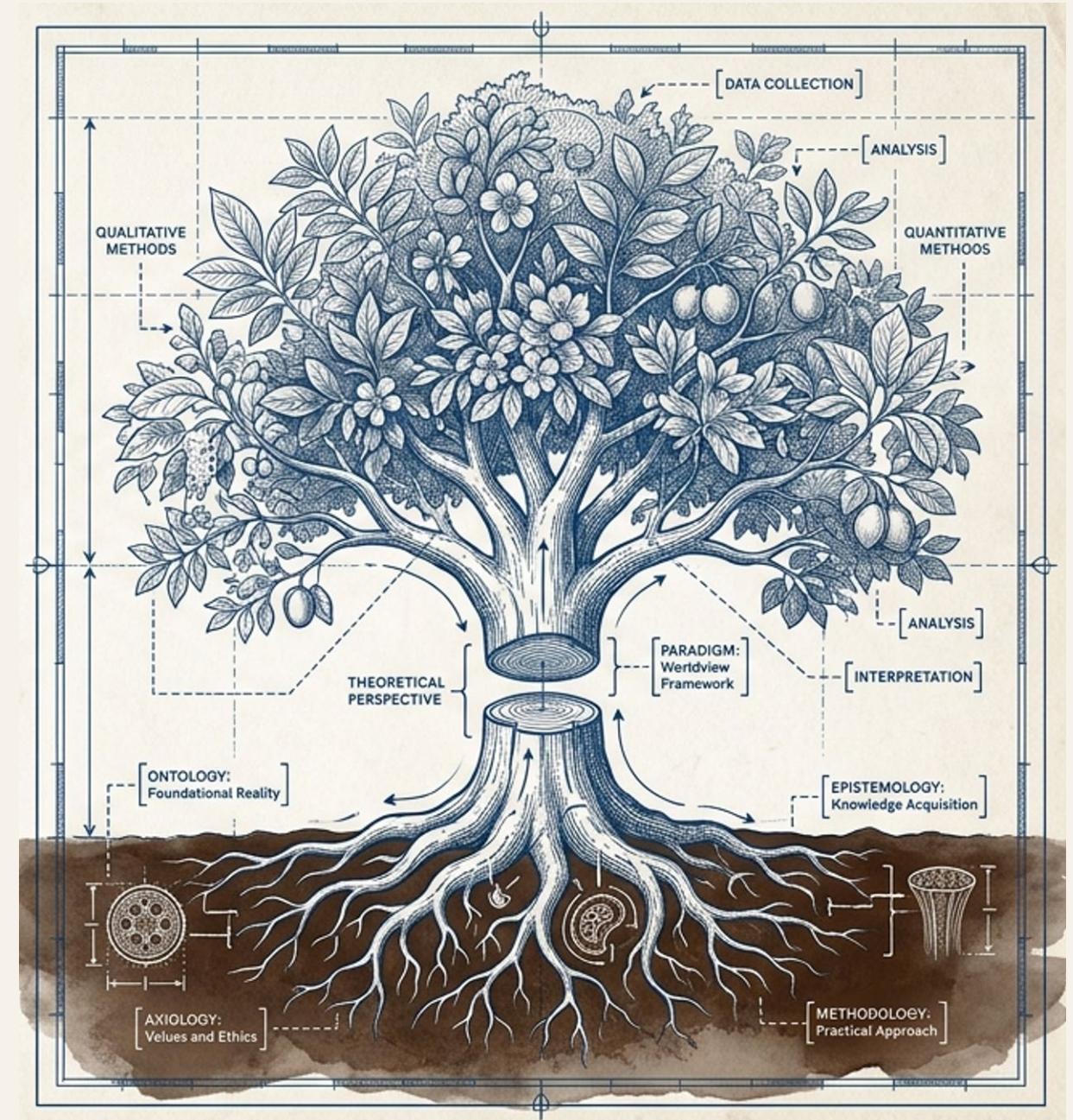


WEEK 2

Research Philosophy



Research Philosophy

BY THE END OF THE LECTURE

- 1** Understand ontology, epistemology, and axiology.
 - 2** Compare the main research philosophies, their assumptions and their limitations.
 - 3** Evaluate how philosophy shapes research.
 - 4** Justify a philosophy and methodological approach for your postgraduate project.
-

What is a research approach?

The broad logic
used to investigate
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It connects the question to the
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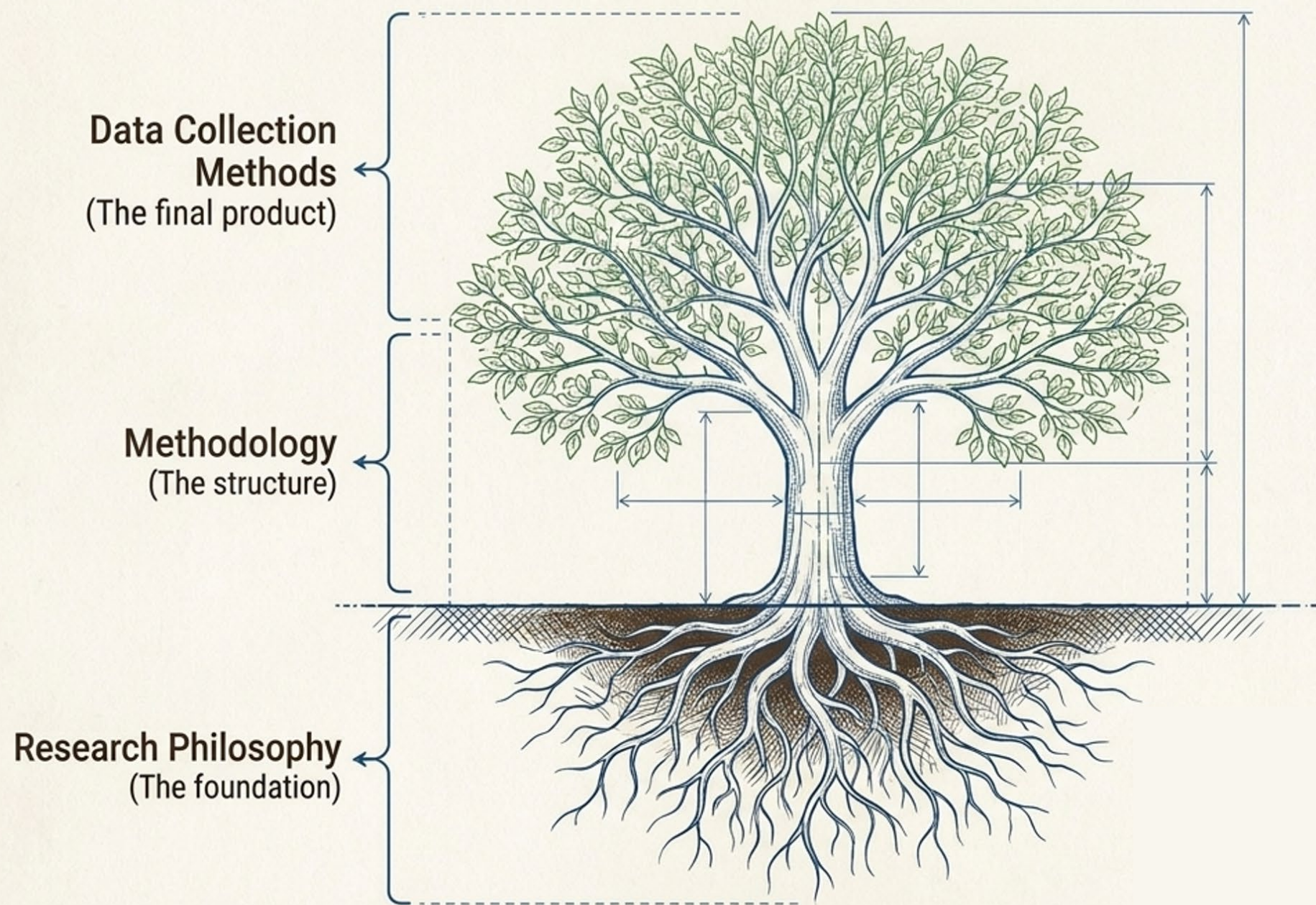
CHOICES THAT MUST FIT

The question and context

Access to evidence

Time and resources

Ethical requirements



The Three Core Pillars

Ontology

The Study of Reality

Examines the nature of existence. Is reality objective and external, or subjective and socially constructed?



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The Role of Values

Investigates ethics and bias. Explores how a researcher's values impact the selection and direction of the study.

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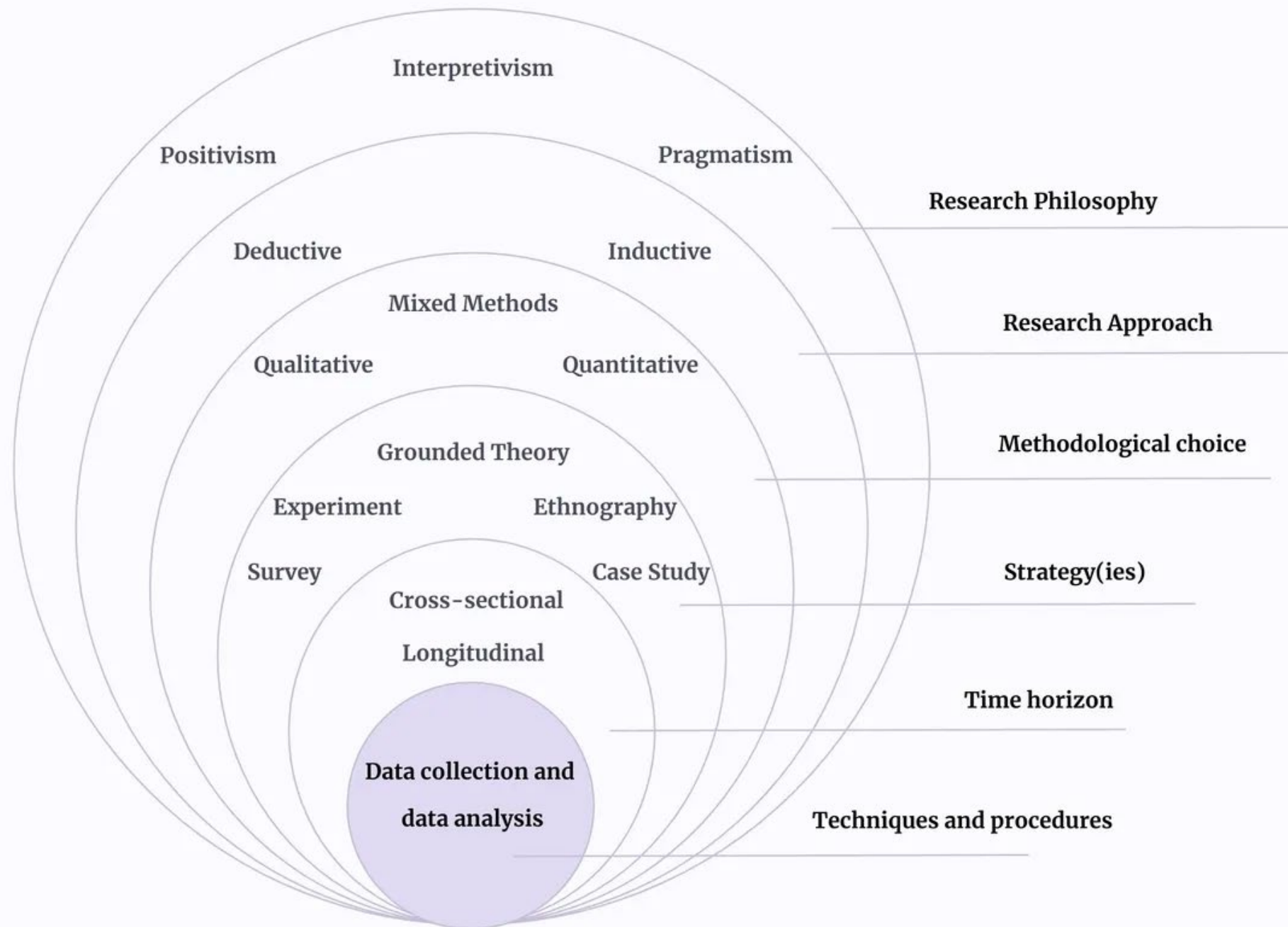
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Methodology

The overall logic and strategy used to answer a research question.



Research philosophy and evidence

Assumptions about reality and knowledge shape what counts as credible evidence.

Positivism

An observer-independent reality can be studied through systematic observation and measurement.

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Judge research choices by how well they address the problem and inform action.

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Realism

Research investigates the underlying mechanisms that explain what we observe.

Positivism

CORE EMPHASIS

**Systematic observation,
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TYPICAL METHODS

Structured surveys
Energy and environmental
monitoring
Statistical analysis

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APPLIED RESEARCH QUESTIONS

Does an energy management system reduce annual consumption in commercial buildings?

Is indoor temperature statistically related to reported occupant comfort?

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Does an energy management system reduce annual consumption in commercial buildings?

Is indoor temperature statistically related to reported occupant comfort?

Can numerical data alone establish success?

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APPLICATIONS

Employee responses to sustainability initiatives. Occupant experiences of hot-desking and smart buildings.

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Semi-structured interviews, focus groups, observation and qualitative document analysis.

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OCCUPANT EXPERIENCE

“The building feels comfortable.”

MEASURED CONDITIONS

Monitoring indicates poor indoor air quality.

How should a researcher interpret this apparent contradiction?

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Mixed methods, programme evaluation, applied case studies and iterative problem-solving

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A PRACTICAL PROBLEM

How can a facilities team reduce energy use without compromising comfort or service quality?

Select approaches that best answer the research question.

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Mixed methods, programme evaluation, applied case studies and iterative problem-solving

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WHO DEFINES SUCCESS?

Carbon reduction

Cost savings

Regulatory compliance

Staff wellbeing

Service delivery

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What organisational, technical and contractual mechanisms explain persistent energy underperformance?

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OBSERVED OUTCOME

**Sustainability policies exist.
Performance still falls short.**

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POSSIBLE UNDERLYING MECHANISMS

Budget constraints and conflicting incentives
Fragmented responsibilities
Training and procurement arrangements
Competing operational priorities

Comparison and critical evaluation

Dimension	Positivism	Interpretivism	Pragmatism	Critical realism
Main concern	Measurement and relationships	Meaning and experience	Practical consequences	Underlying causal mechanisms
Typical evidence	Measured variables	Accounts and observations	Evidence suited to the problem	Evidence that explains outcomes
Researcher emphasis	Systematic testing	Interpretation and context	Problem-solving	Explanation and causal analysis
Potential limitation	May overlook context and meaning	Limited generalisability	Weak philosophical clarity if poorly justified	Complex reasoning about mechanisms

Research quality depends on how well the design fits the question.

One building, three research perspectives

Illustrative problem: occupants report that an office is uncomfortable.

Positivism

Does temperature predict reported discomfort?

Compare sensor readings with standardised comfort ratings.

Interpretivism

How do occupants experience comfort and control?

Interpret interviews about routines, expectations and workspace.

Pragmatism

What change could improve comfort here?

Combine readings and accounts, then assess a feasible change.

Discussion: what would count as convincing evidence for each question?

One problem, four philosophies

Campus waste remains a problem

Recycling bins, awareness campaigns and new waste contracts are in place.

Contamination remains high and overall waste costs have increased.

Explain what each approach would reveal and what it might miss.

	Your response
Research question	
Assumptions about the problem	
Evidence, collection and analysis	
One limitation	

Suggested directions for discussion

Philosophy	Possible research question	Evidence and methods
Positivism	Which factors are associated with recycling contamination rates?	Waste audits, bin-level measurements and statistical analysis
Interpretivism	How do students and staff understand and experience the campus recycling system?	Interviews, focus groups and observations
Pragmatism	Which combination of interventions could most effectively reduce waste and costs?	Waste data, interviews, cost analysis and intervention evaluation
Critical realism	What organisational and behavioural mechanisms explain persistent contamination?	Procurement records, interviews, waste audits and comparative case analysis

What would each approach reveal, and what might it miss?

Deductive reasoning

Deduction starts with an existing theory and tests whether evidence supports it.



TYPICAL QUESTION

Does the evidence support an existing theory or hypothesis?

Testing an LED lighting hypothesis

Theory: more efficient lighting reduces electricity consumption.

HYPOTHESIS

At least
20% lower

electricity consumption after replacing
conventional lighting with LEDs

DATA COLLECTION

Measure consumption before and after
installation. Account for operating
hours where possible.

ANALYSIS

Compare consumption and assess
whether the evidence supports the
hypothesis.

Inductive reasoning

Induction develops patterns, explanations or concepts from observations and data.

01 Observations

02 Patterns

03 Themes

04 Explanation or theory

TYPICAL QUESTION

What can the evidence reveal about a phenomenon that is not yet adequately explained?

Explaining perceived thermal comfort

OBSERVATION

Several occupants report dissatisfaction with indoor temperatures.

DATA COLLECTION

Interview occupants and facilities staff about their experiences.

RECURRING THEMES

Inconsistent temperature control

Limited user control

Conflicting comfort preferences

EXPLANATION

Develop an explanation of the factors influencing perceived thermal comfort.

KEY DIFFERENCES

Deduction and induction compared

Feature	Deductive	Inductive
Starting point	Existing theory	Observations or data
Main purpose	Test or evaluate theory	Develop explanations or theory
Reasoning direction	General to specific	Specific to broader patterns
Common questions	Does X affect Y? Is the hypothesis supported?	How do people experience X? What patterns emerge?
Common methods	Experiments, structured surveys, statistical analysis	Interviews, observations, qualitative analysis
Typical association	Positivism	Interpretivism

Common associations, not fixed rules. Deduction can use qualitative data, and induction can use quantitative data.

Abductive reasoning

Abduction moves between observations and possible explanations.

UNEXPECTED FINDING

Why does a university building use more electricity at weekends than expected?

1 POSSIBLE EXPLANATIONS

Equipment left running, ventilation schedules, server rooms or unusual occupancy.

2 INVESTIGATION

Check meter data and building-management records. Interview facilities staff.

3 REFINEMENT

Assess the best-fitting explanation and investigate further.

One retrofit, two research designs

ENERGY PERFORMANCE

Does the retrofit reduce energy consumption?

Post-positivist philosophy

Deductive approach

Quantitative before-and-after evaluation

Statistical analysis of energy data

OCCUPANT EXPERIENCE

How do occupants experience the same retrofit?

Interpretivist philosophy

Inductive approach

Interview-based design

Interviews and thematic analysis

Neither combination is compulsory. The research question and intended claims guide the choices.

CONCLUSION

Justifying research choices

The research question and the claims you want to make should guide your choices.

DEDUCTION

Tests an existing theory or hypothesis.

INDUCTION

Develops explanations from patterns in data.

ABDUCTION

Develops and assesses explanations for unexpected findings.

FOR YOUR OWN PROJECT

Which approach fits your question, and why?

Philosophy and your dissertation

YOUR DESIGN RATIONALE

Choose or write a question.

Explain which philosophy could support it and why.

Consider a different philosophy and how it would change your investigation.

A question can support more than one defensible philosophical approach.

Exit ticket

COMPLETE THE FIVE STATEMENTS

- 1** My proposed research question is ...
 - 2** My current philosophical position is ...
 - 3** This position is appropriate because ...
 - 4** The evidence I will need is ...
 - 5** One limitation or assumption to consider is ...
-