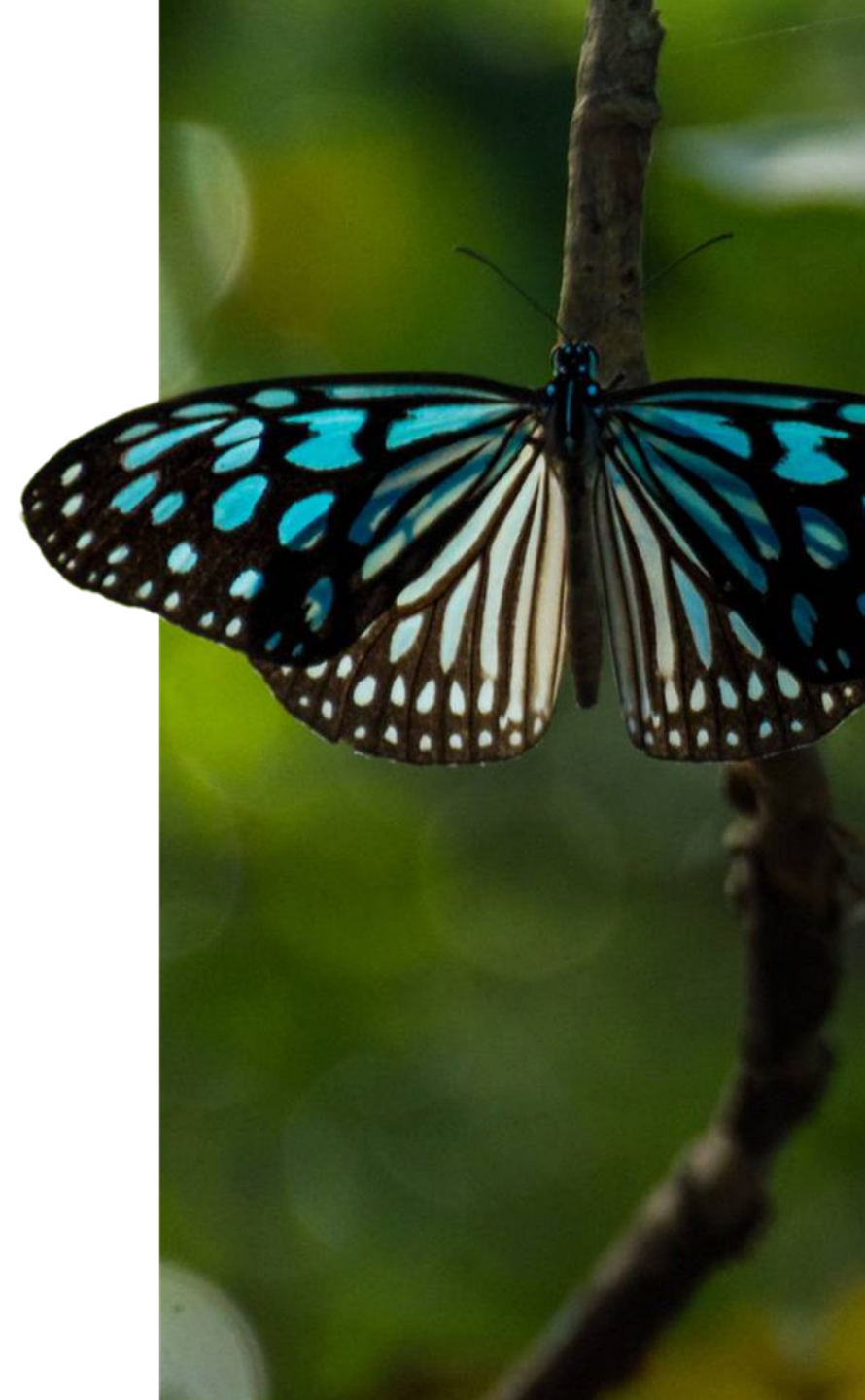


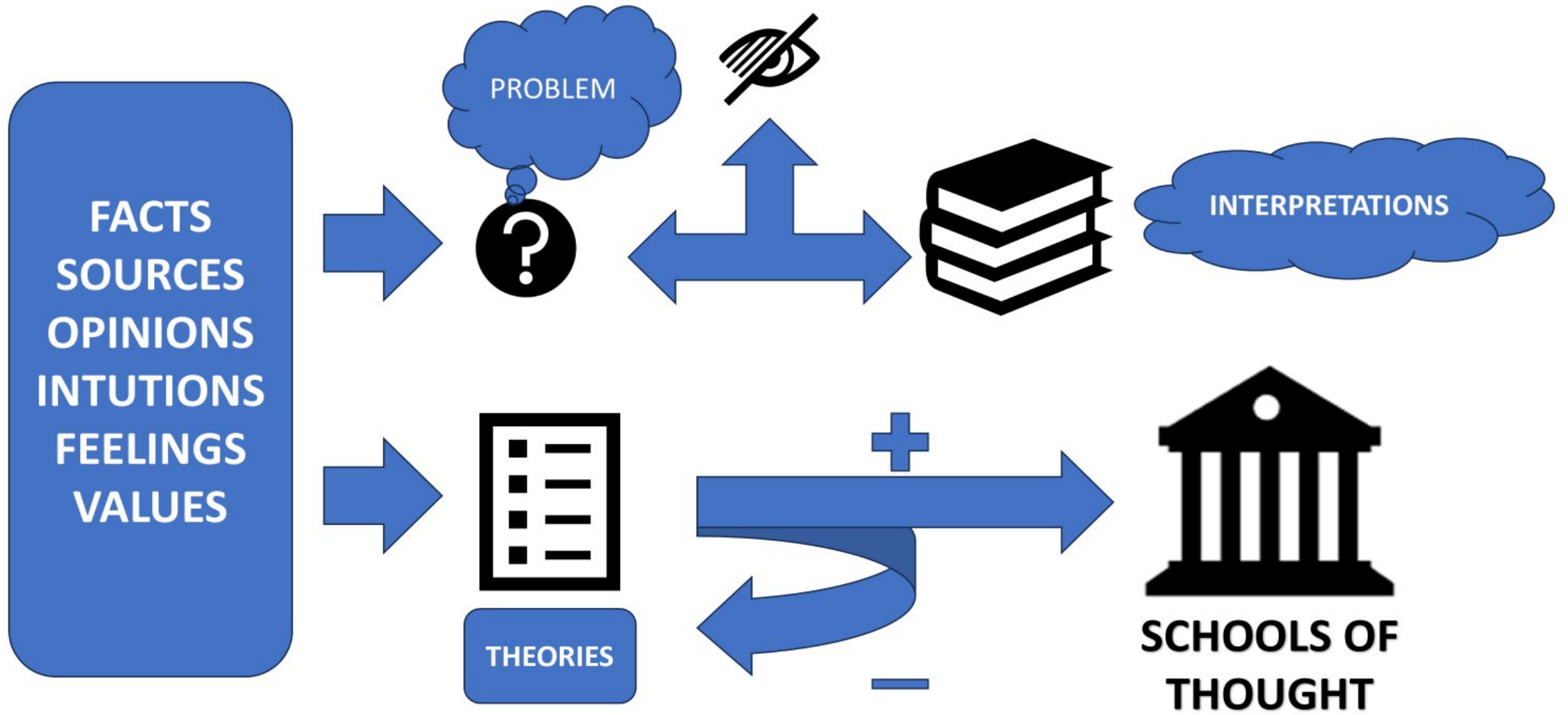
FOUNDATIONS OF RESEARCH

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D.A.V. POSTGRADUATE COLLEGE, AZAMGARH. (U.P.)

MODULE 1







1



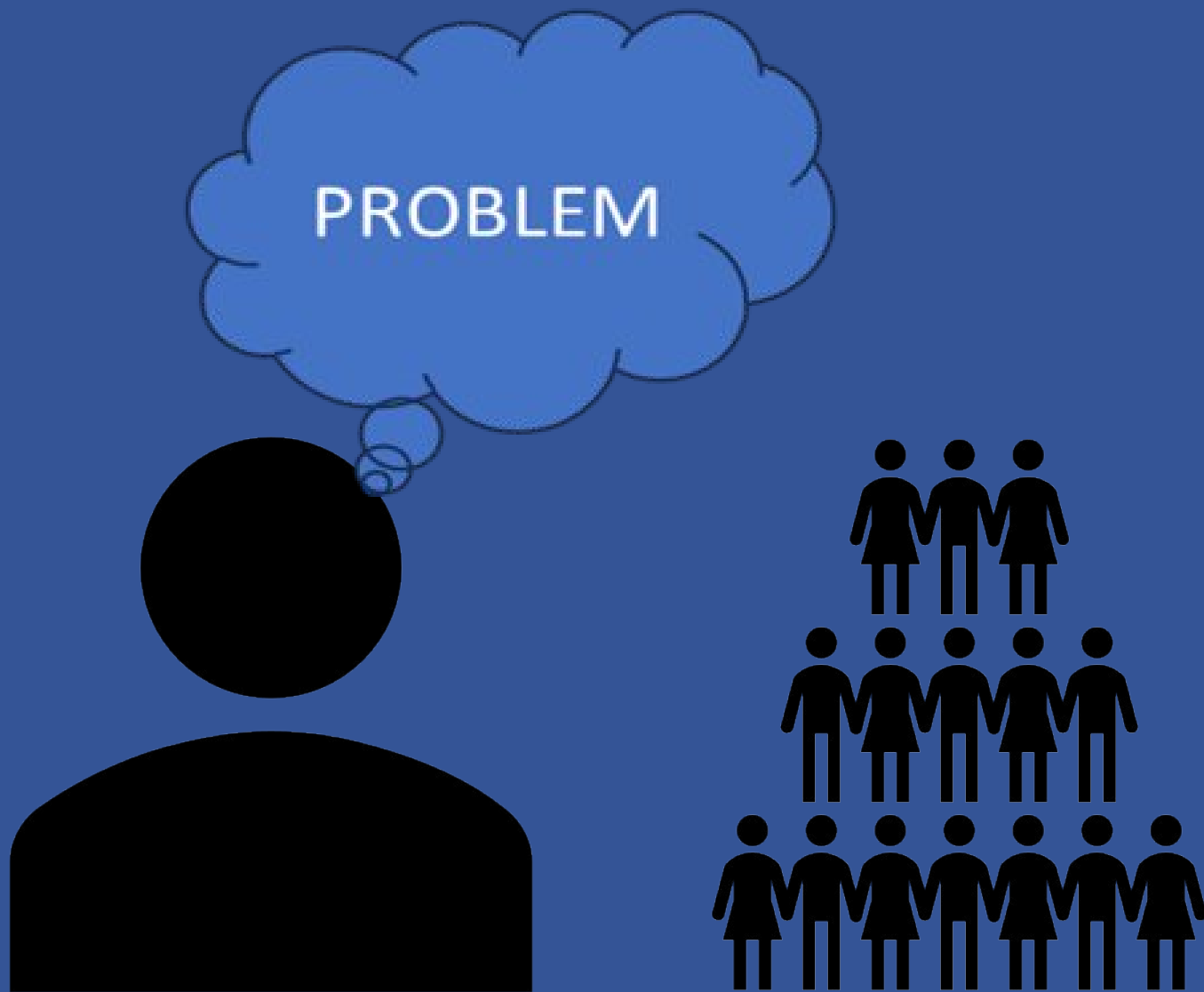
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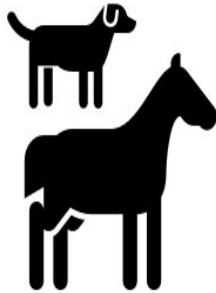


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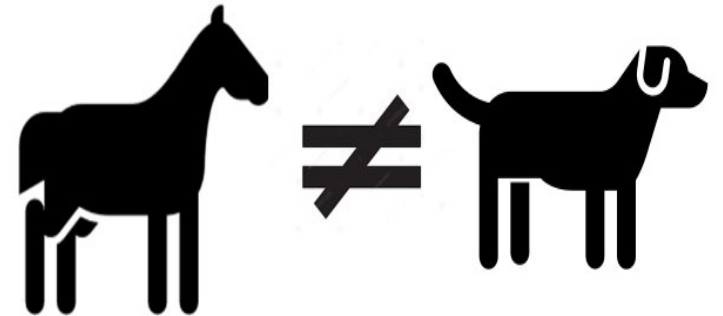
OBSERVATION



ENQUIRY



NEW KNOWLEGDE



Jean
Piaget

Theory of Cognitive Development

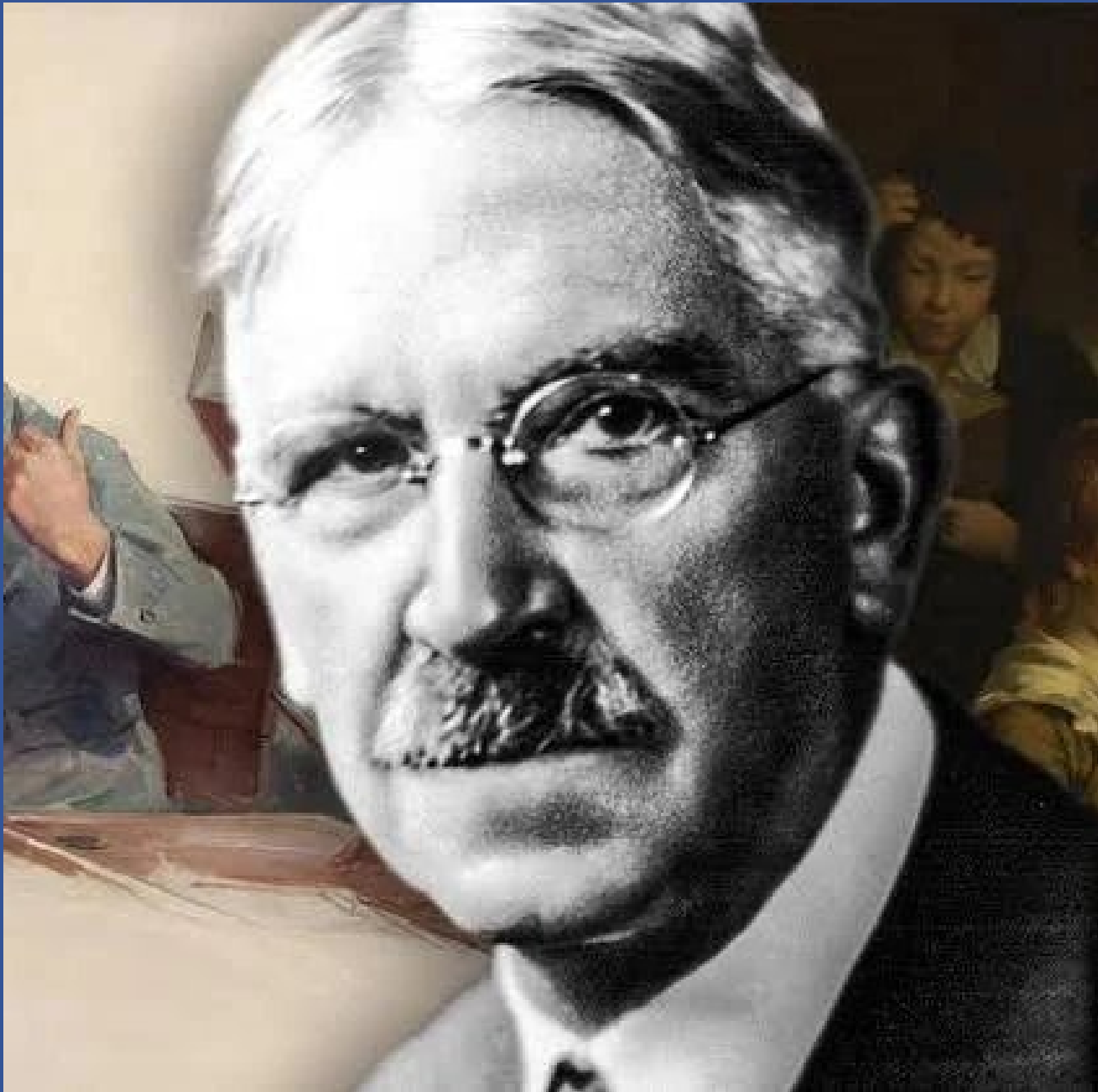
How do we create knowledge



Lev
Vygotsky

**Cognitive
Development is
Inherently Social**

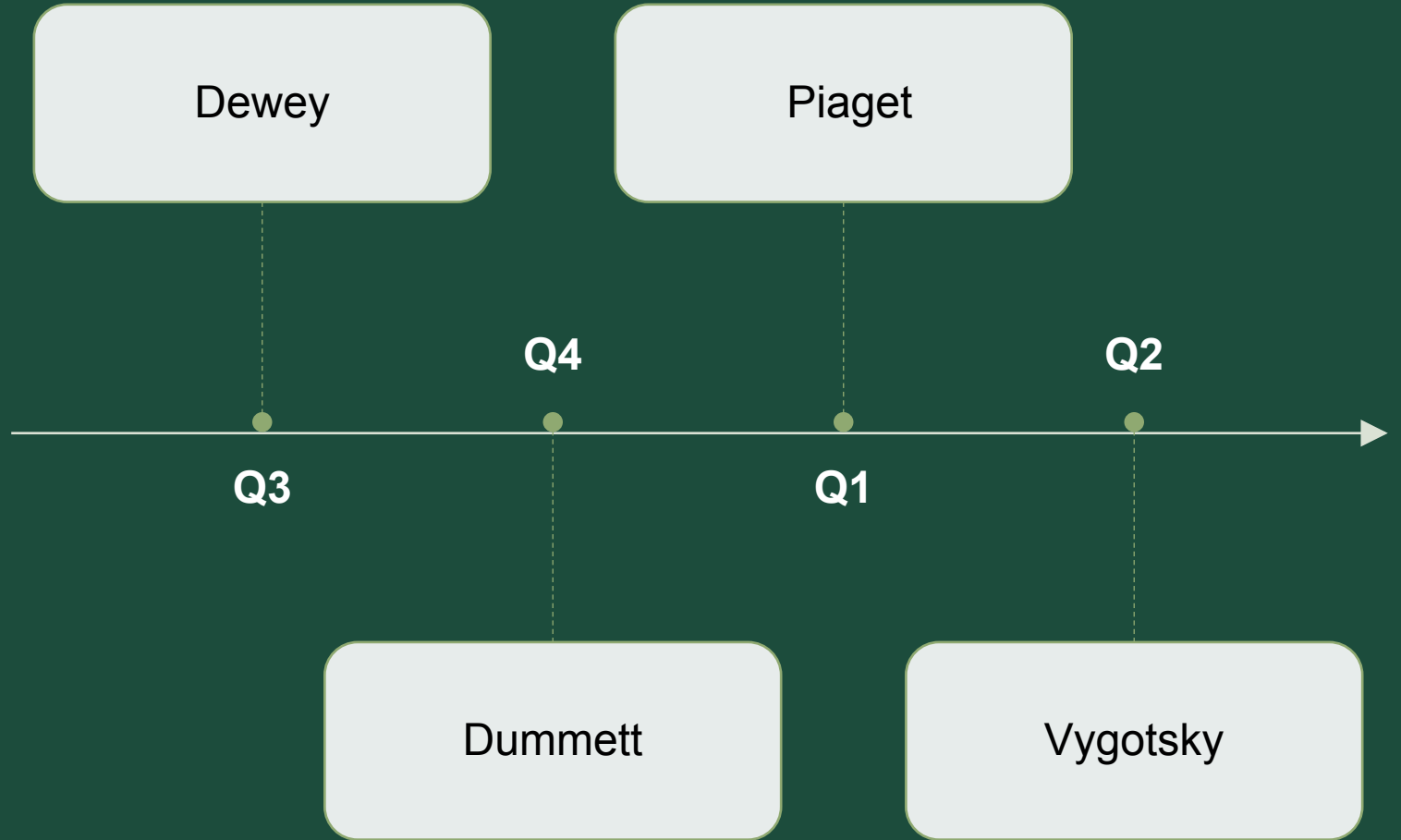




John Dewey

Mixed-methods Research and Action- research.

Unlocking new horizons



truth cannot exist independently of our human ability to verify or recognize it

Positivism
Constructivism
(Pure Science)
cultural



Variables

Realism
(Semantic Realism)



Dummett

Pragmatism
(What Works)



Dewey

Constructivism
(Individual)



Piaget

Social
(Socio-

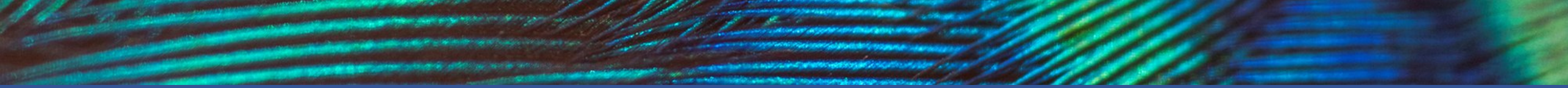


Vygotsky



WHAT IS RESEARCH

Research is a structured, systematic process of inquiry aimed at discovering, interpreting, and revising facts, theories, or practical applications. Fundamentally, it is not just gathering existing information; it is the purposeful creation of *new* knowledge or the novel application of existing knowledge.

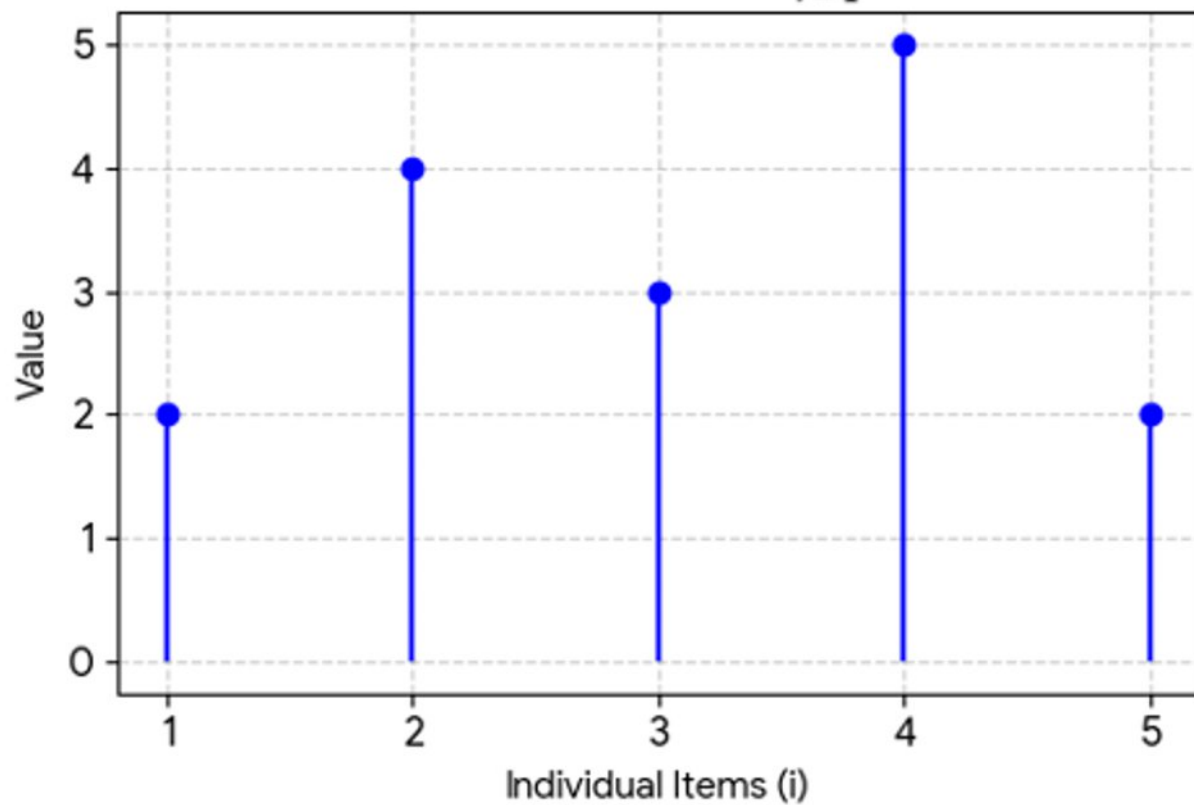


WHEN DID RESEARCH BEGIN?

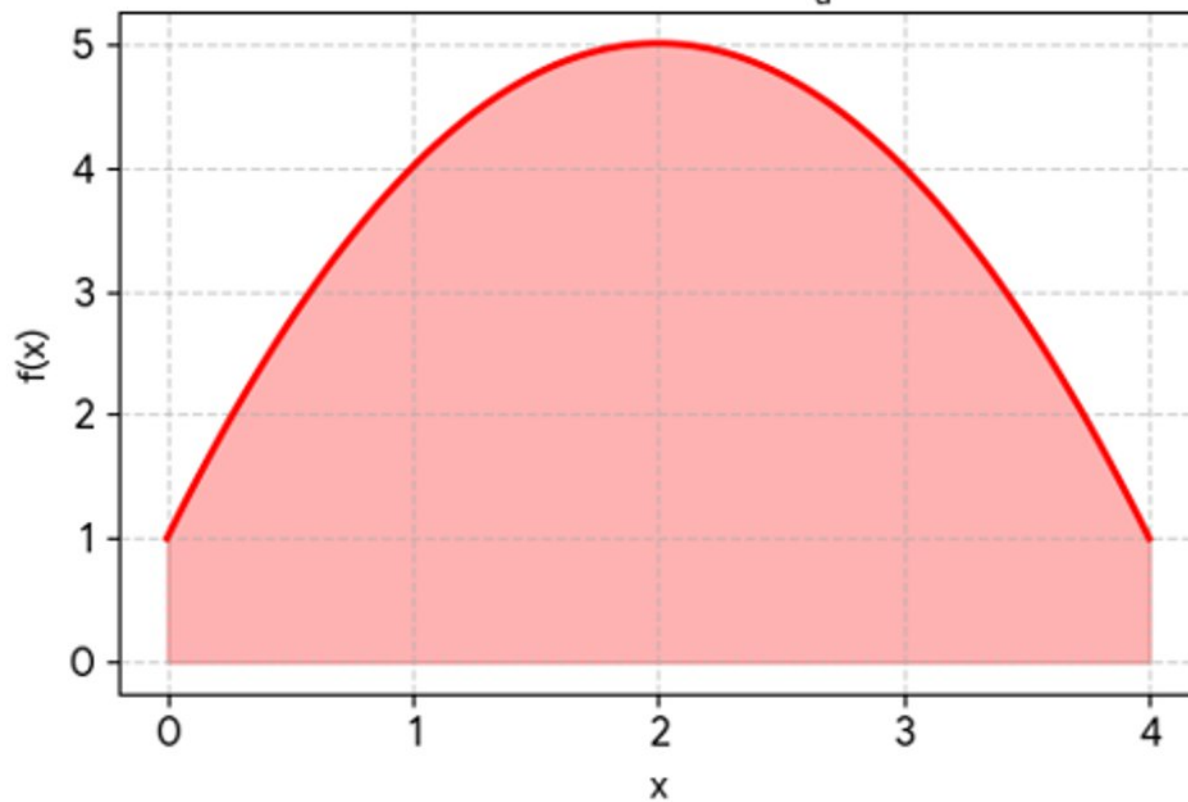
Research did not begin at a single, precise moment; rather, it evolved over thousands of years as humans transitioned from basic survival-driven trial and error to highly structured academic methodologies.

Navigating Variables

Discrete Gathering: $\sum_{i=1}^5 x_i$



Continuous Gathering: $\int_a^b f(x) dx$

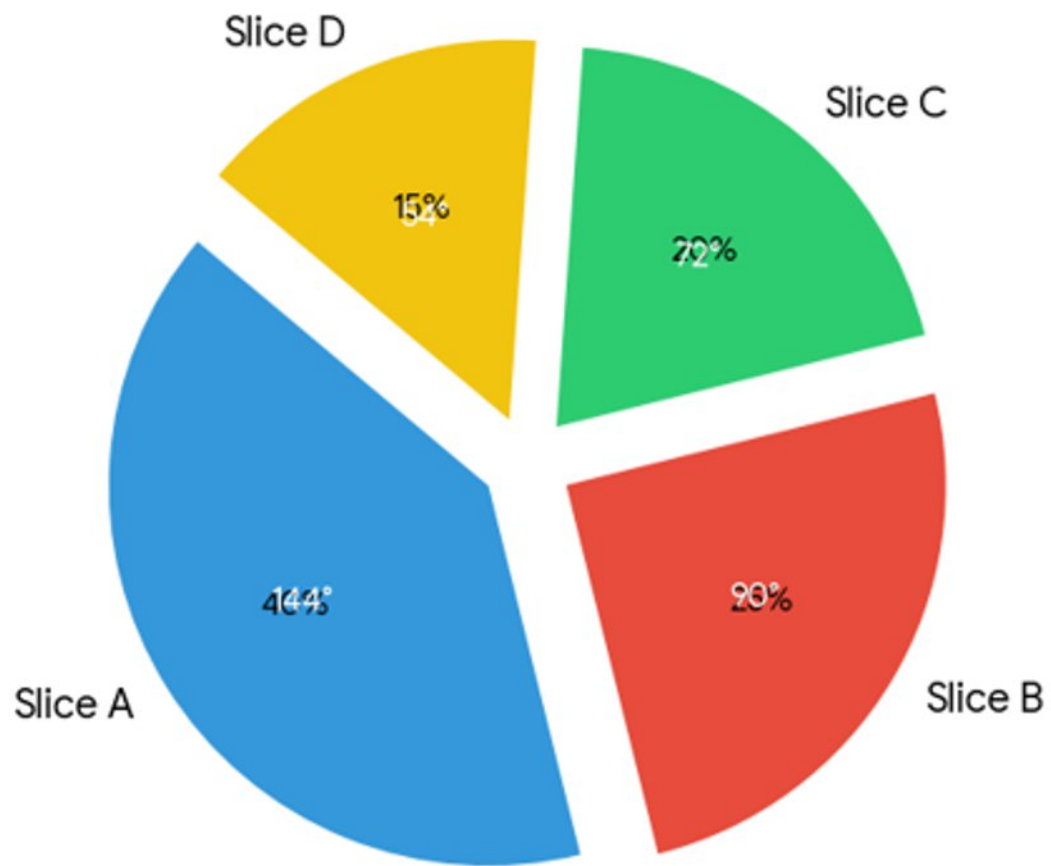


Application in Quantitative Research: This represents discrete variables or categorical data, such as counting the number of participants, recording separate test scores, or tracking distinct clicks on a website.

Continuous data gathering is a research strategy focused on measuring fluid, unbroken variables that can take any value within a given range. It treats data as a seamless spectrum where values can be infinitely divided into smaller fractions or decimals.

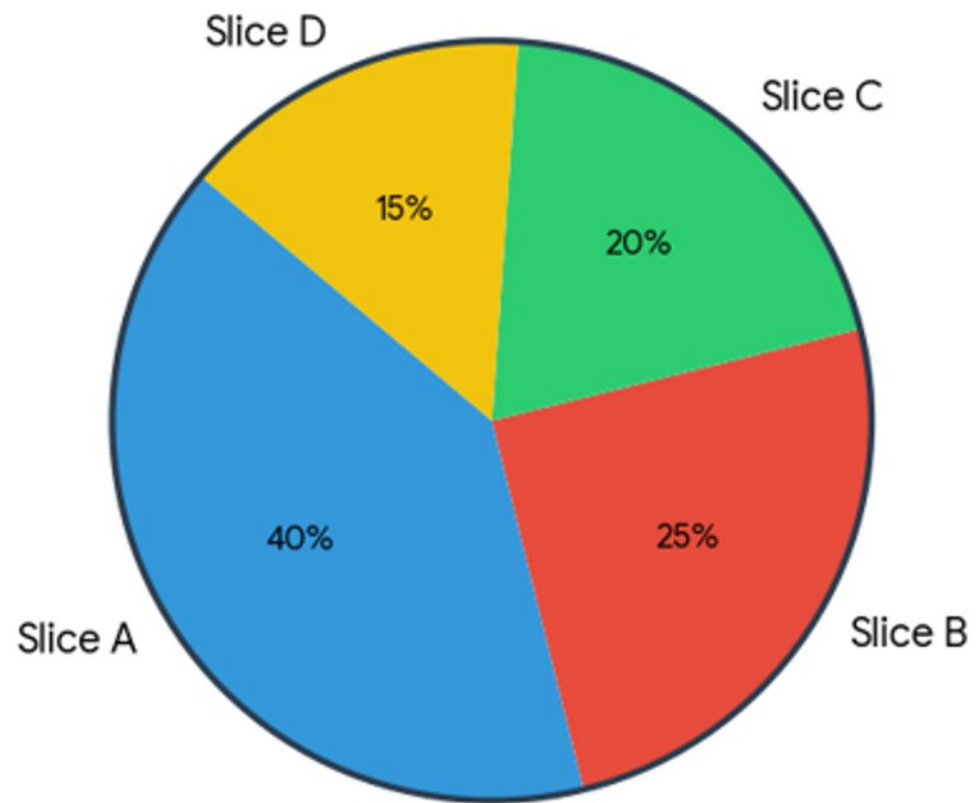
1. ANALYSIS Isolating & Sizing Segments

$$w_i = \frac{x_i}{\sum x}$$



2. GATHERING Reconstituting the Whole

$$\sum \theta_i = 360^\circ$$



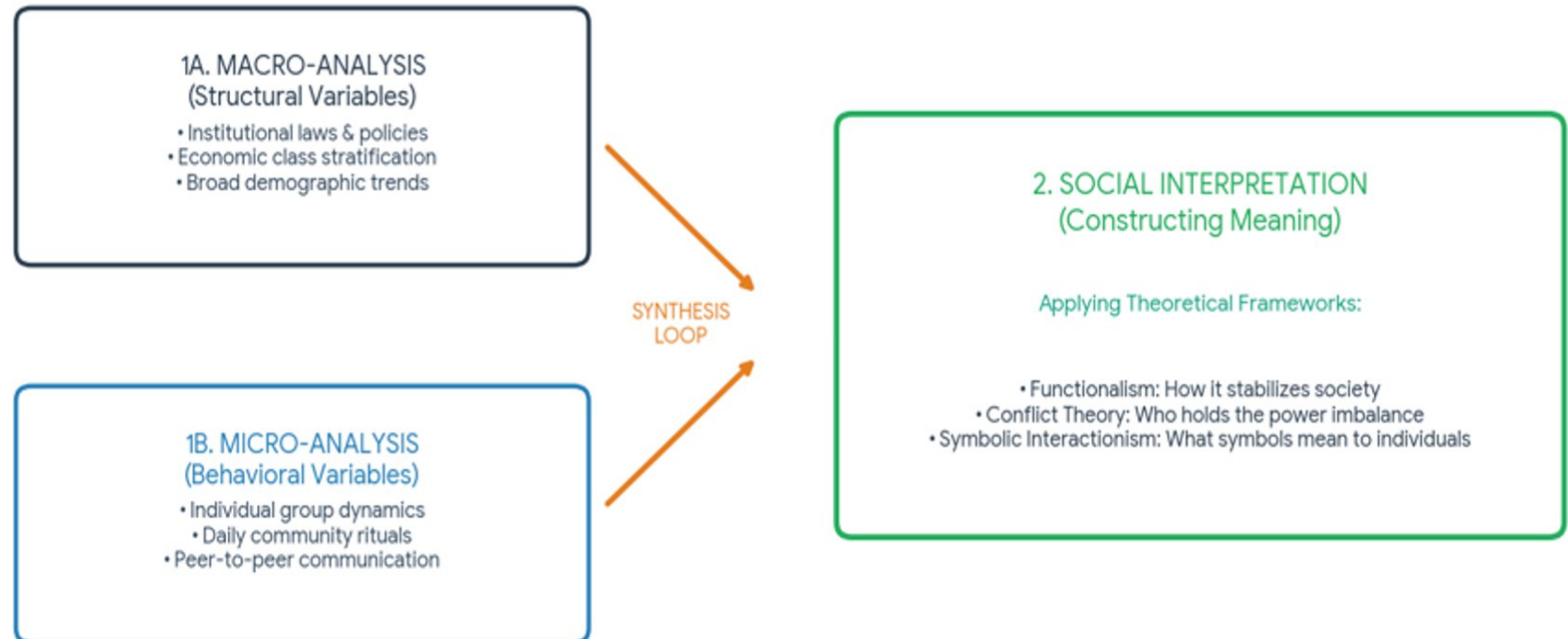
The Three Steps of Data Interpretation

1. **Contextualization:** Placing the clean data chart alongside real-world conditions (e.g., economic shifts, competitor behavior, or cultural factors).
2. **Hypothesis Testing:** Evaluation of whether the final results match your original expectations or if an unexpected glitch or variable caused a shift.
3. **Action Induction:** Moving from a historical view ("This happened") to a predictive strategy ("We must do this next").



INNOVATIVE SOLUTIONS

Social Science Blueprint: From Measured Variables to Human Insight



Core Analytical Approaches in Social Sciences

1. QUANTITATIVE ANALYSIS (THE STRUCTURAL VIEW)

THE APPROACH: SOCIAL SCIENTISTS ISOLATE INDEPENDENT VARIABLES (LIKE INCOME LEVEL) AND DEPENDENT VARIABLES (LIKE EDUCATIONAL ATTAINMENT) USING STATISTICS.

Core Analytical Approaches in Social Sciences

2. QUALITATIVE ANALYSIS (THE HUMAN VIEW)

- **THE APPROACH: RESEARCHERS USE SYSTEMATIC CODING TO PULL KEY THEMES OUT OF UNSTRUCTURED DATA LIKE INTERVIEWS, FIELD NOTES, OR CULTURAL ARTIFACTS.**

3. INTERPRETATION (THE THEORETICAL LENS)

THE EXACT SAME DATA CAN MEAN COMPLETELY DIFFERENT THINGS DEPENDING ON THE INTERPRETIVE FRAMEWORK APPLIED:

- **A CONFLICT THEORIST LOOKS AT LOW VOTER TURNOUT AND INTERPRETS IT AS SYSTEMIC VOTER SUPPRESSION BY ELITE POWER STRUCTURES.**
- **A STRUCTURAL FUNCTIONALIST LOOKS AT THE SAME LOW TURNOUT AND INTERPRETS IT AS SOCIETAL COMPLACENCY BORN FROM OVERALL SYSTEMIC STABILITY.**

The 4 Core Quadrants of Research Design

FUNDAMENTAL (BASIC)

Objective: Expand Pure Knowledge

- Driven by intellectual curiosity
- Builds core theories & laws
- E.g., Mapping human DNA strands

APPLIED RESEARCH

Objective: Solve Specific Problems

- Driven by commercial/social need
- Creates practical, real-world fixes
- E.g., Engineering a new vaccine

DESCRIPTIVE RESEARCH

Objective: Map Out 'What Is'

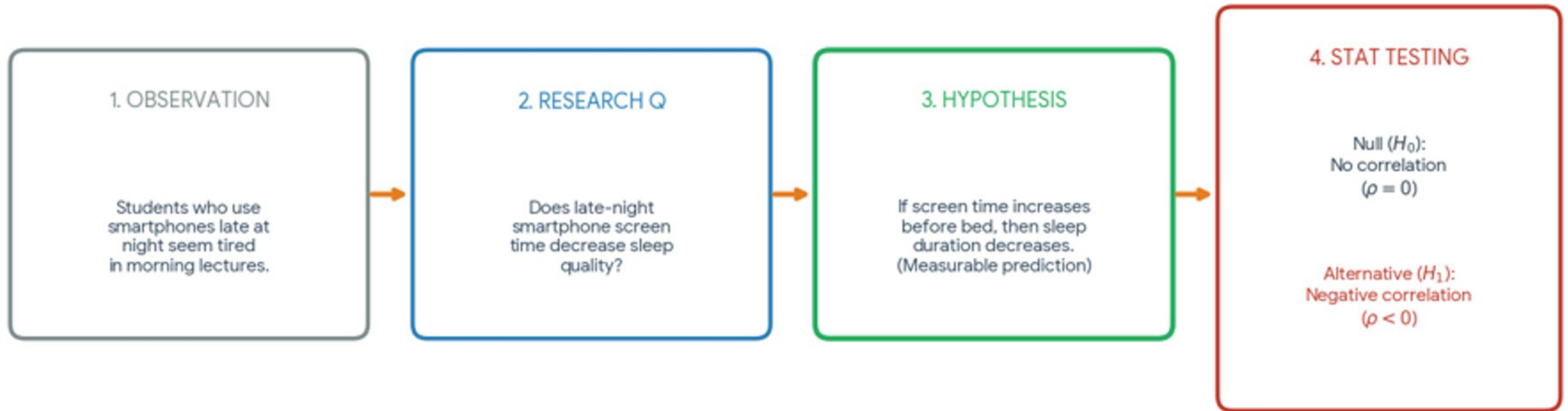
- Identifies traits of populations
- Does not manipulate variables
- E.g., A national census survey

EXPERIMENTAL

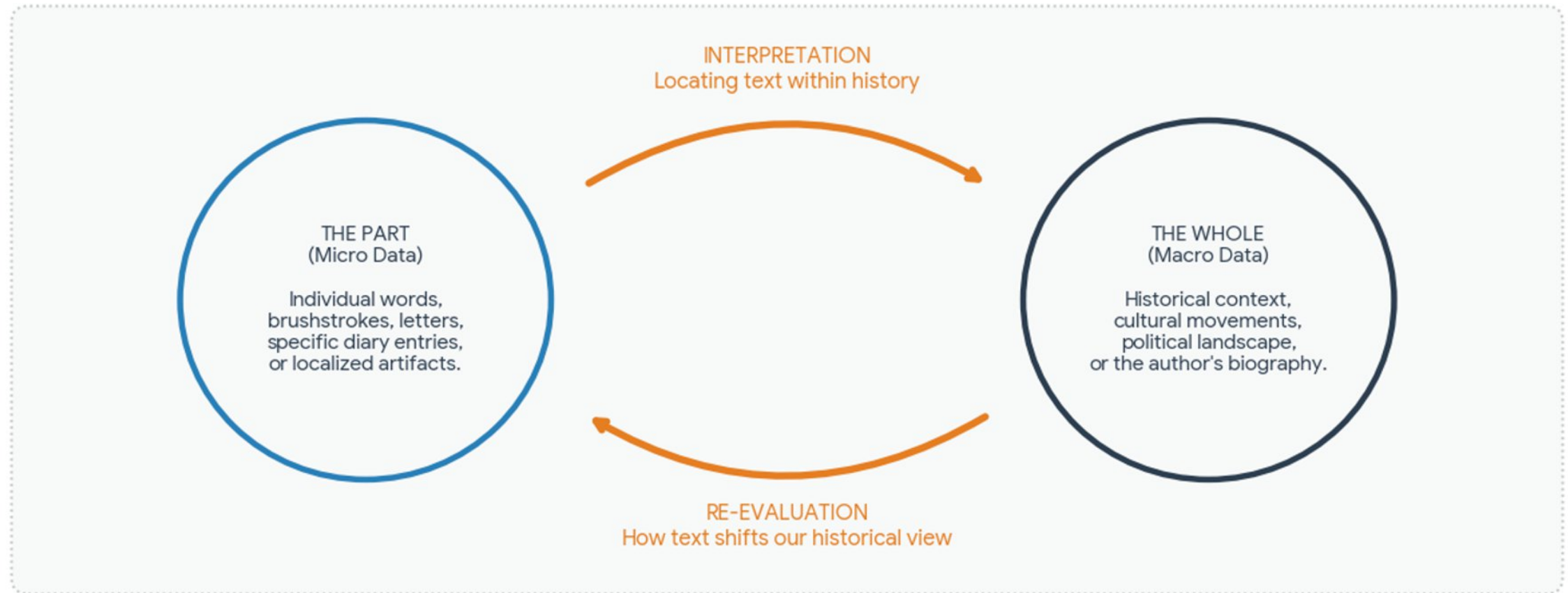
Objective: Prove Cause & Effect

- Tests isolated hypotheses
- Controls independent variables
- E.g., Clinical trials comparing drug A vs B

The Hypothesis Pipeline: From Curiosity to Data Verification



The Hermeneutic Circle: Interpreting Meaning in the Humanities



Quantitative vs. Humanities Interpretation

Feature	Scientific Interpretation	Humanities Interpretation
Data Nature	Discrete numbers, measurements, metrics.	Texts, images, material relics, ideas.
Primary Goal	Finding reproducible laws or proof	Finding nuanced layers of human meaning.
Validity Check	Statistical power, p-values, reproducibility.	Coherence, depth of evidence , critical consensus.
Outcome Type	A falsified null hypothesis or formula.	A critical essay, monograph, or thematic argument.

**THANKYOU
&
REGARDS**