

# 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

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—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

X



DICTIONARY

THESAURUS

# consciousness noun

con·scious·ness | \kän(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

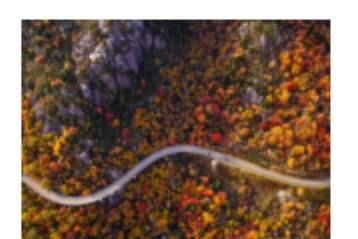
Get Word of the Day daily email!

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## TEST YOUR VOCABULARY

Autumn Words of the Day 2018



Which is a synonym of fugacious?

violent

impermanent

brawny

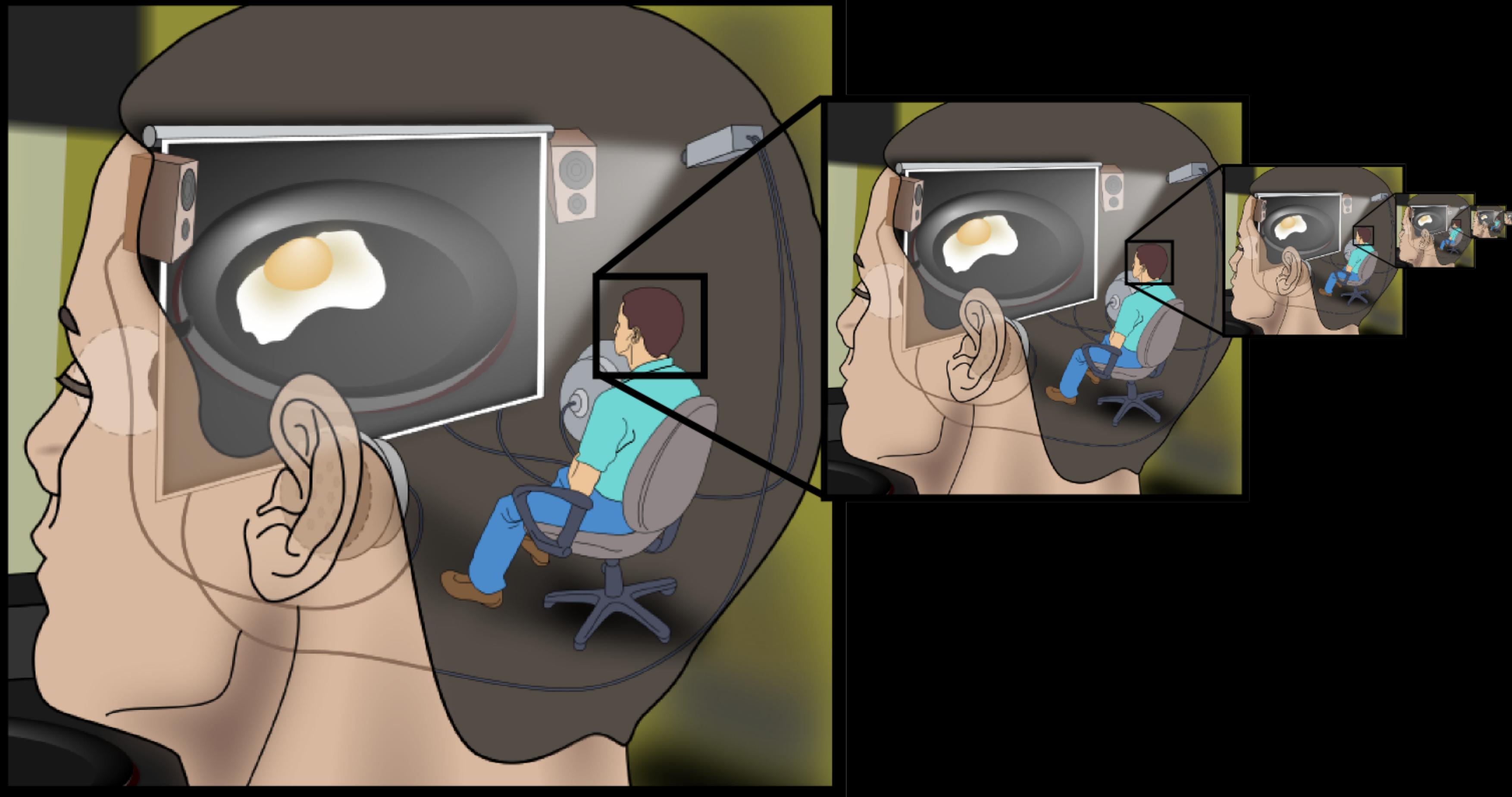
hidden

# consciousness noun

con·scious·ness | \kän(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:

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*“Consciousness is Specific to Biology”*

Social Sciences

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

*How did we, Humans, evolve consciousness?*

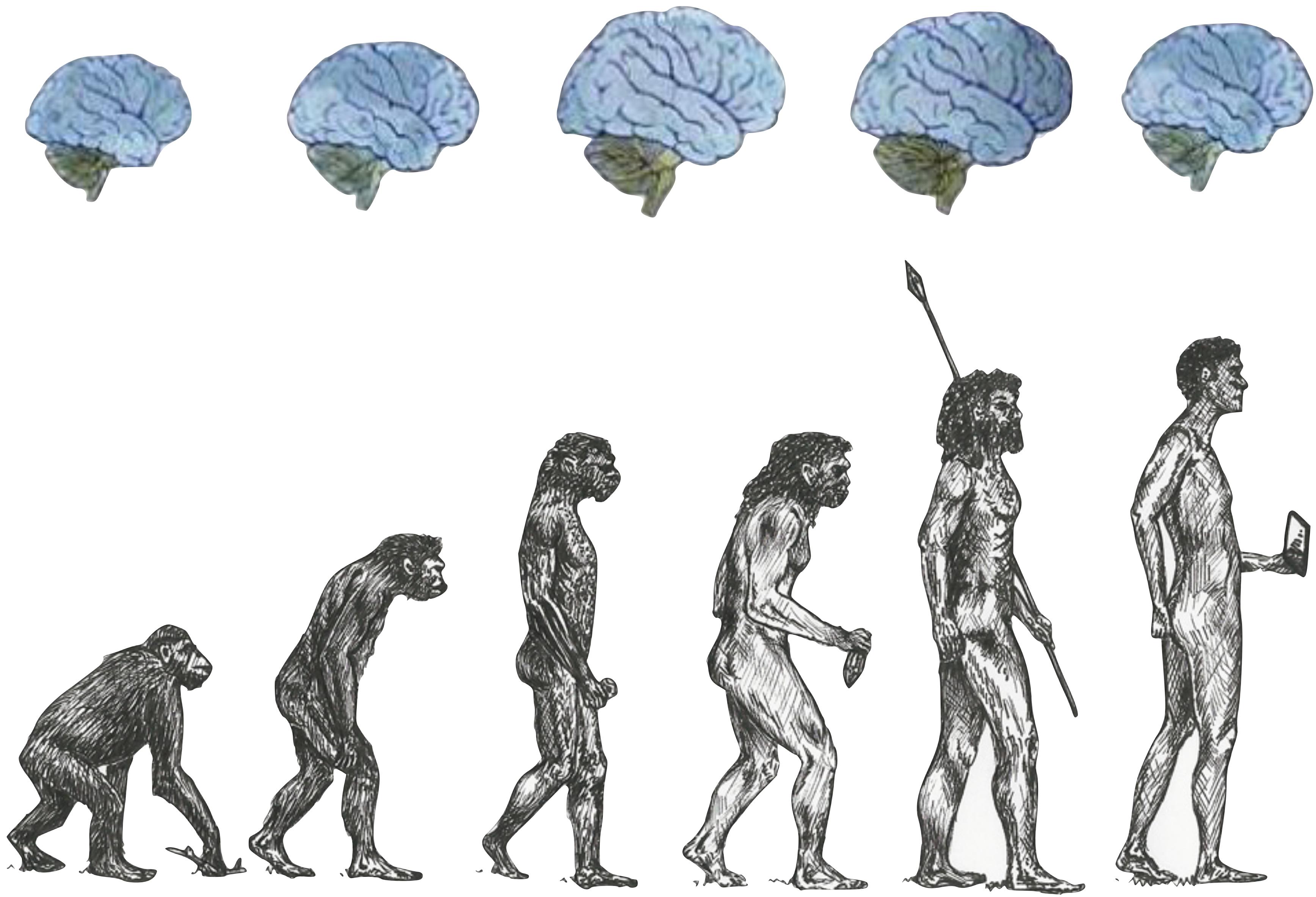
ON

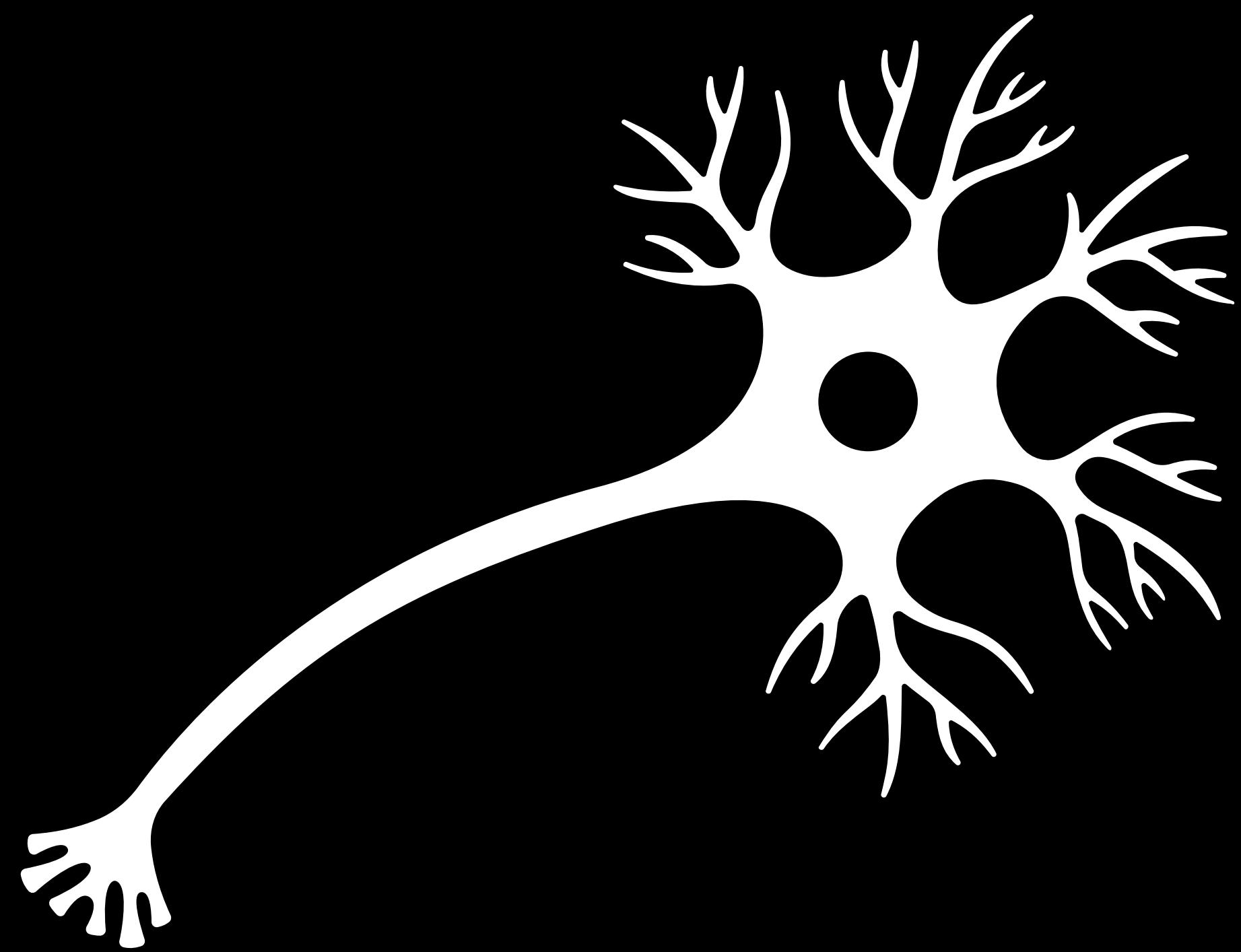
# THE ORIGIN OF SPECIES.

BY MEANS OF NATURAL SELECTION,

OR THE

PRESERVATION OF FAVOURED RACES IN THE STRUGGLE  
FOR LIFE.

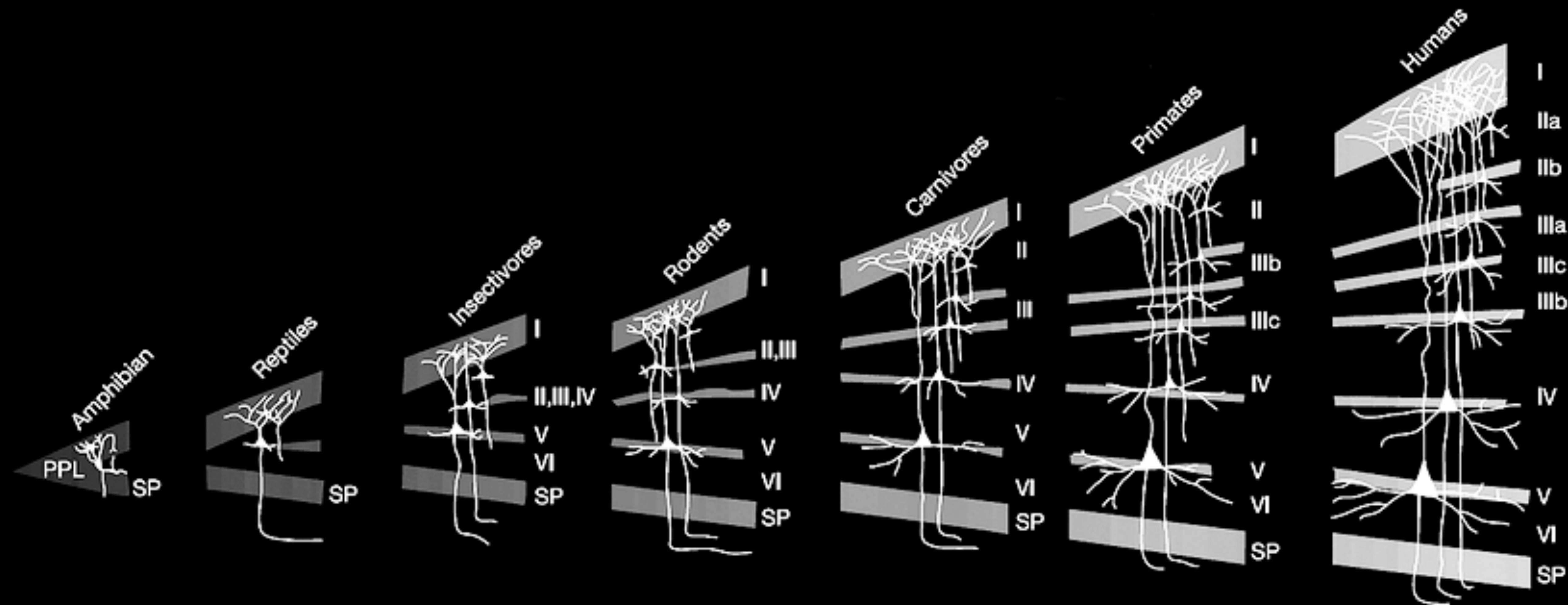




*Simply For Survival*



*Simply For Survival?*



## 2. From the Mathematician:

## 2. From the Mathematician:

*“Consciousness is a Byproduct  
of Information Processing”*

Mathematics & Natural Sciences

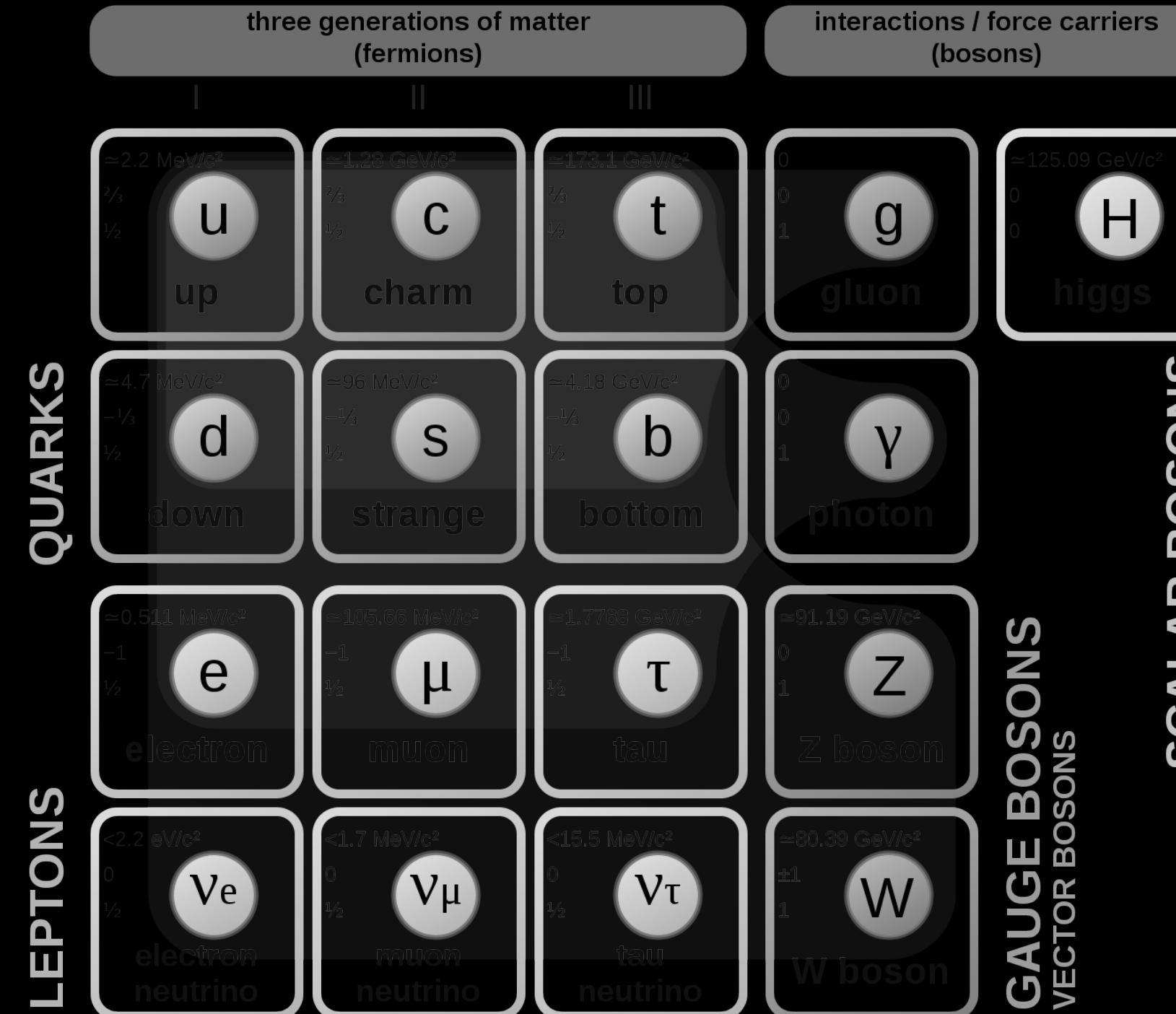
Information Theory

Physics (& Mathematics)

Emergence

Complexity from Simple Rules

# Physics\* in a Nutshell: Geometry\* in a Nutshell:



THE  
ELEMENTS OF EUCLID.

BOOK I.

DEFINITIONS.

L. 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.

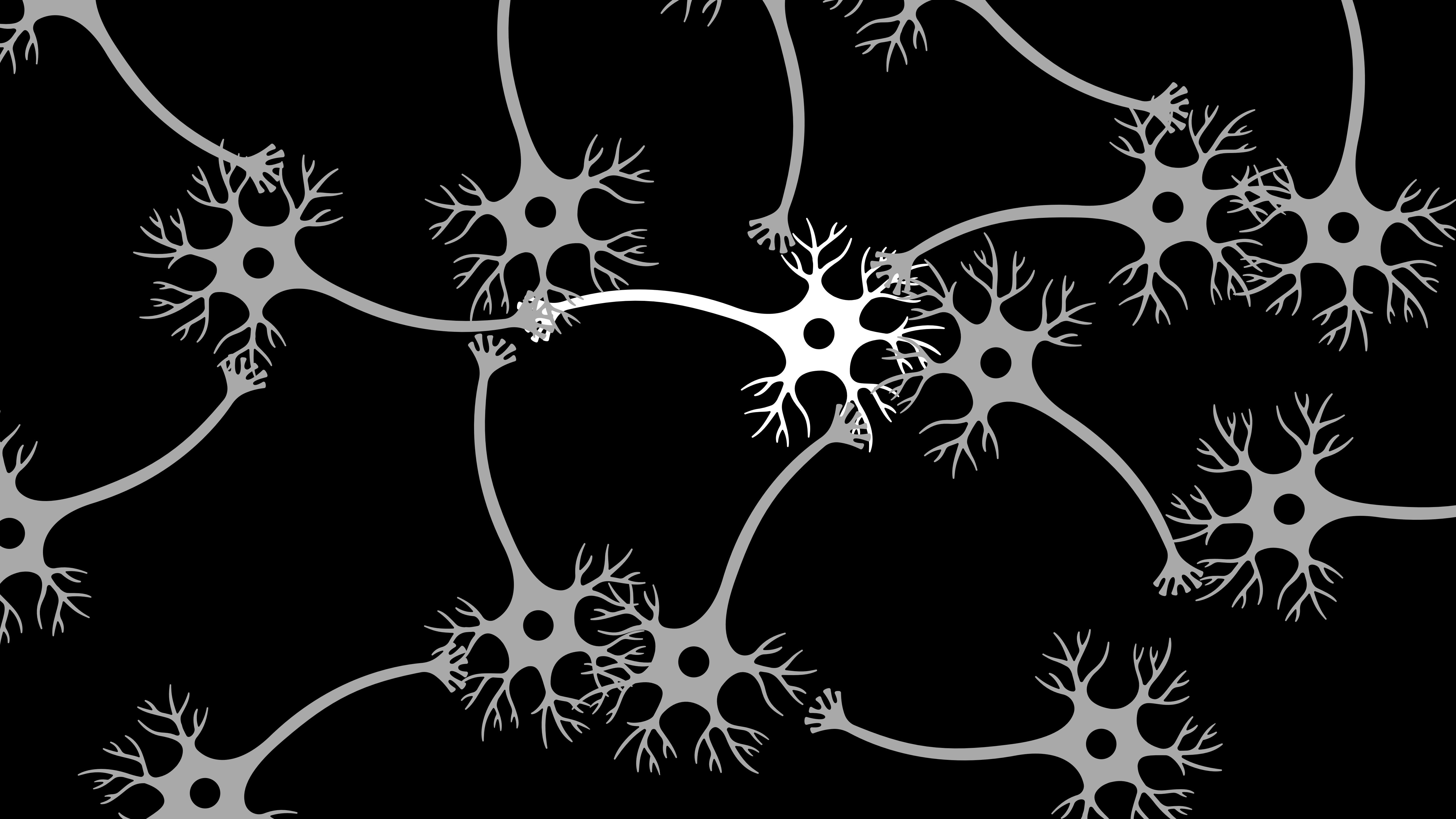
VI. The extremities of a superficies are lines.

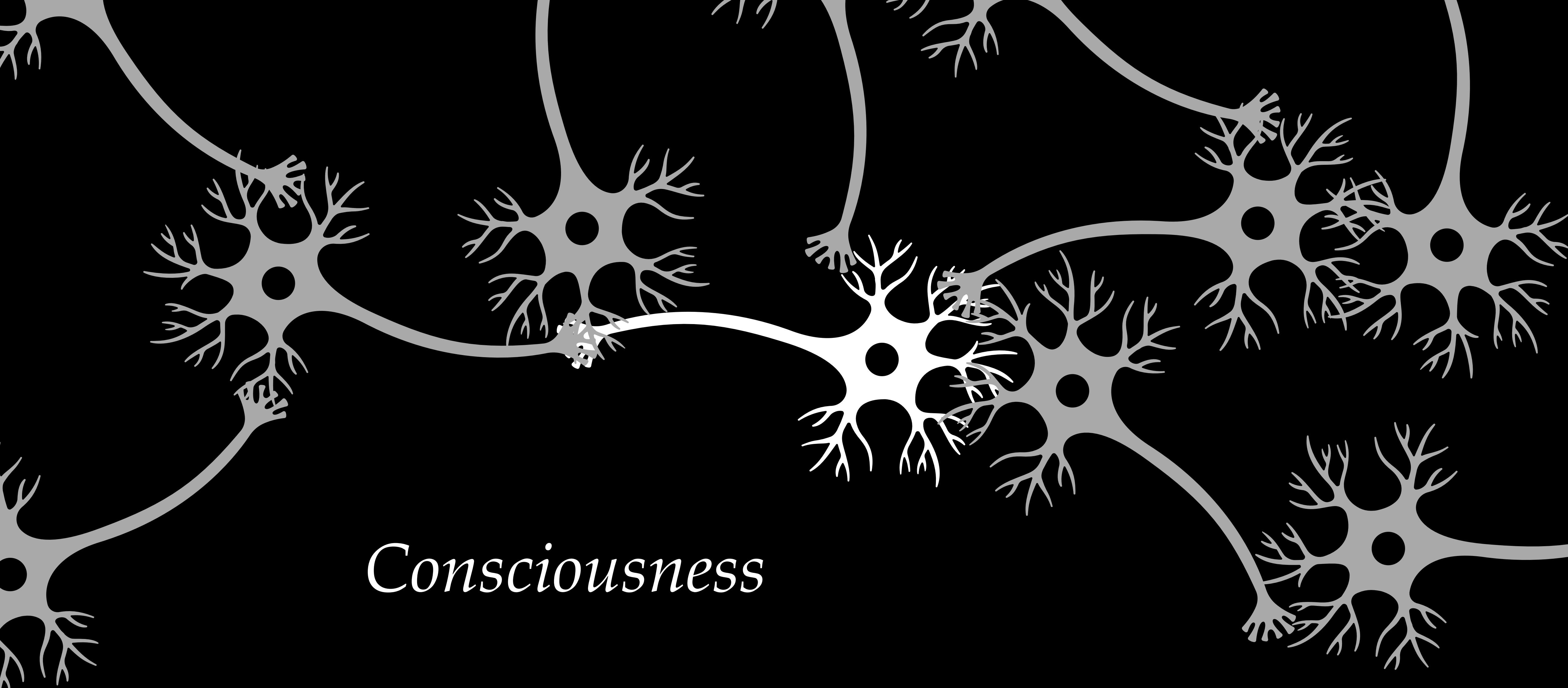
VII. A plane superficies is that in which any two points being taken,\* the straight line between them lies wholly in that superficies.

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.

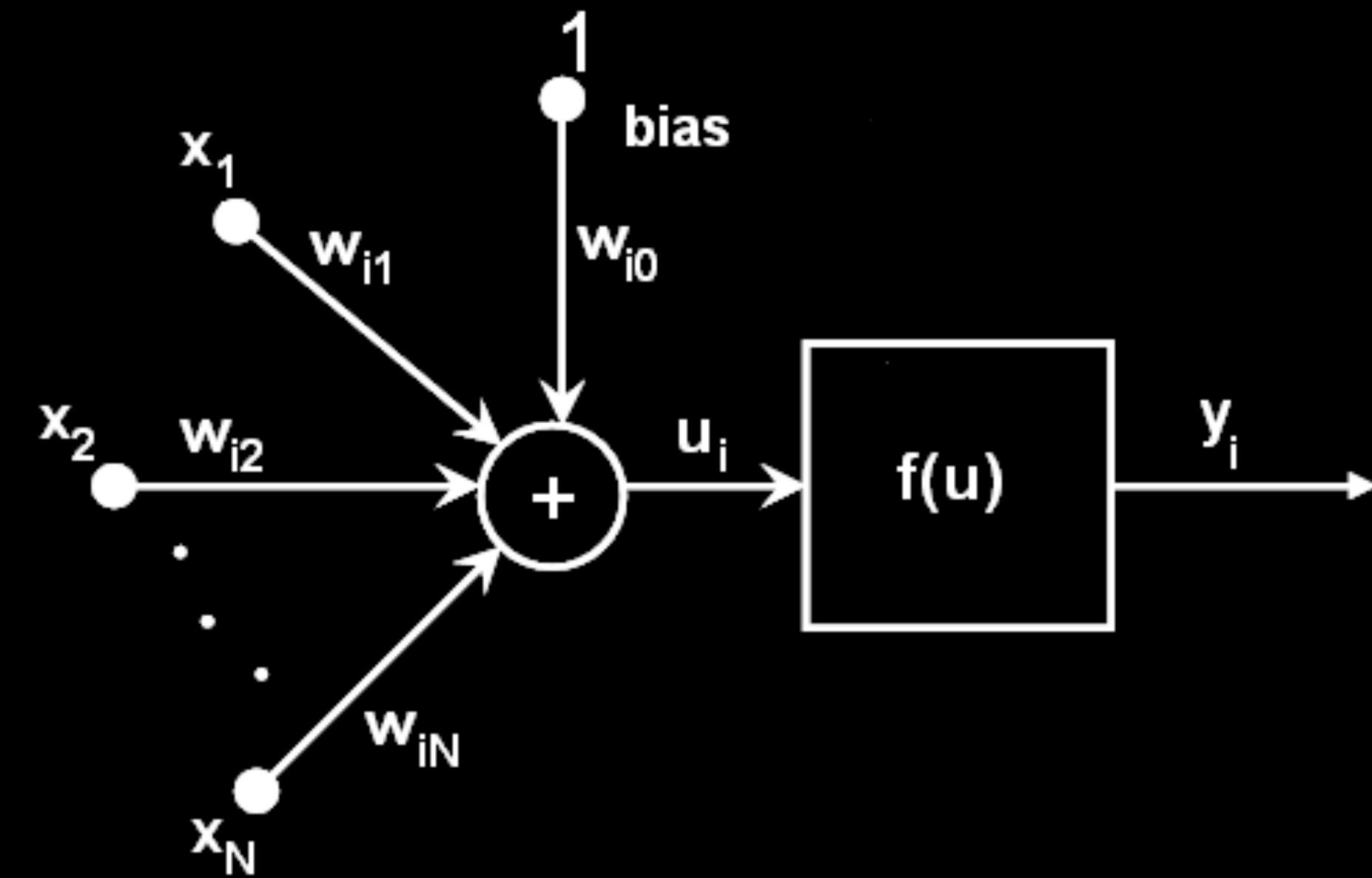
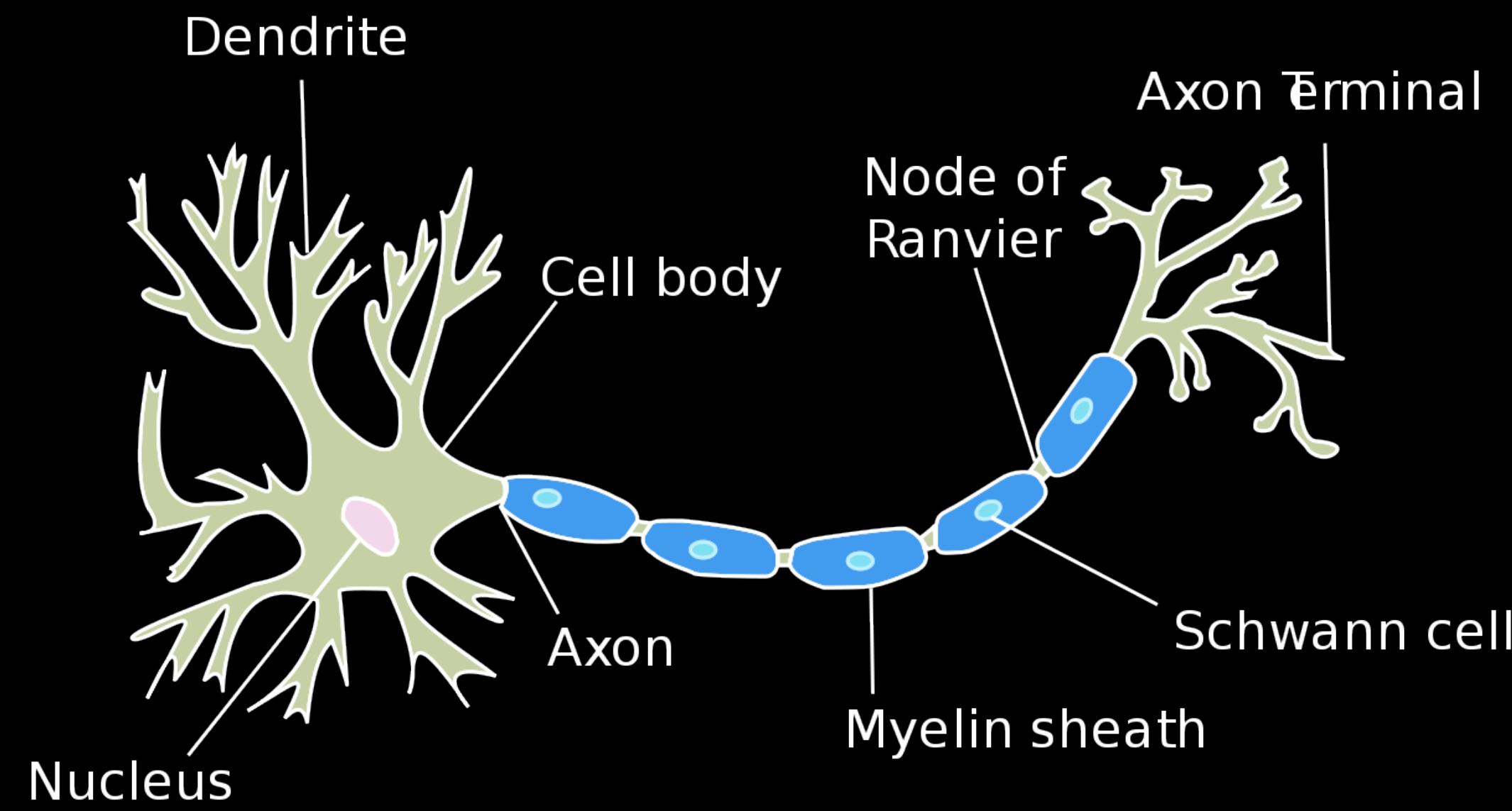
\*Grossly Simplified



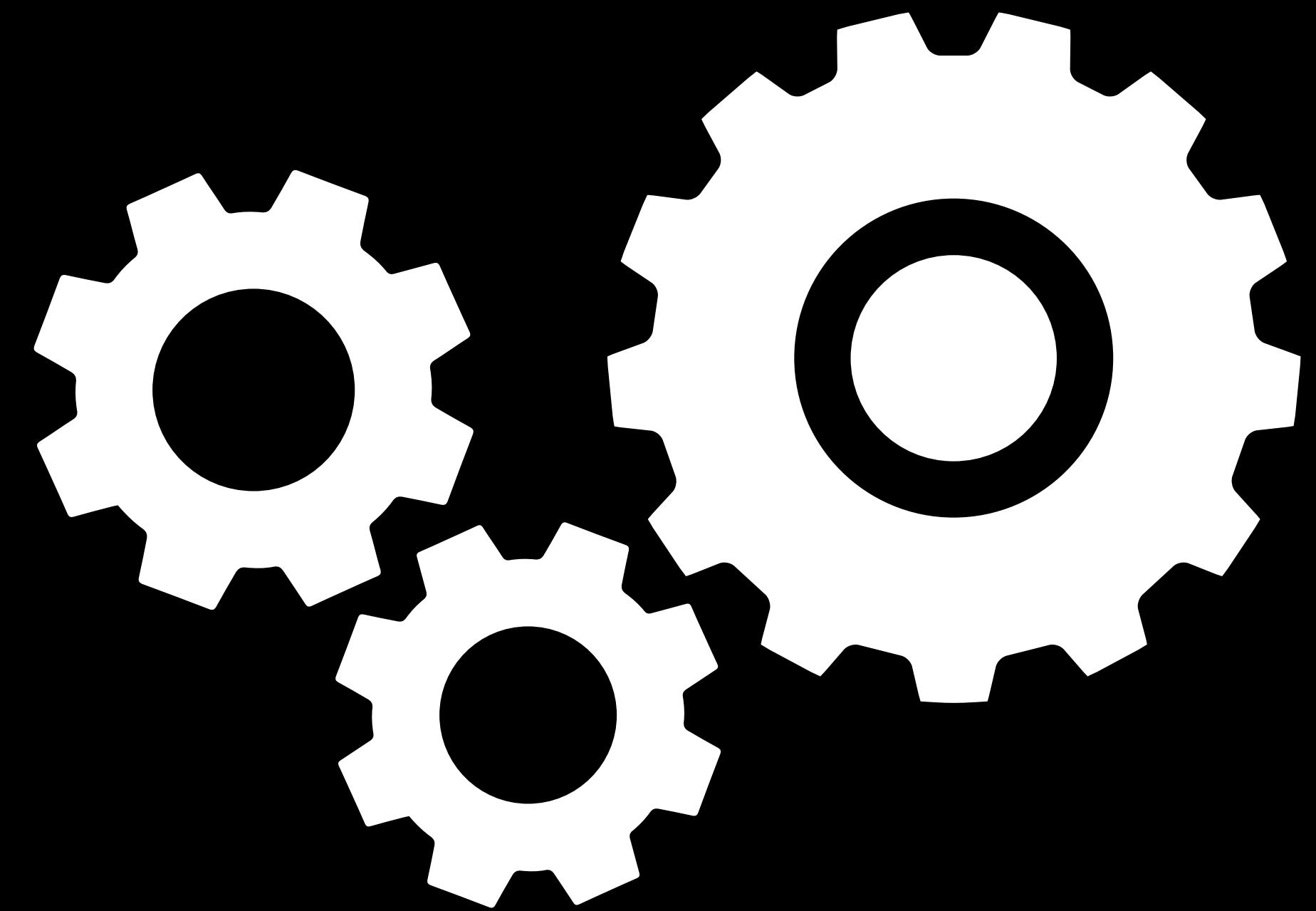


*Consciousness*

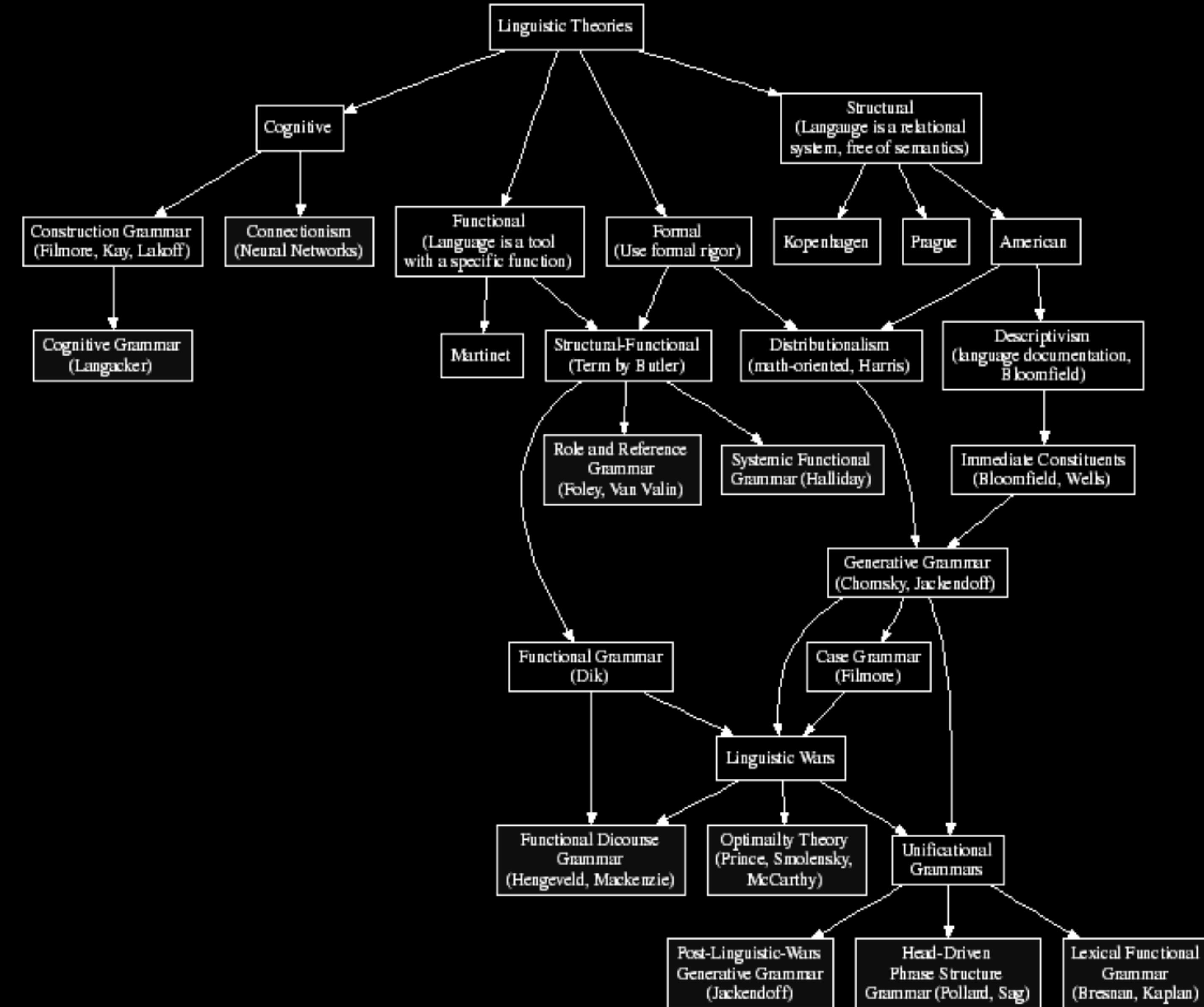
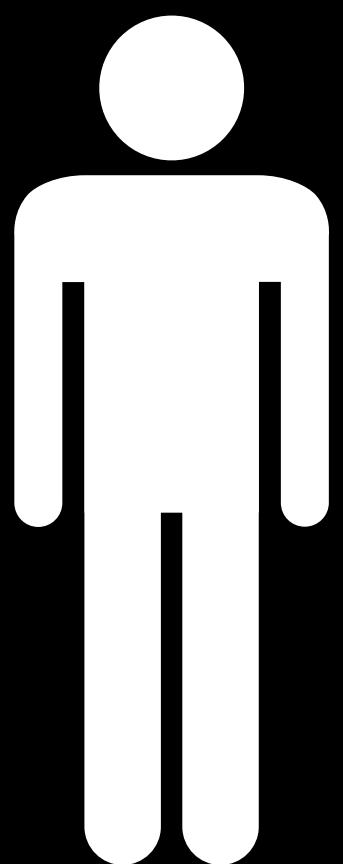
→ A result of *information processing*

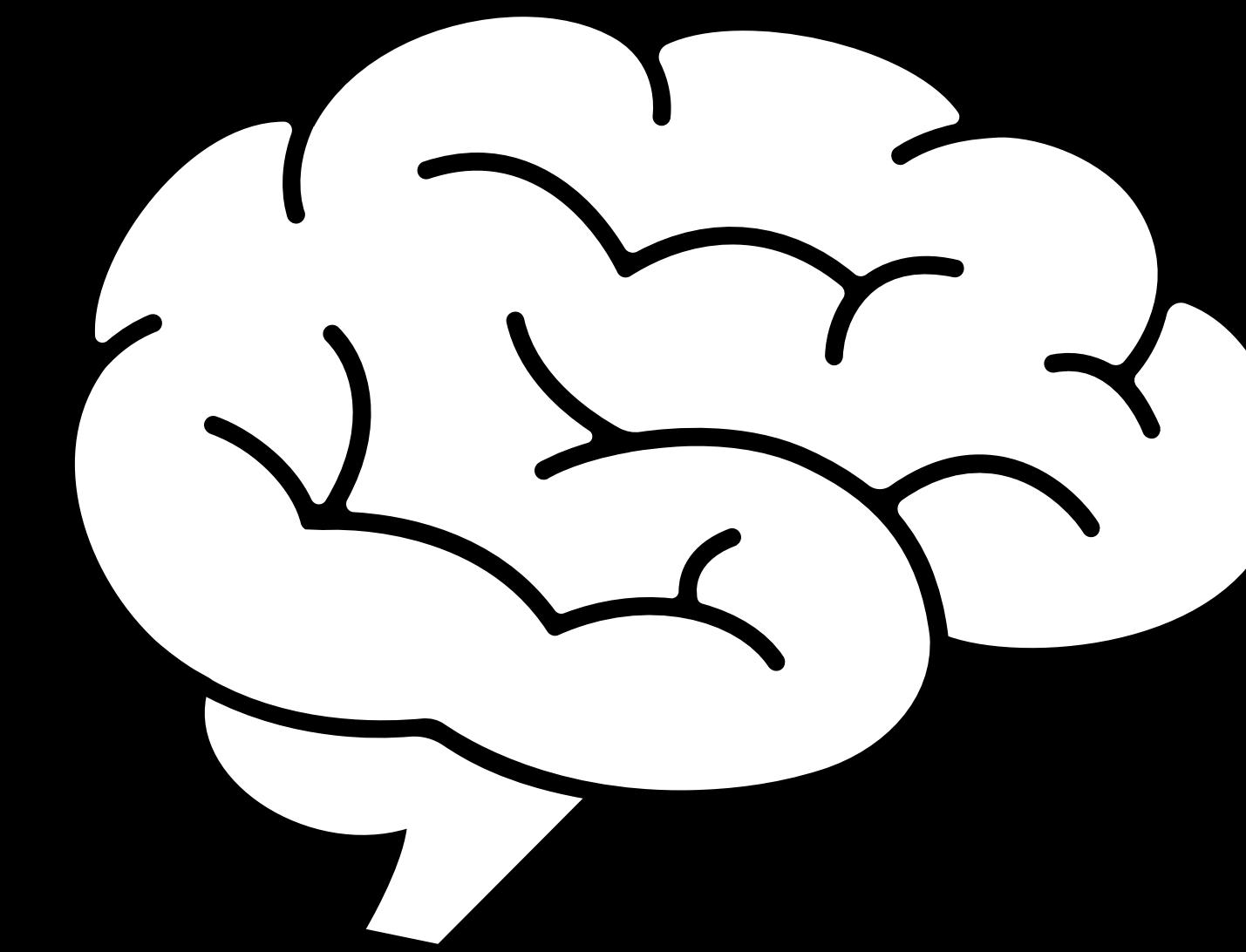


*Both Equally  
Conscious*



Is it Conscious?

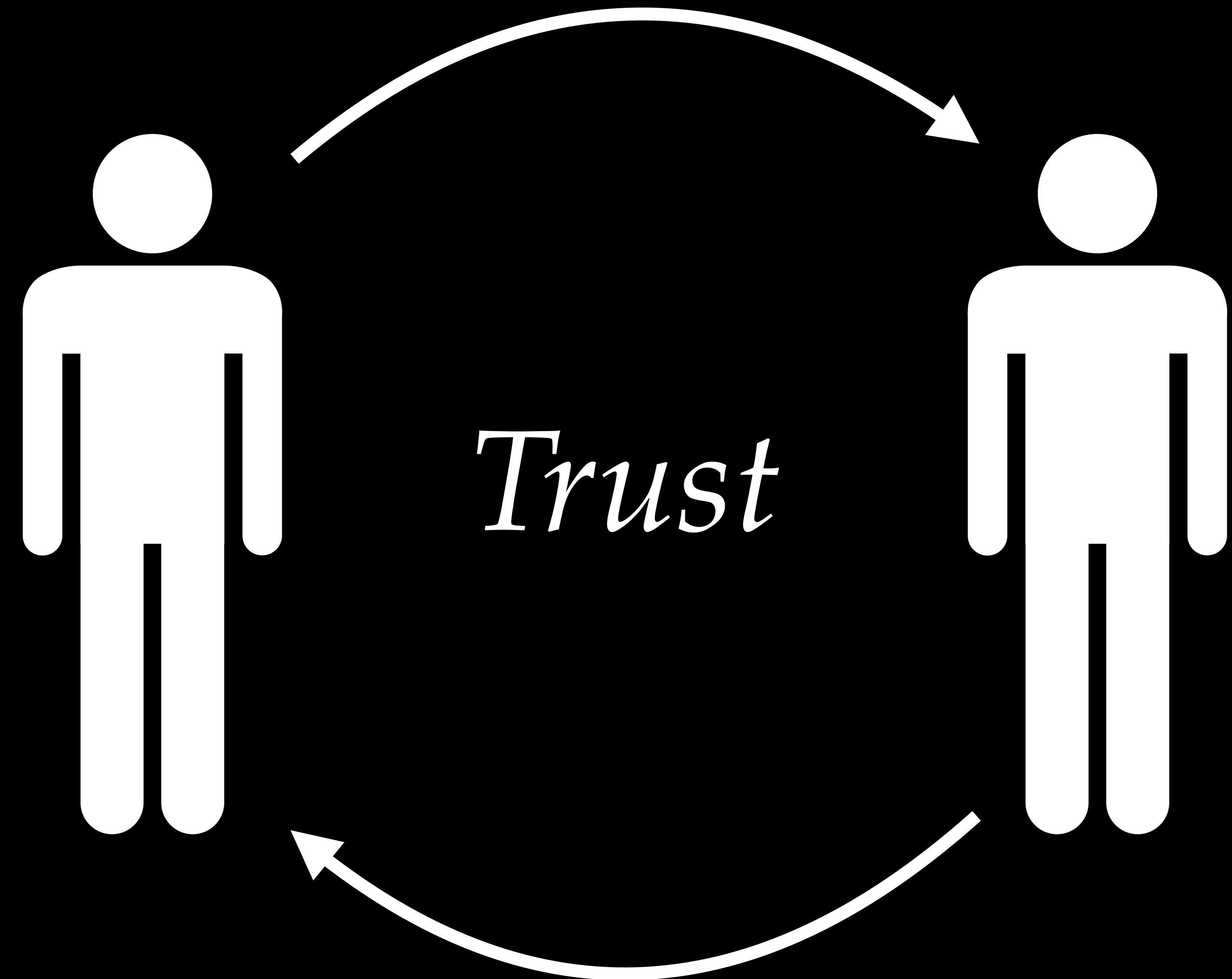


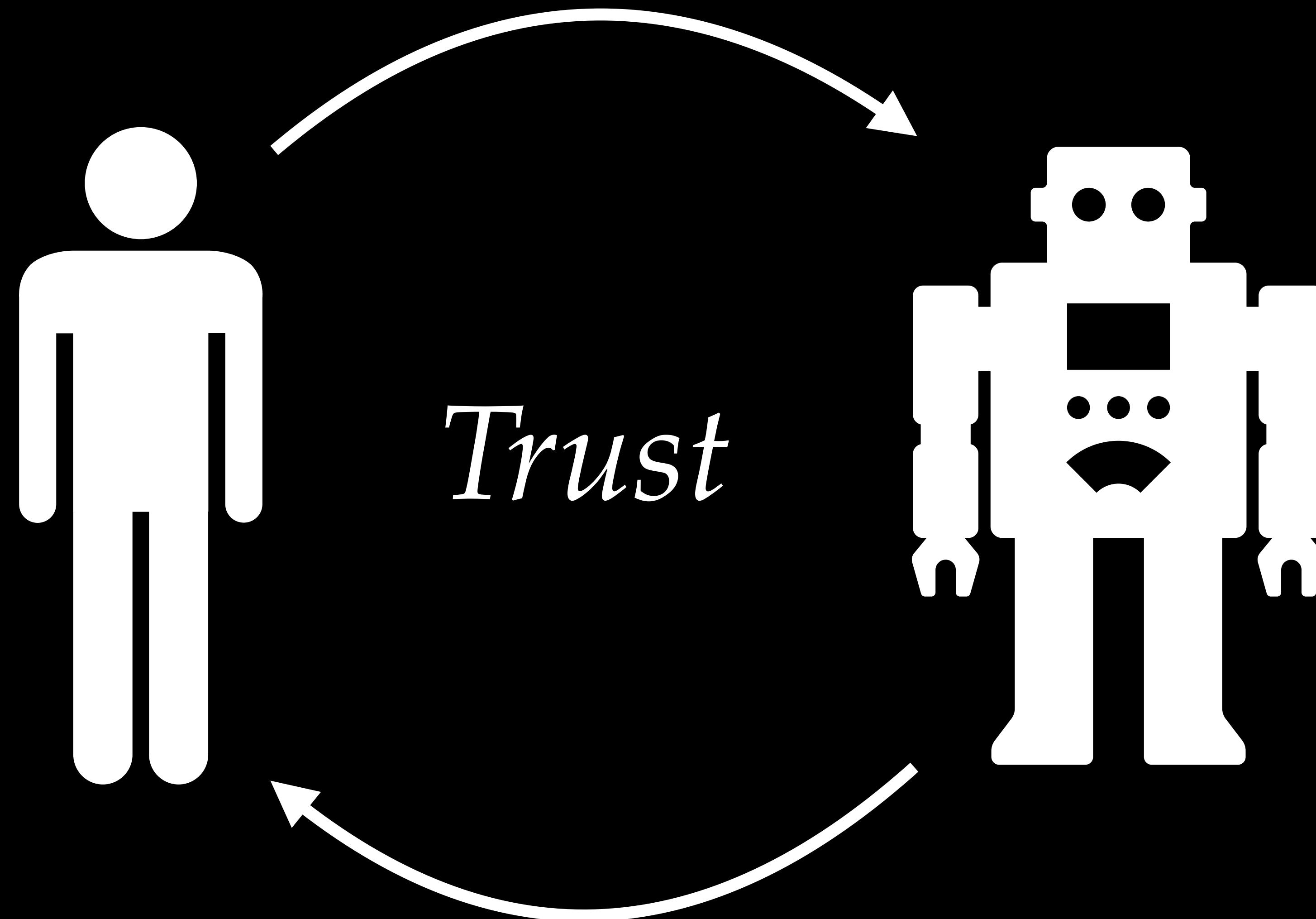




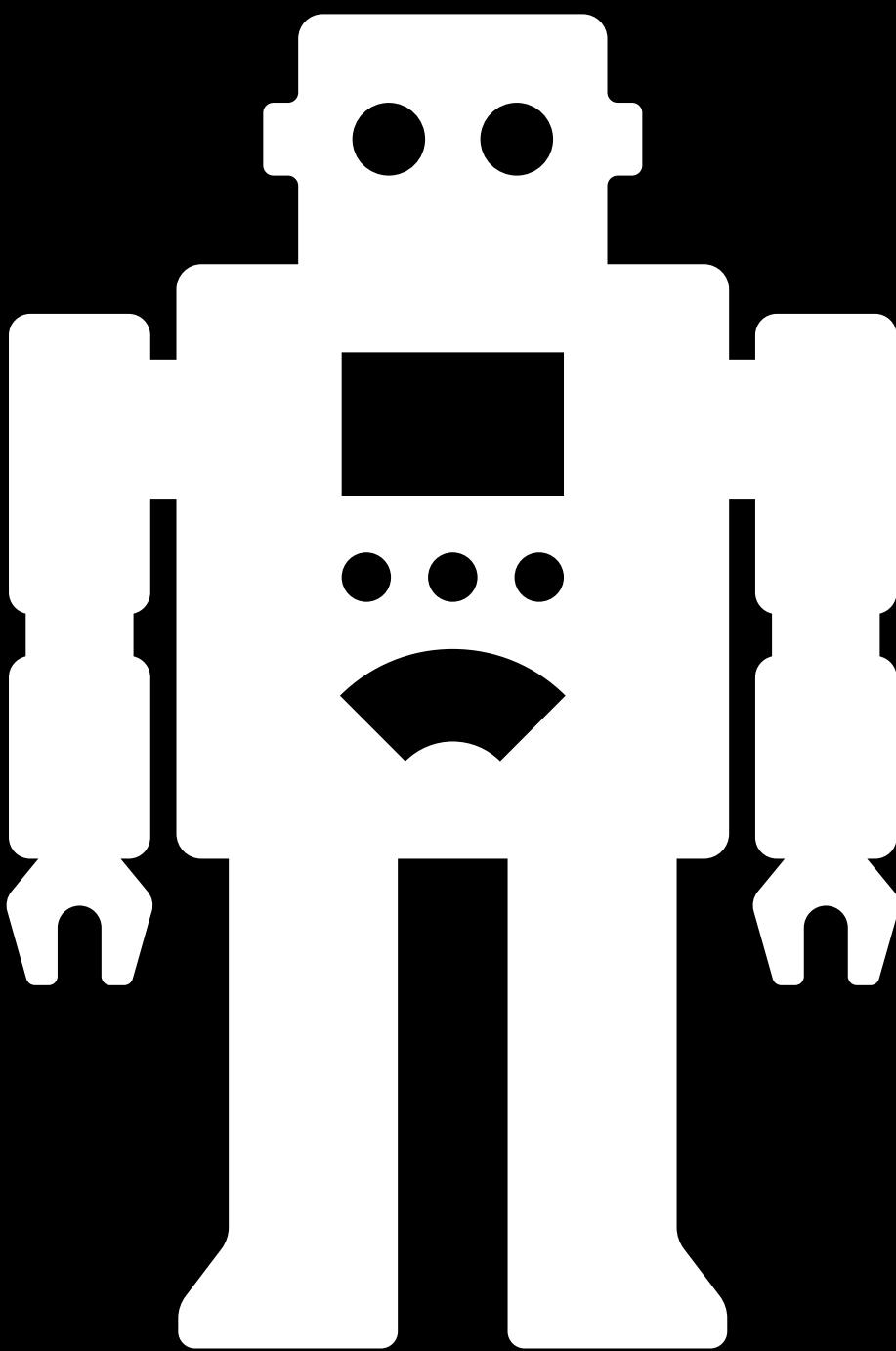
### 3. From the Humanitarian:

*Trust*



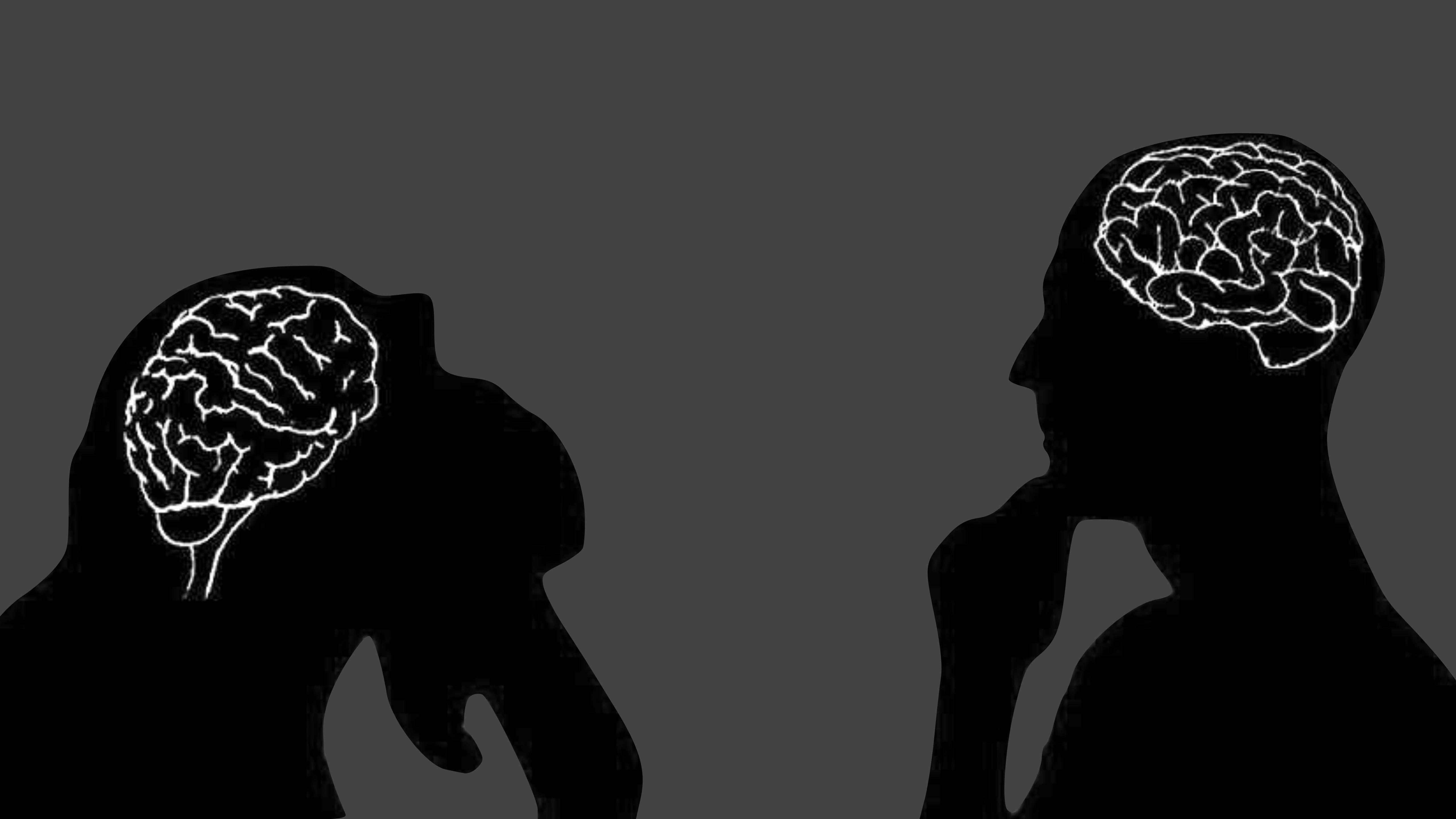


“I'm conscious”



# 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  $b$

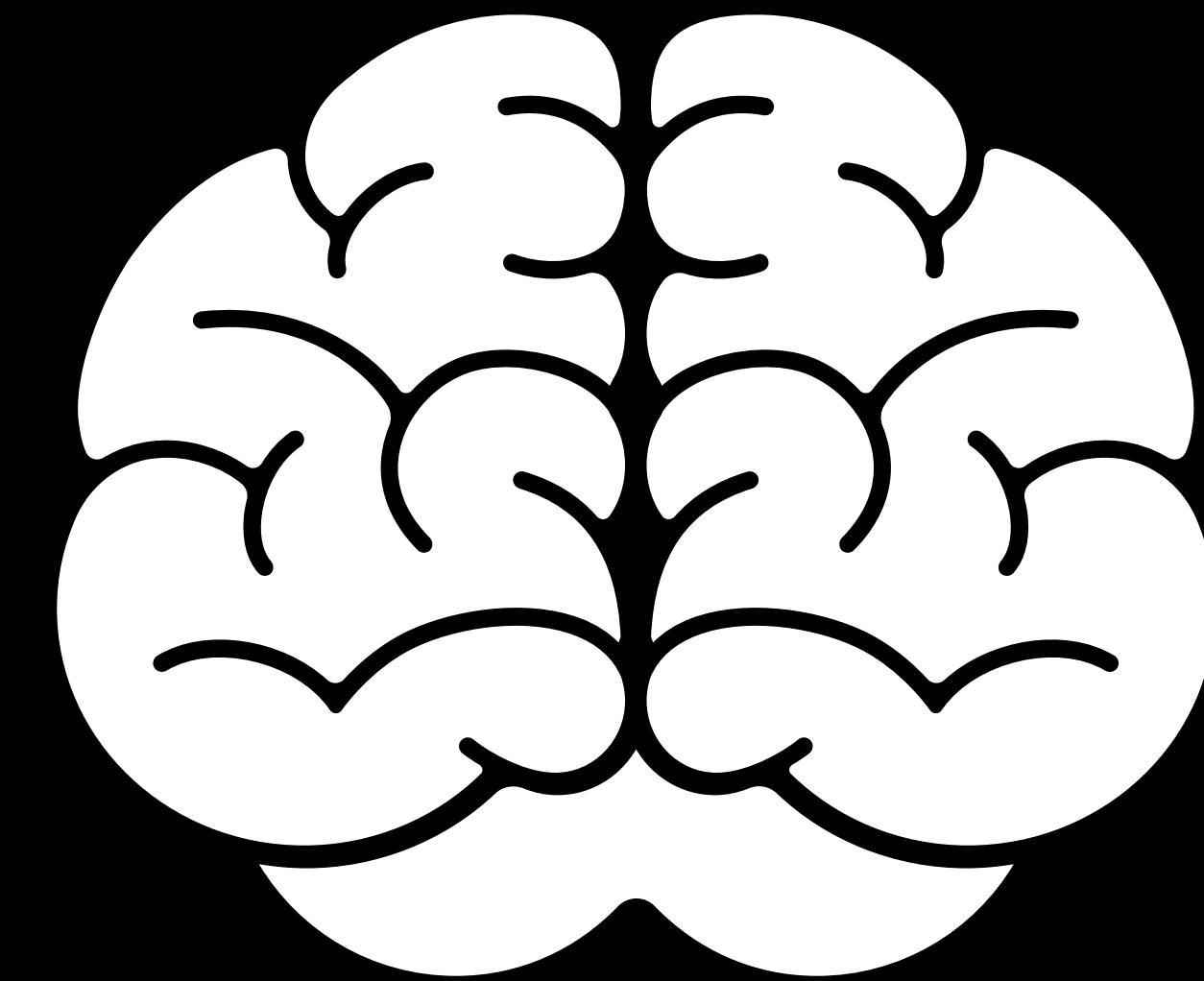
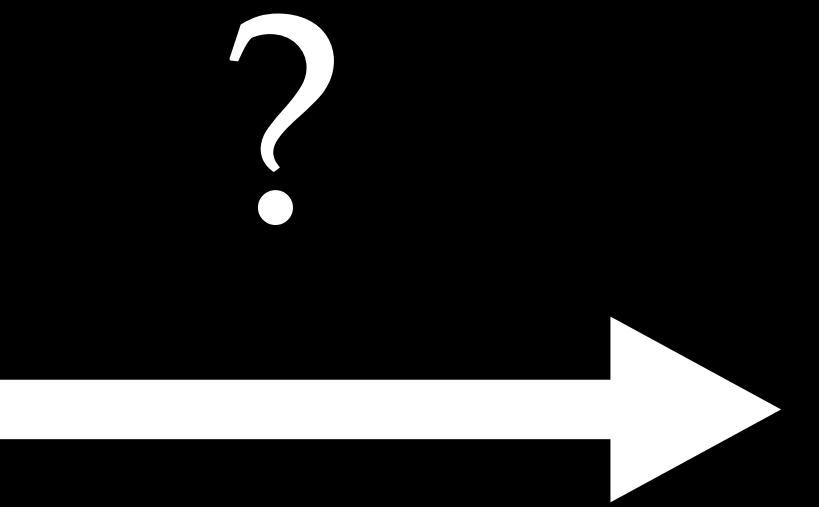
$a \equiv b$   $a$  is equivalent to  $b$

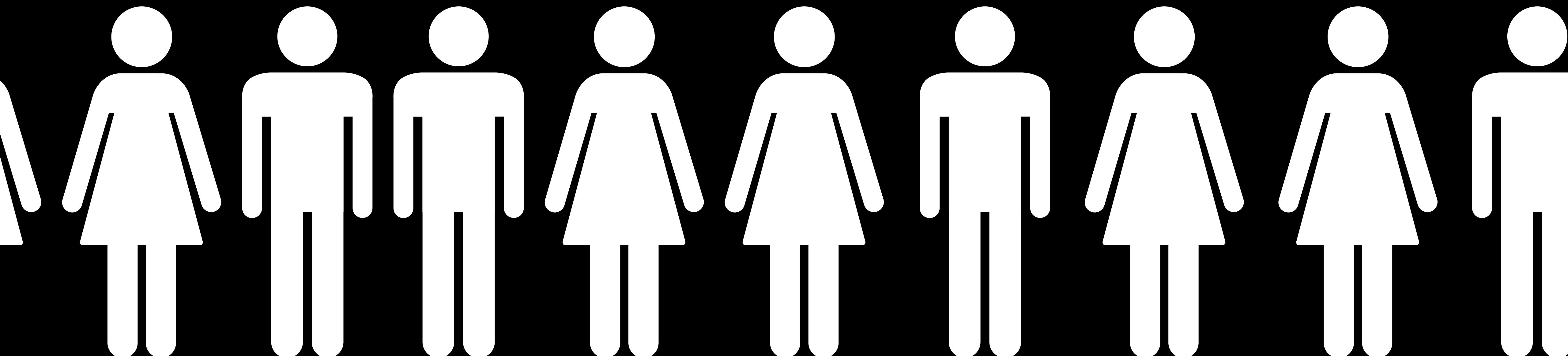
$a$  iff  $b$   $a$  is equivalent to  $b$

$\neg P$  not  $P$

$\overline{P}$  not  $P$

$a \cap b$   $a$  and  $b$ , intersection of  $a$  and  $b$





# On Consciousness

Theory of Knowledge,  
Individual Presentation,  
Pyokyeong Son