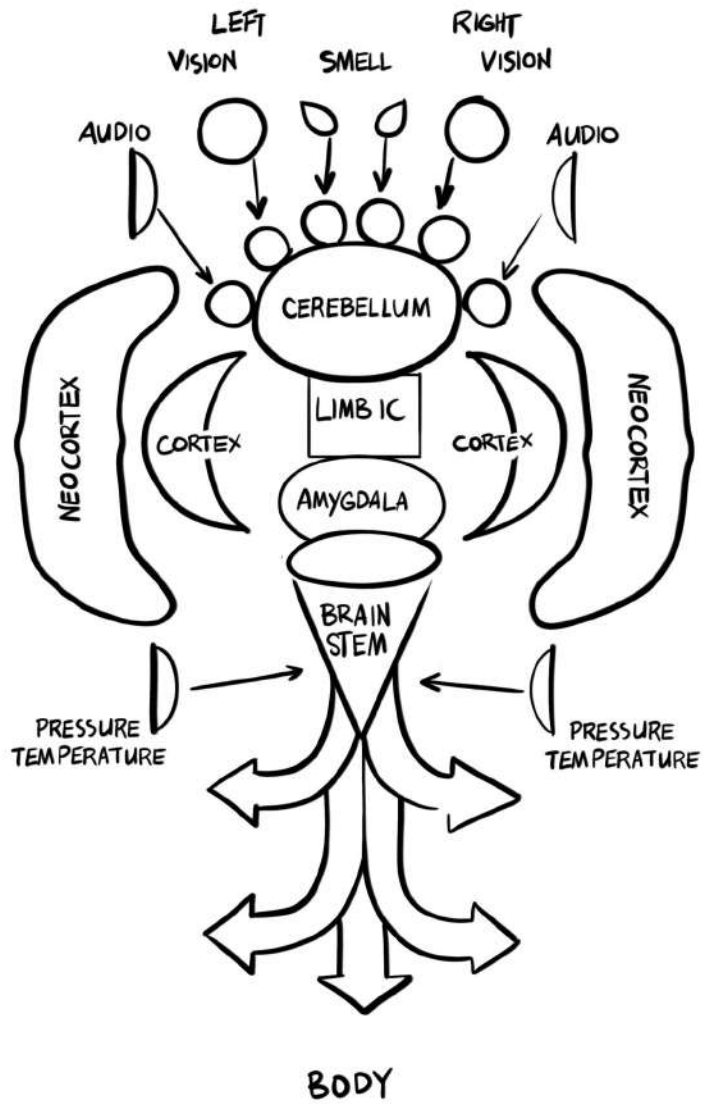
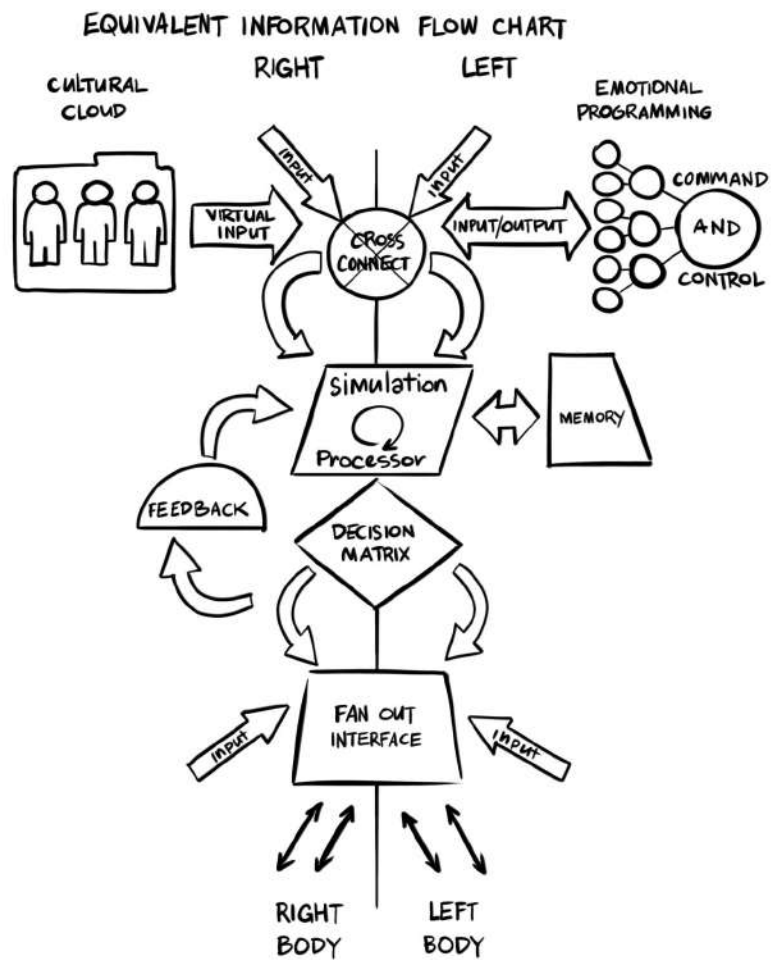
NATURE

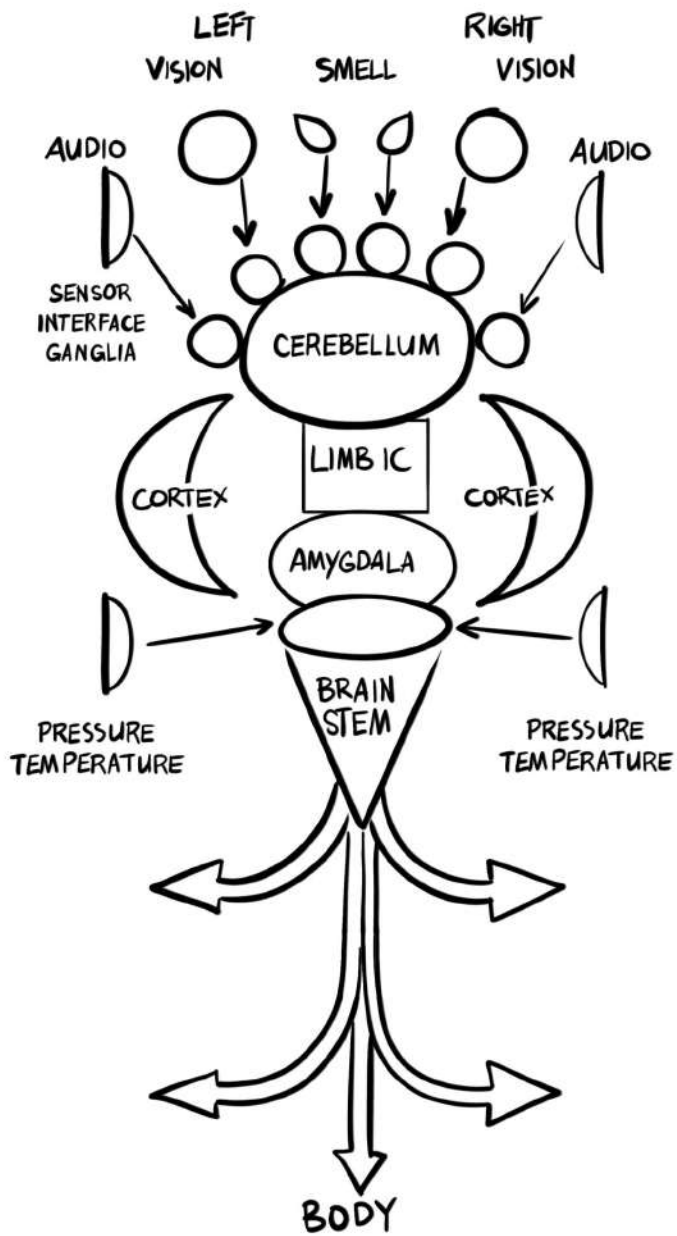
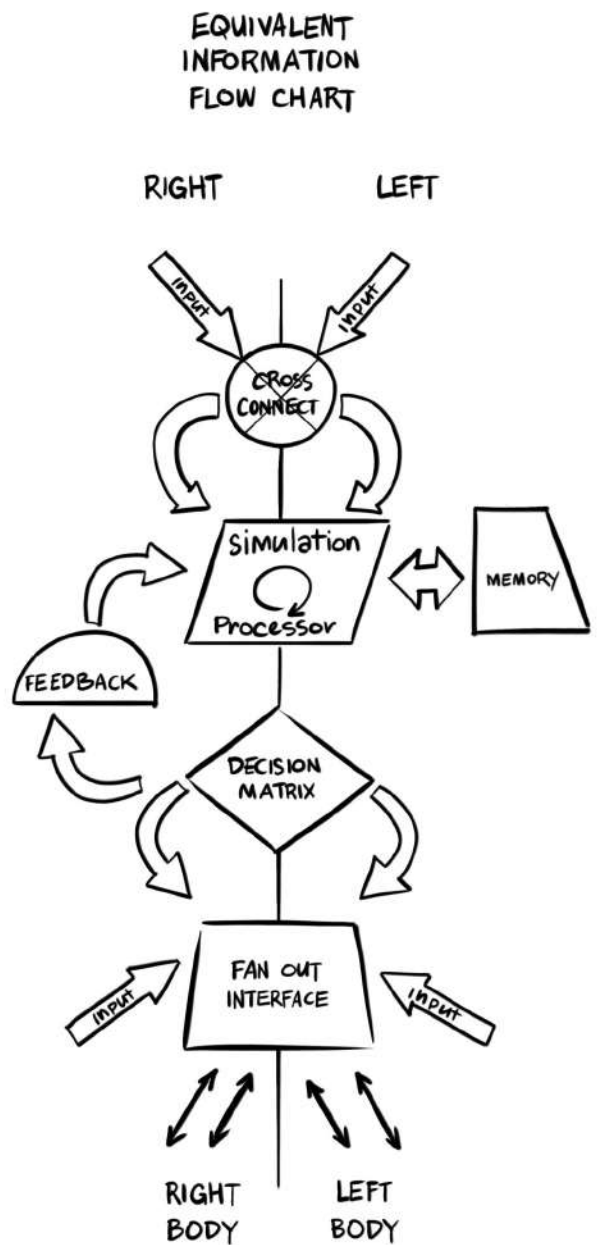
VIRTUAL INFORMATION

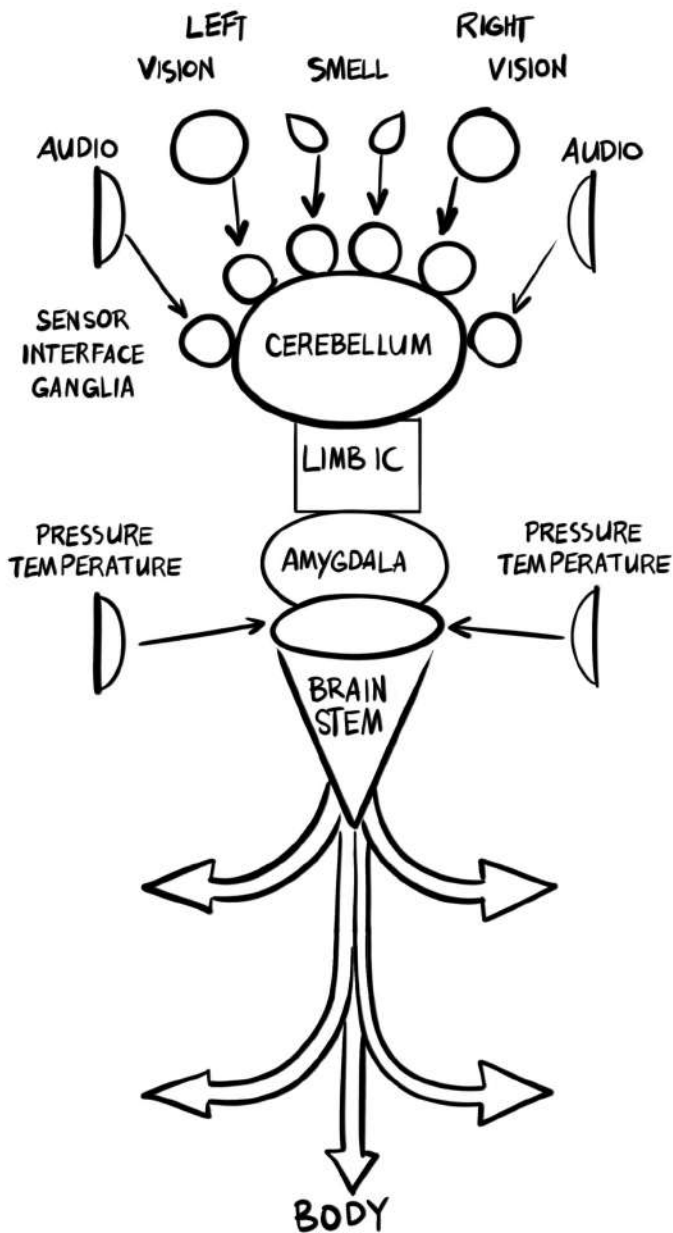
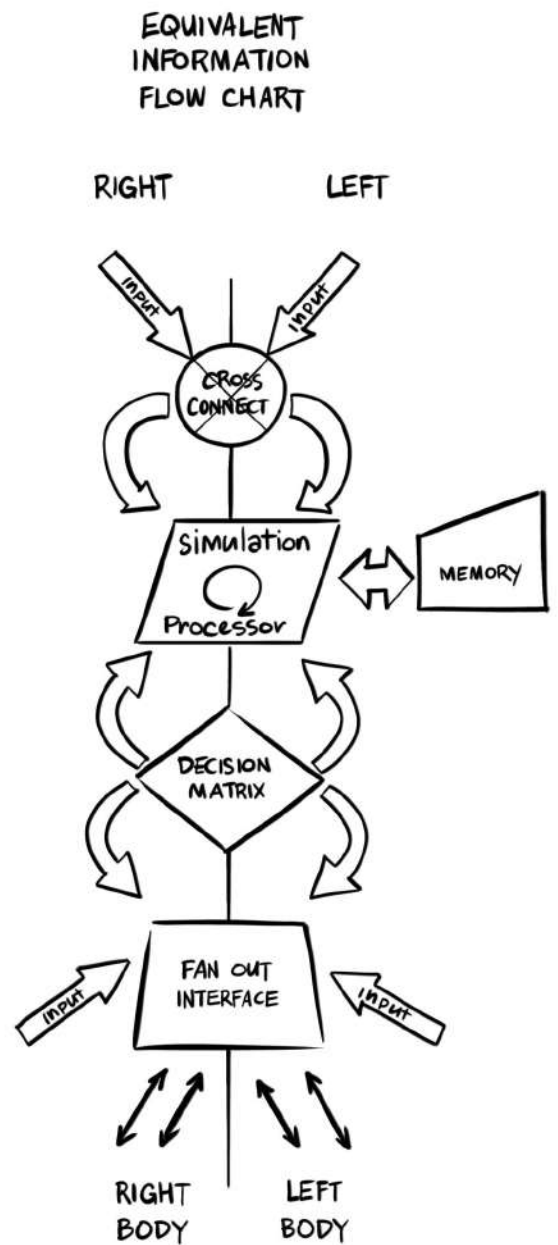
DESIRED REALITY

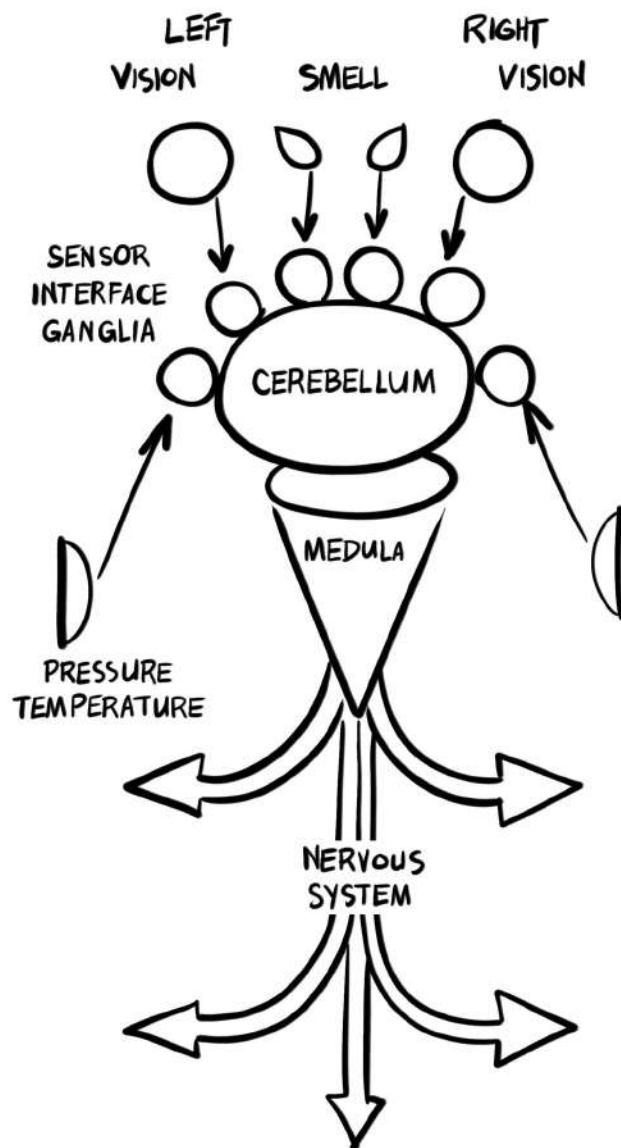
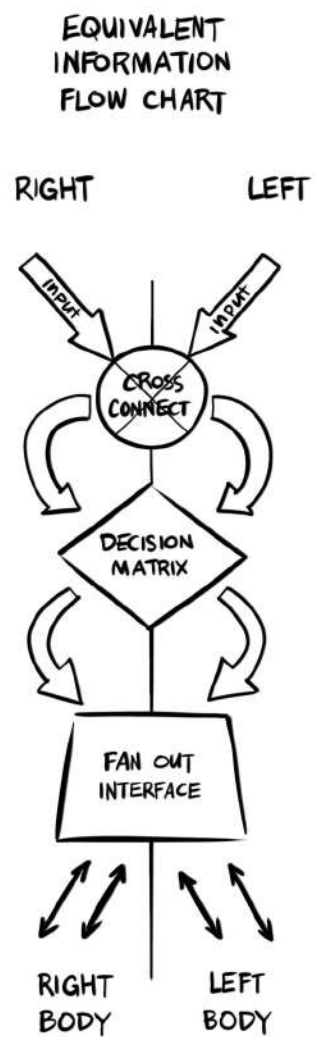
Glacial-interglacial cycles over the past 450,000 years

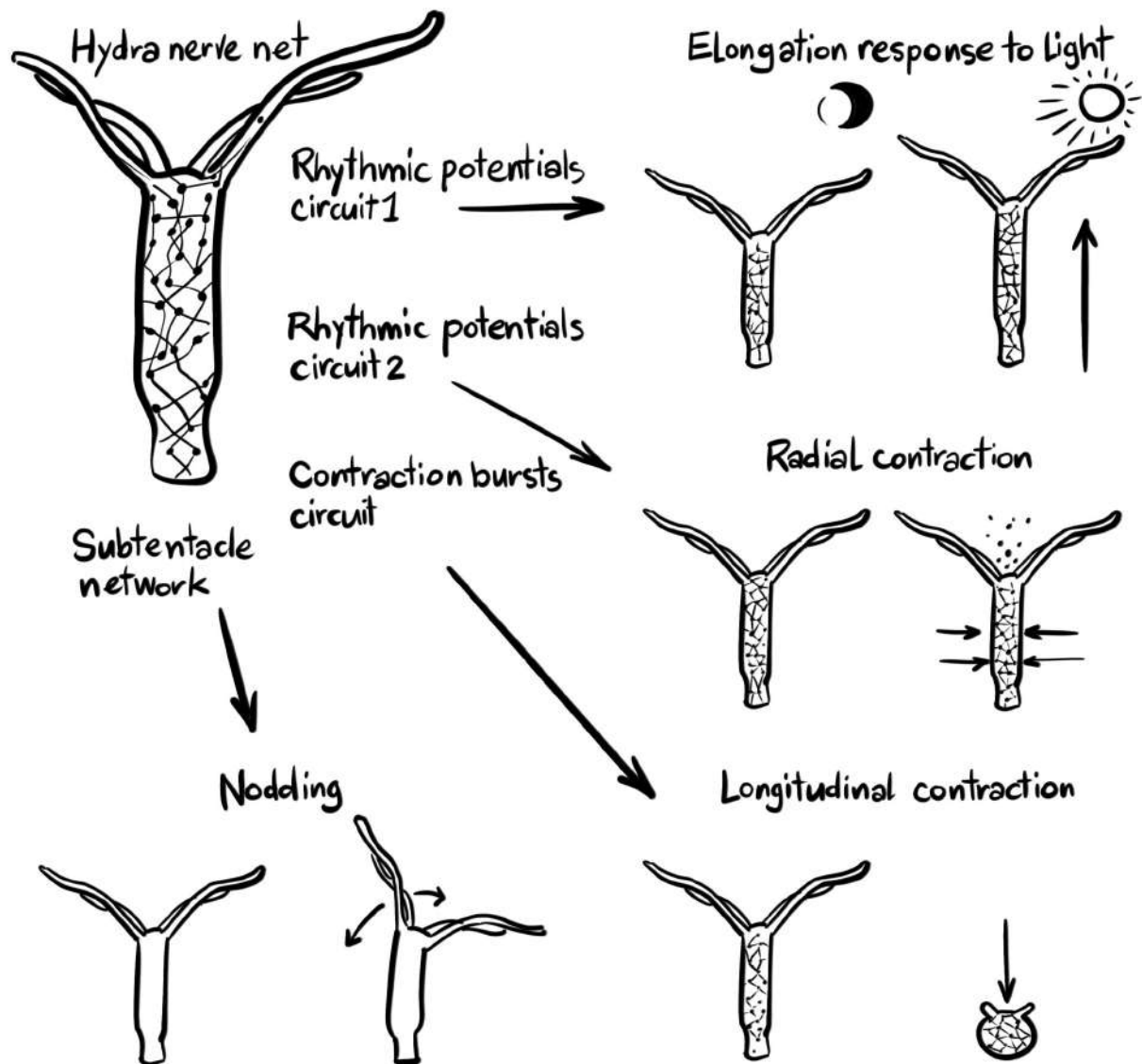


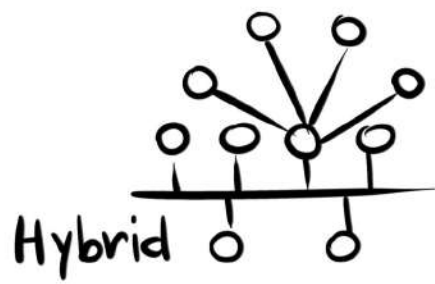
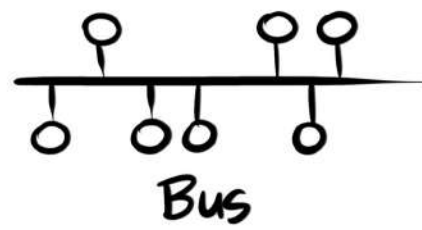
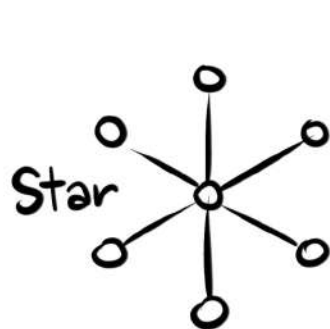
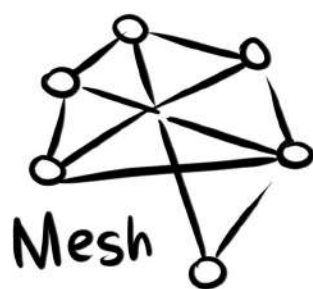
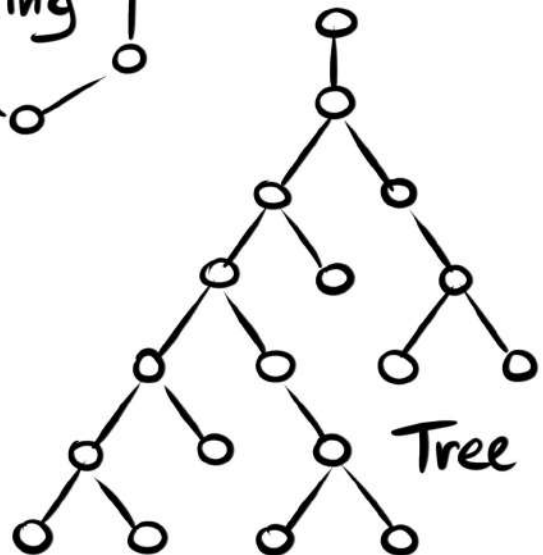




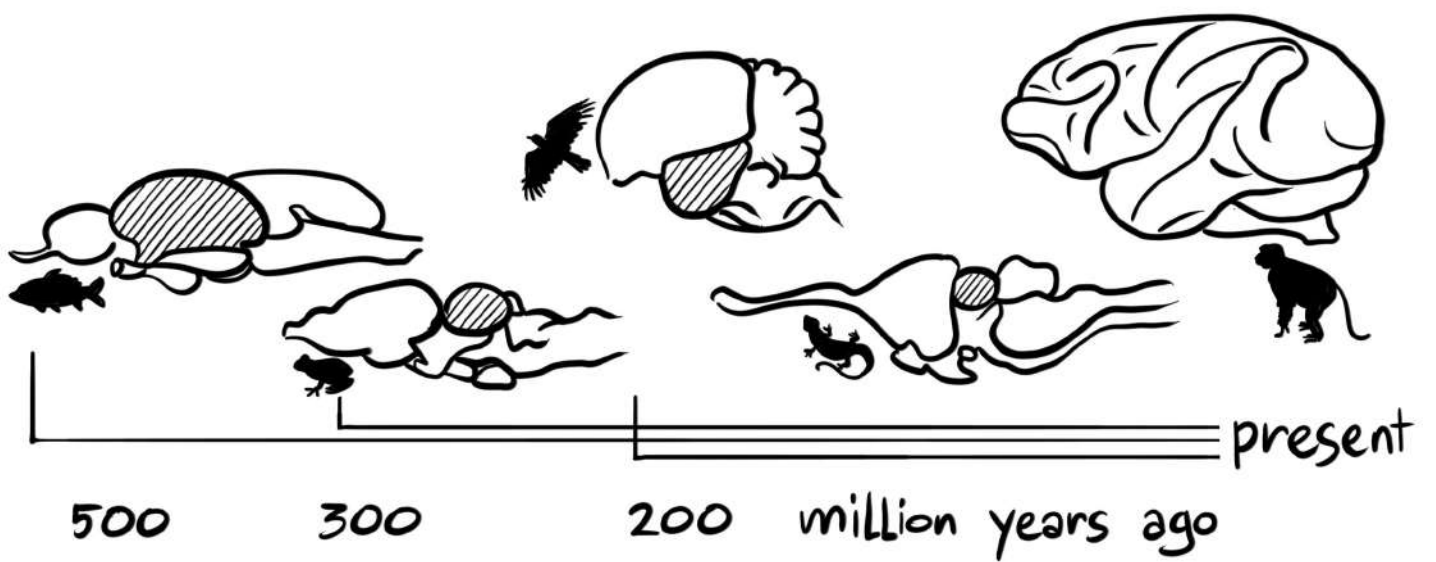


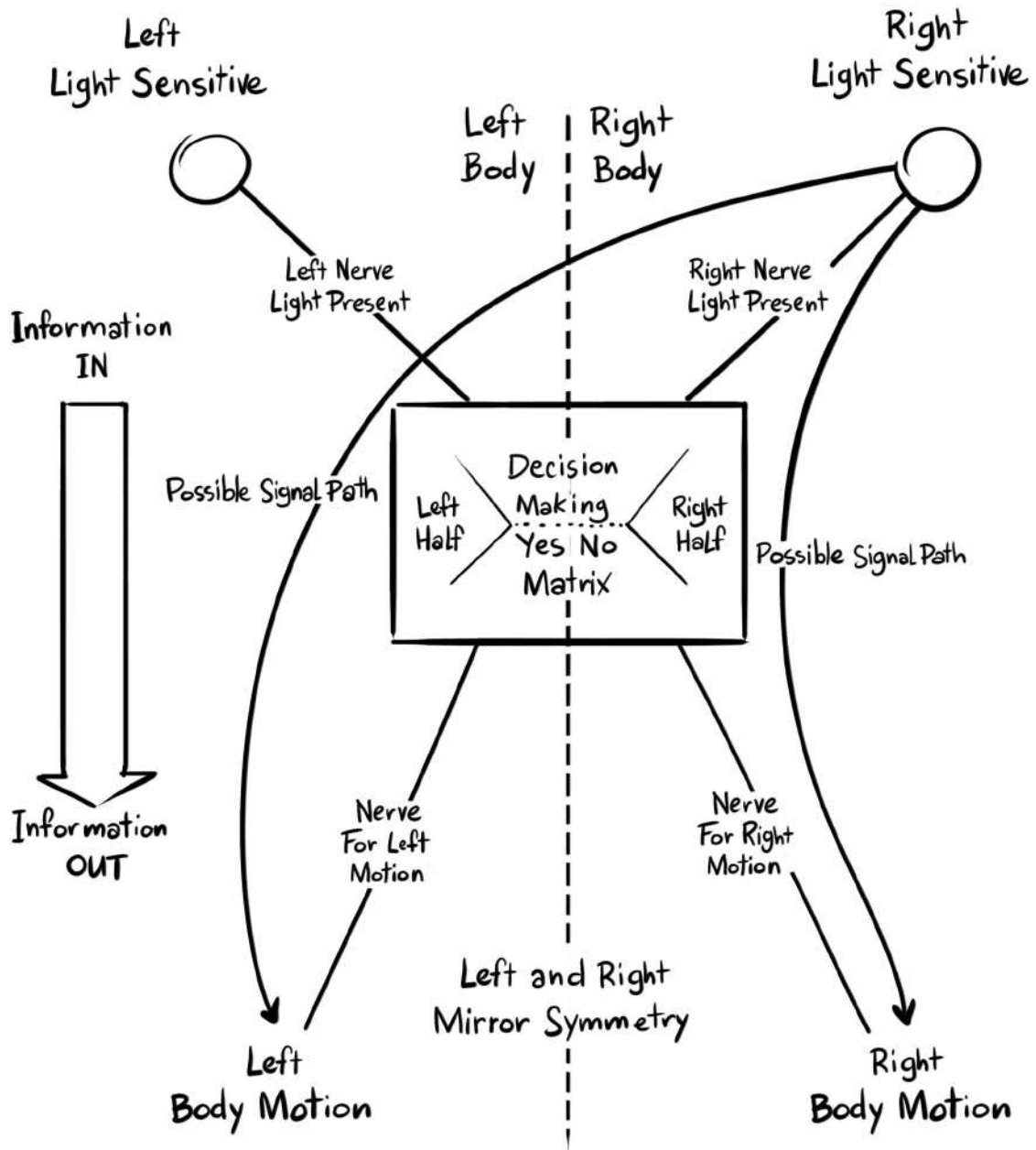




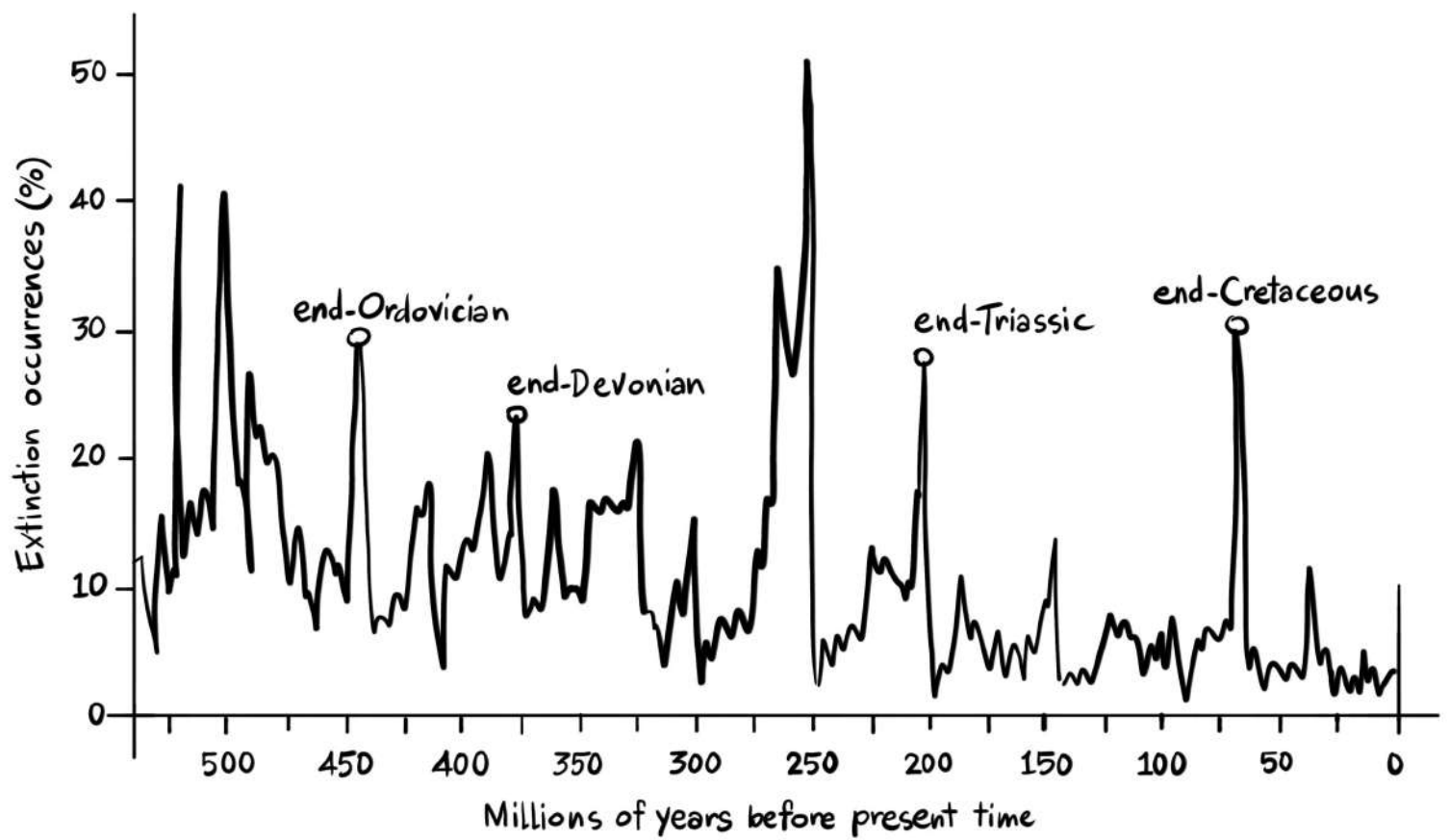


BRAIN EVOLUTION

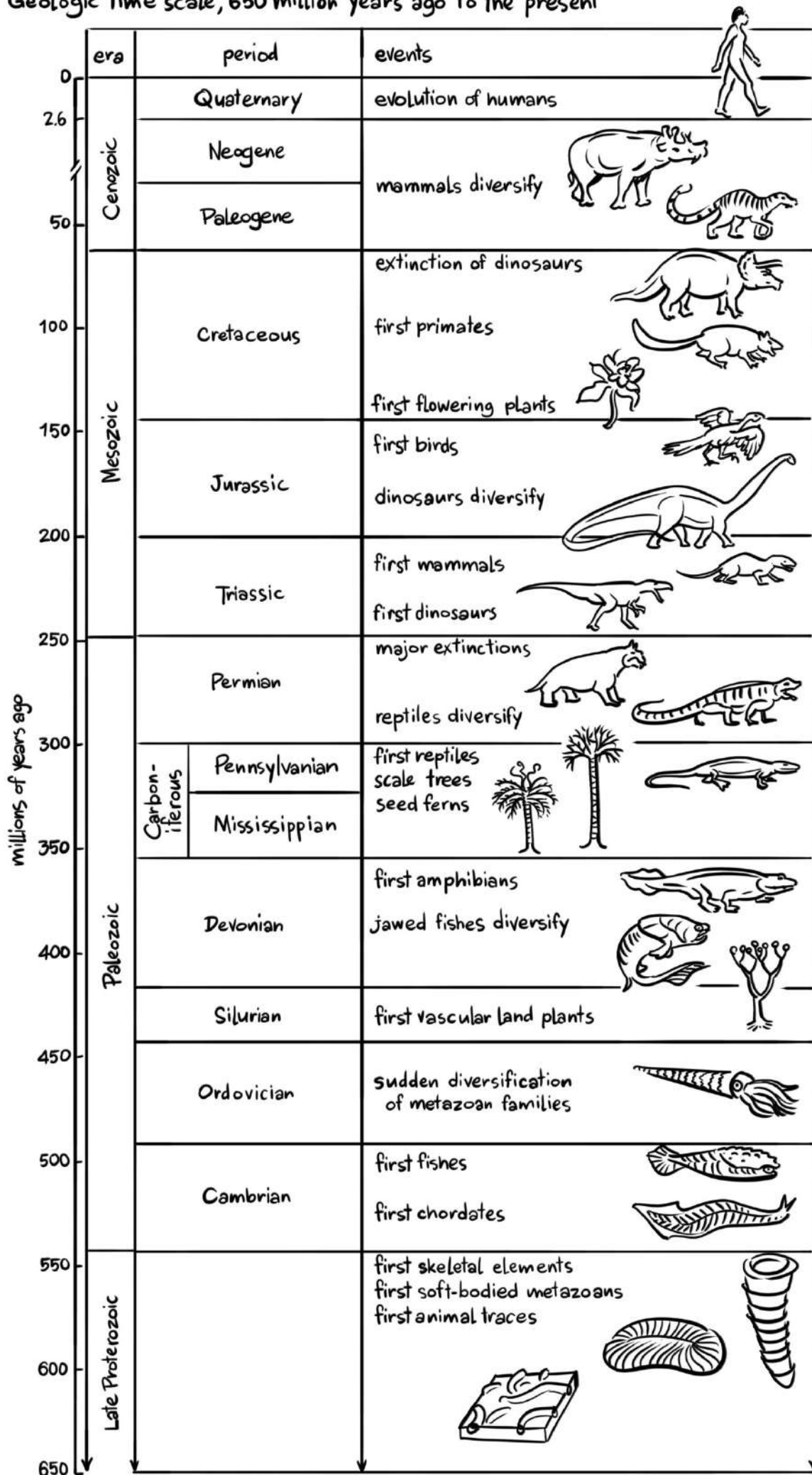


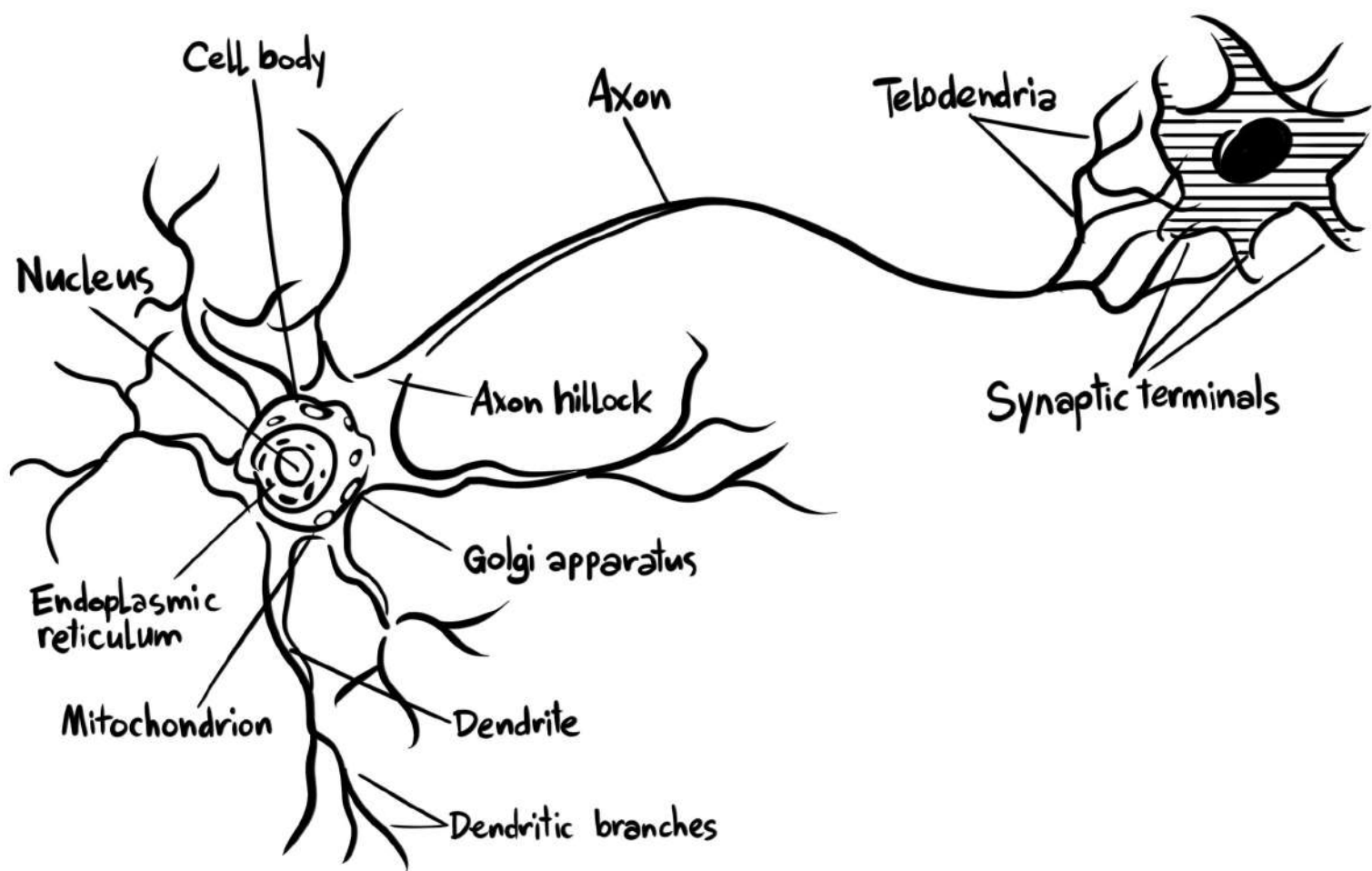


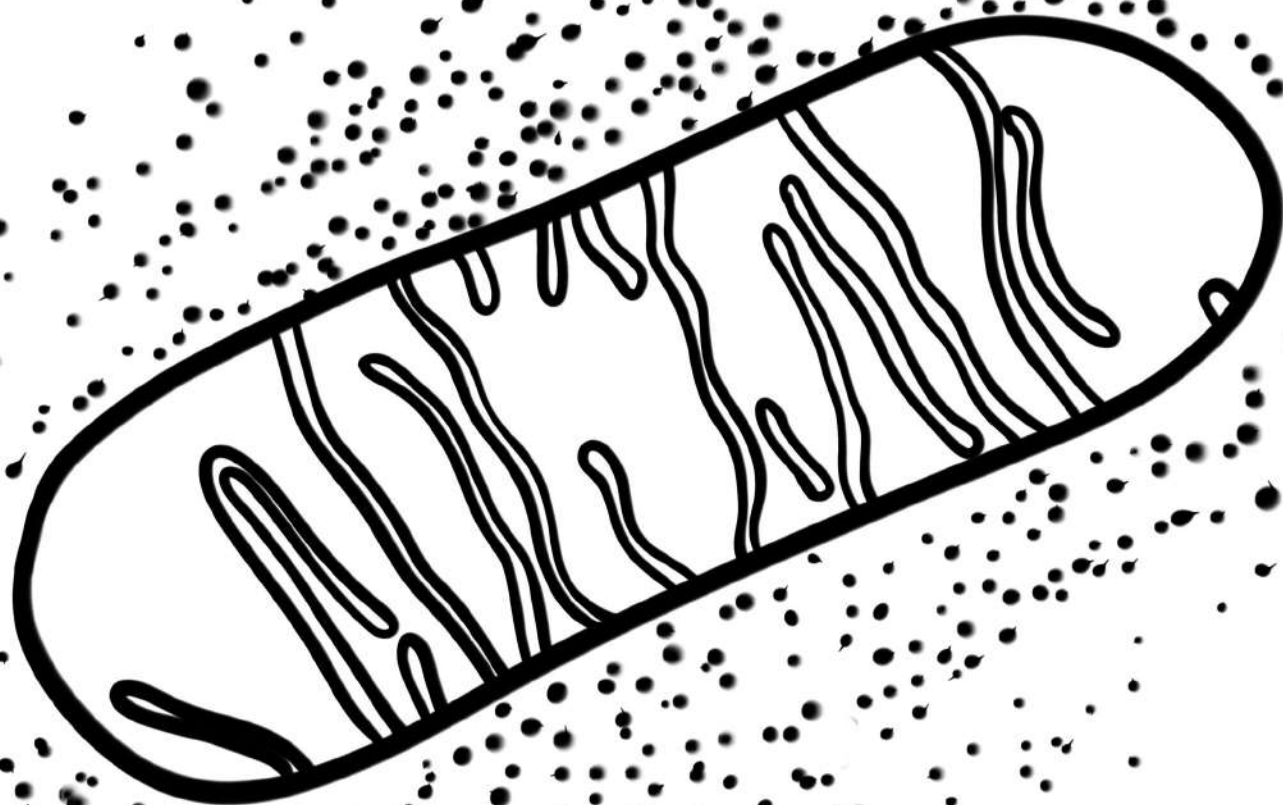


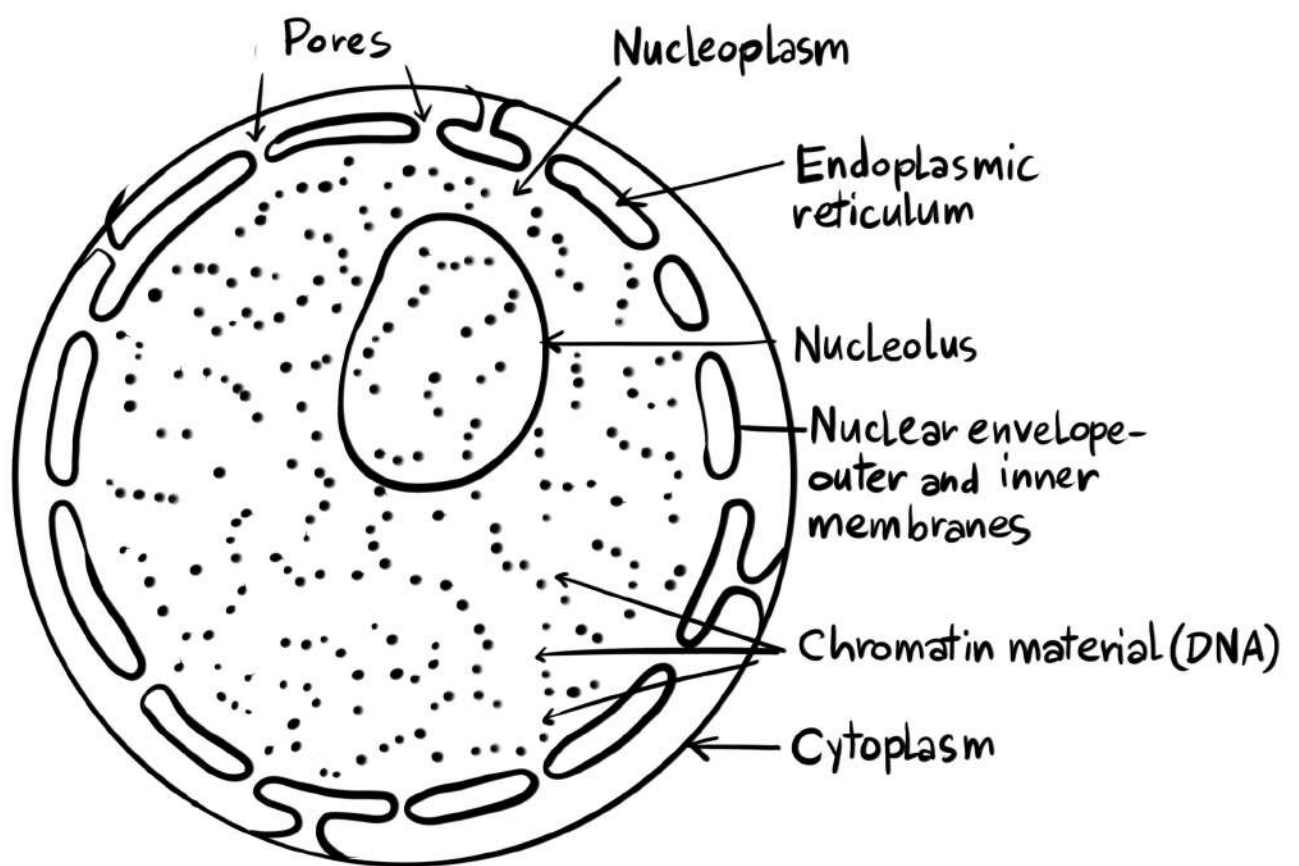


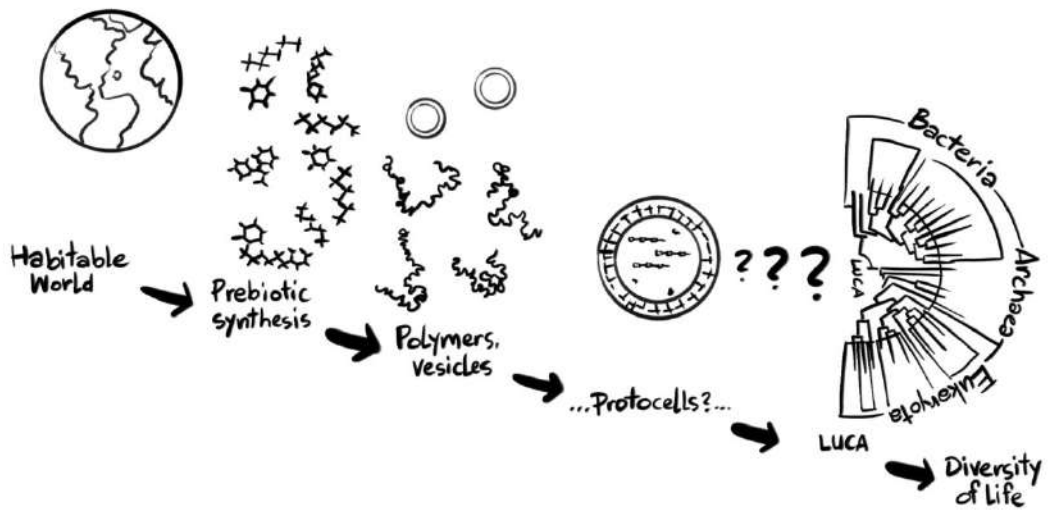
Geologic time scale, 650 million years ago to the present



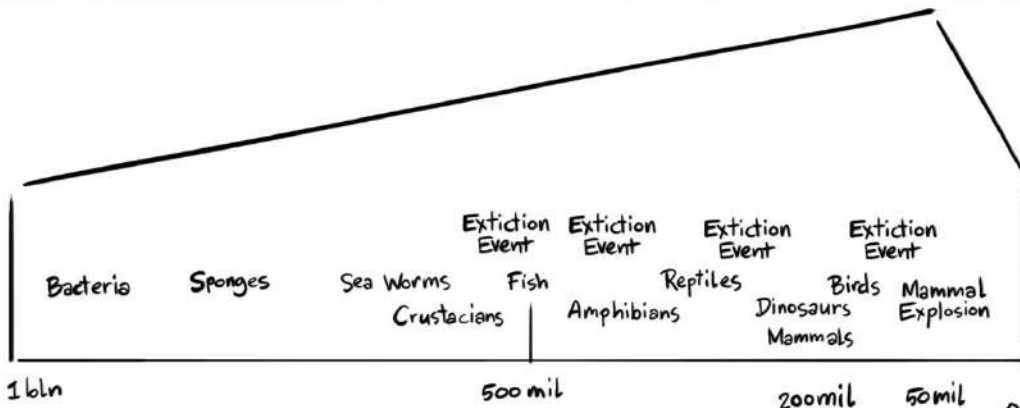
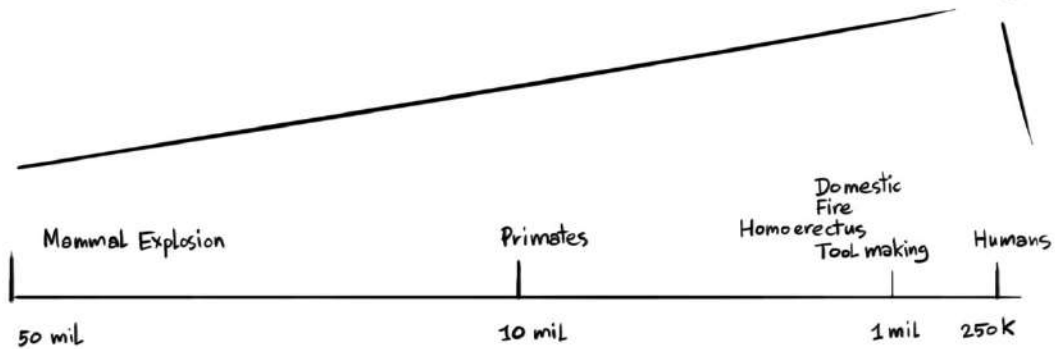
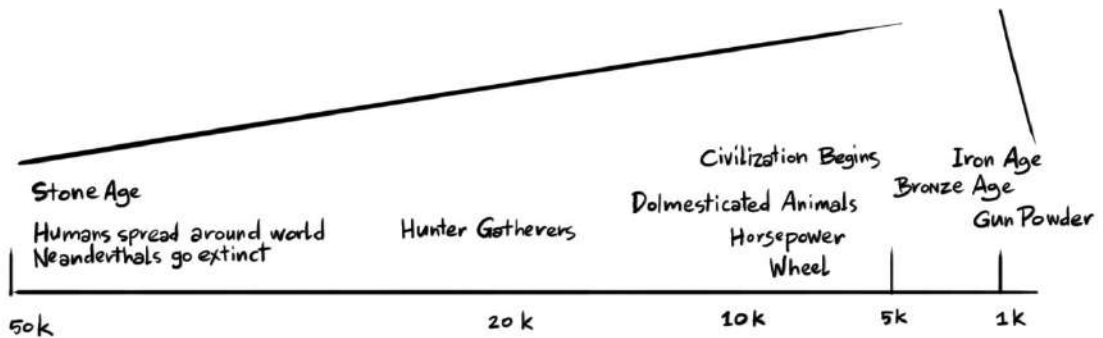
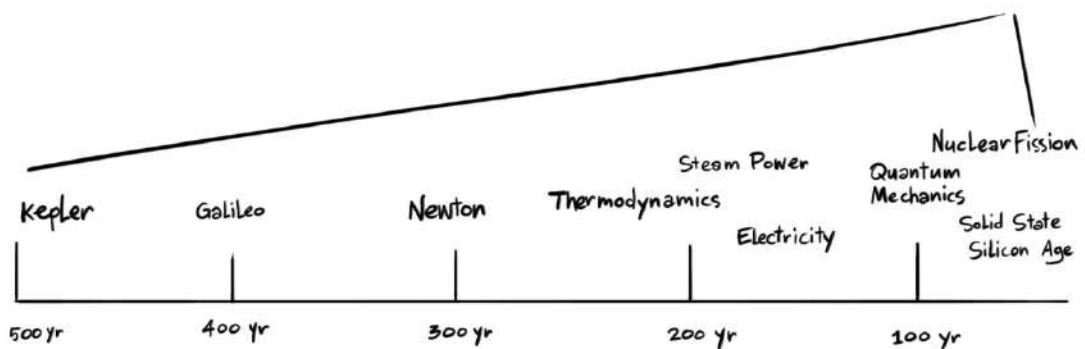


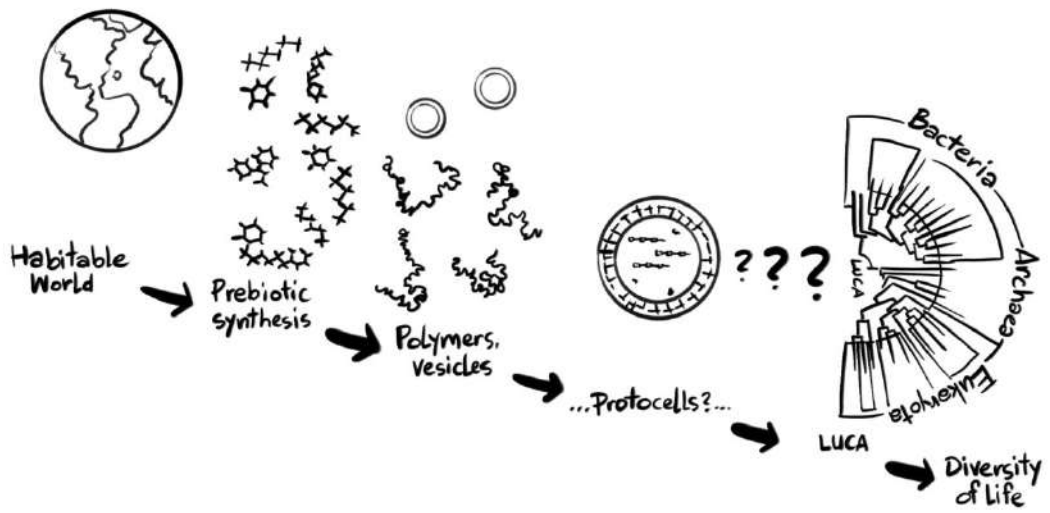




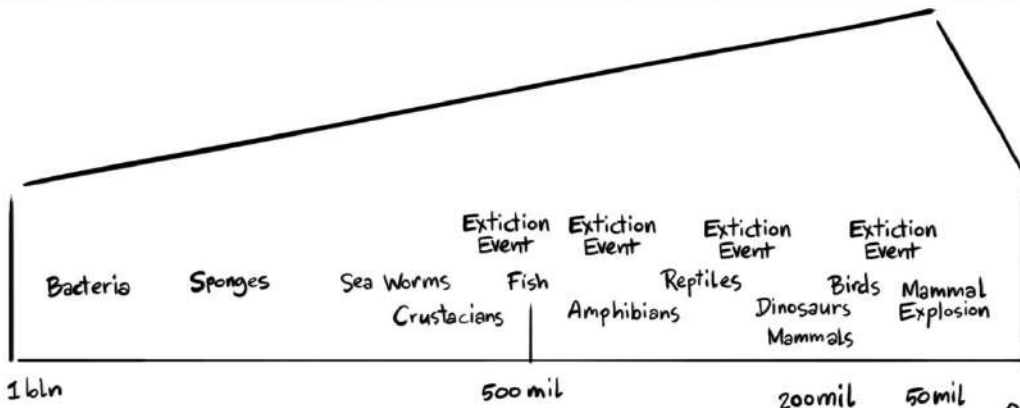
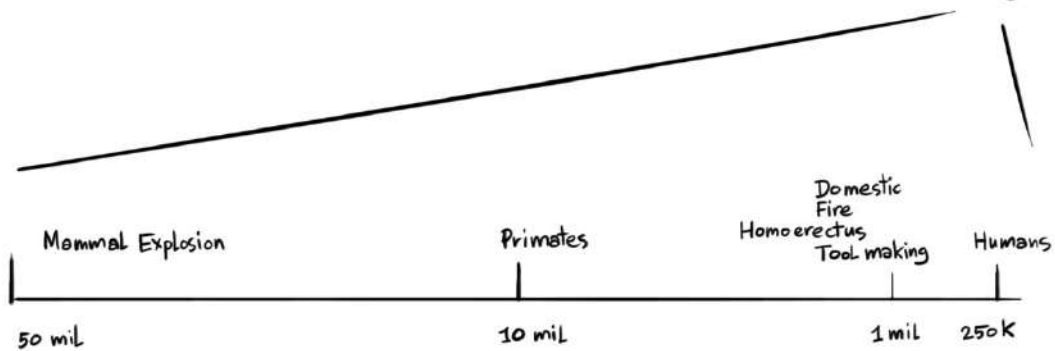
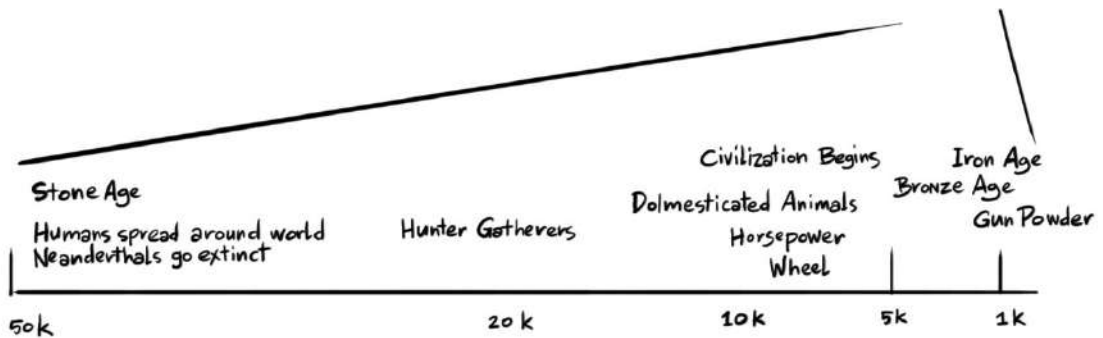
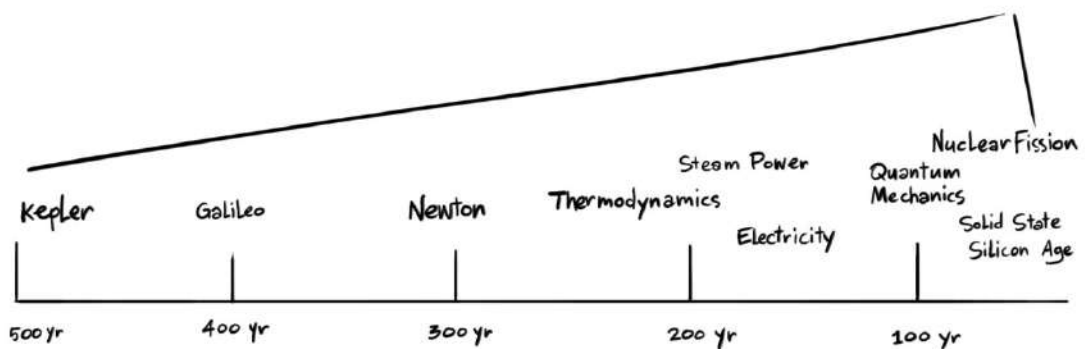


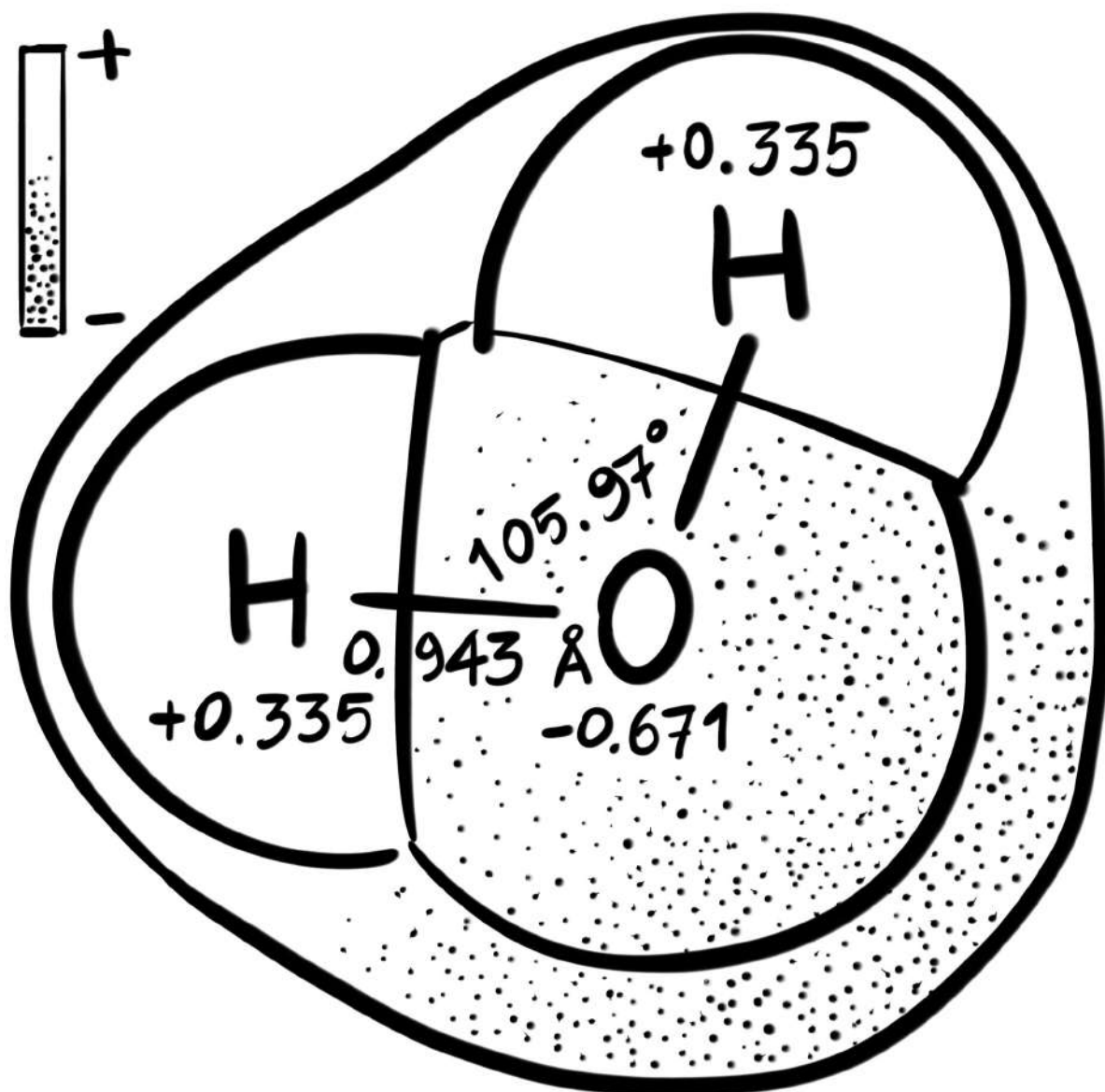
4 bln 3 bln 2 bln 1 bln

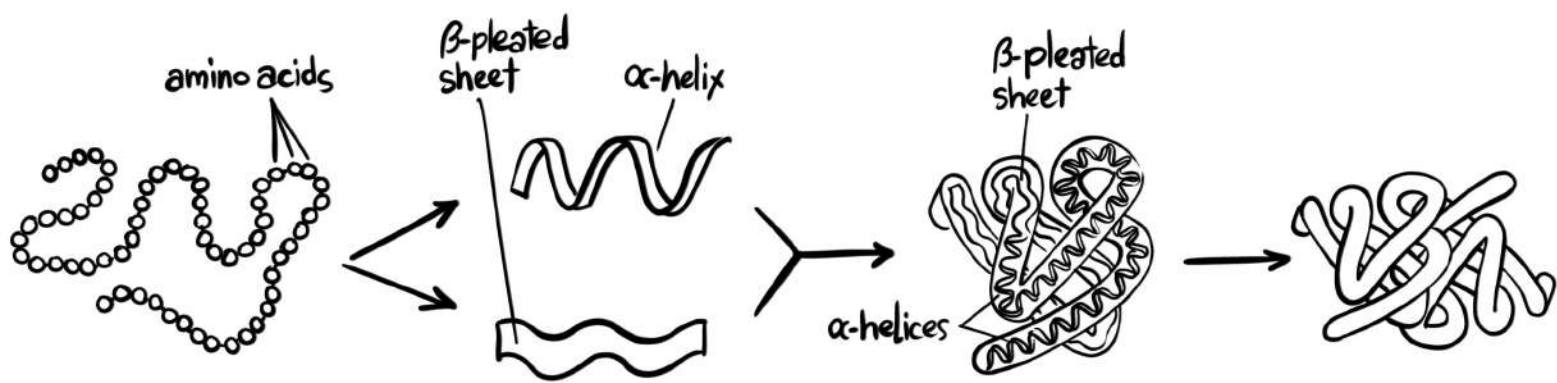




4 bln 3 bln 2 bln 1 bln





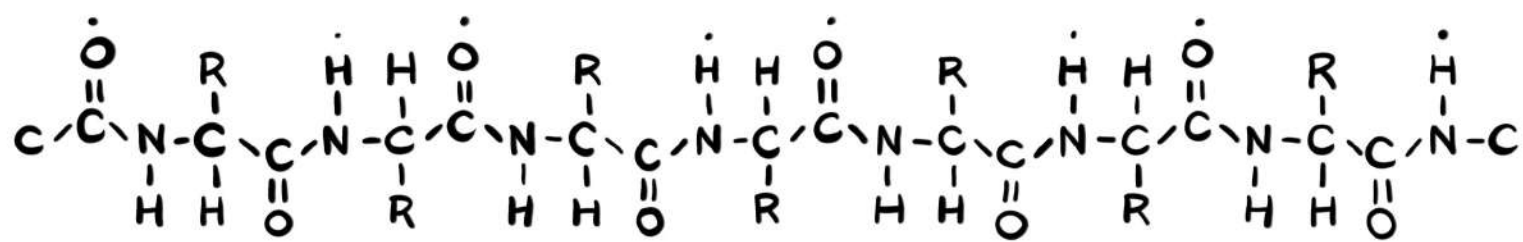


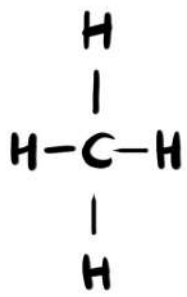
Primary Protein Structure
Sequence of a chain of amino acids

Secondary Protein Structure
Local folding of the polypeptide chain into helices or sheets

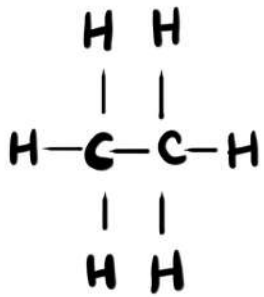
Tertiary Protein Structure
Three-dimensional folding pattern of a protein due to side chain interactions

Quaternary Protein Structure
protein consisting of more than one amino acid chain

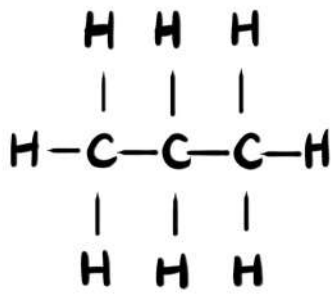




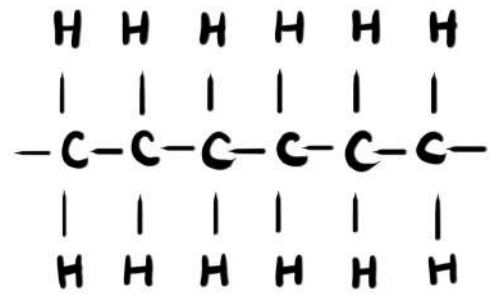
Methane



Ethane



Propane



Hydro-Carbon Chain

- Alkali Metal
- Alkaline earth metal
- Lanthanide
- Actinide
- Transition Metal
- Other Metals
- Metalloids
- Non Metals
- Halogen
- Noble Gas

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra		Rf	Db	Sg	Sh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo

La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Plank Length
1pl

Neutrino

Electron

Proton

H₂O Proteins Cells

Human ISS

Earth Sun

Solar System

Milky Way

Observable Universe

ν_e

e⁻

p



-35

Size (10ⁿ m) -24 -23 -22 -21 -20 -19 -18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Common Unit ym

zm

am

fm

pm

Å nm

µm

mm

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km

1

2

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1

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4

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6

7

8

9

10

D₀

A quick review of numbers and how we represent them.

All numbers that are real, can be represented by:

0,1,2,3,4,5,6,7,8,9 are number symbols so we can count. But when we get to big numbers like:

one billion, which looks like this, 1,000,000,000

I'm lazy and get tired of writing zeros and keeping track of commas, or if you're european, periods

So, instead we write a billion as:

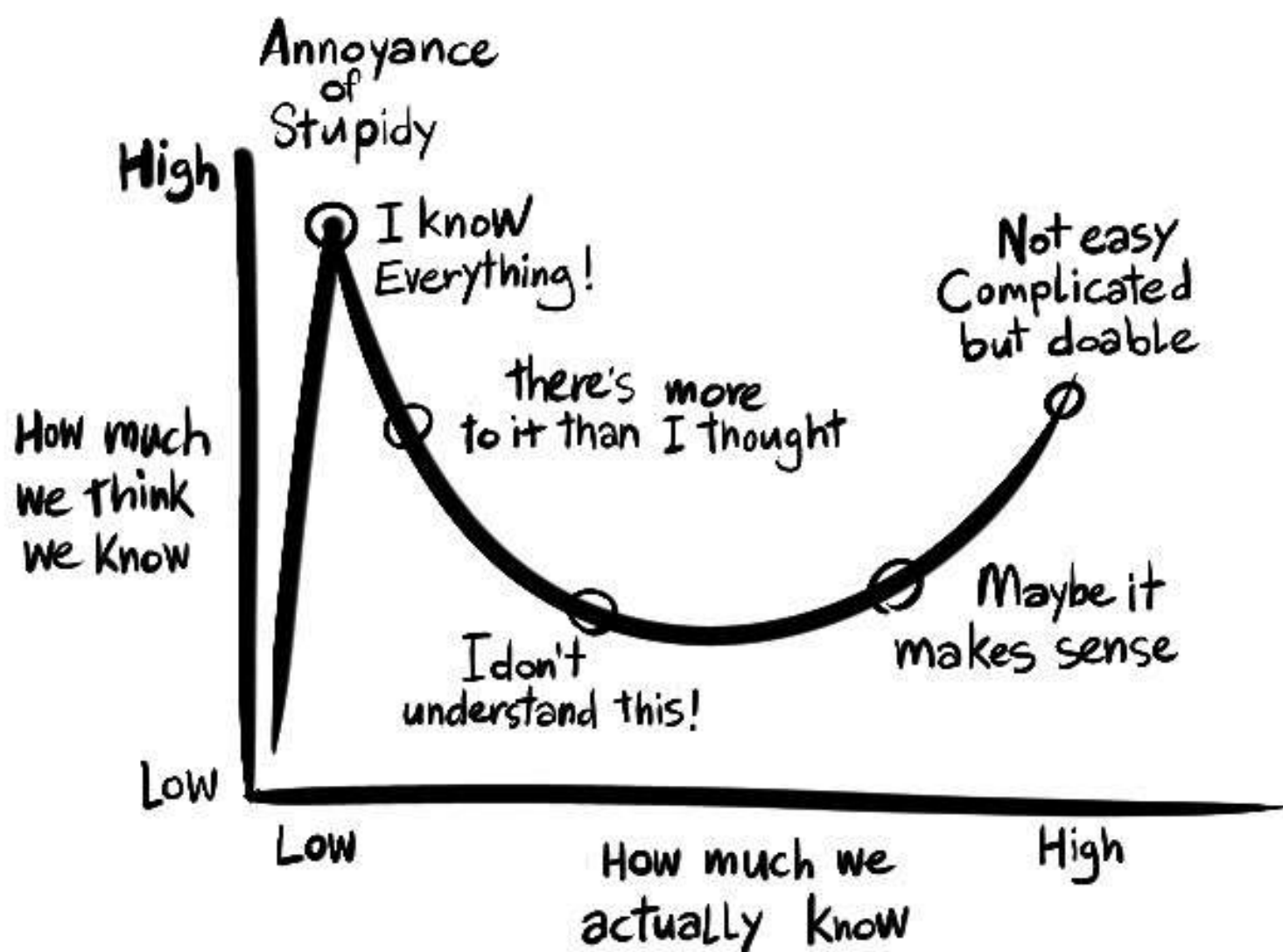
1.0×10^9 which says the number is one times ten to the ninth, or nine zeroes.

Our universe is very large and our building blocks are very small, so we need to represent our numbers this way which makes easy writing and computing.

$$\text{Ex. } 2.0 \times 10^{-3} \times 2.0 \times 10^7 = 4.0 \times 10^4$$

Rem: exponents add when multiplying numbers

The Dunning Kruger Effect



The Dunning Kruger Effect

