

CIHAN UNIVERSITY/SULIMANIA, ARCHITECTURAL DEPT.

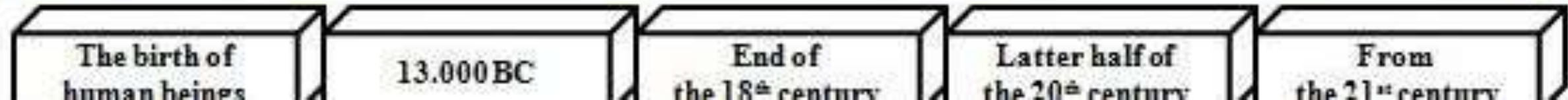
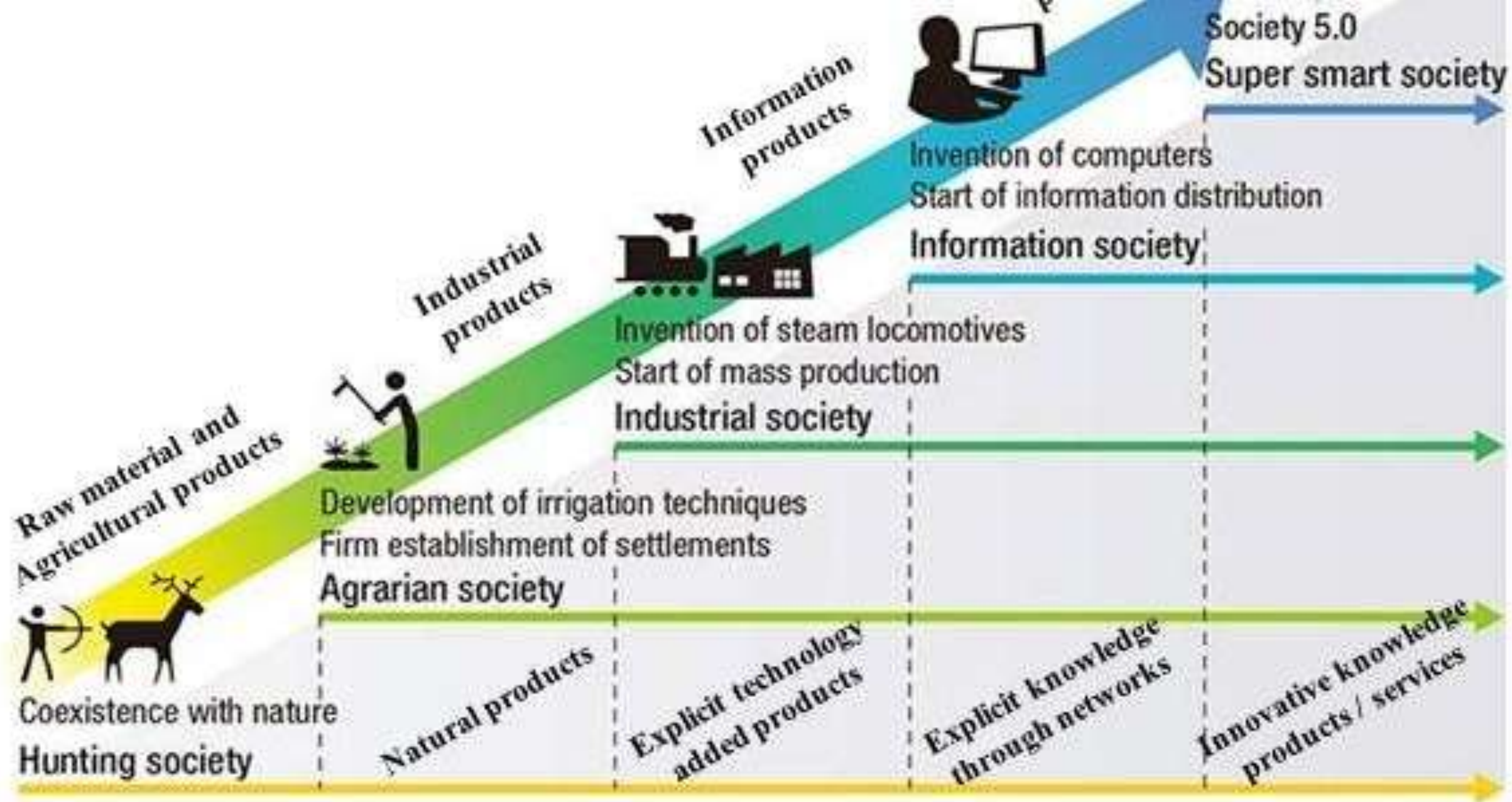
THIRD YEAR 2023-2024

FIRST SEMESTER LECTURE 4

# Logic and Design Methodology

Dr. Nahedh T. Al-QEMAQCHI





# Thinking evolution



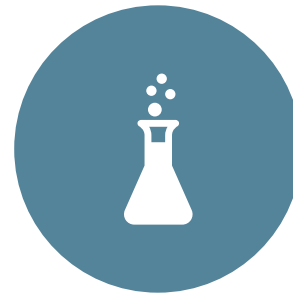
First stage: Nature



Second stage:  
Sources of  
confidence



Third stage:  
Philosophy and  
Meditation



Fourth stage:  
Experimental science

First stage



# Nature as a source of knowledge

- ▶ Simple raw knowledge
- ▶ Couldn't be estimated or predicted
- ▶ The relation with human is an act and react
- ▶ No primary cause and effect measured



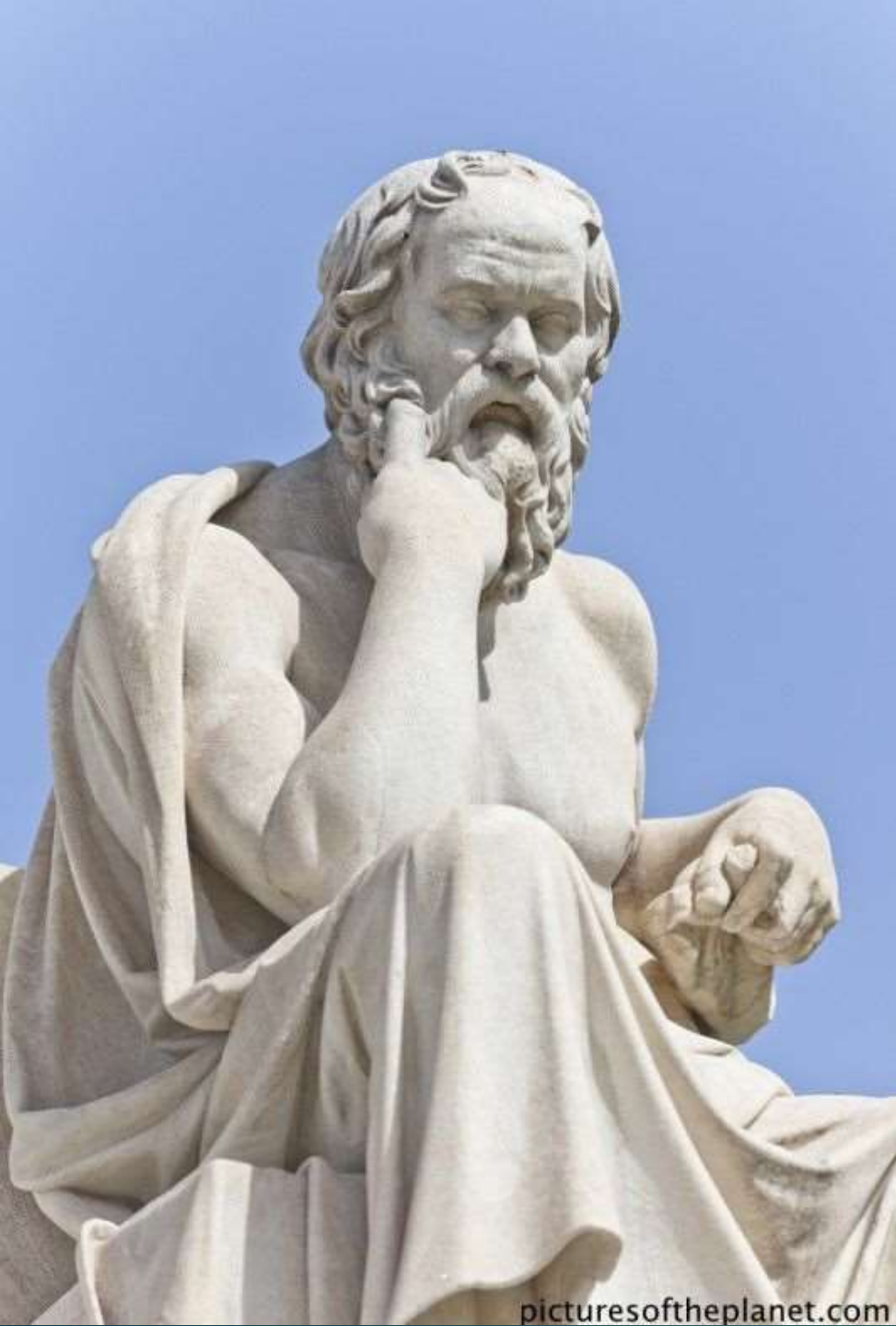
# Second stage: Sources of confidence

- ▶ Depends on beliefs not facts
- ▶ Correlated to myths and legends
- ▶ untestable information
- ▶ Simple causality and forecasting







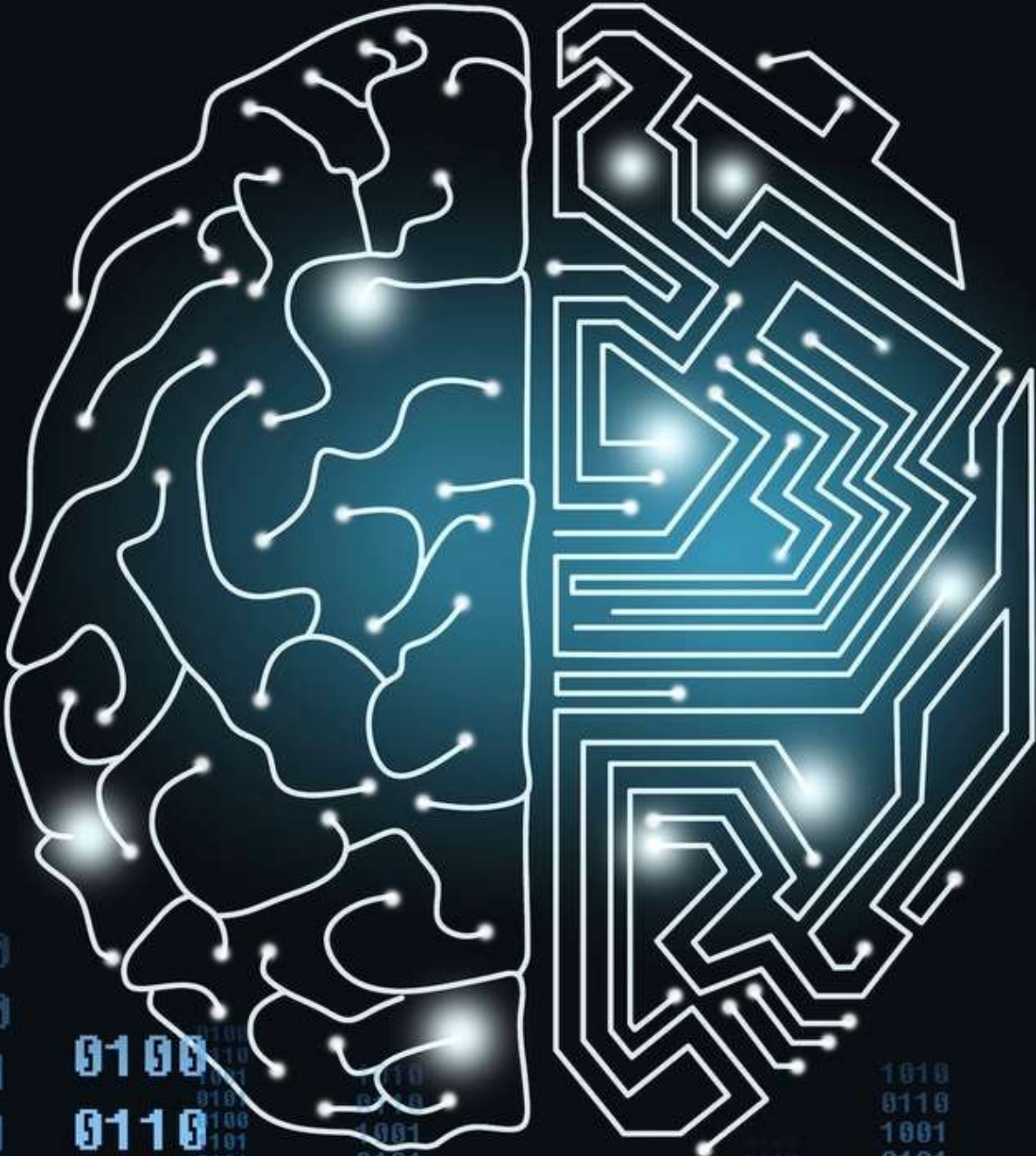


# Third stage: Philosophy and Meditation

- ▶ The use of Logical thinking
- ▶ Expectation
- ▶ Correlate Causes and Effects
- ▶ Analyses and synthesis of facts
- ▶ Rationality



Fourth stage:  
experimental  
sciences




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- ▶ Inquiry in seeking facts and the search for truth through testing of theories
  - ▶ The use of Scientific Method Contains Five Steps
    1. Forming of a Question
    2. Forming of a Hypothesis
    3. Testing of the Hypothesis
    4. Analyzing Results
    5. Draw Conclusions
  - ▶ Objectivity instead of subjectivity
  - ▶ Laws and roles for prediction
  - ▶ Explanation of facts
  - ▶ The formation of theoretical science

# Bits of knowledge

- ▶ Data
- ▶ Information

- ▶ Data are the raw facts gathered in any condition, event, idea, entity or anything sorts of things for which one needs to conclude any information.
- ▶ The facts what we conclude from a particular event or subject for which, we filter the data by eliminating the useless data and keep the necessary data that forms the information.
- ▶ Data could be anything like simple text or numbers
- ▶ Information is the processed and interpreted form of data.
- ▶ Data is unorganized, randomly collected facts and figures which could be processed to draw conclusions as per the need.
- ▶ The organized form of the same data that make sense is called Information.
- ▶ Data are collected based on observations and records, which are stored in computers or simply in papers or by some other means.
- ▶ Information are considered more reliable because the proper analysis is conducted to convert data into information.

Earth selfie taken by  
Voyager 1, from 4  
billion miles away.





Data

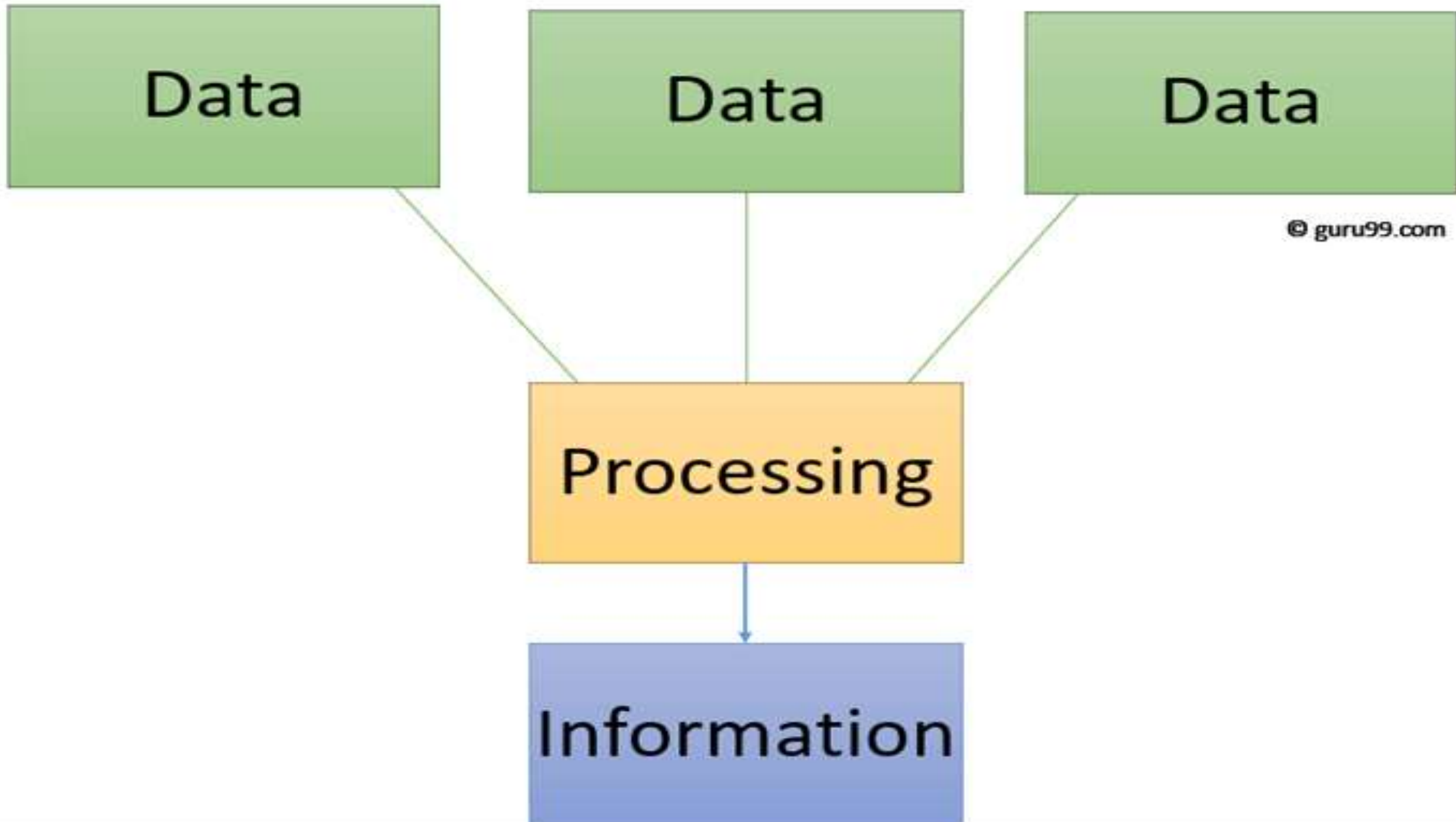
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Data

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Processing

Information



# Analysis and synthesis

- ▶ Analysis would take each system and divide that system to see what was true about each part respectively, defining the properties of X, Y, and Z, then defining the properties of those properties until no further analysis could be done.
- ▶ Synthesis on the other hand would look at each part of each system individually (from the most basic property to the most complex) to see how those parts related to other parts in the system

