



EMERGING TECHNOLOGIES AND DIGITAL TRANSFORMATIONS OF HUMAN BEING

ILYA LEVIN

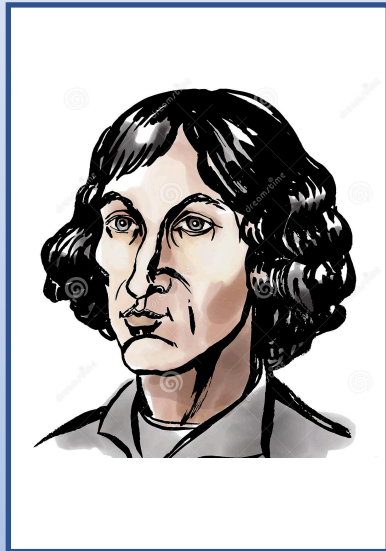
21.08.2020

IEEE Third International Conference on Data Stream Mining & Processing, Lviv, Ukraine

OUTLINE

- **Revolutions in the human consciousness**
- **Three Caves**
 - **Plato's Cave**
 - **Papert's Cave - Personal computer**
 - **Zuckerberg's Cave – Hyperconnected world**
- **Digital transformations**
- **Digital Existence**

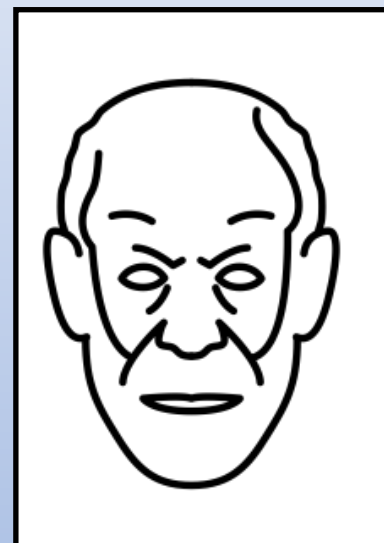
FOUR REVOLUTIONS OF MANKIND CONSCIOUSNESS



Copernicus
1473-1543



Darwin
1809-1882

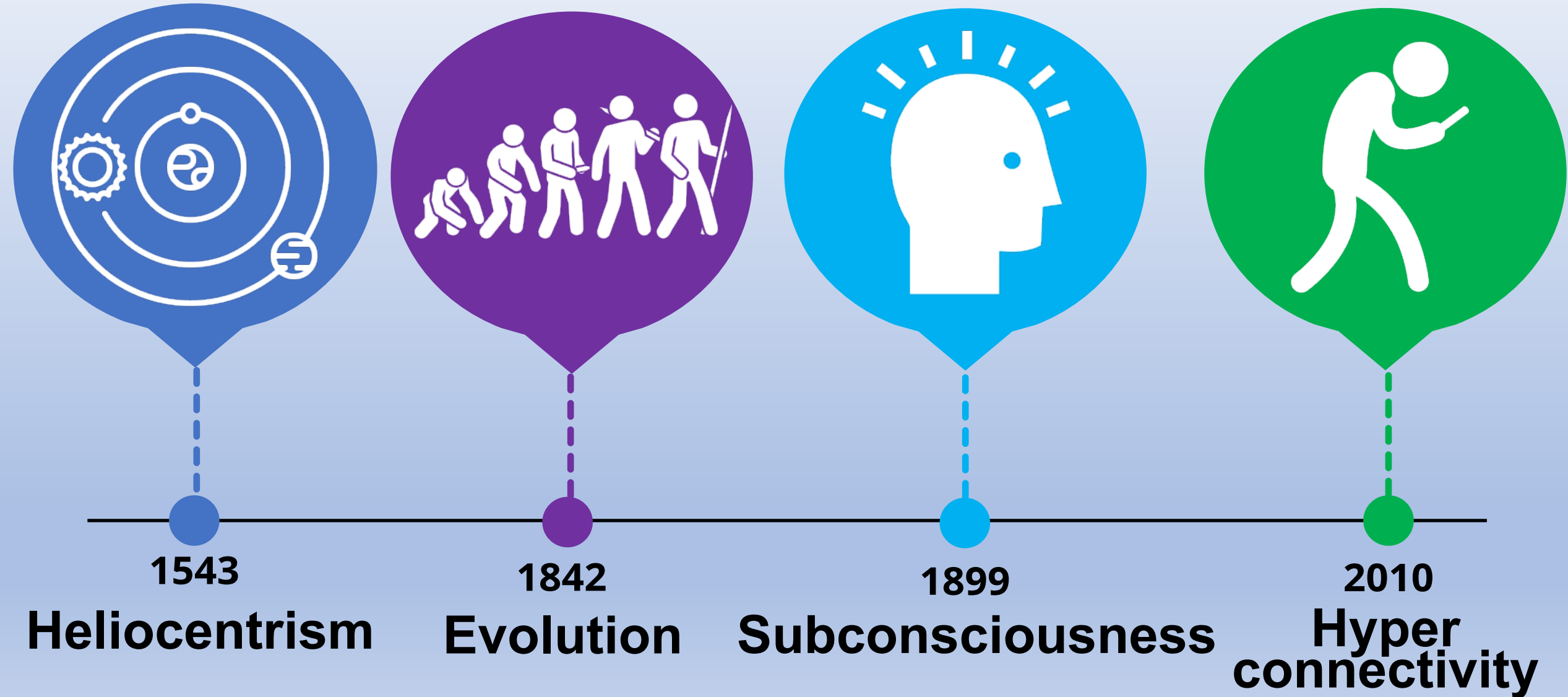


Freud
1856-1939



Turing
1912-1954

FOUR REVOLUTIONS OF MANKIND CONSCIOUSNESS



THREE CAVES: PLATO'S, PAPERT'S, ZUCKERBERG'S



THREE CAVES: PLATO'S, PAPERT'S, ZUCKERBERG'S



5th century BC



1980

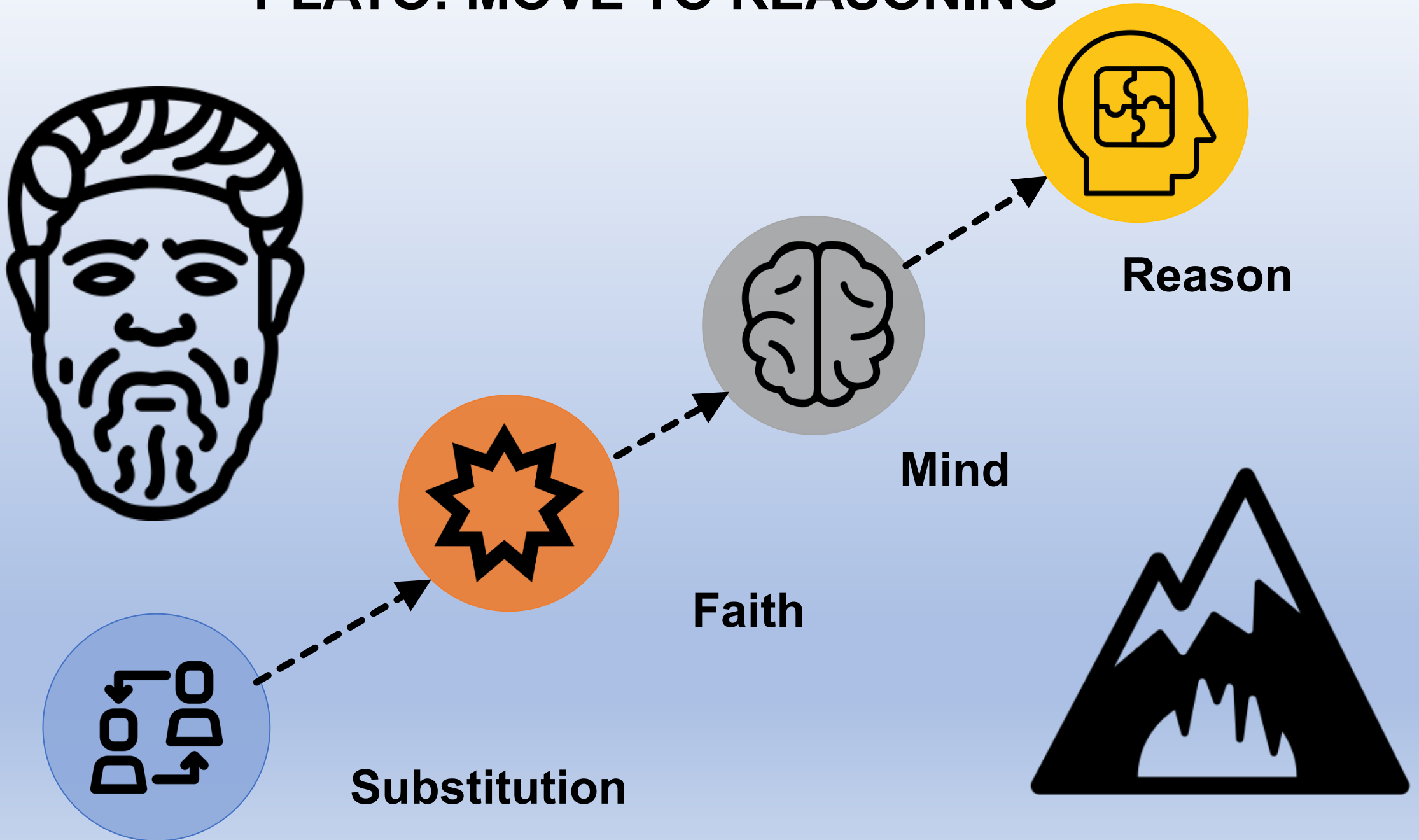


2010

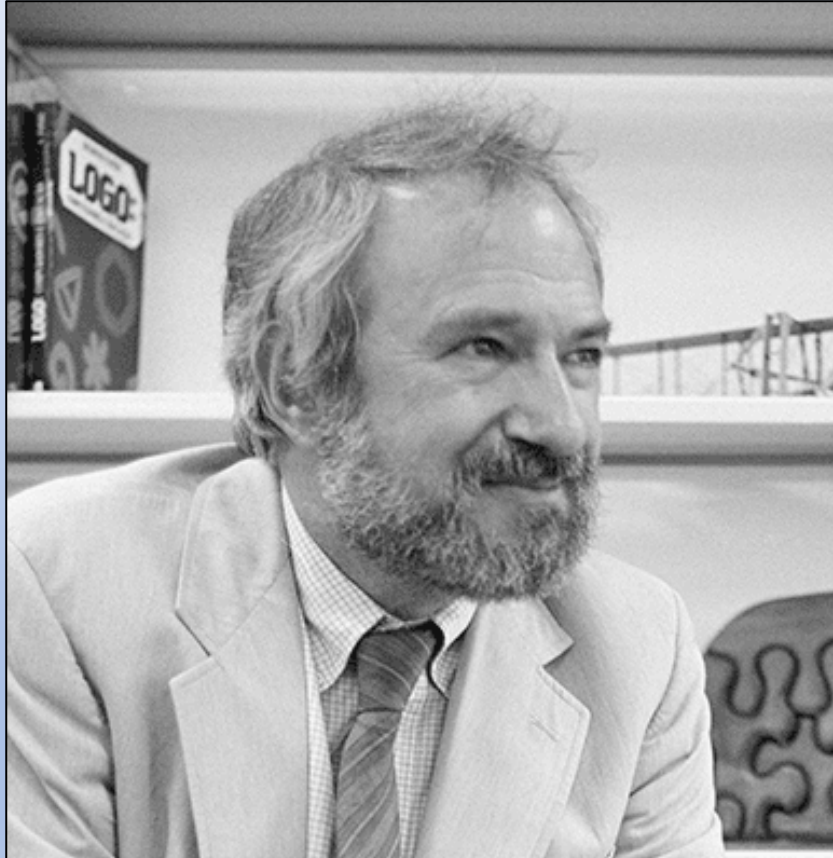
THE PLATO'S CAVE. 5TH CENTURY BC



PLATO: MOVE TO REASONING



S. PAPERT'S CAVE – PC. 1980-TH

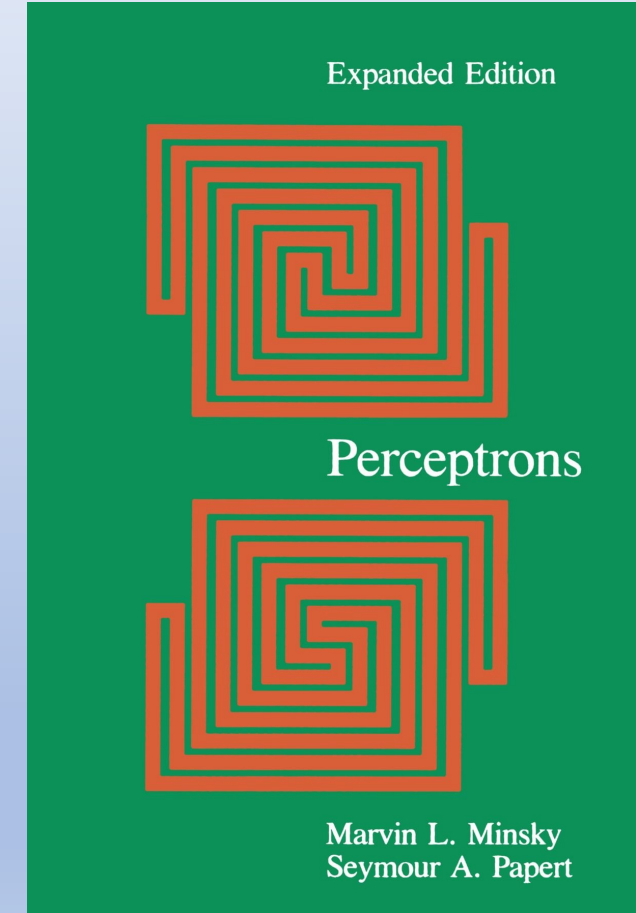




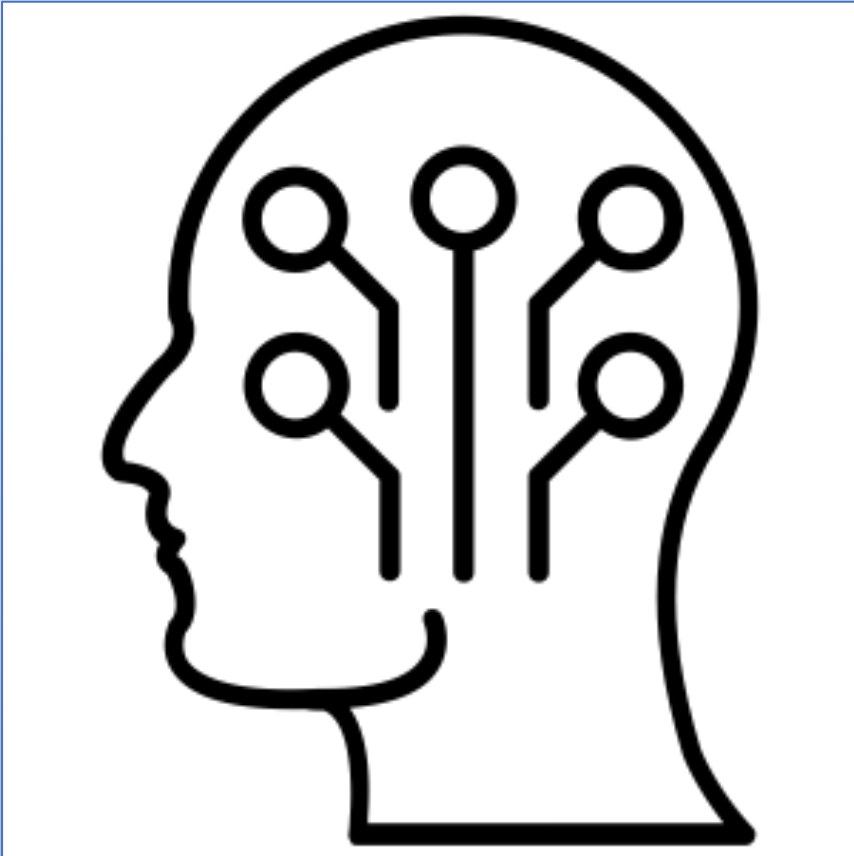
... it will change the way children everywhere think about themselves in relation to the world...

(S. Papert, 1980)

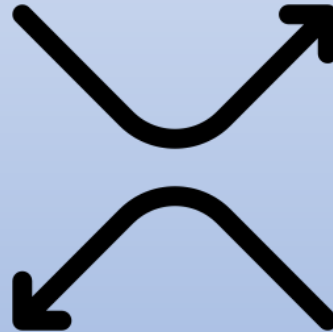
MARVIN MINSKY AND SEYMOUR PAPERT. PERCEPTRONS, 1969



PAPERT: NATURAL HUMAN LEARNING CONTRADICTS TO TRADITIONAL TEACHING

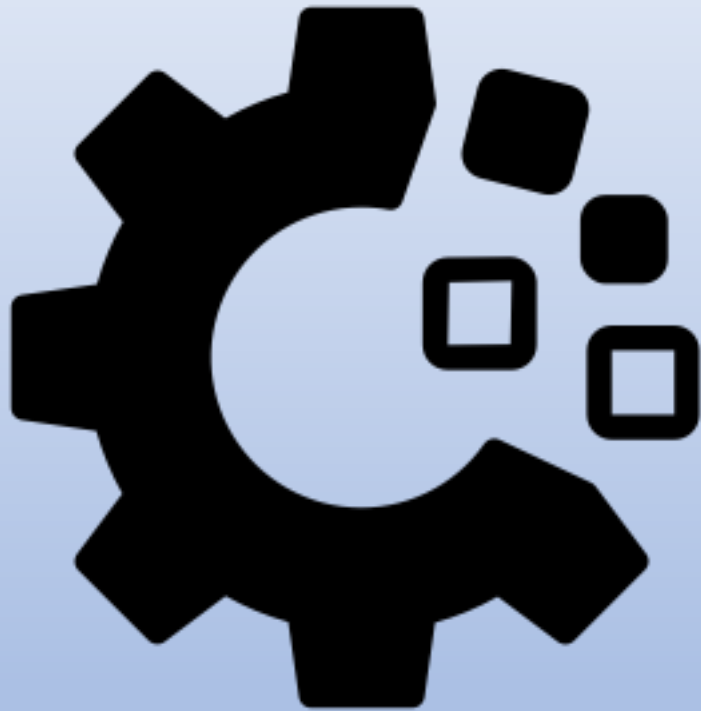


BOTTOM-UP

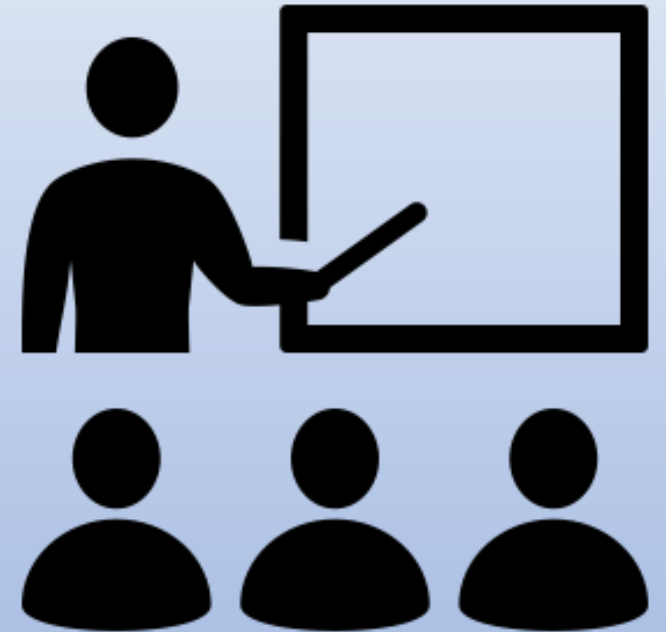


TOP DOWN

PAPERT: MOVE TO CONSTRUCTIONIST LEARNING



Constructionism



Instructionism

PAPERT VS. PIAGET

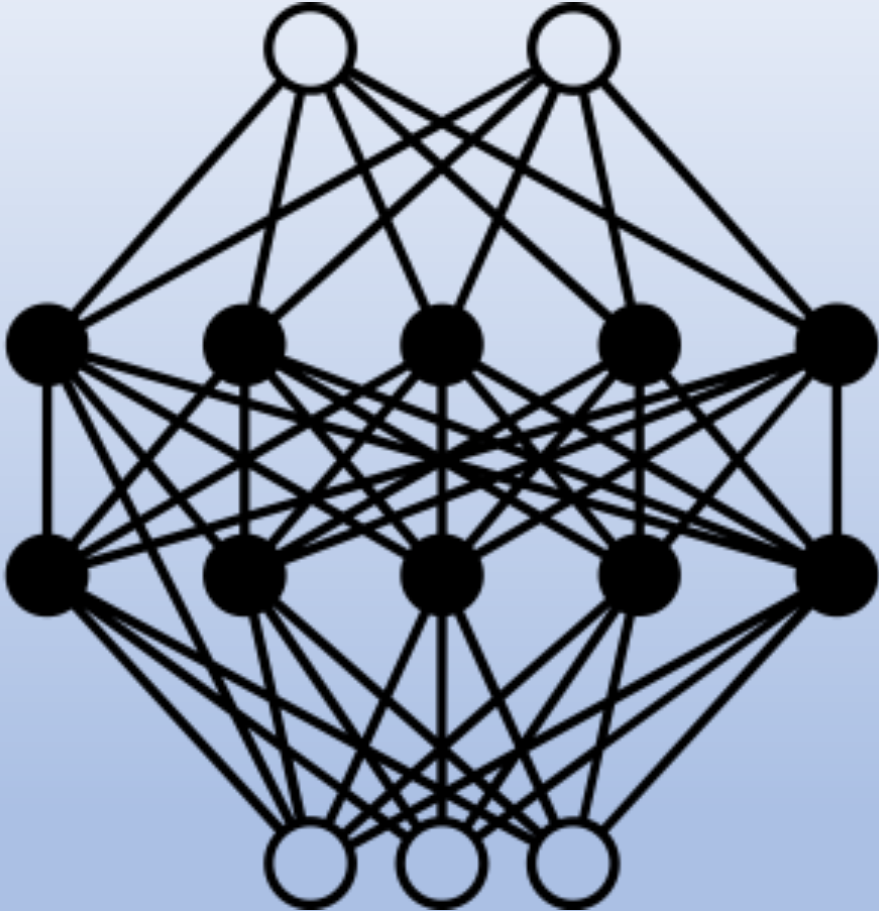


Constructionism

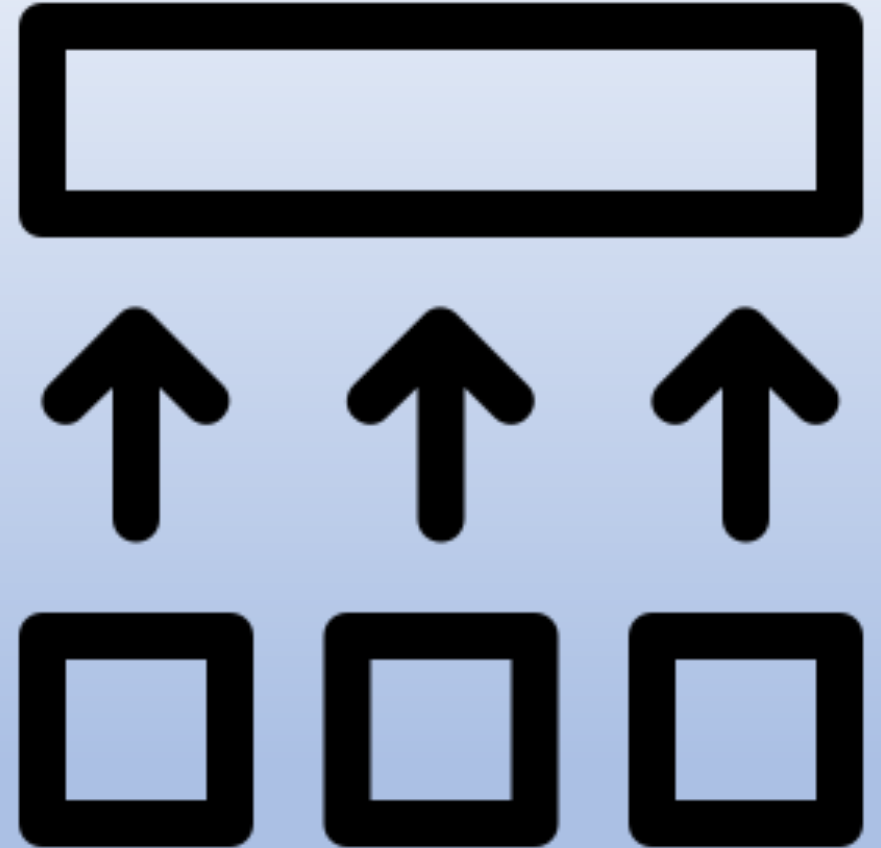


Constructivism

PAPERT VS. PIAGET

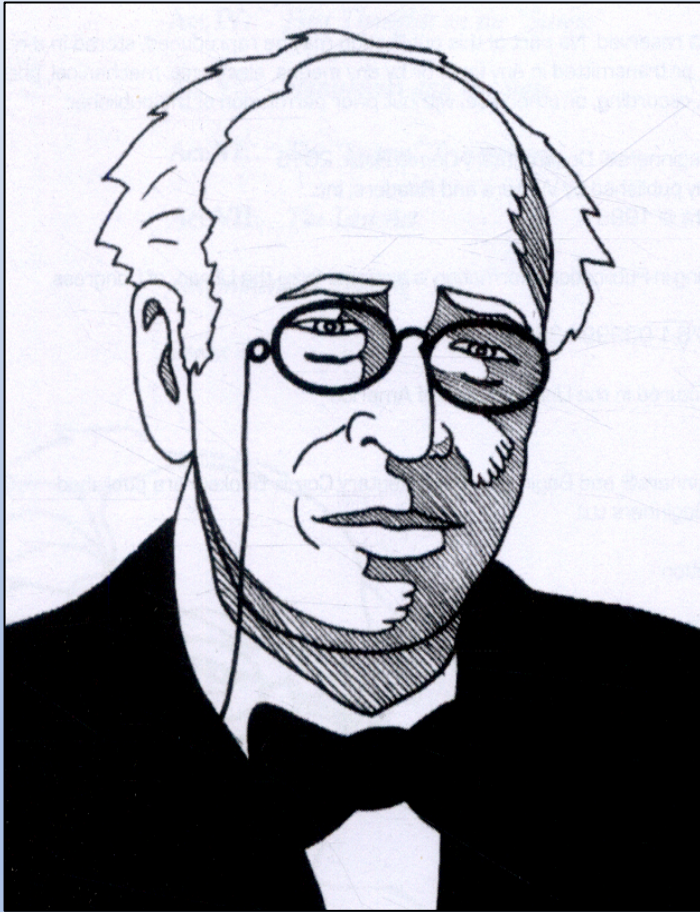


Constructionism – deep learning

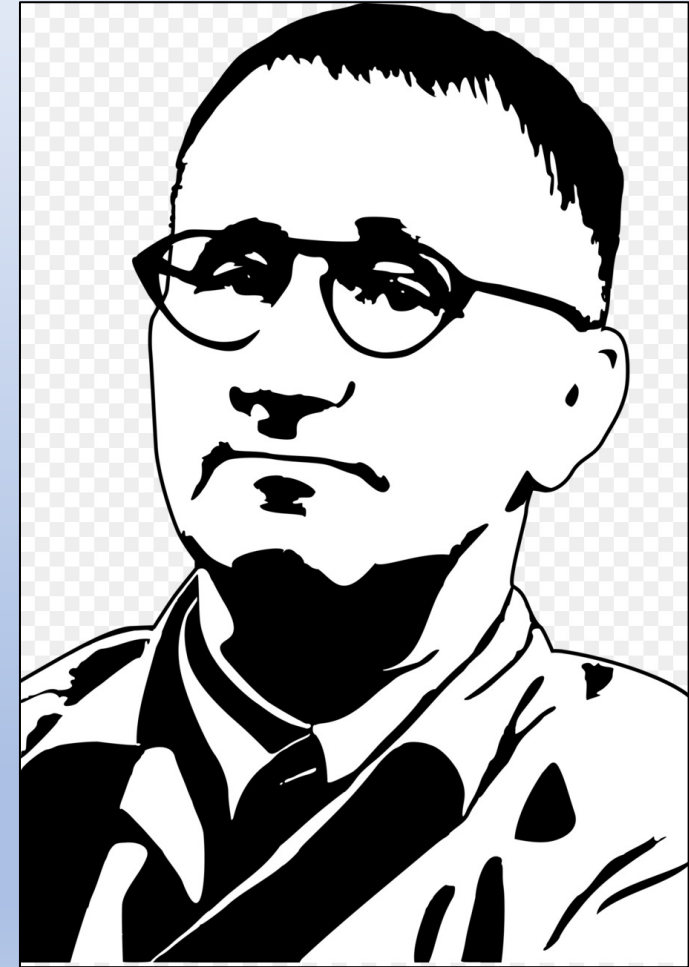


Constructivism – ontology

IT'S SIMILAR TO THE STANISLAVSKI-BRECHT DILEMMA



Embodiment

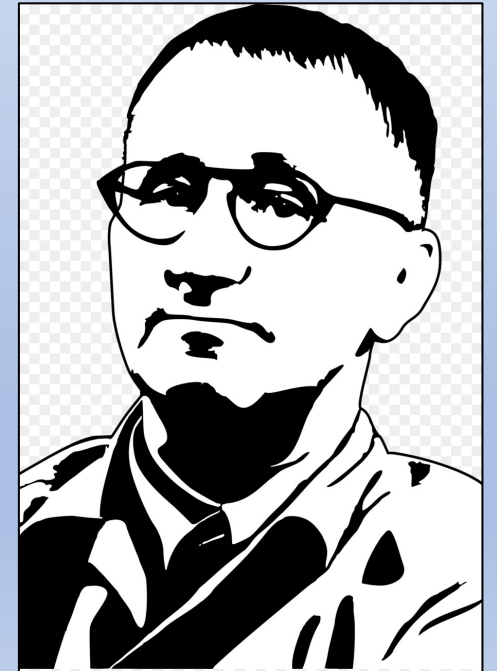
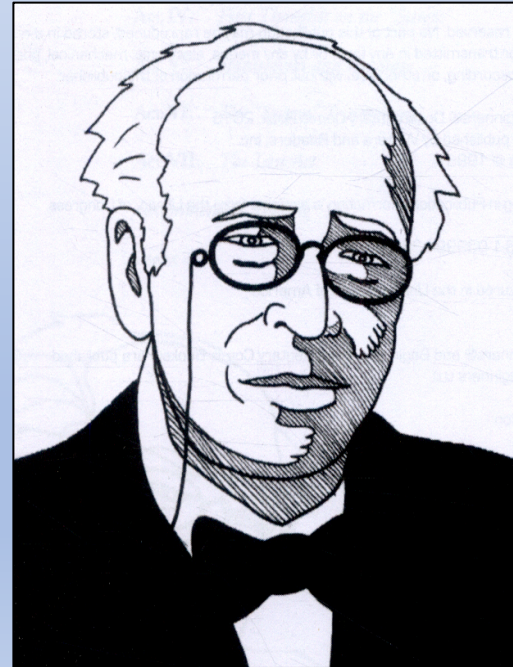


Estrangement

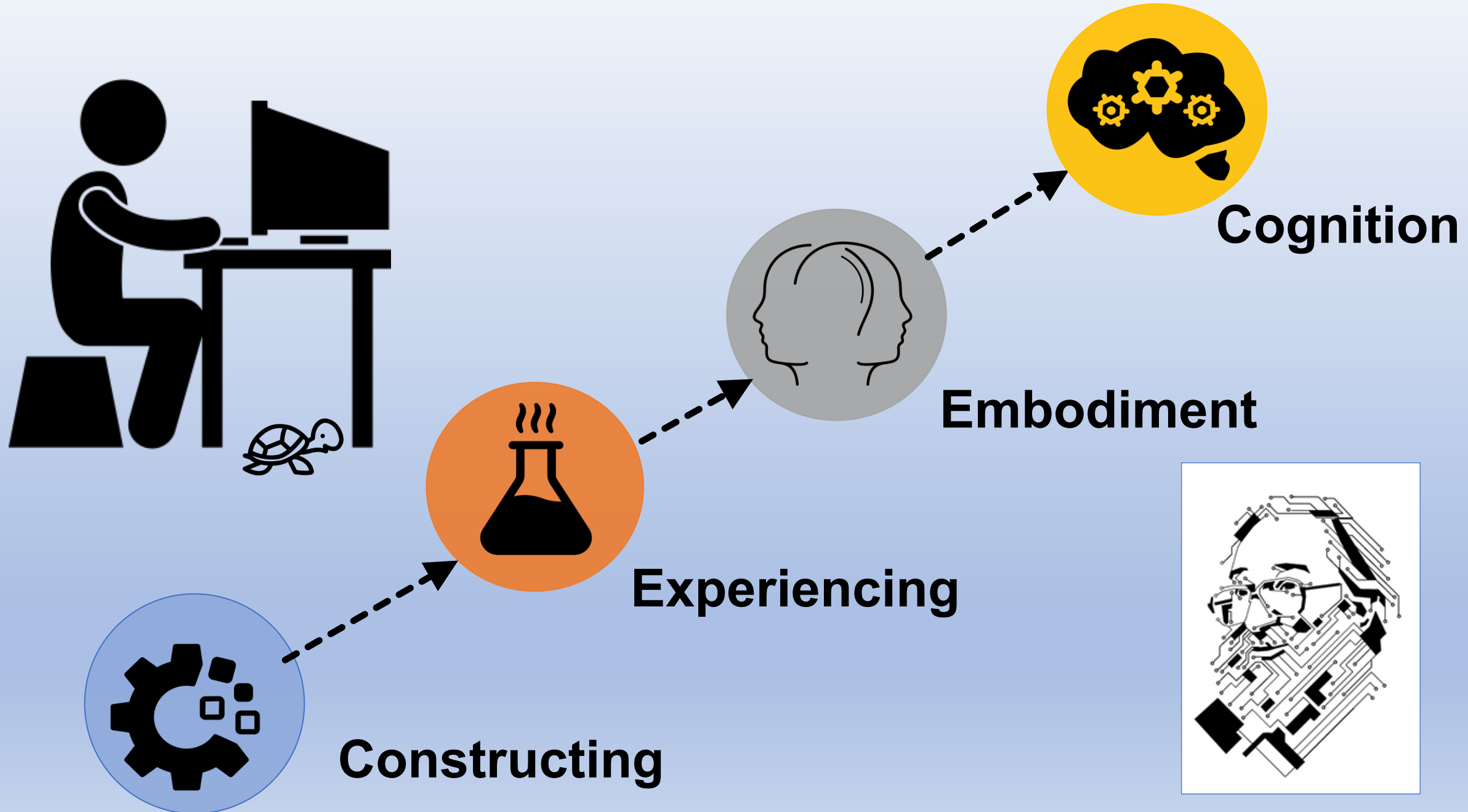
Papert vs. Piaget



Stanislavski vs. Brecht



PAPERT: MOVE TO COMPUTER BASED COGNITION



THE DIGITAL CAVE. HYPERCONNECTED WORLD. DIGITAL EXISTENCE



DIGITAL TRANSFORMATIONS

- **Blurring of the distinction between reality and virtuality**
- **Blurring of the distinctions between human, machine and nature**
- **Reversal from information scarcity to information abundance**



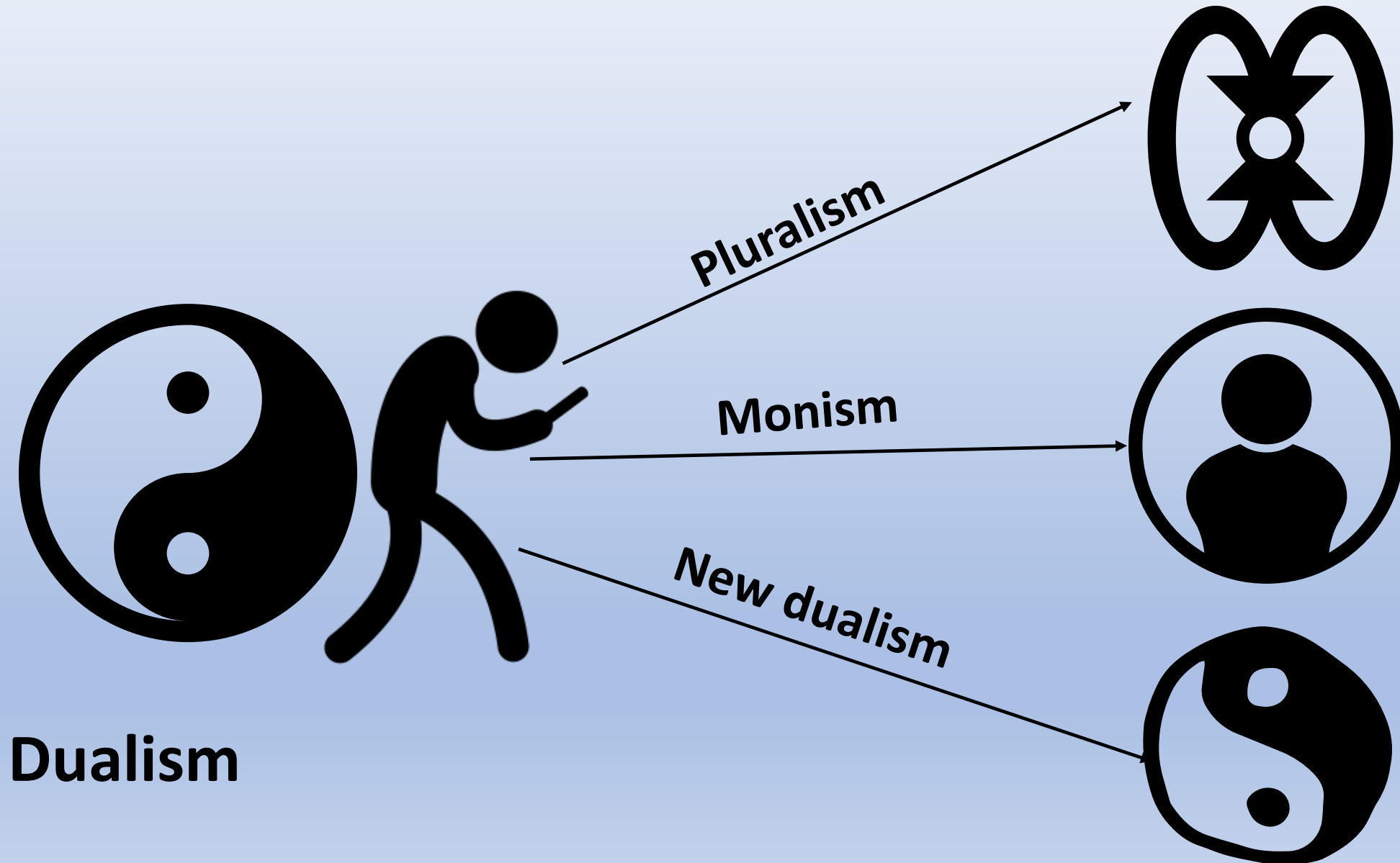
BLURRING OF THE DISTINCTION BETWEEN REALITY AND VIRTUALITY



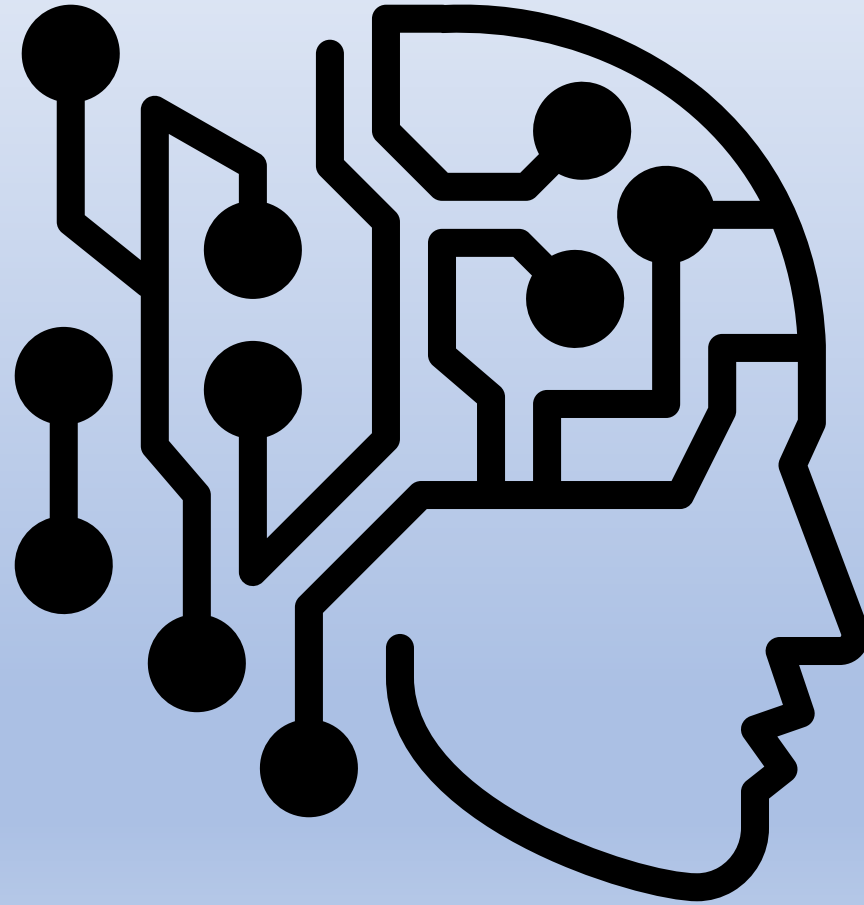
TRADITIONAL DUALISM



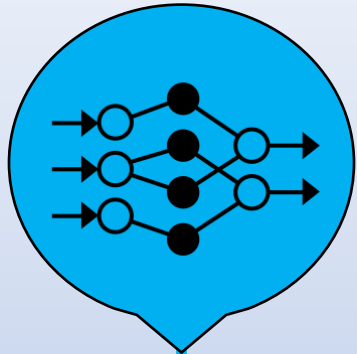
THE DIGITAL CAVE. MOVING FROM THE DUALISM



BLURRING OF THE DISTINCTIONS BETWEEN HUMAN, MACHINE AND NATURE

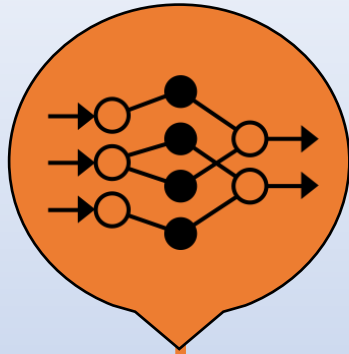


AI TIMELINE



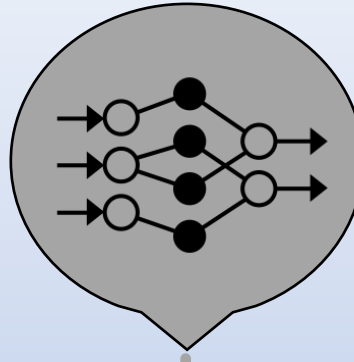
1943

McCulloch and Pitts
Neural network



1958

Rosenblatt
Perceptron



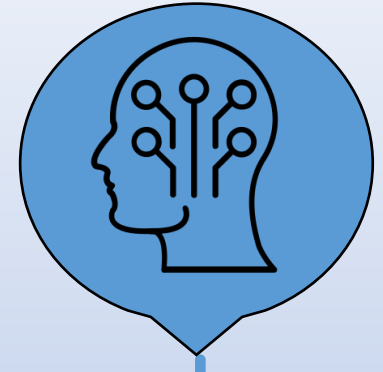
1969

Minsky and Papert
Perceptron crisis



1975

Bill Gates
PC



2017

Wolfram, Google,
AlphaGo
AI was born!



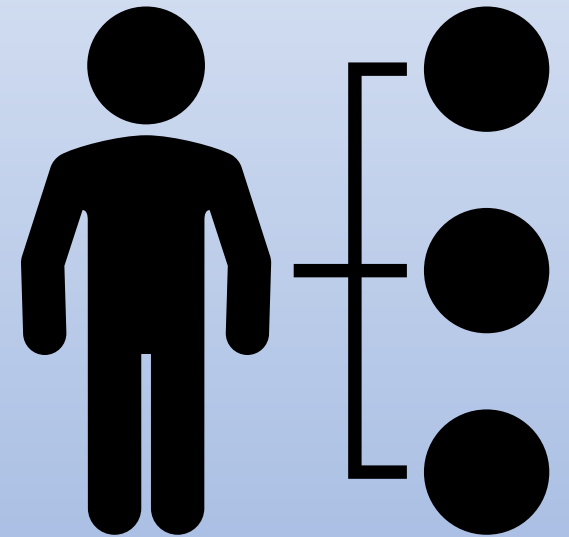
AI winter

GENERALLY ACCEPTED CRITICISM OF THE DIGITAL WORLD (UP TO 2017):

- The digital world is a simplified analogue world**
- The digital world belongs to programmers**

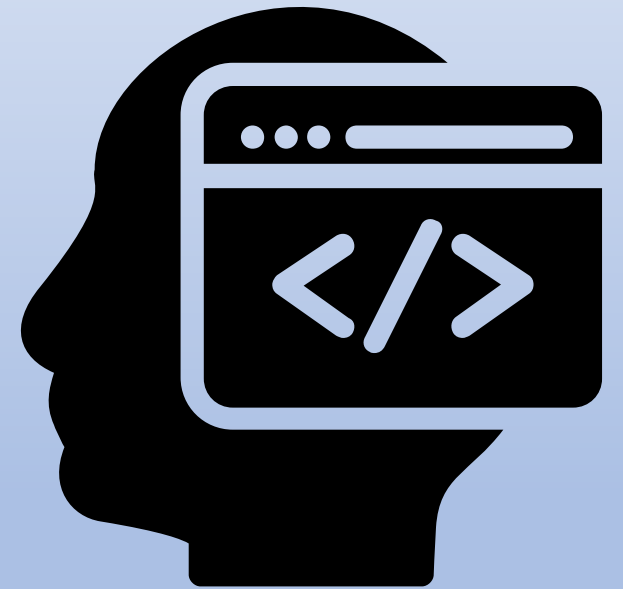
THE DIGITAL WORLD IS A SIMPLIFIED ANALOGUE WORLD

- In the digital world, there is always a choice
- In the analog world, there is no limit to the choice



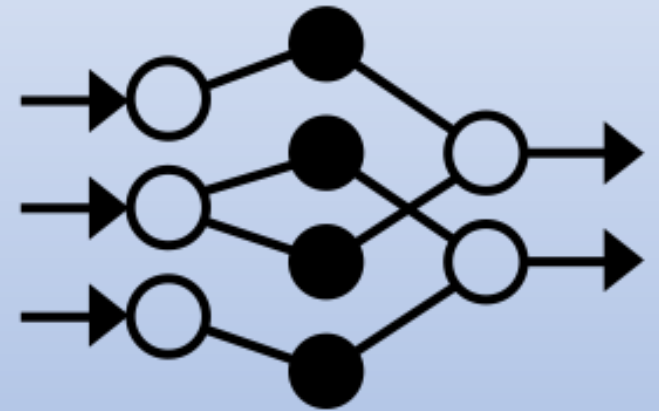
THE DIGITAL WORLD BELONGS TO PROGRAMMERS

**“Program or Be Programmed”
(Douglas Rushkoff)**



2017 - AI ACHIVEMENTS CHANGED THE DIGITAL CAVE

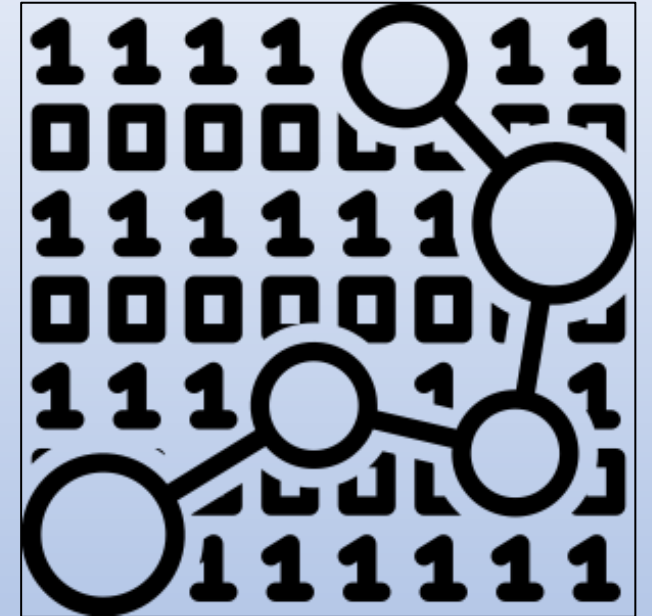
- **The digital world is as complex as the analogue world**
- **The digital world doesn't really belong to programmers**



REVERSAL FROM INFORMATION SCARCITY TO INFORMATION ABUNDANCE - DATAISM

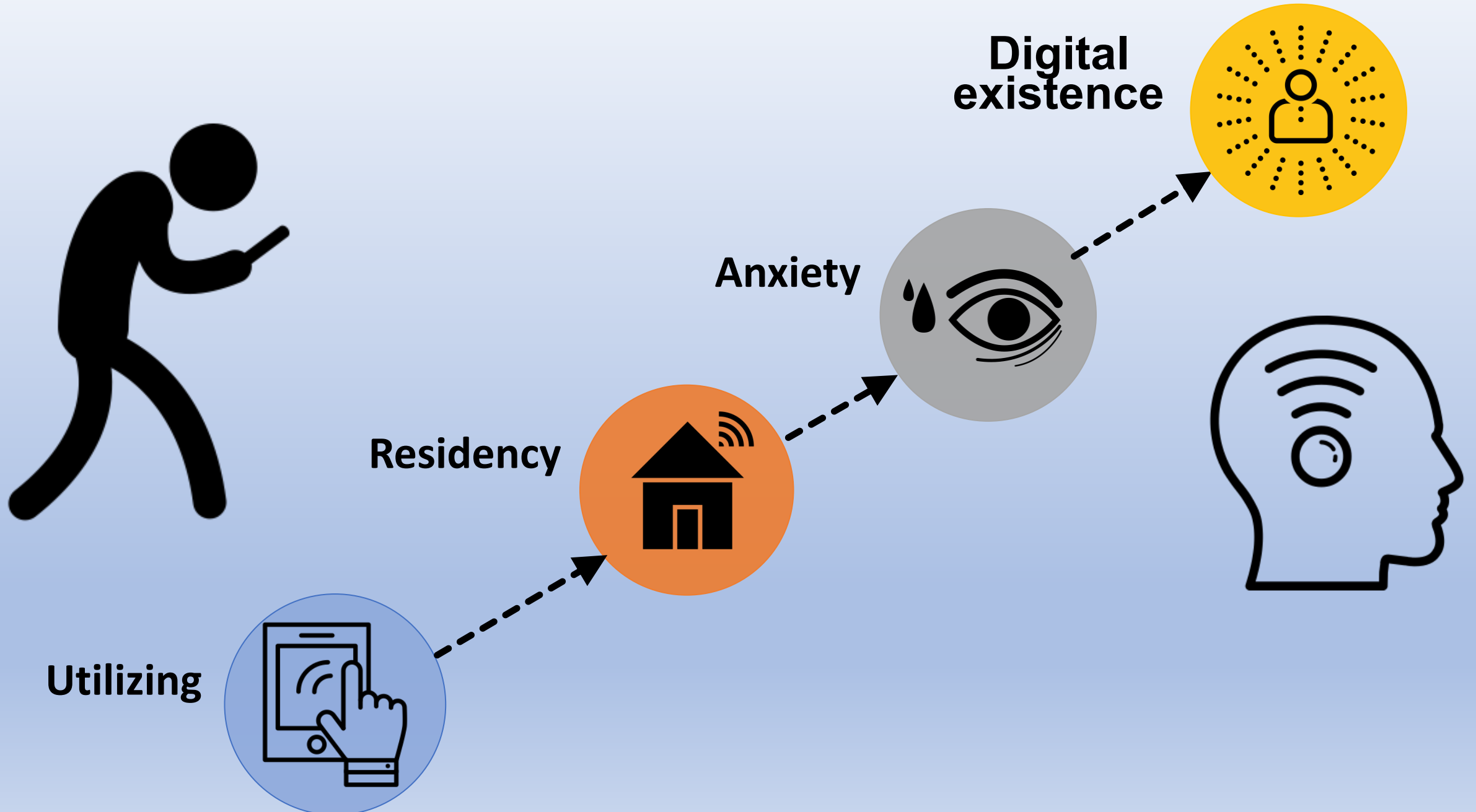


Yuval Harari



The DATAISM is the alternative to liberalism, which removes human from the center of the universe and replace him with information flow

MOVE TO THE DIGITAL EXISTENCE



THREE CAVES



Reason



Cognition



**Digital
existence**

CONCLUSIONS

- **The Plato's cave – move to reasoning**
- **The Papert's cave – move to computer based cognition**
- **The Digital cave – move to the digital existence**