

On Consciousness

Theory of Knowledge,
Individual Presentation,
Pyokyeong Son

*“Can **machines** carry out **thinking** [in a form]
very different from **humans**?”*

–Alan Turing

-
- 1950 • Alan Turing, Proposal of the “Turing Test”
 - 1980 • Invention of Neural Networks
 - 1997 • IBM, *Deep Blue* defeats Human in Chess
 - 2009 • Google, First *Self-driving Car*
 - 2015 • *AlphaGo*, defeats Human in a game of Go

Real Life Situation:

Rise of Human-like Intelligence

——How do we know whether an external entity is *conscious*?

1. The Problem of Definition

The having of perceptions,
thoughts, feelings & awareness.



Stuart Sutherland,
Psychologist



“Mind-body Dualism”



“Mind-body Dualism”

“A **reflex act**, by which a person knows their thoughts to be their own thoughts,”



SINCE 1828



consciousness ×

DICTIONARY

THESAURUS

consciousness **noun**

con·scious·ness | \ˈkän(t)-shəs-nəs \

Definition of *consciousness*

- 1 **a** : the quality or state of being aware especially of something within oneself
- b** : the state or fact of being conscious of an external object, state, or fact
- c** : AWARENESS

especially : concern for some social or political cause

// The organization aims to raise the *political consciousness* of teenagers.

2 : the state of being characterized by sensation, emotion, volition, and thought : MIND

3 : the totality of conscious states of an individual

4 : the normal state of conscious life

// regained *consciousness*

5 : the upper level of mental life of which the person is aware as contrasted with unconscious processes

WORD OF THE DAY

admonish

to express warning or disapproval

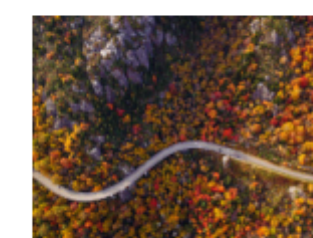
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TEST YOUR VOCABULARY

Autumn Words of the Day 2018



Which is a synonym of fugacious?

violent

impermanent

brawny

hidden

consciousness **noun**

con·scious·ness | \ˈkän(t)-shəs-nəs  \

Definition of *consciousness*

1 a : the quality or state of being aware especially of something within oneself

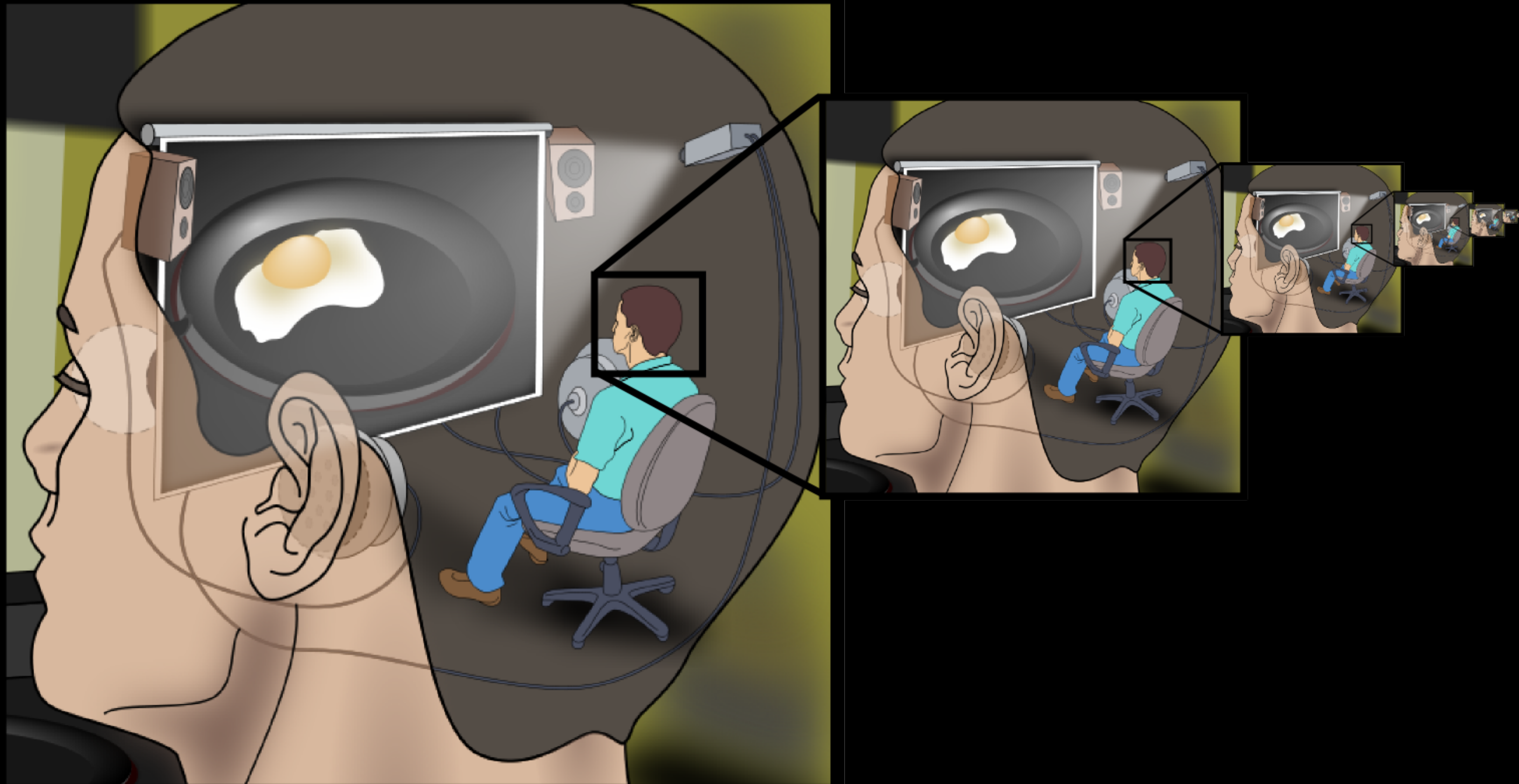
b : the state or fact of being conscious of an external object, state, or fact

c : AWARENESS

especially : concern for some social or political cause

// The organization aims to raise the political *consciousness* of teenagers.

2 : the state of being characterized by sensation, emotion, volition, and thought : MIND



“Homunculus”

2. From the Sociobiologist:

2. From the Sociobiologist:

“Consciousness is Specific to Biology”

Social Sciences

How do we know whether an external entity is conscious?

*How did we, **Humans**, evolve consciousness?*

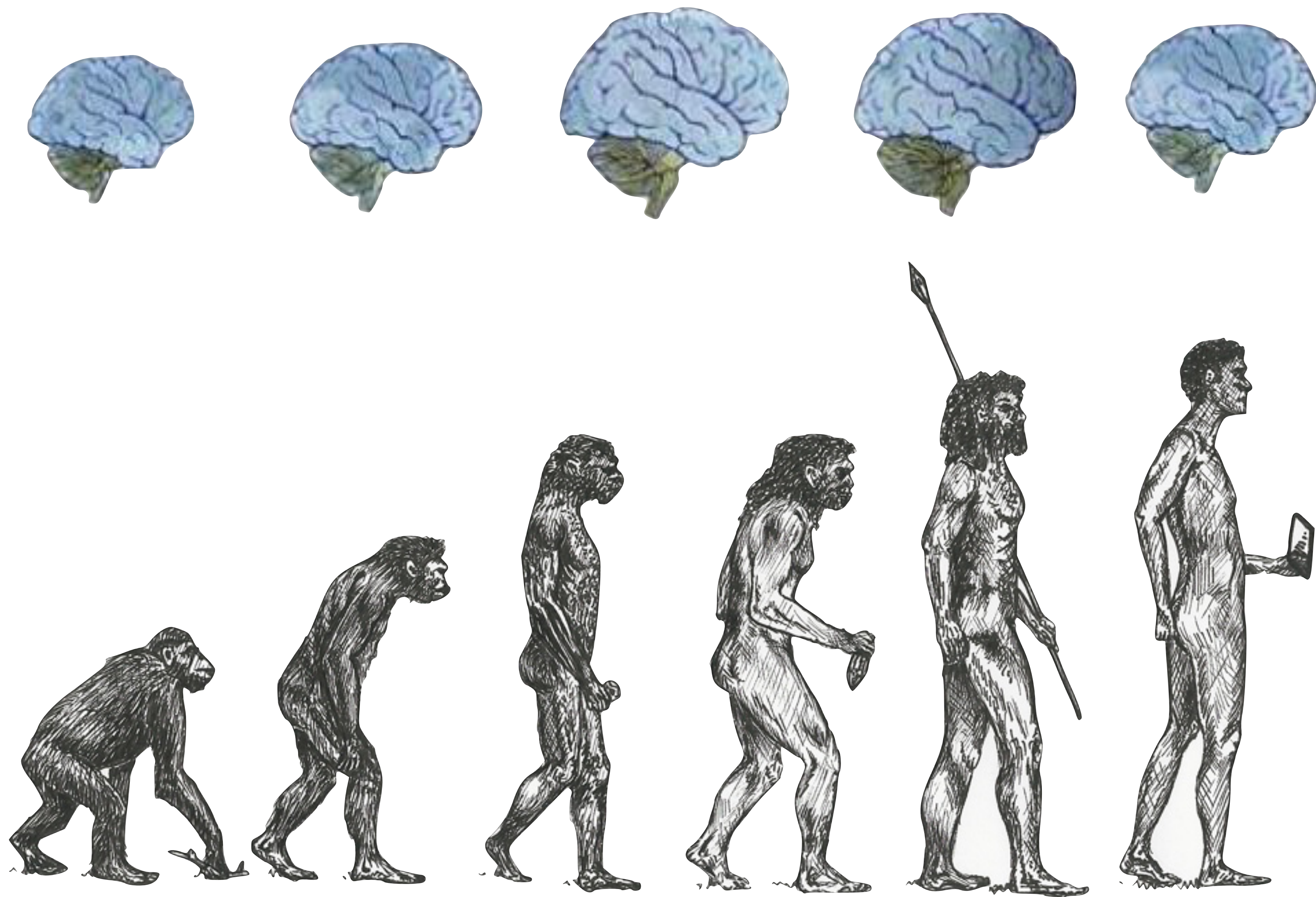
ON

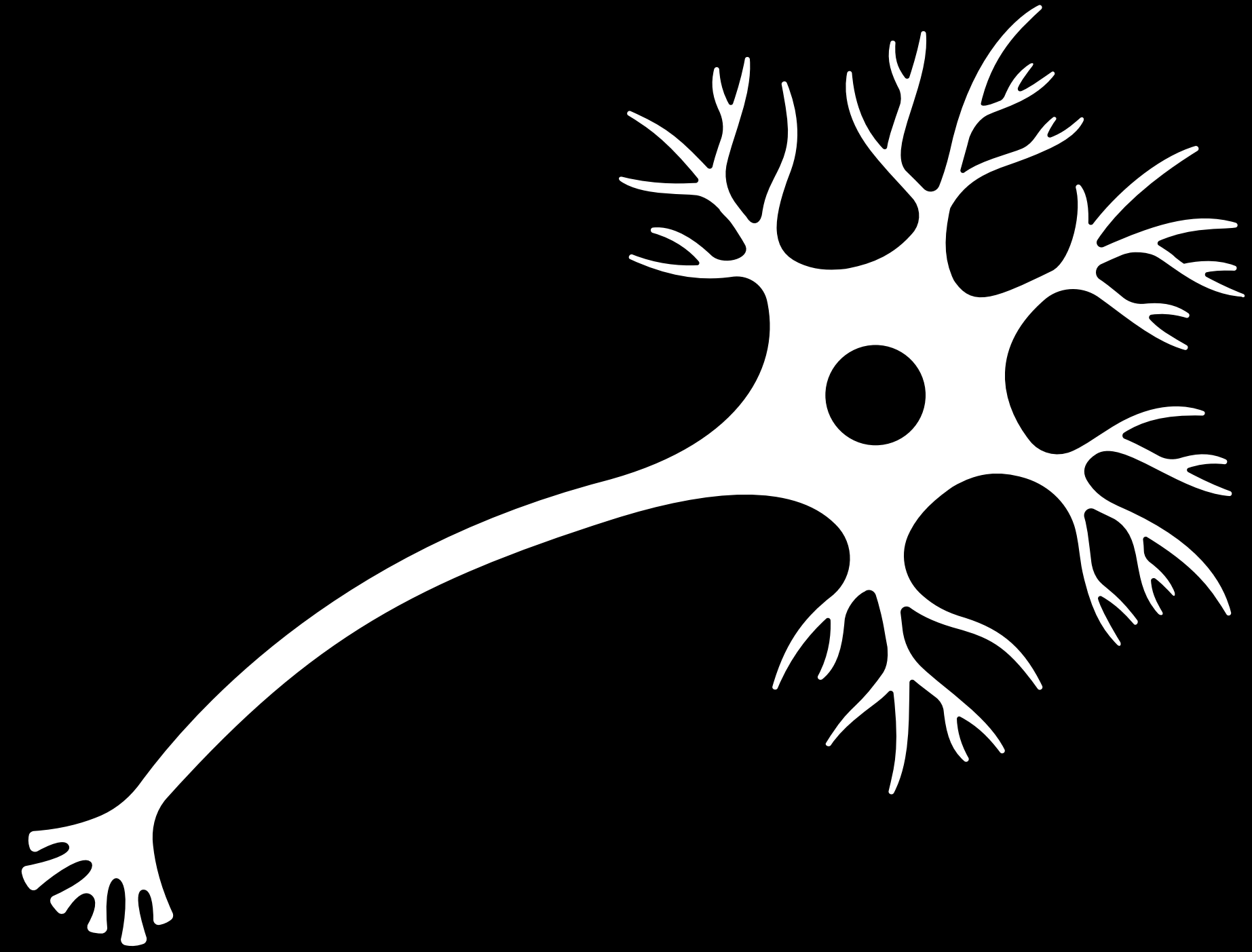
THE ORIGIN OF SPECIES

BY MEANS OF NATURAL SELECTION,

OR THE

PRESERVATION OF FAVOURED RACES IN THE STRUGGLE
FOR LIFE.

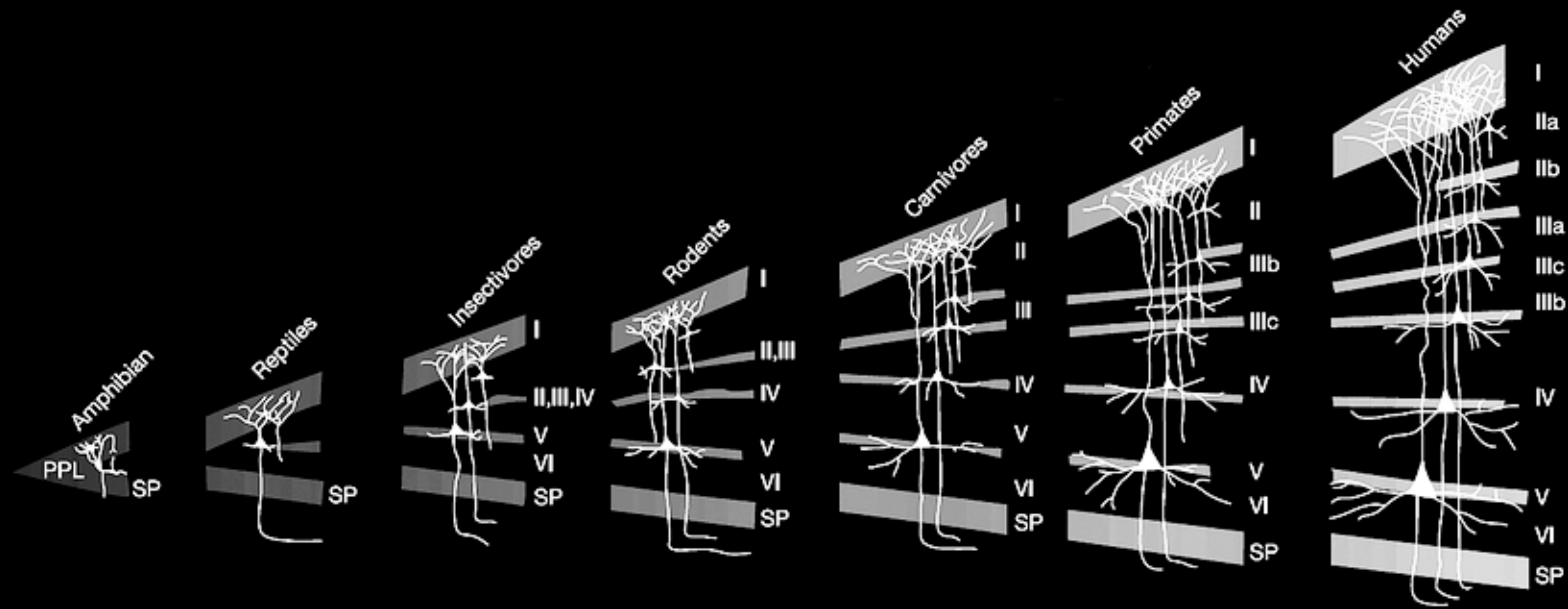




Simply For Survival



Simply For Survival?



2. From the Mathematician:

2. From the Mathematician:

*“Consciousness is a Byproduct
of Information Processing”*

Mathematics & Natural Sciences

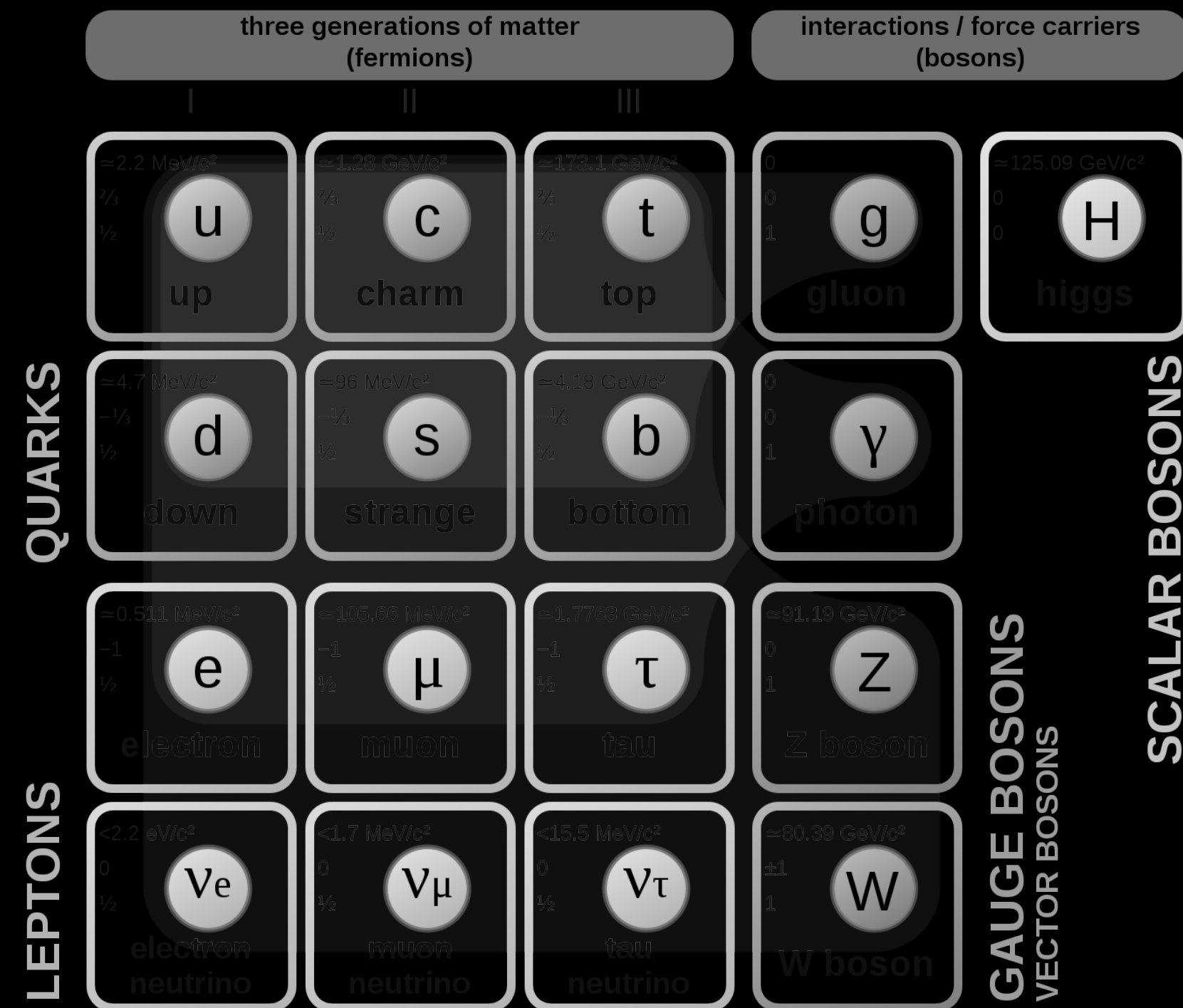
Information Theory

Physics (& Mathematics)

Emergence

Complexity from Simple Rules

Physics* in a Nutshell: Geometry* in a Nutshell:



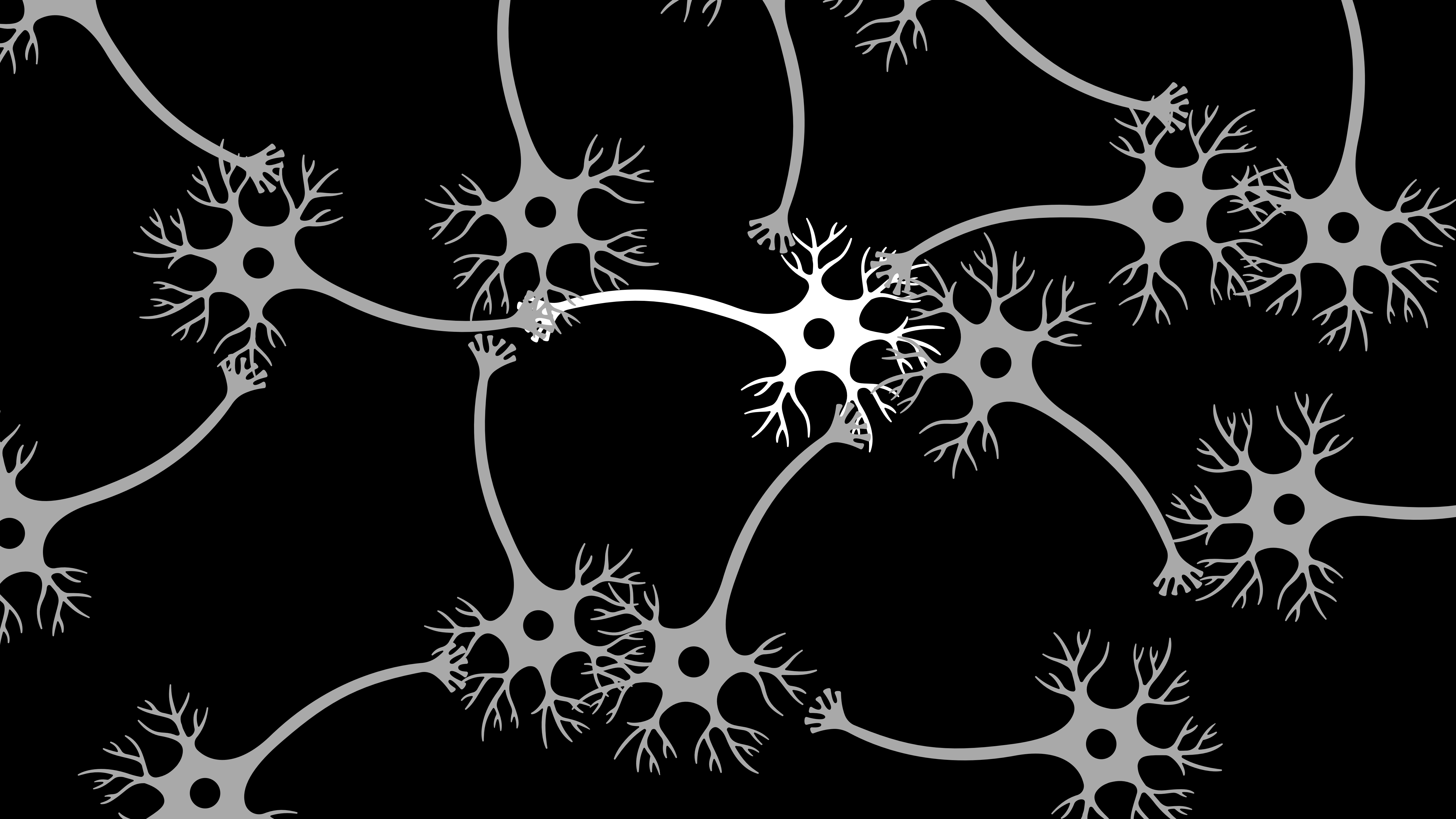
THE
ELEMENTS OF EUCLID.

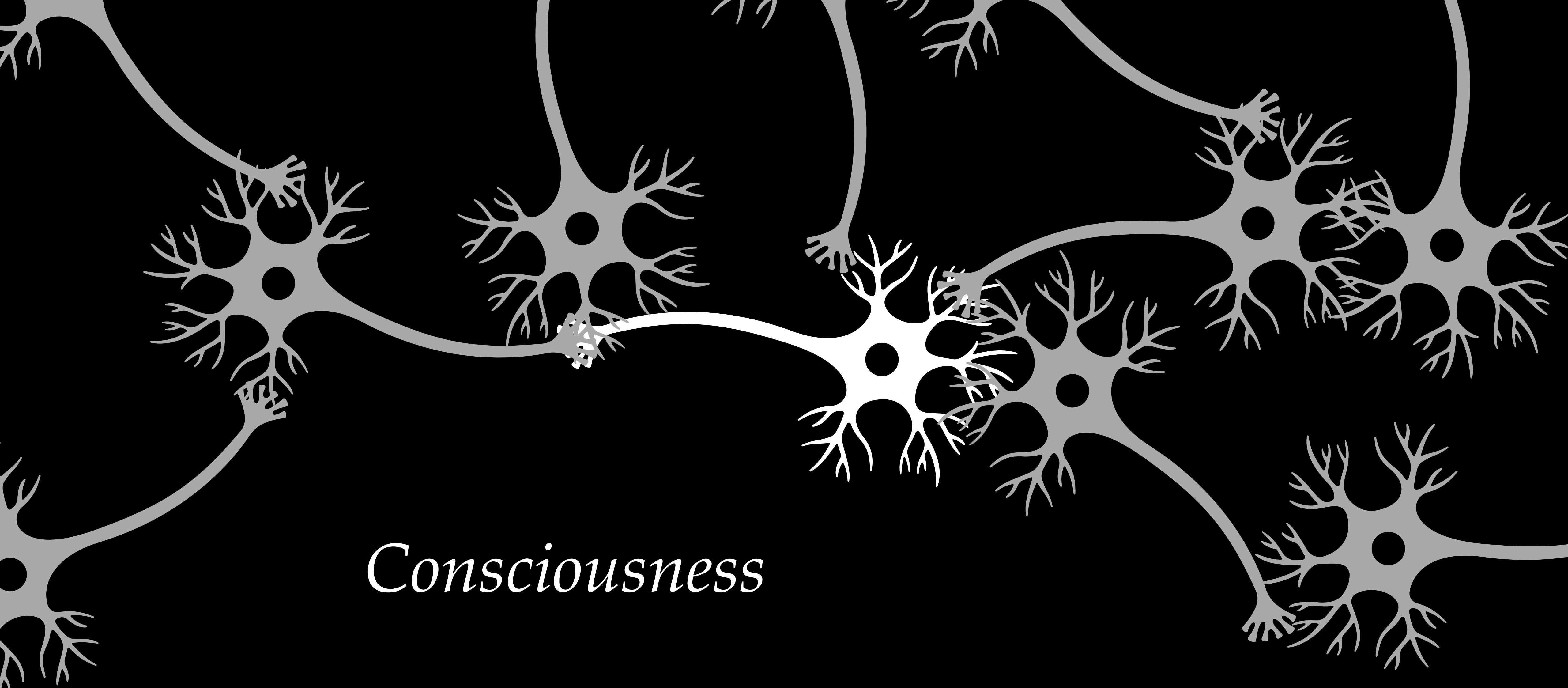
BOOK I.

DEFINITIONS.

- I.
- A point is that which hath no parts, or which hath no magnitude.
- II.
- A line is length without breadth.
- III.
- The extremities of a line are points.
- IV.
- A straight line is that which lies evenly between its extreme points.
- V.
- A superficies is that which hath only length and breadth.
- VI.
- The extremities of a superficies are lines.
- VII.
- A plane superficies is that in which any two points being taken,* the straight line between them lies wholly in that superficies.
- VIII.
- “A plane angle is the inclination of two lines to one another* in a plane, which meet together, but are not in the same direction.”
- IX.
- A plane rectilineal angle is the inclination of two straight lines to one another, which meet together, but are not in the same straight line.

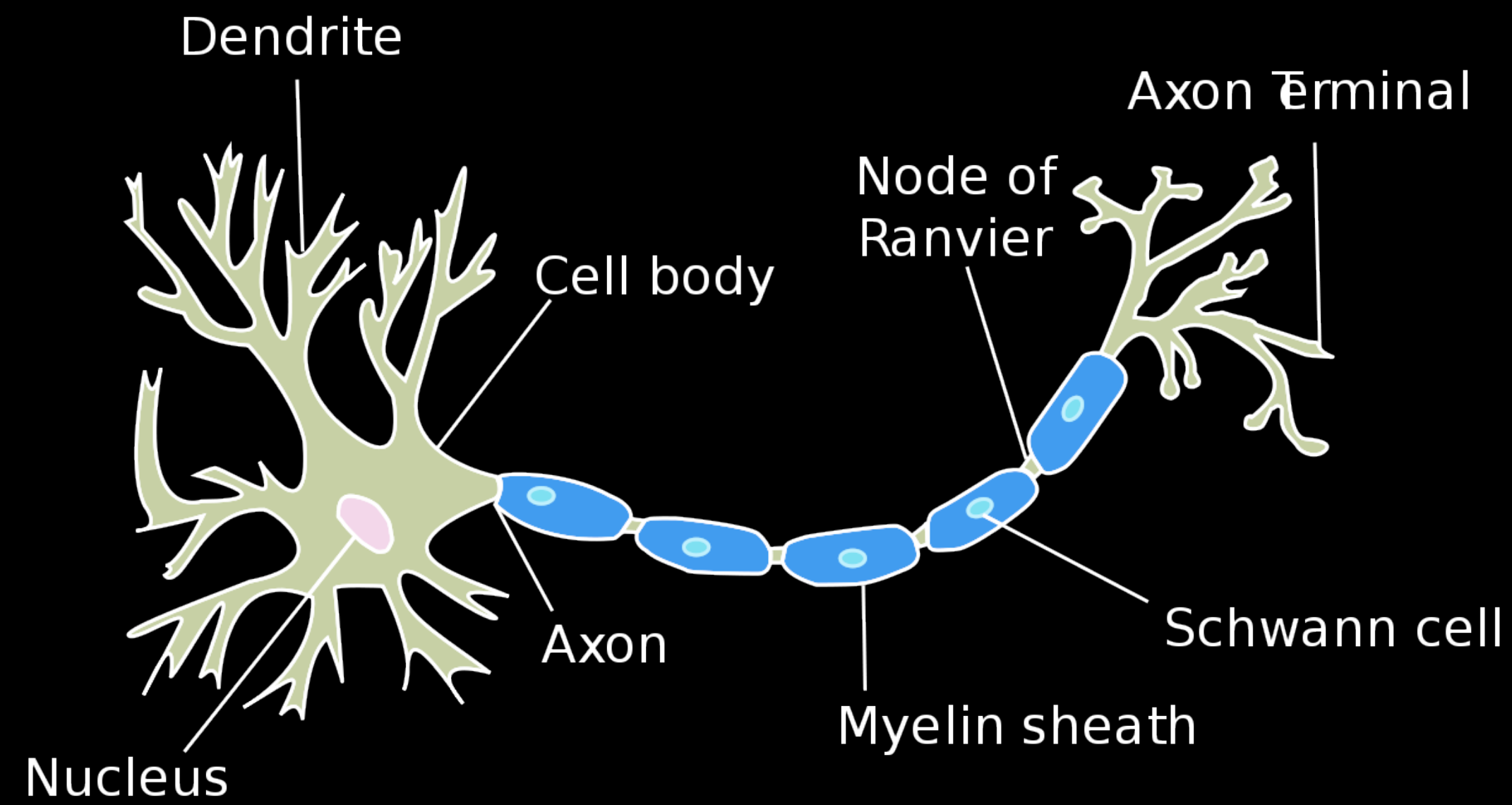
*Grossly Simplified



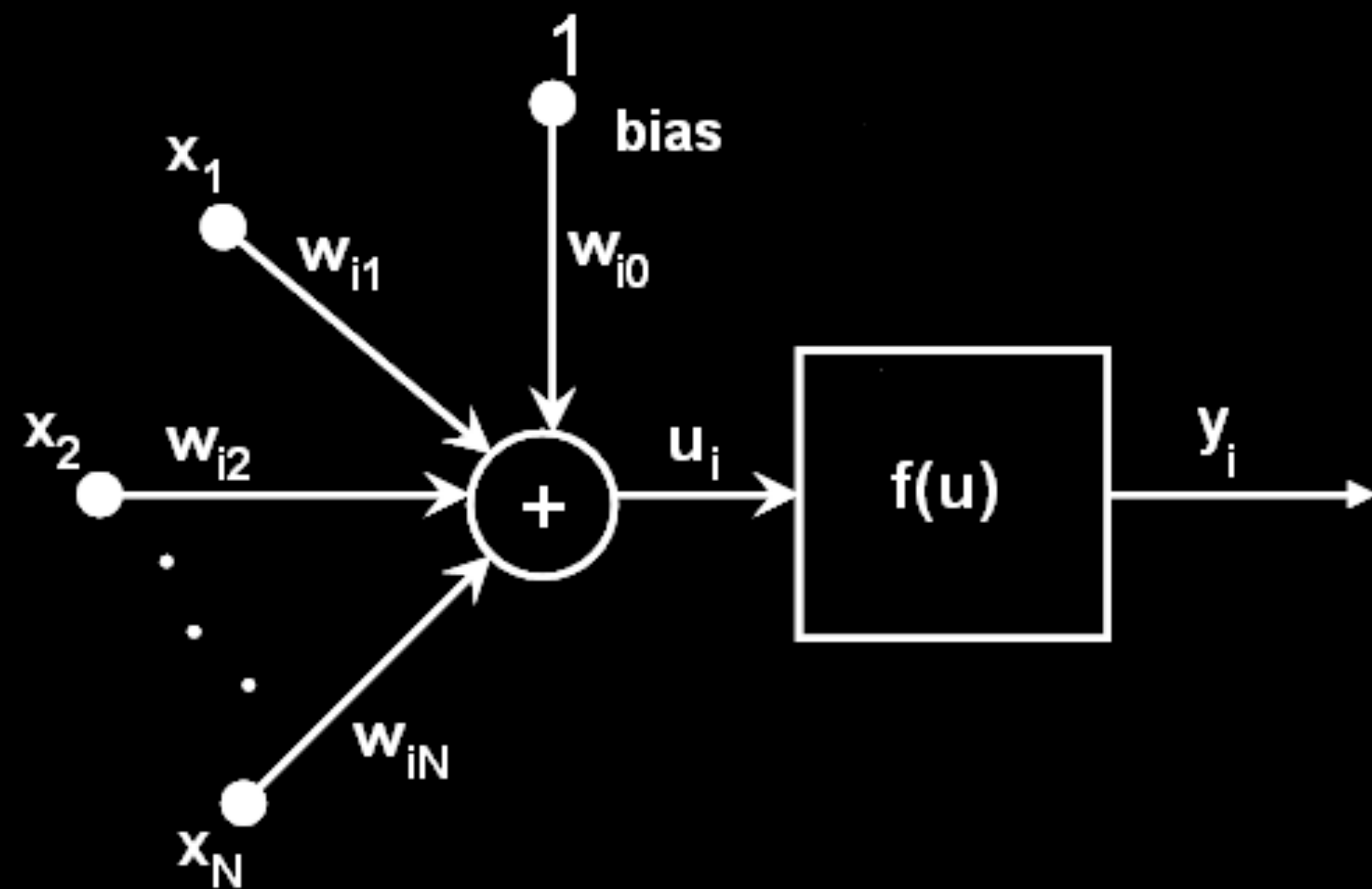


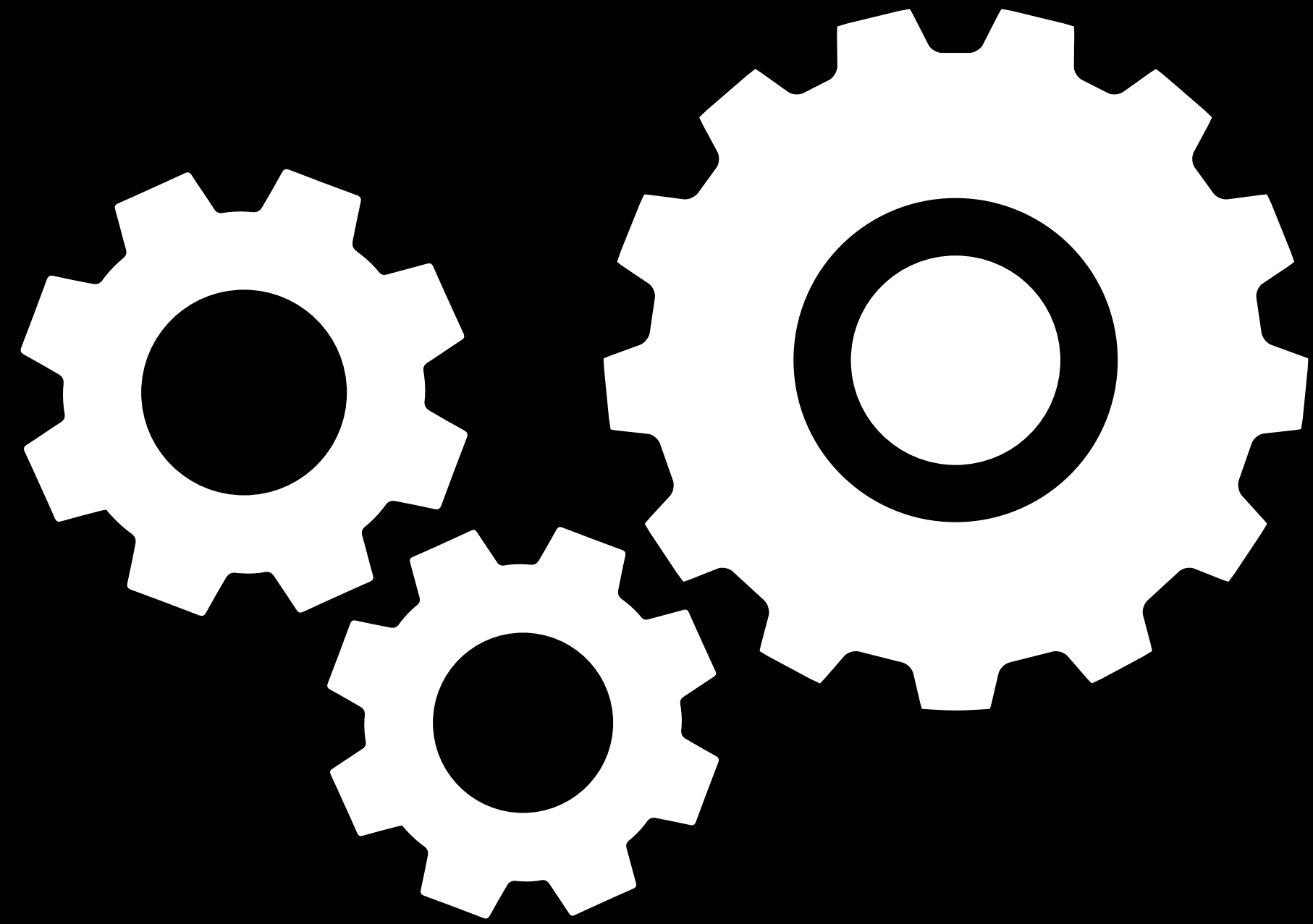
Consciousness

→ *A result of information processing*

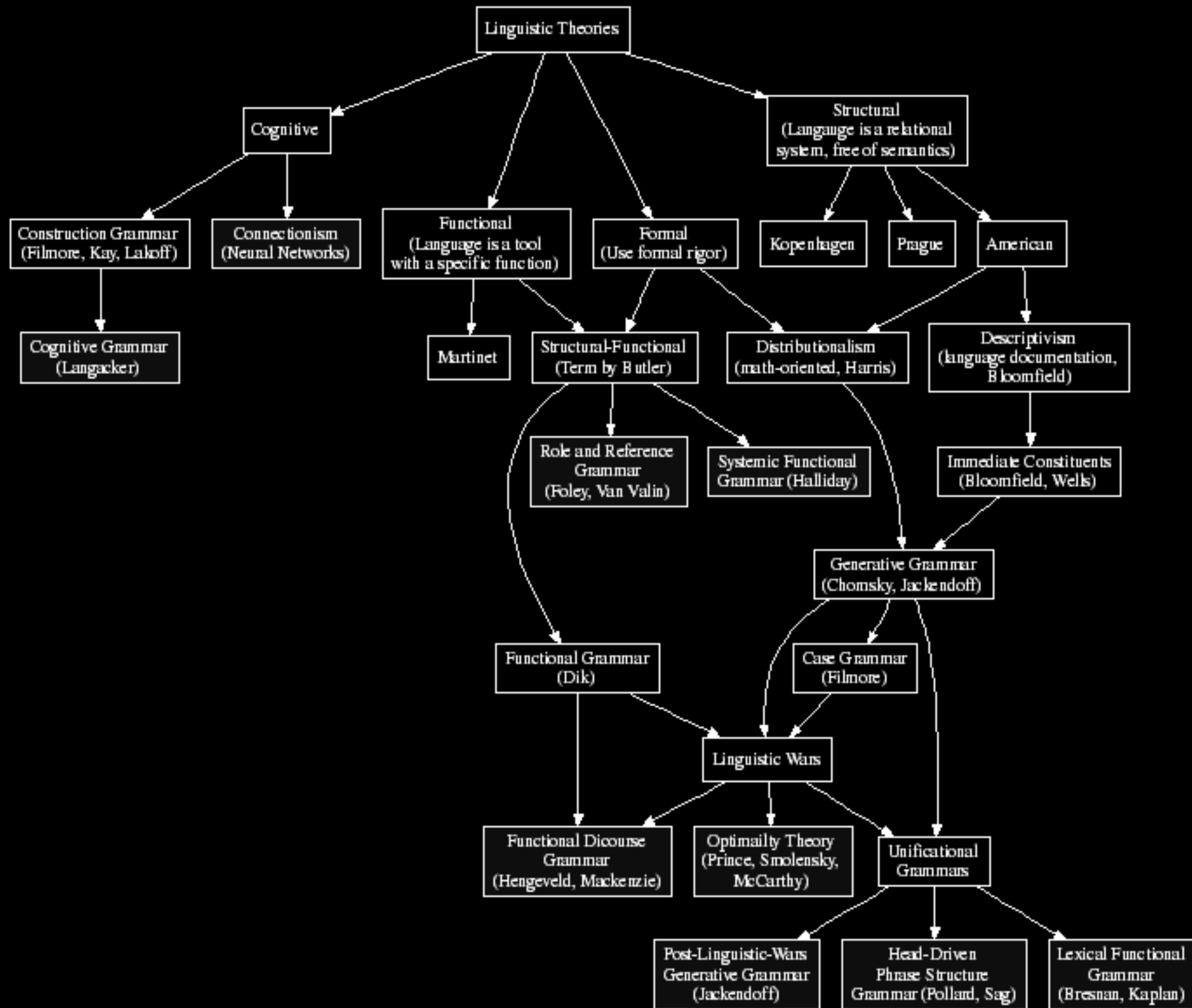
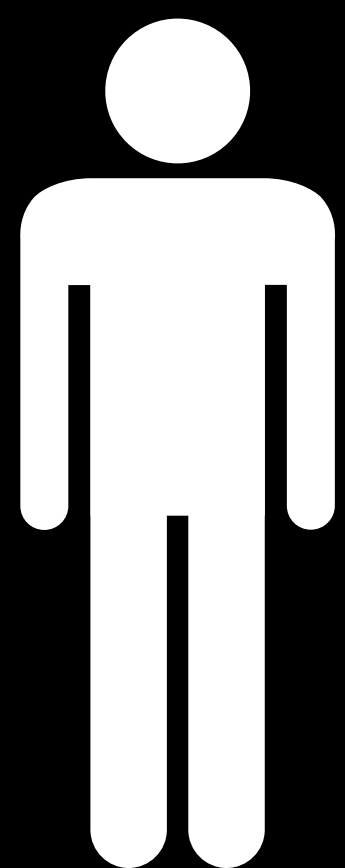


*Both Equally
Conscious*





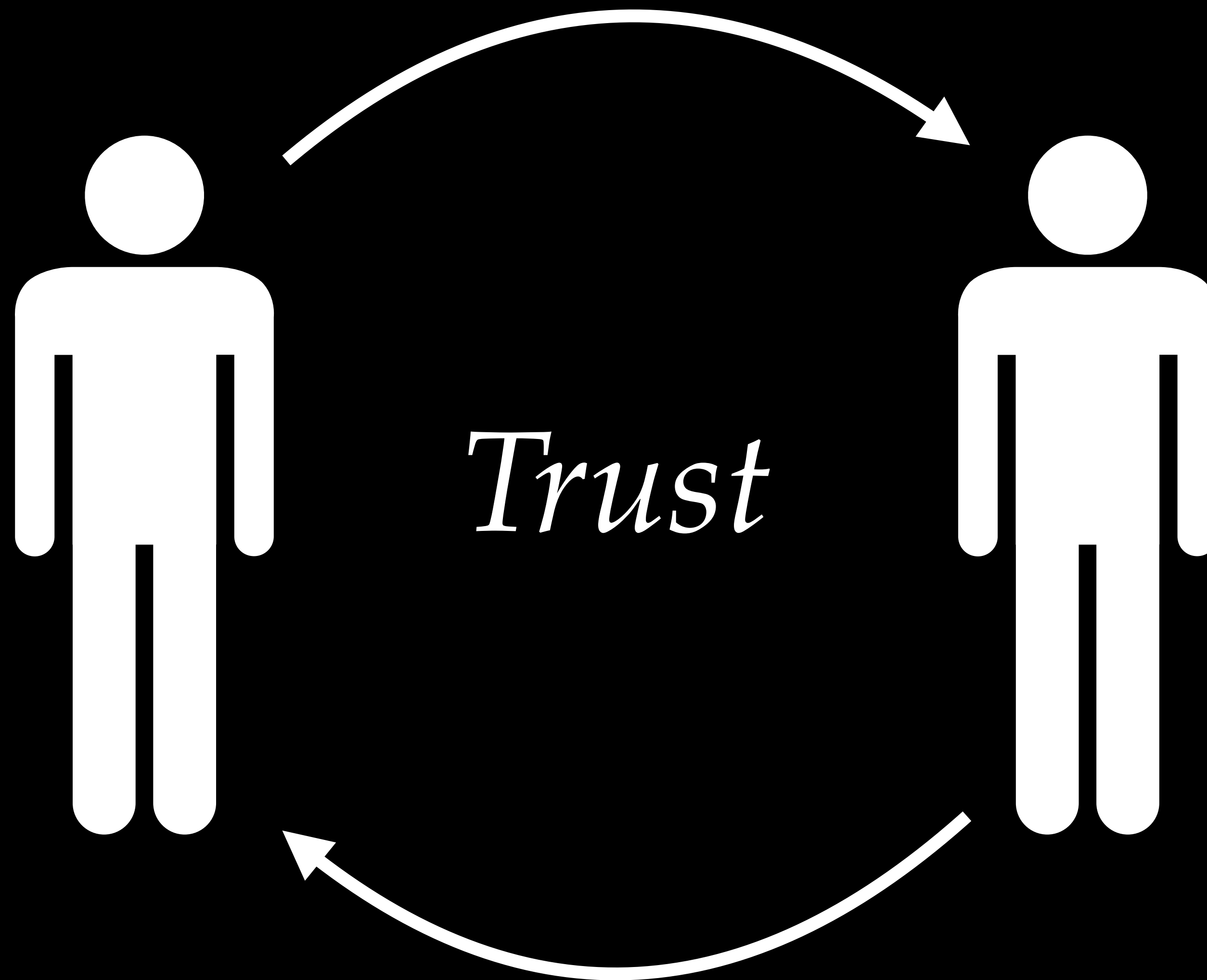
Is it Conscious?

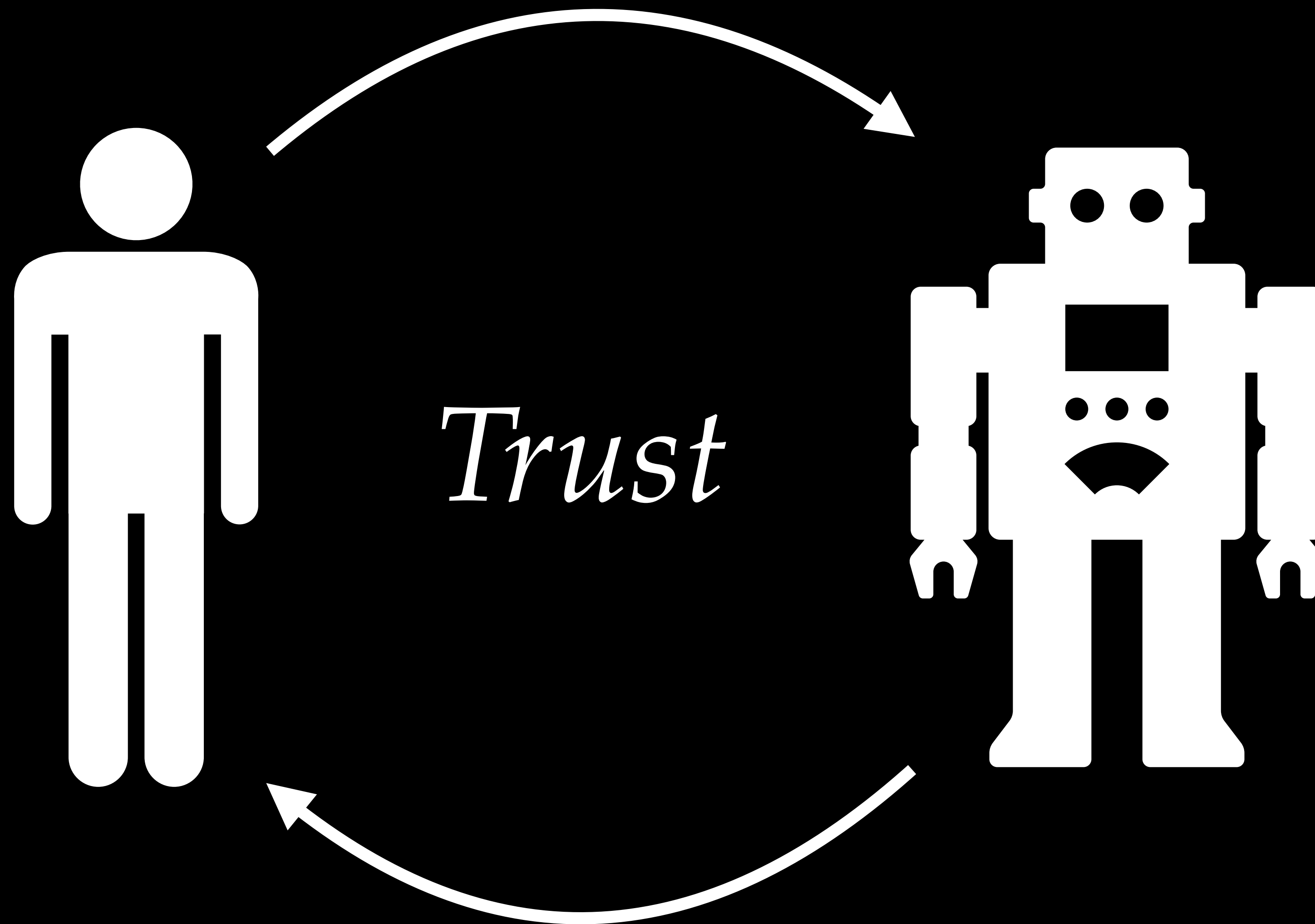




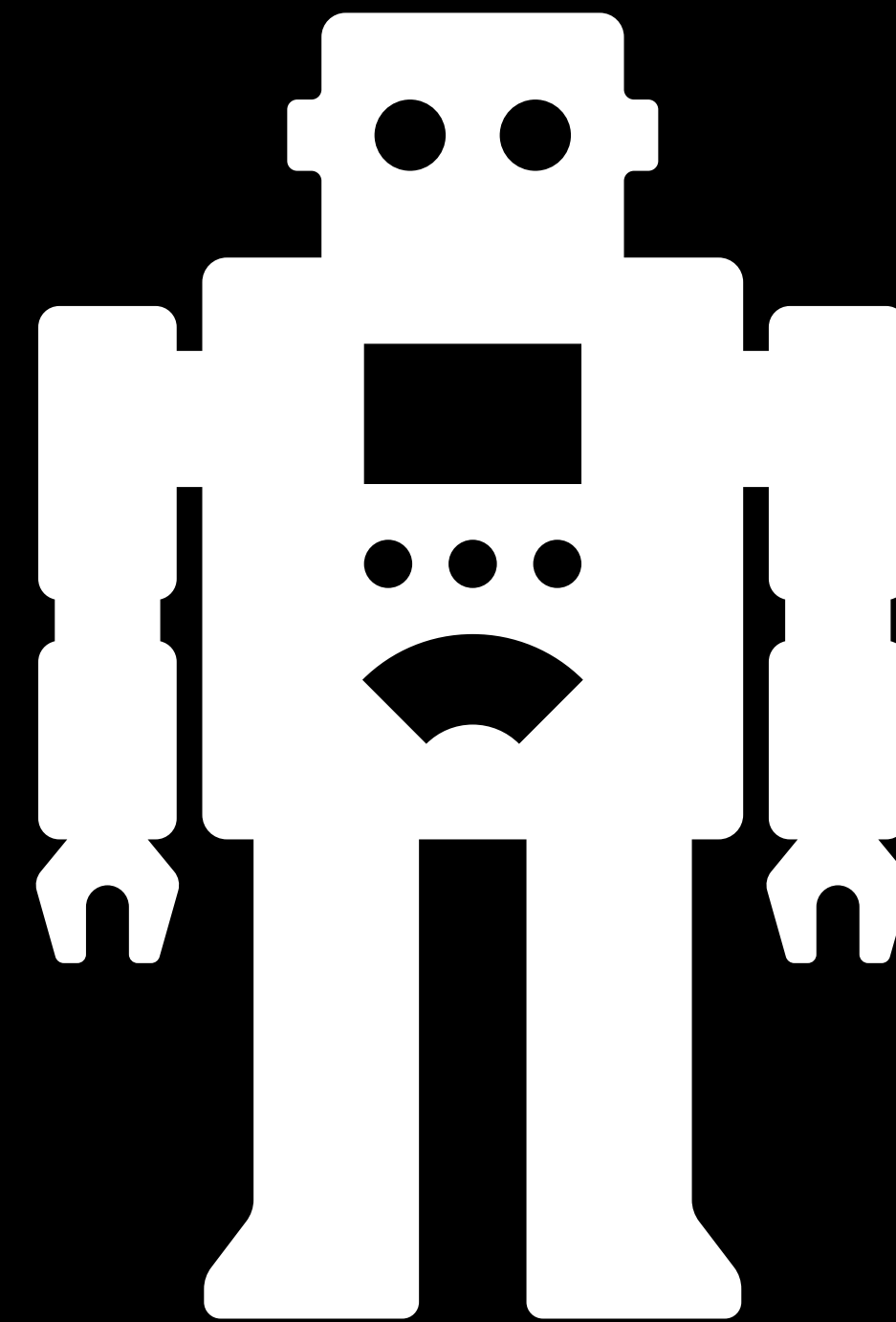
3. From the Humanitarian:

Trust





“I’m conscious”

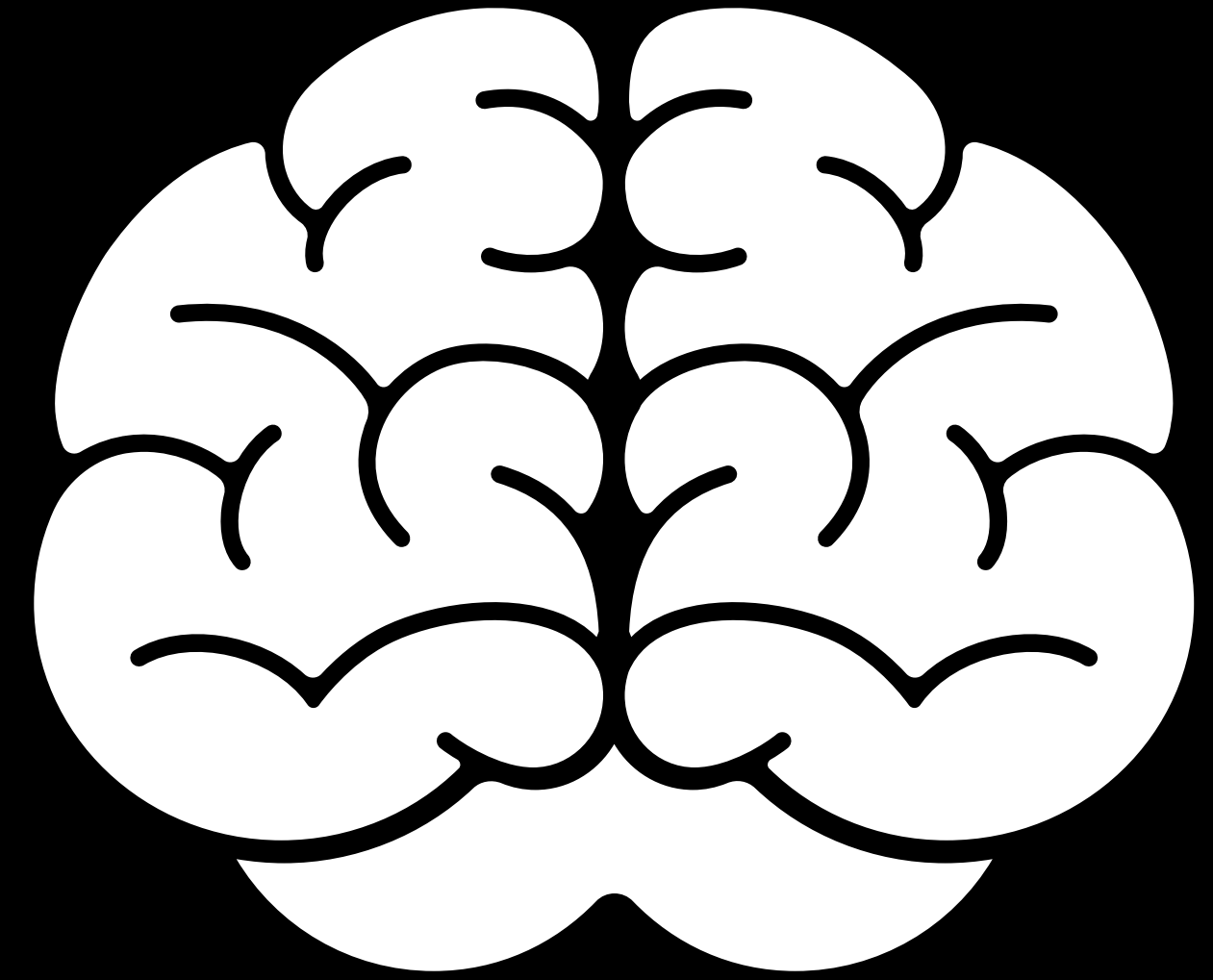
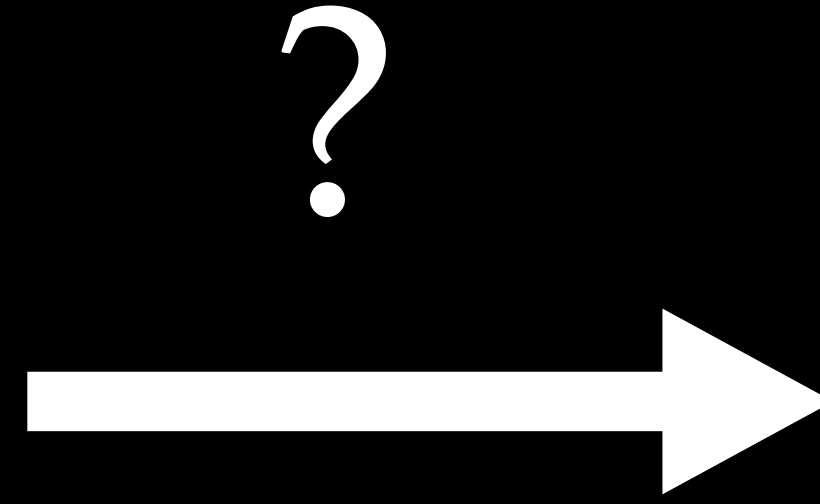


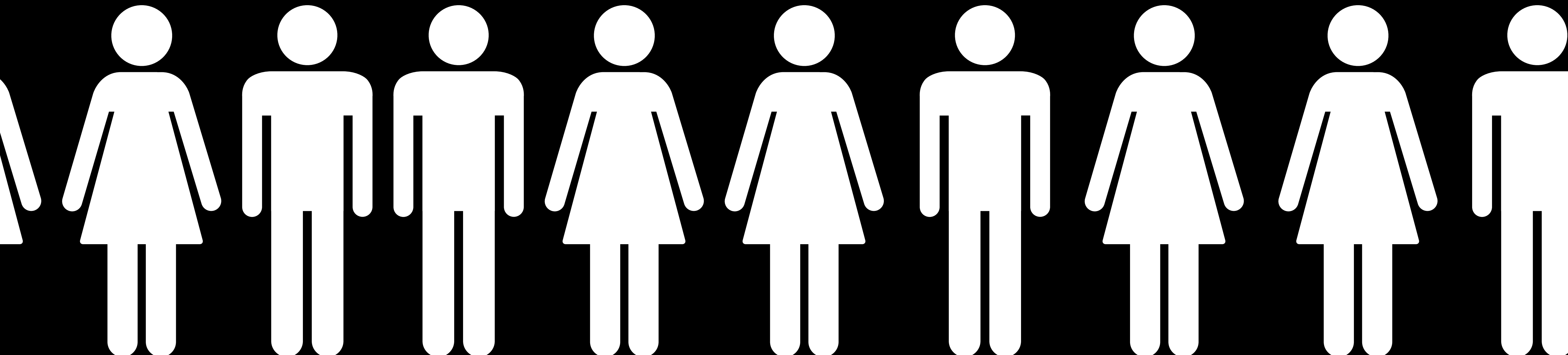
Conclusion

*How do we know whether an external entity is **conscious**?*



$\forall x$ for all x
 $\exists x$ there exists x
 $\therefore P$ therefore P
 $\because P$ because of P
 $a \Rightarrow b$ a implies b , if a then b
 $a \rightarrow b$ a implies b
 $a \supset b$ a implies b , a contains b
 $a \Leftarrow b$ a is implied by b , if b then a
 $a \leftarrow b$ a is implied by b
 $a \subset b$ a is implied by b , a is contained in b
 a if b a is implied by b
 $a \Leftrightarrow b$ a is equivalent to b , a if and only if b
 $a \leftrightarrow b$ a is equivalent to b
 $a \equiv b$ a is equivalent to b
 a iff b a is equivalent to b
 $\neg P$ not P
 \bar{P} not P
 $a \cap b$ a and b , intersection of a and b





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Theory of Knowledge,
Individual Presentation,
Pyokyeong Son