

EPISTEMOLOGY

The Theory of Knowledge

Lecture 11

From the structure of cognition to truth, science, and the epistemological challenges of the digital age

"We do not simply mirror reality; we actively construct experience through the meeting of sensation, reason, and interpretation".

Lecture Plan

The presentation follows the logic of Lecture 11 and develops six thematic blocks:

01 The essence and structure of the cognitive process

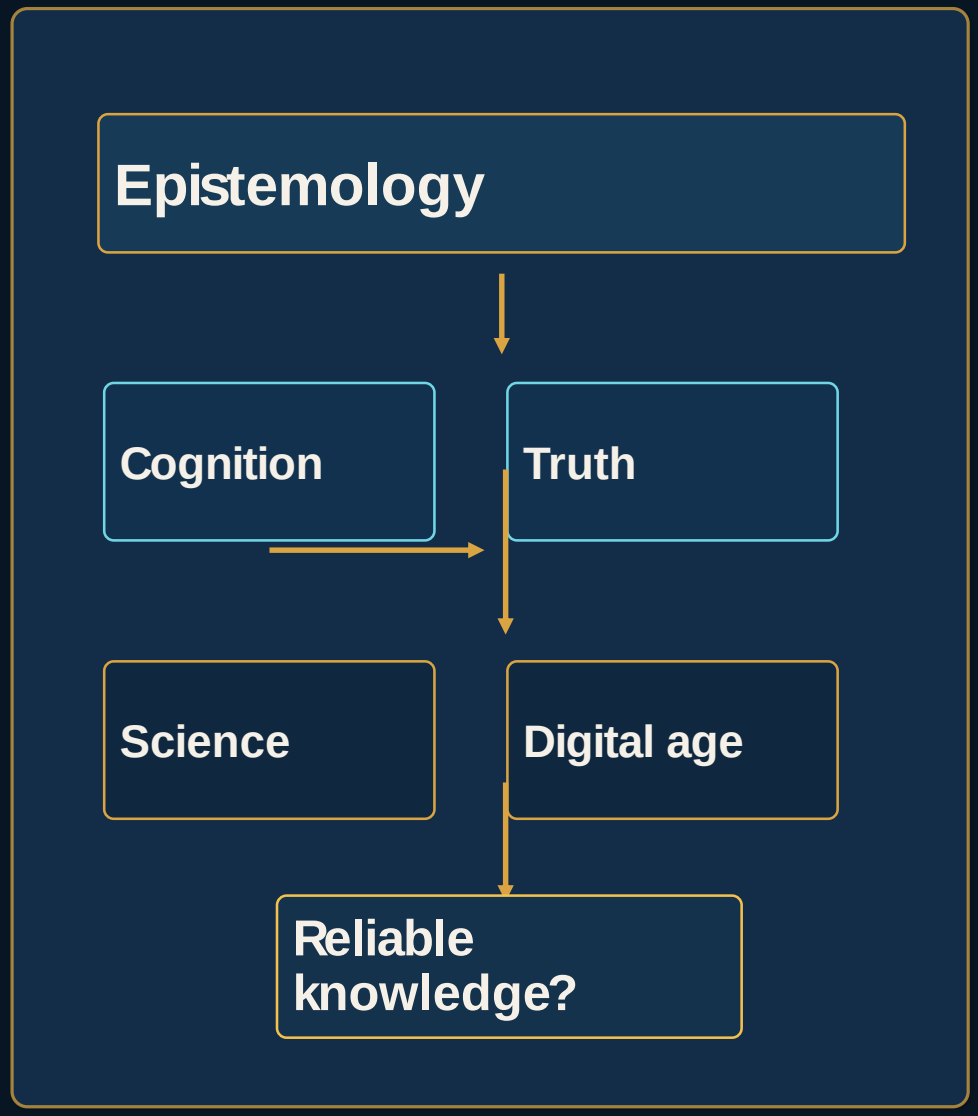
02 Sensory and rational cognition: levels and forms

03 Empiricism vs. rationalism in modern philosophy

04 The problem of truth and its criteria

05 Scientific knowledge: levels, methods, and structure

06 Cognition in the digital age: 21st-century challenges

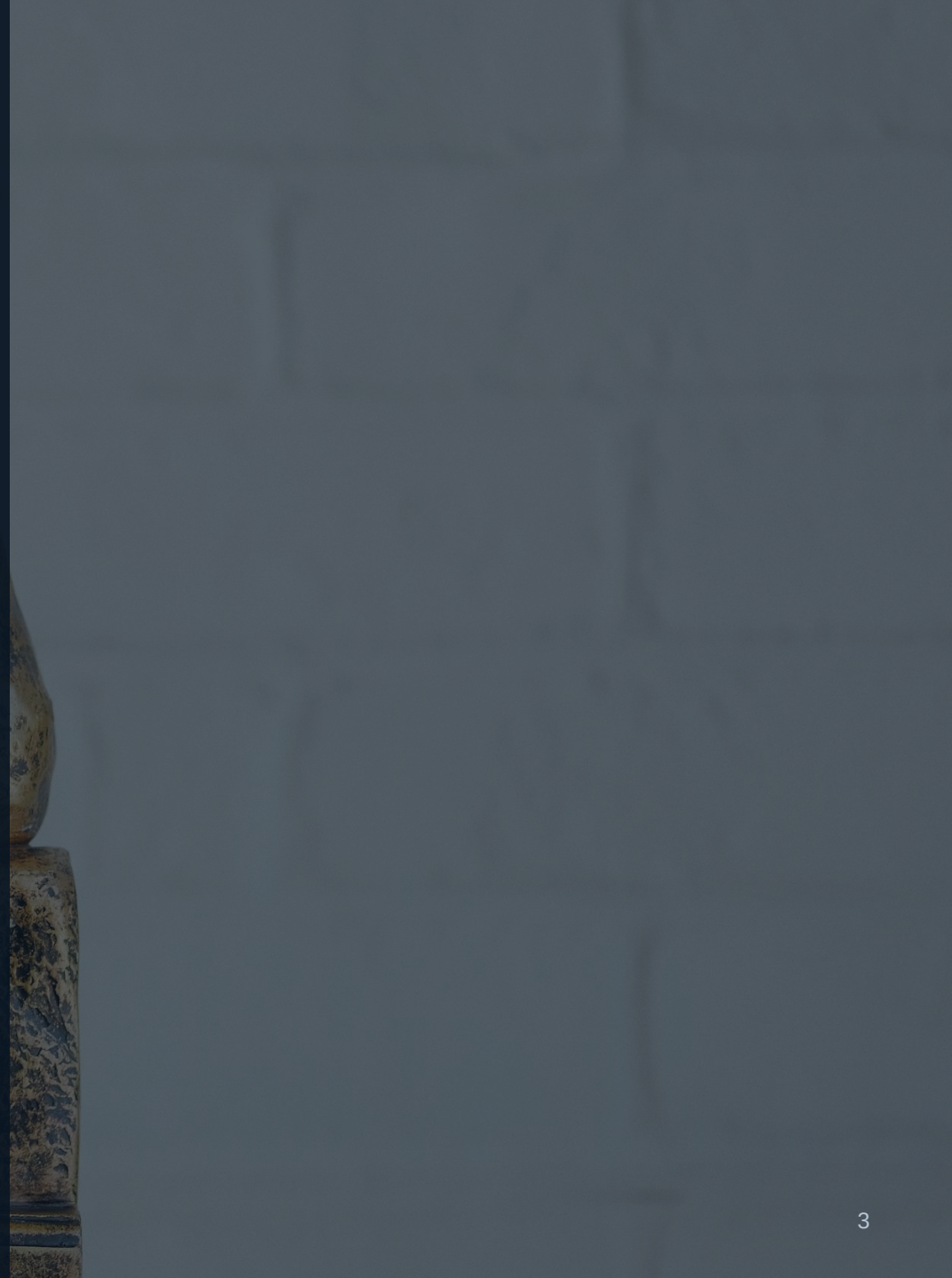


01

The Cognitive Process

From ontology to epistemology: knowing is an active relation to the world

1. What exactly is cognition, and who participates in it?
2. Why is truth central to every theory of knowledge?
3. How far can the human mind actually know reality?



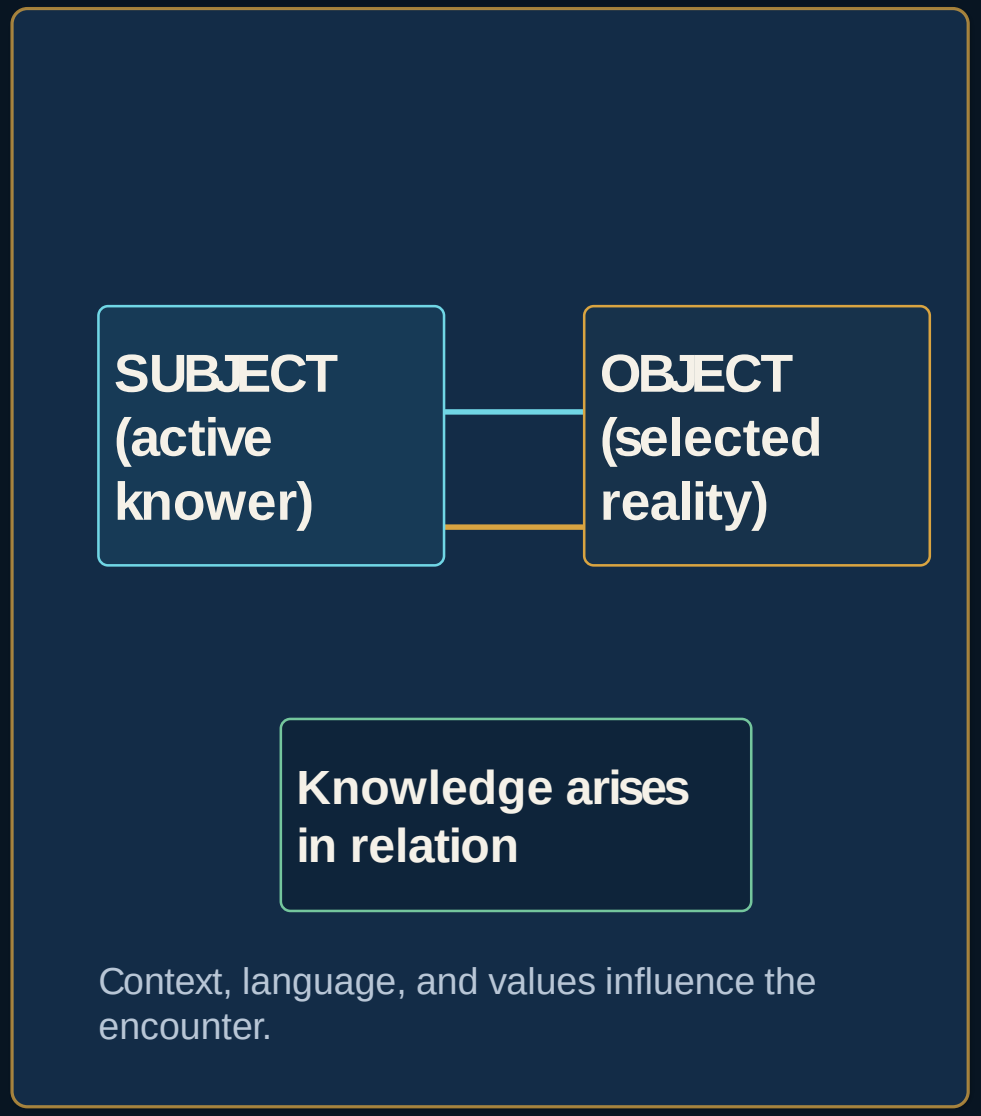
What Is Epistemology?

- Epistemology is the branch of philosophy that studies the nature, possibility, limits, and validity of knowledge.
- If ontology asks “What exists?”, epistemology asks “How can we know it, and how reliable is that knowledge?”
- Its central concern is not only information, but the conditions under which a belief becomes justified and true.

Epistemology begins where certainty becomes a question rather than an assumption.

Subject and Object in Cognition

- The subject is the active knower: a human being with consciousness, will, language, and cultural background.
- The object is not “the whole world”, but the fragment of reality toward which attention is directed at a given moment.
- Cognition begins when subject and object enter into relation; knowledge is therefore interactive, not isolated.



Why Cognition Is Not a “Mirror Reflection”

- Human consciousness does not reflect reality like a neutral mirror; it interprets, selects, and organizes what it encounters.
- Expectations, values, language, prior experience, and prejudice enter the cognitive process from the very beginning.
- As a result, cognition is an active “intrusion” of mind into reality rather than a passive copy of ready-made facts.

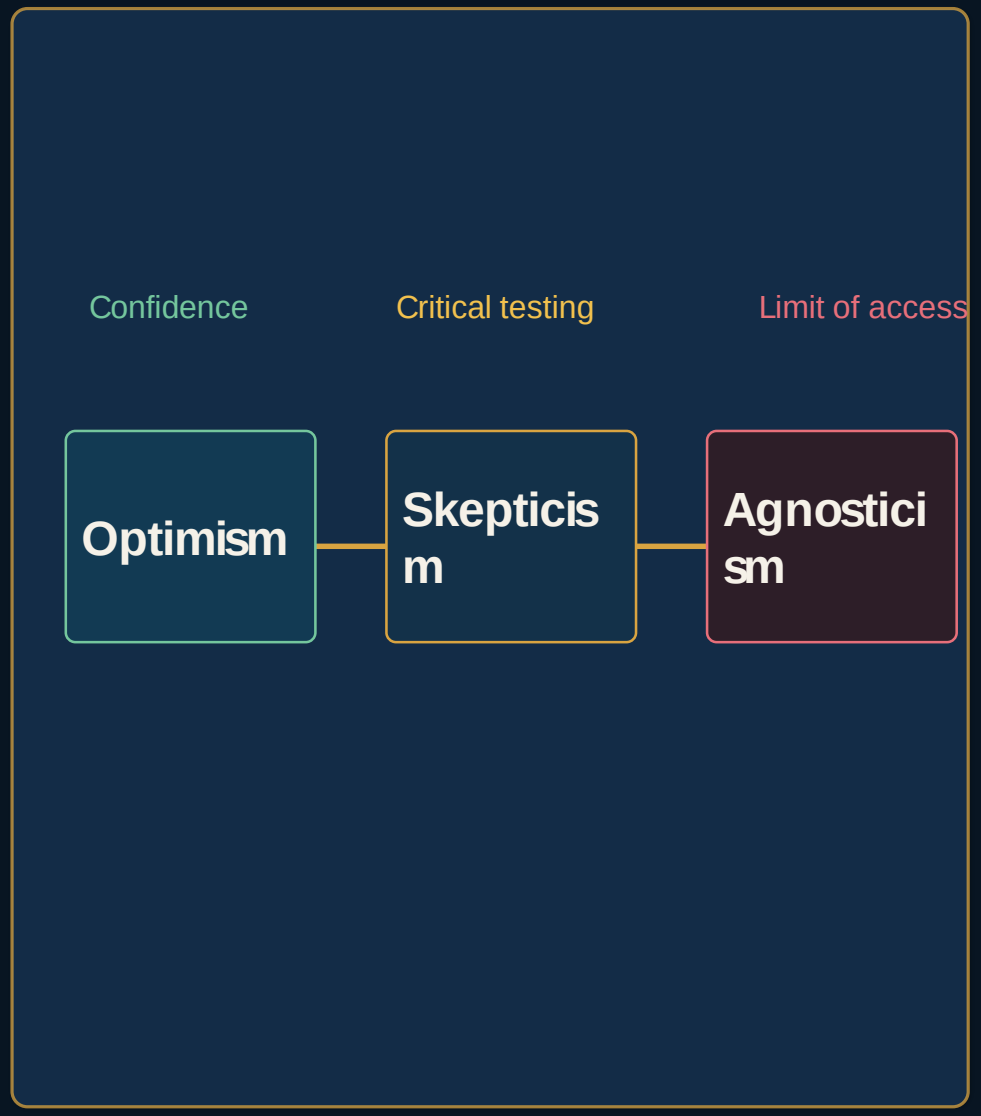


The same event can be perceived as fact, threat, opportunity, or symbol depending on the horizon of the subject.

Perception is always already interpreted.

Can the World Be Known? Three Classical Positions

- Gnoseological optimism holds that the world is knowable in principle; barriers are temporary rather than absolute.
- Skepticism recommends disciplined doubt and constant testing of claims before certainty is granted.
- Agnosticism argues that the essence of reality may remain fundamentally inaccessible to human knowledge.



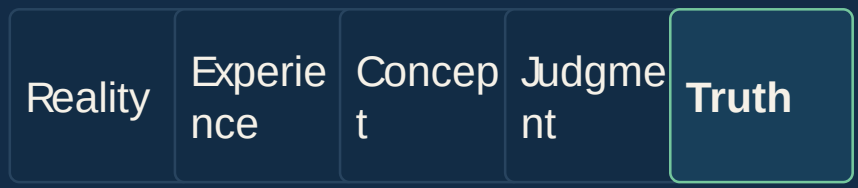
Kant and the “Thing-in-Itself”

- Kant distinguishes between the thing-in-itself (noumenon) and phenomenon, the object as it appears to us.
- We never know reality “as it is in itself”; we know only what passes through the forms of our sensibility and understanding.
- Space, time, and categories are not discovered in raw experience—they are conditions that make experience possible.



The Structure of the Cognitive Process

- Cognition unfolds as a chain: encounter with reality → sensation → interpretation → concept formation → judgment.
- Truth becomes the guiding horizon of the whole process because every stage asks whether our knowledge corresponds to reality.
- The main epistemological problem is verification: how do we test correspondence if all access is mediated by consciousness?



Truth is not a decorative addition to cognition; it is its inner measure.

02

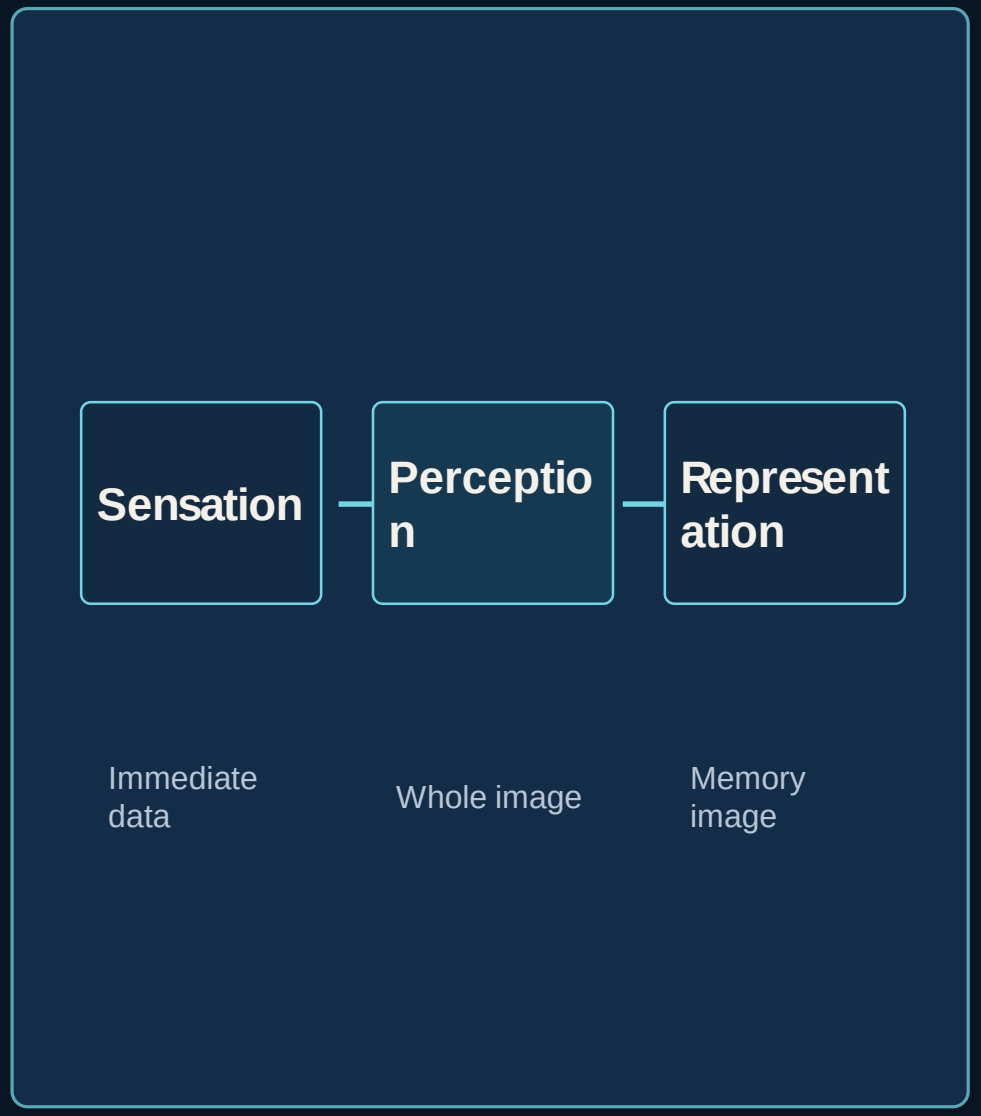
Sensory and Rational Cognition

How experience becomes thought

1. What are the levels and forms of cognition?
2. How does the mind move from sensation to inference?
3. Where does intuition fit into the structure of knowing?

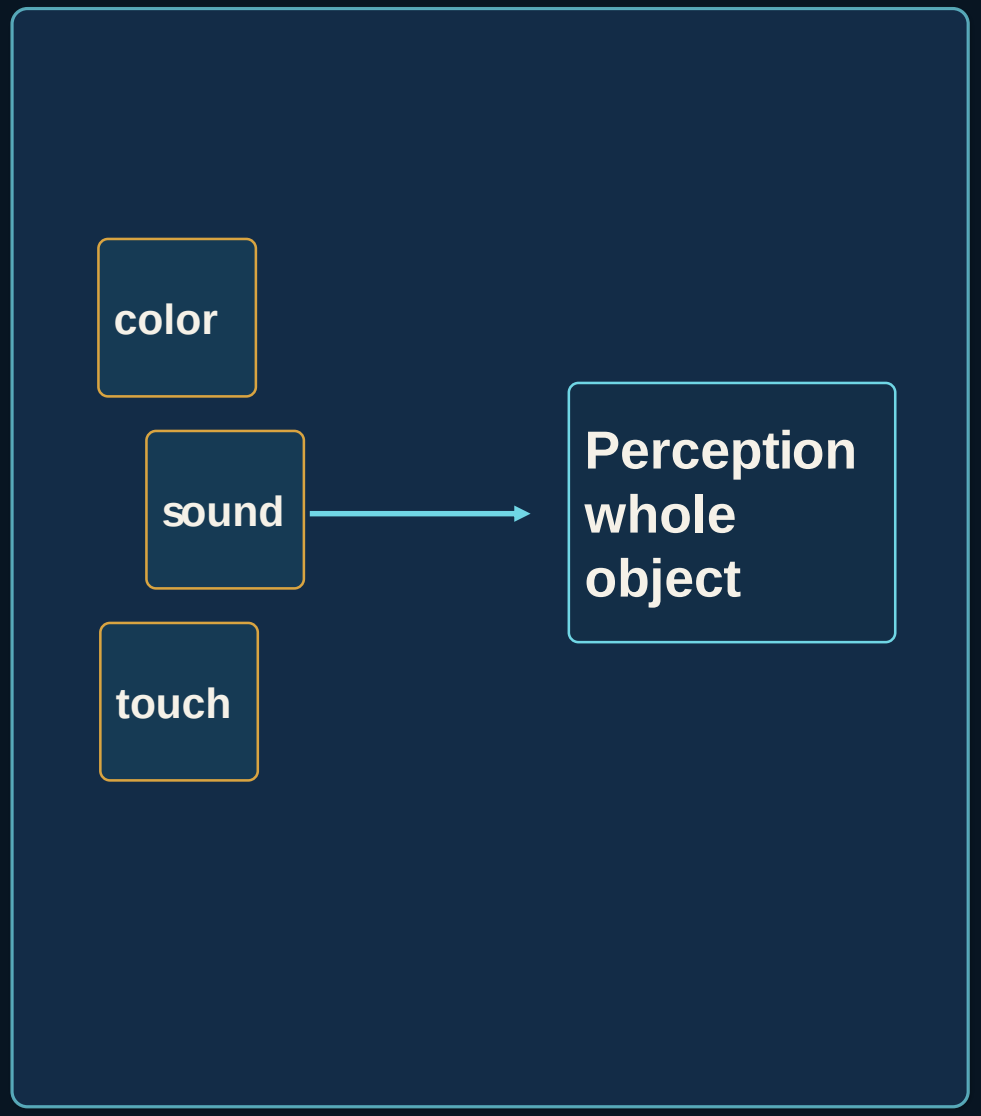
Sensory Cognition: The First Line of Contact

- Sensory cognition is the immediate contact of consciousness with the world through the senses.
- It provides vivid and concrete data, but usually captures only external qualities and accidental connections.
- Its basic forms are sensation, perception, and representation.



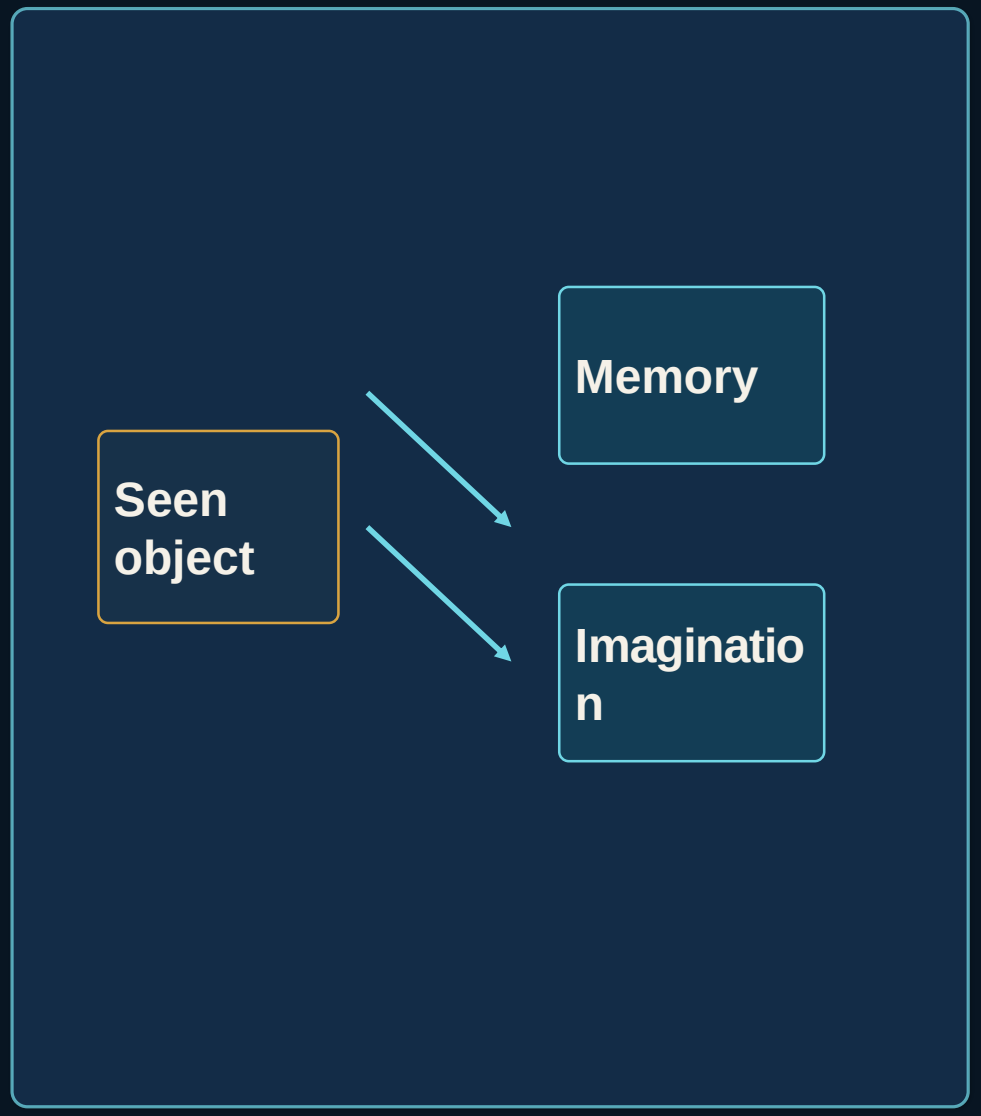
From Sensation to Perception

- Sensation registers separate properties: a color, a sound, a smell, a touch.
- Perception synthesizes these scattered impressions into a unified image of an object.
- This movement from fragments to wholes is the first great organization performed by consciousness.



Representation: Memory Beyond the “Here and Now”

- Representation reproduces an image even when the object is no longer physically present.
- This frees consciousness from the tyranny of the immediate present and opens memory, imagination, and anticipation.
- Without representation, planning, recollection, and symbolic thinking would be impossible.



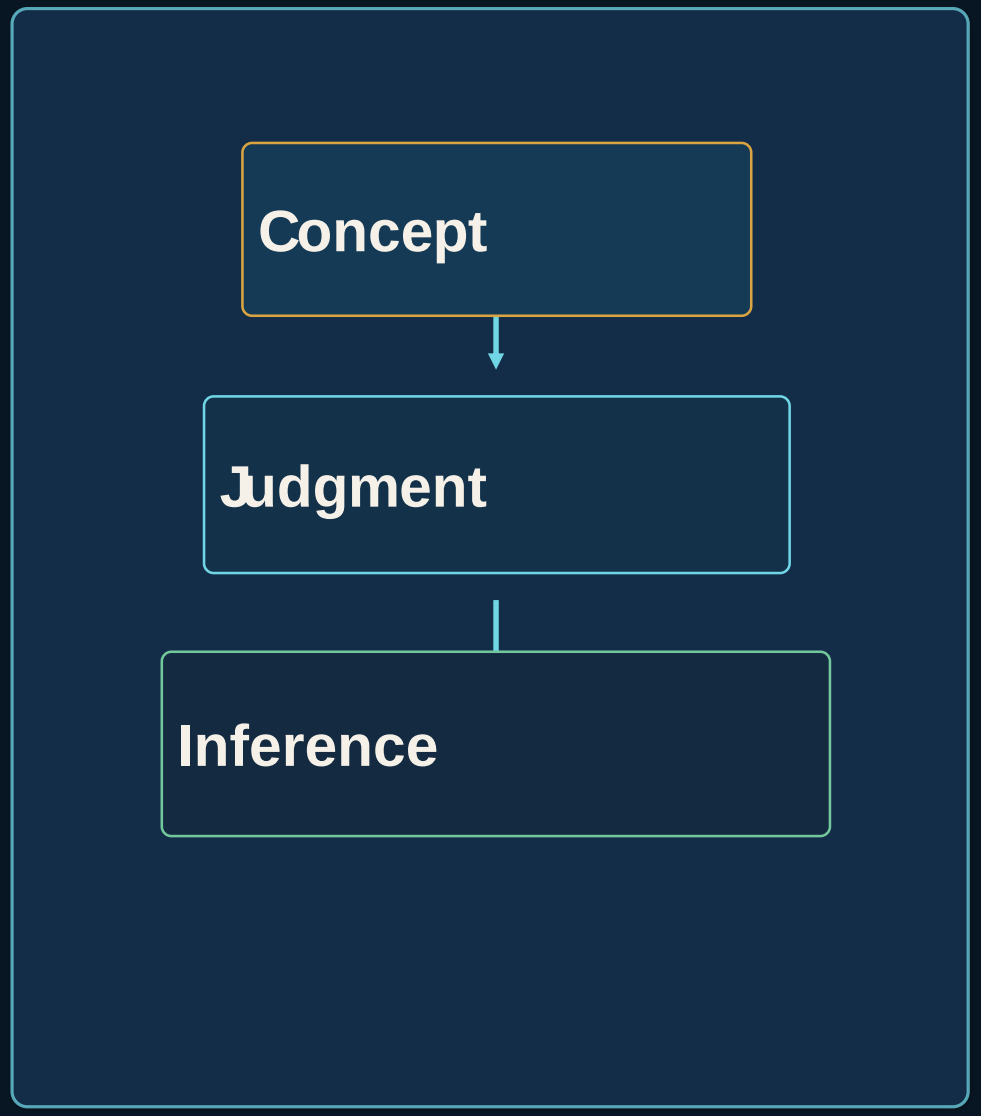
Rational Cognition: Penetrating to Essences

- Rational cognition moves beyond images to concepts, laws, and necessary relations.
- It abstracts from accidental traits in order to identify what is essential and repeatable.
- Reason makes science possible because it organizes facts into explanatory structures.



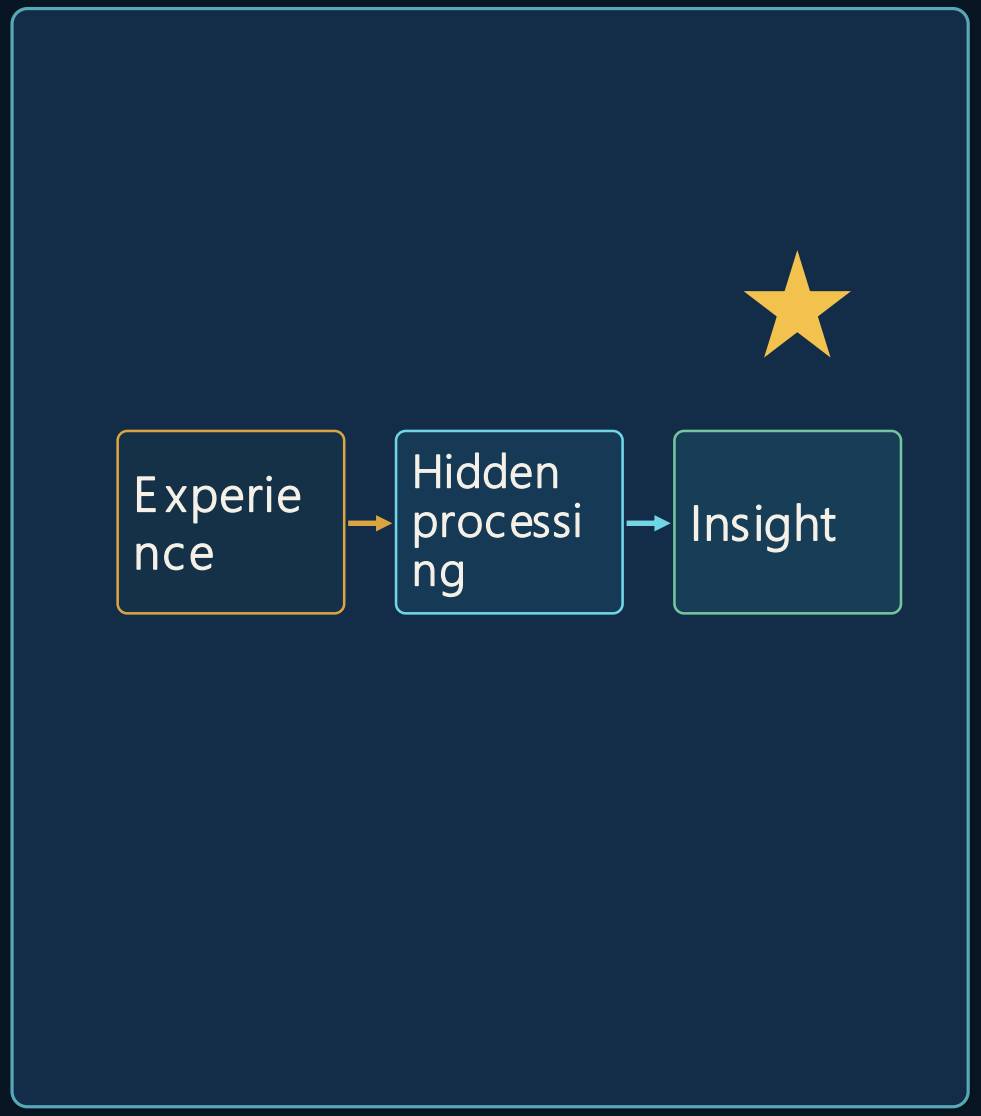
Three Logical Forms: Concept, Judgment, Inference

- A concept isolates the essential features of a class of objects.
- A judgment affirms or denies something about the world by linking concepts together.
- An inference derives new knowledge from already established premises without direct observation.



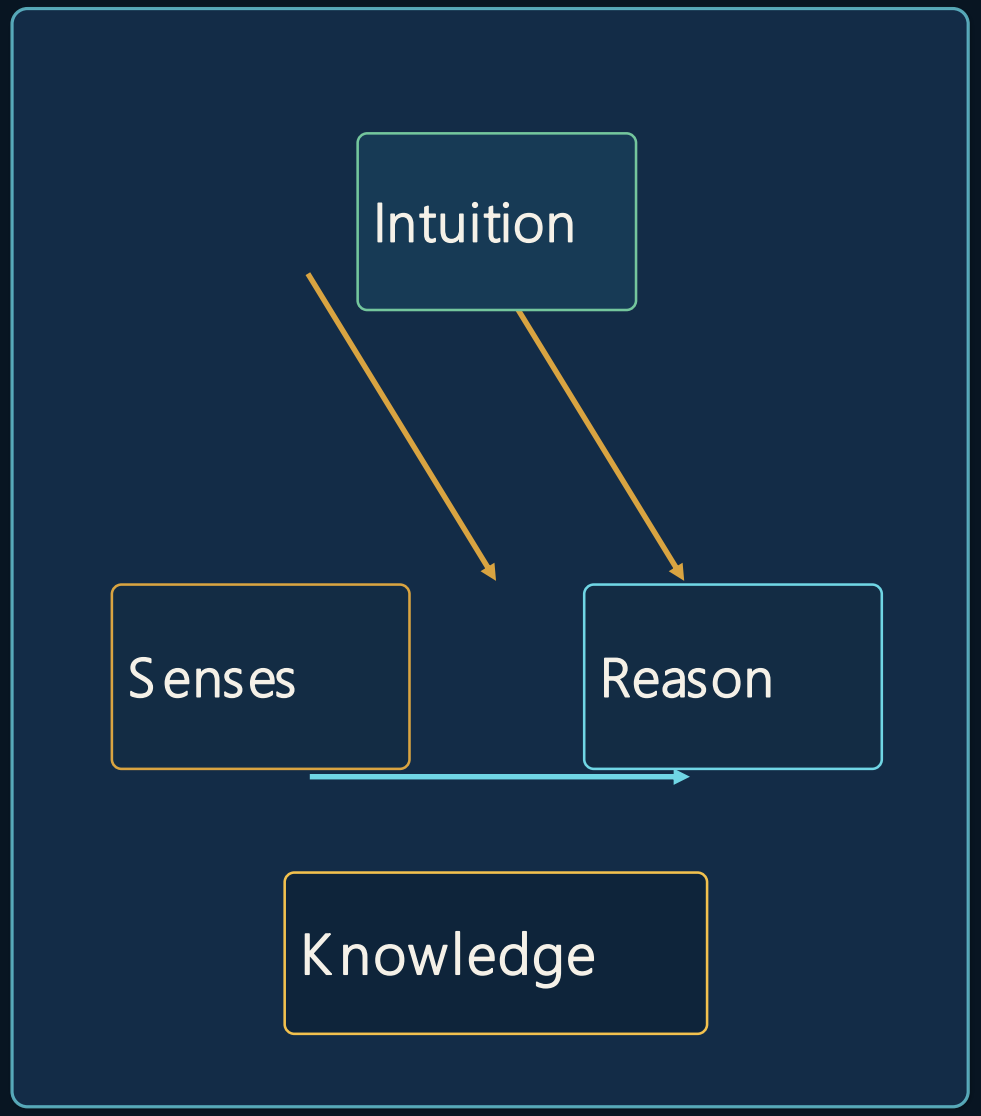
Intuition and Insight

- Intuition is often described as an extra-rational grasp of truth, yet it usually rests on deep prior experience.
- It condenses many hidden operations into a sudden "flash" of understanding or insight.
- In science and philosophy, intuition often points the way before explicit proof is constructed.



Cognition as a Unified Ensemble

- Sensory cognition supplies the raw material of experience.
- Rational cognition organizes that material into concepts, judgments, and theories.
- Intuition mediates hidden syntheses and often accelerates discovery where formal logic hesitates.



03

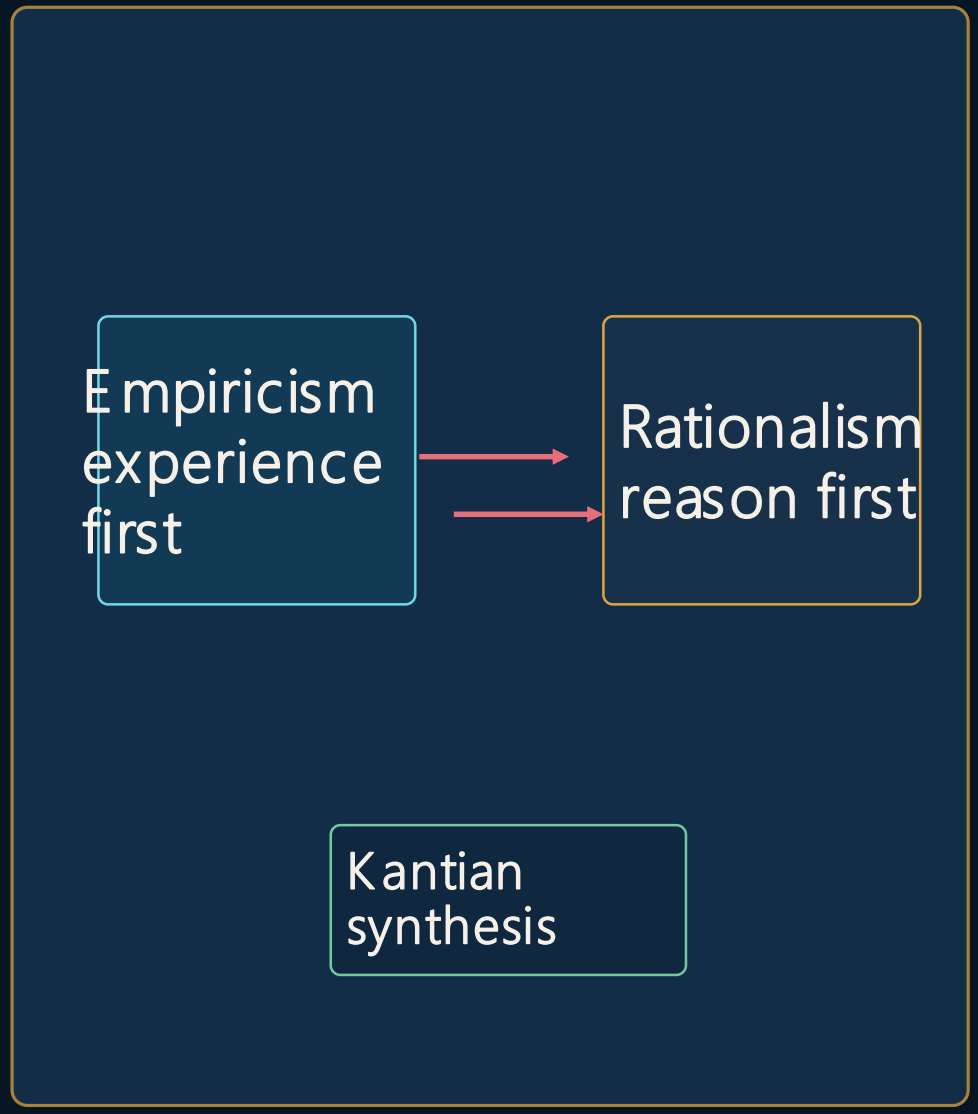
Empiricism and Rationalism

The great modern debate over the source of knowledge

1. Does all knowledge begin with experience?
2. Can reason generate certainty on its own?
3. How did Kant synthesize both positions?

The Great Debate in Modern Philosophy

- Modern philosophy turned the question of knowledge into a decisive intellectual battle.
- Empiricism argued that knowledge begins with sensory experience; rationalism defended reason as the primary source of certainty.
- The dispute shaped the rise of modern science and set the stage for Kant's synthesis.



Francis Bacon and the Empirical Method

- Bacon redirected philosophy from sterile scholastic dispute to observation, induction, and experiment.
- Knowledge, for him, had practical power: it should expand human capacity to act upon and transform nature.
- His legacy prepared the methodological ethos of modern experimental science.

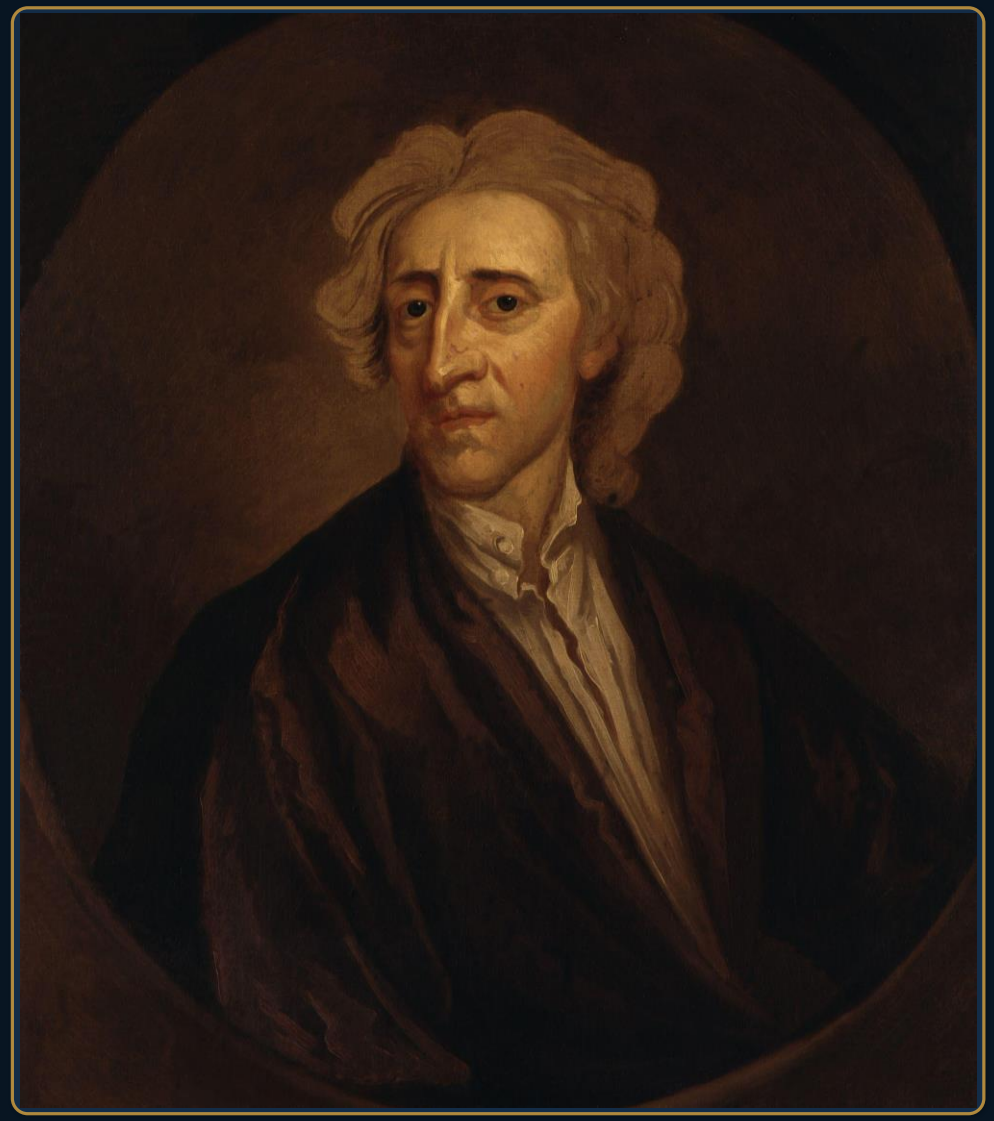


"Knowledge is power."

John Locke and Tabula Rasa

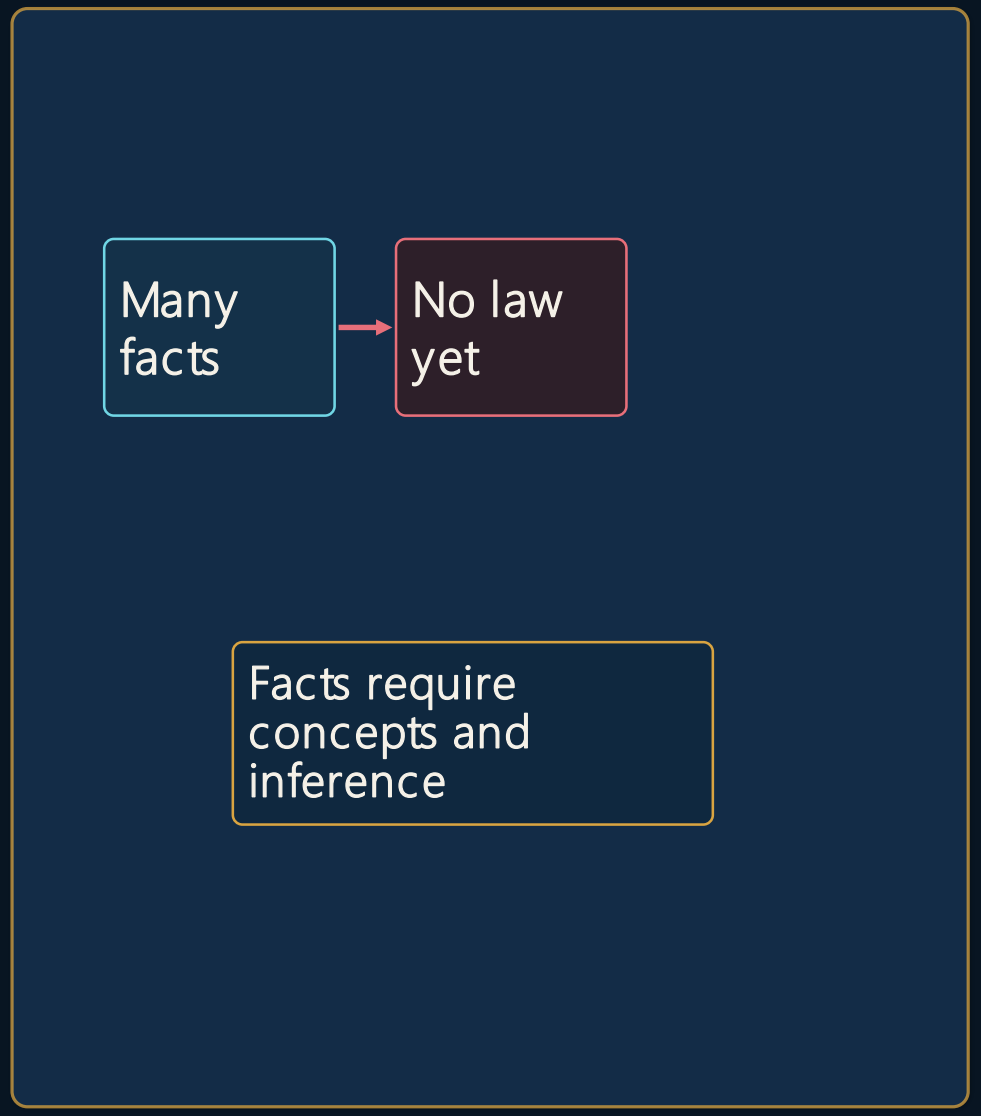
- Locke described the mind at birth as a blank slate without innate content.
- Experience writes on this slate through sensation and reflection; the mind then combines, compares, and abstracts ideas.
- This view makes knowledge dependent on contact with the world rather than on built-in truths.

Tabula rasa = blank slate



The Limits of Empiricism

- Experience gives content, but the senses can mislead us through illusion, distance, bias, or unstable circumstances.
- No amount of repeated observation automatically yields universal and necessary laws.
- Empirical data therefore need conceptual and logical organization in order to become knowledge.



René Descartes and Rational Certainty

- Descartes sought an indubitable foundation by doubting everything that could possibly be doubted.
- Because the senses are unstable, certainty must be grounded in reason, deduction, and clear ideas.
- The doctrine of innate ideas gives rationalism a starting point independent of experience.



Methodic doubt does not destroy knowledge; it searches for what cannot collapse.

Spinoza: Reason as Geometric Order

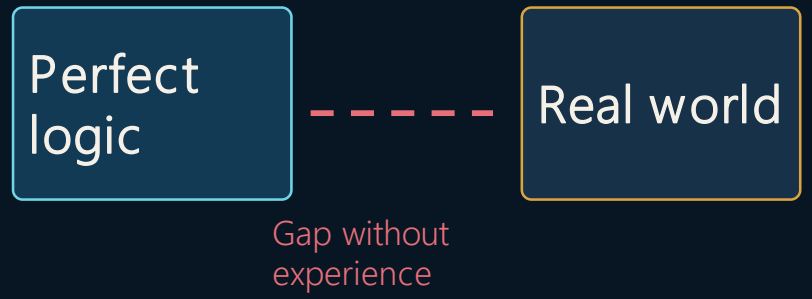
- Spinoza radicalized rationalism by presenting philosophy in a geometrical mode of demonstration.
- For him, truth arises from clear definitions, necessary relations, and rigorous deduction.
- The world is intelligible because reason can follow its inner order.

Definition → deduction → necessity



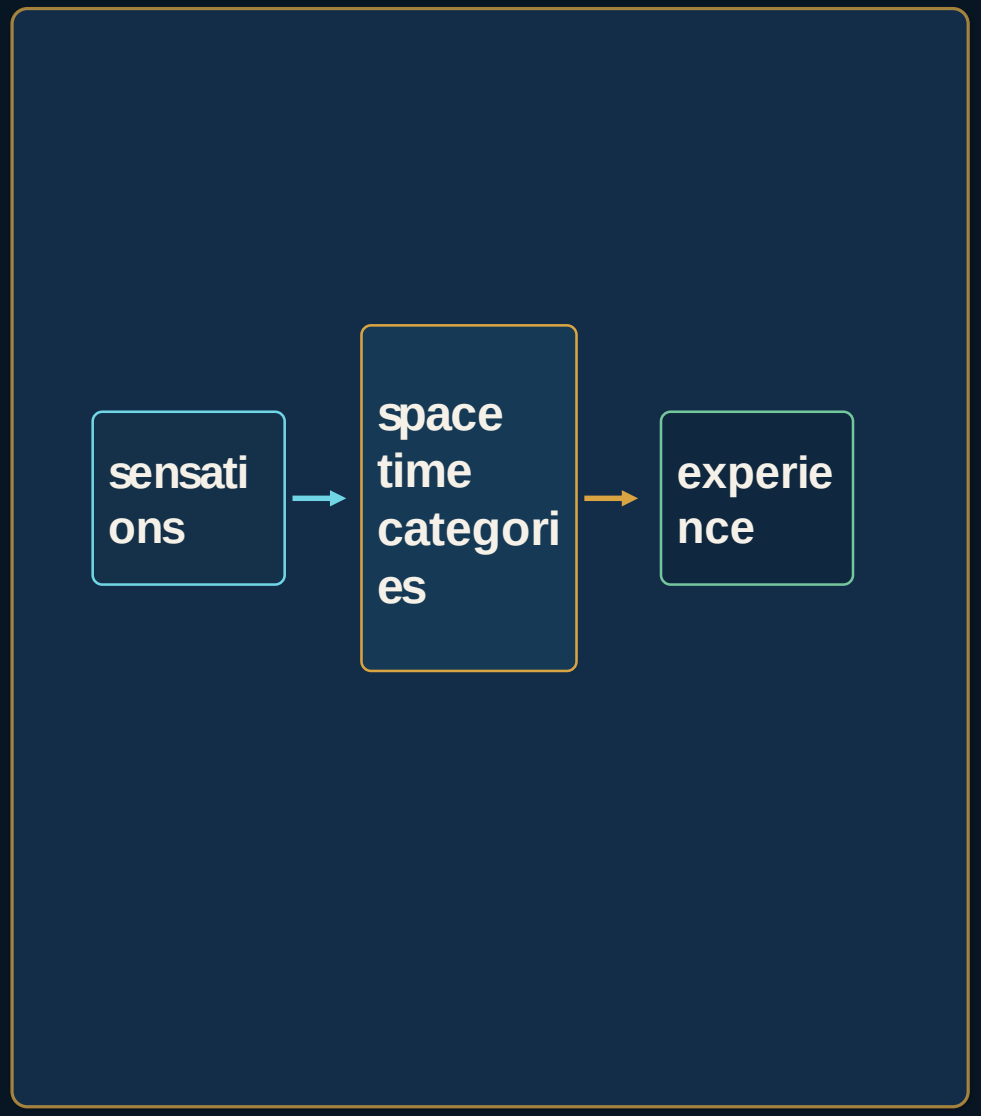
The Limits of Rationalism

- Pure deduction without empirical content can produce elegant but empty systems.
- Logical coherence alone does not guarantee contact with the actual world.
- Reason must therefore be connected to experience if knowledge is to remain concrete and testable.



The “Copernican Revolution” in Epistemology

- Kant’s revolution consists in reversing the relation between mind and object: experience is shaped by the structures of the subject.
- Space and time are forms of intuition, while categories of understanding organize the manifold of sensation.
- We do not invent the world from nothing, but we do construct experience through built-in conditions of knowing.



04

Truth and Its Criteria

The semantic core of epistemology

1. What does it mean for knowledge to be true?
2. How can truth be tested or justified?
3. Why are error and correction inseparable from cognition?

Truth as Correspondence

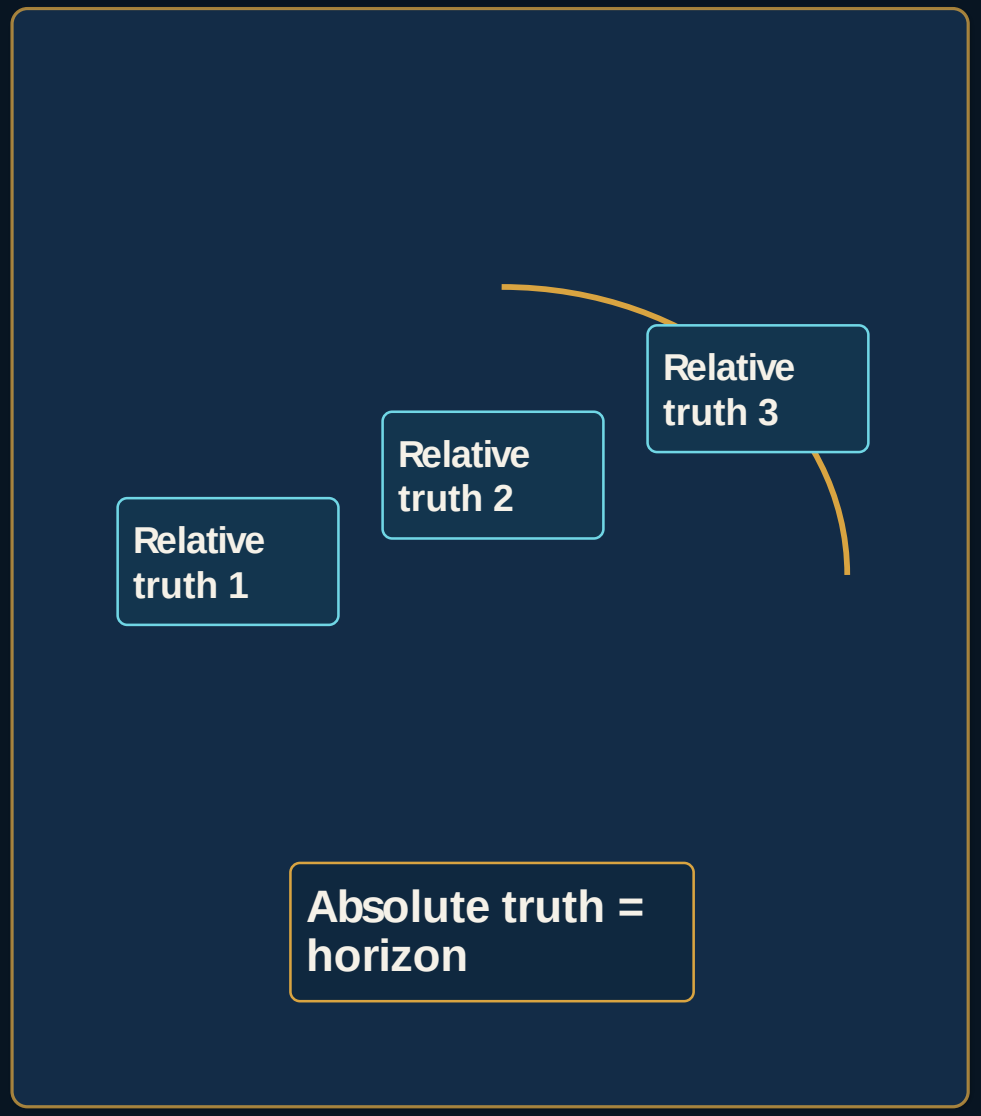
- The classical theory, associated with Aristotle, defines truth as the conformity of thought to reality.
- If a statement matches the actual state of affairs, it is true; if not, it is false.
- The difficulty is epistemic: we never compare thought with reality outside consciousness, only through our access to it.

Statement ↔ state of affairs



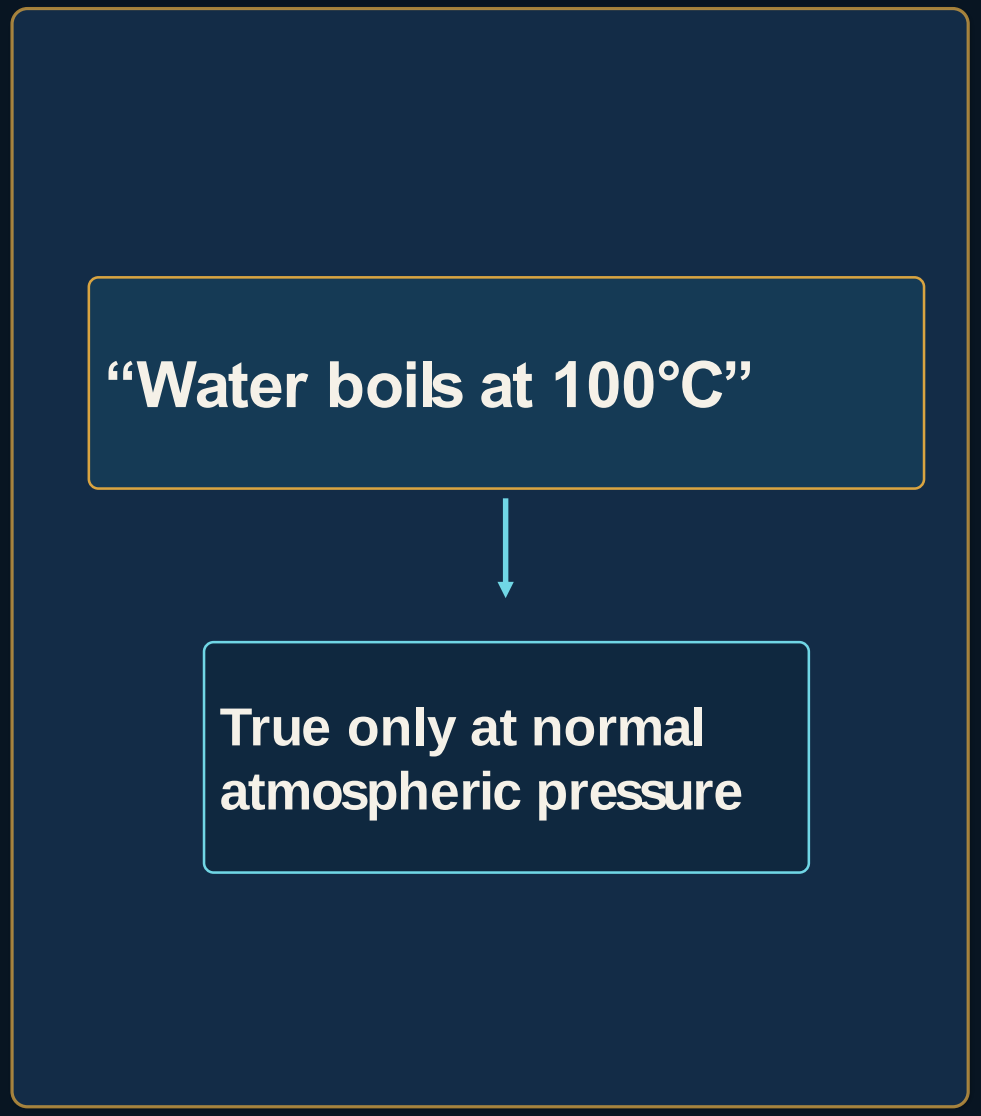
Objectivity, Absolute Truth, Relative Truth

- Objectivity means that truth depends on the object, not on individual desire or opinion.
- Absolute truth is the ideal of complete and exhaustive knowledge; relative truth is partial but still valid within limits.
- Human cognition advances by accumulating relative truths that approximate the absolute.



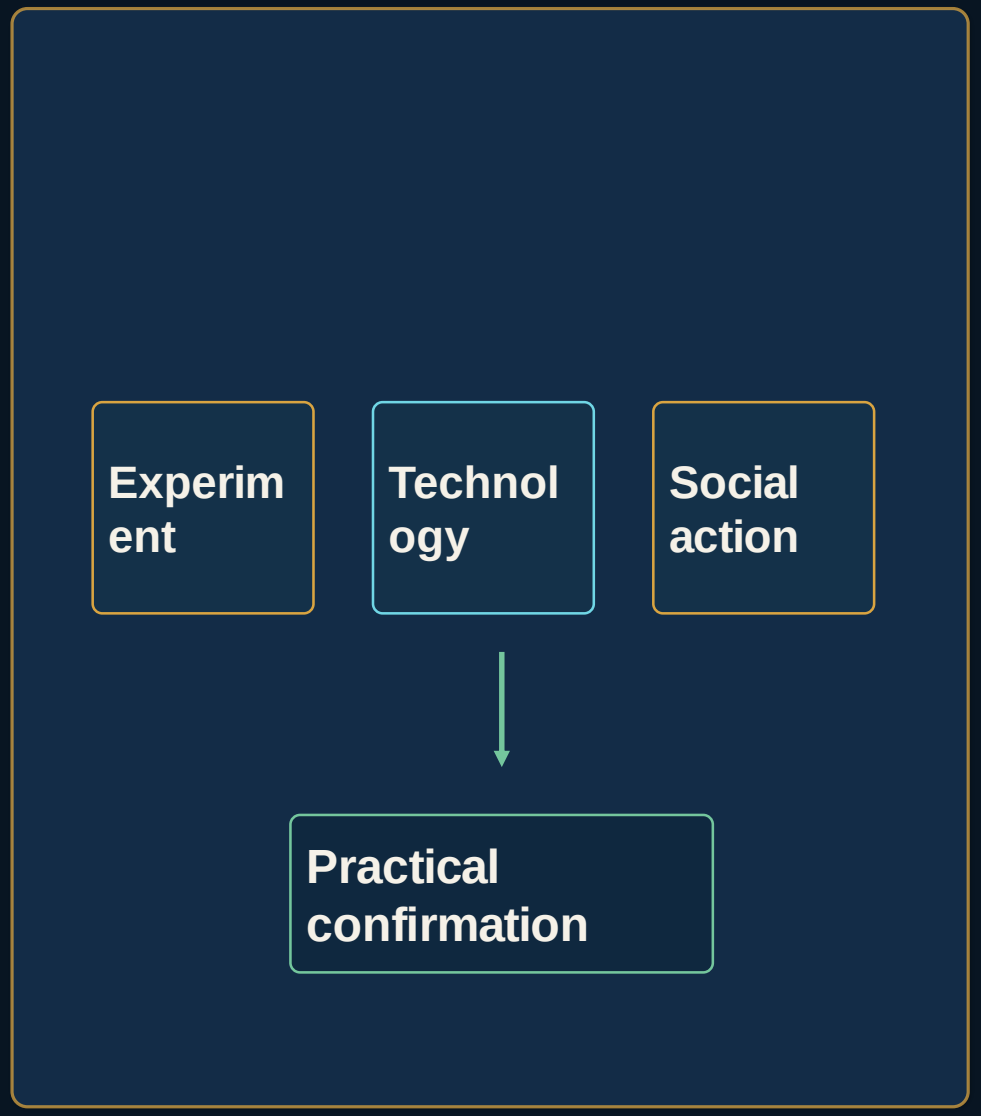
The Concreteness of Truth

- Truth is never purely abstract; it is always tied to definite conditions, place, and time.
- A correct statement detached from its real conditions can become misleading or even false.
- Context is therefore not an optional addition to truth, but part of its meaning.



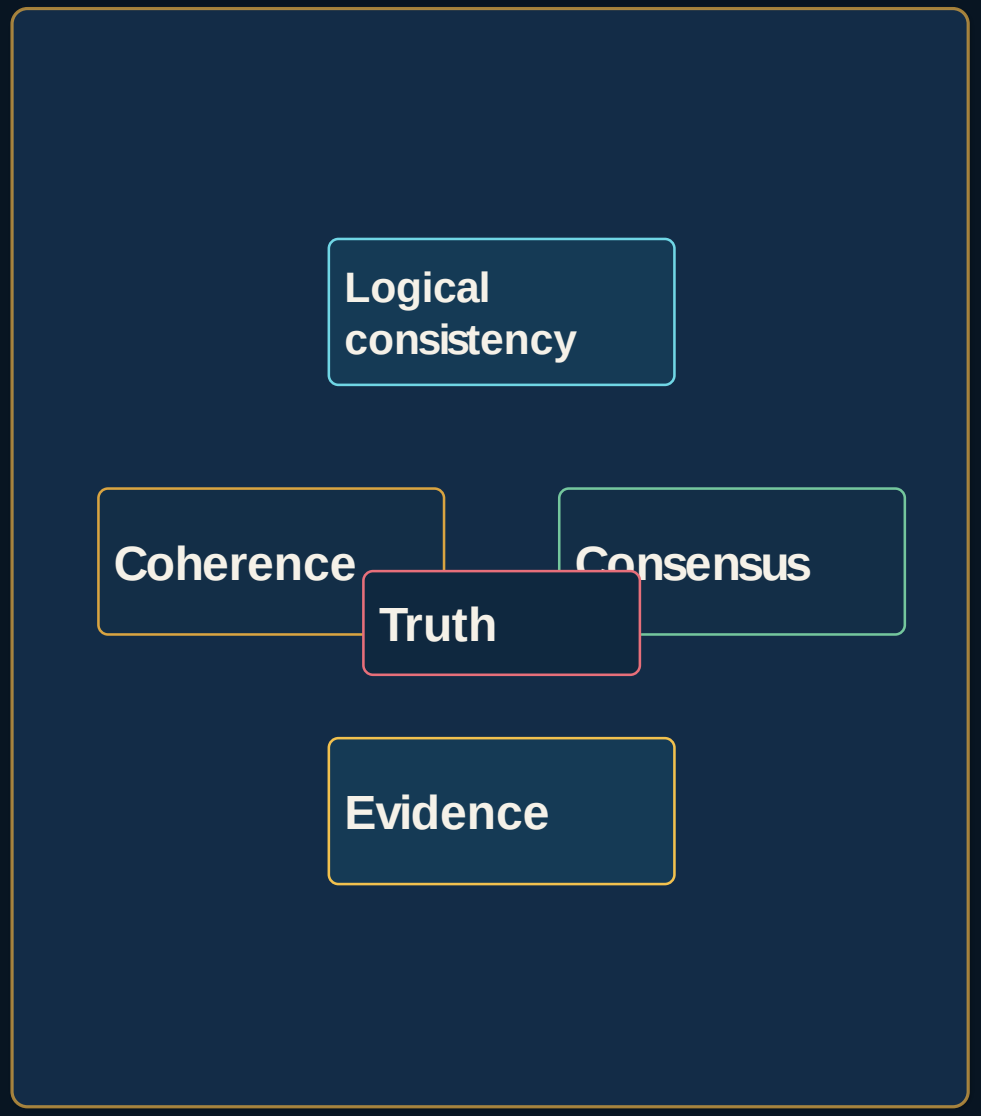
Practice as a Criterion of Truth

- In Marxism and pragmatism, practice is the supreme test of theory: ideas prove themselves in action, experiment, and production.
- If a theory helps us successfully transform reality, it gains objective weight.
- Yet practice cannot directly test every kind of knowledge, especially abstract mathematics or distant historical events.



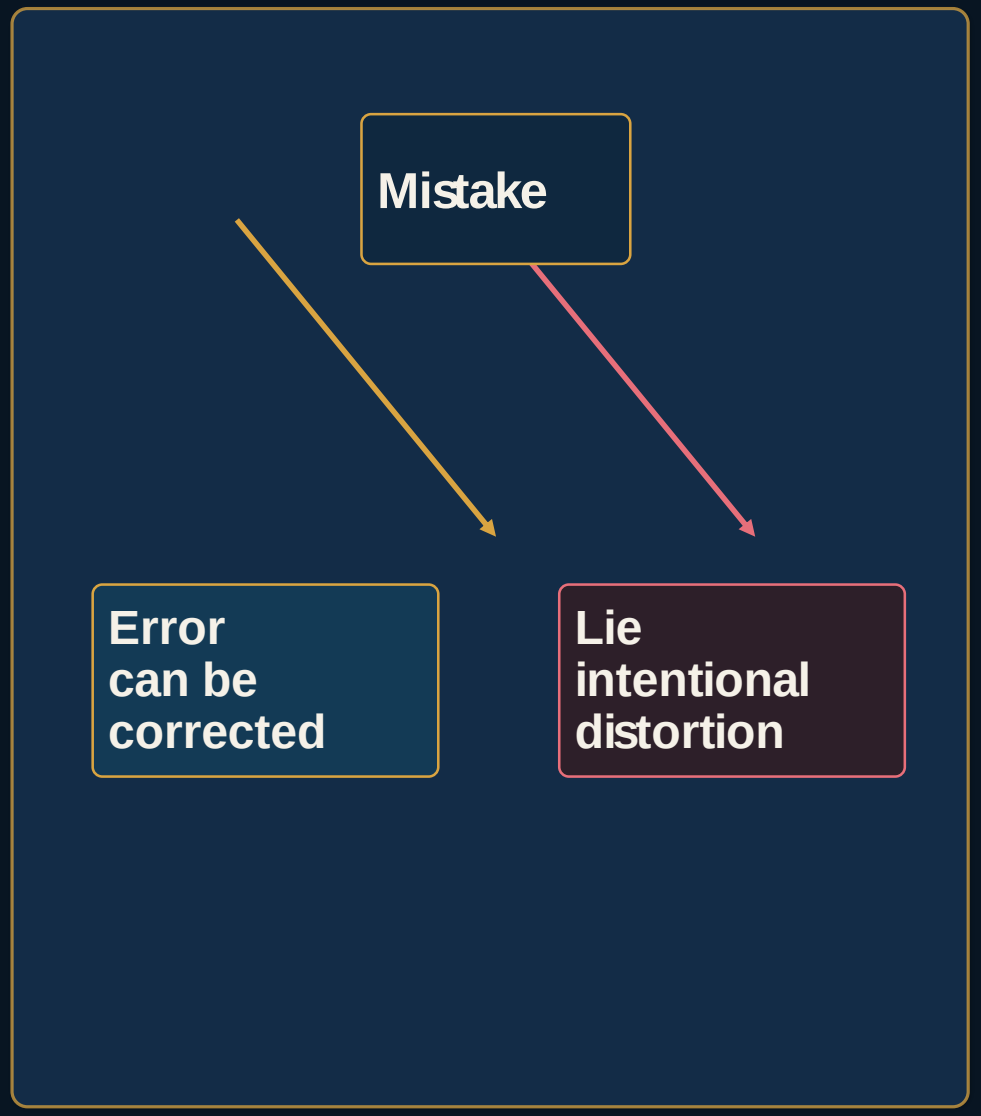
Additional Criteria of Truth

- Logical consistency ensures that knowledge does not contradict itself from within.
- Coherence measures how well a new claim fits into a larger, tested system of ideas.
- Consensus among experts and evidence of first principles can support truth, but none of these criteria works alone.



Error and Lie

- Error is an unintentional divergence between knowledge and reality; it is a normal part of the path toward truth.
- A lie is the conscious distortion of truth for selfish or manipulative purposes.
- Science progresses by correcting errors, whereas lying corrodes the very ethical conditions of knowledge.



Main Theories of Truth Compared

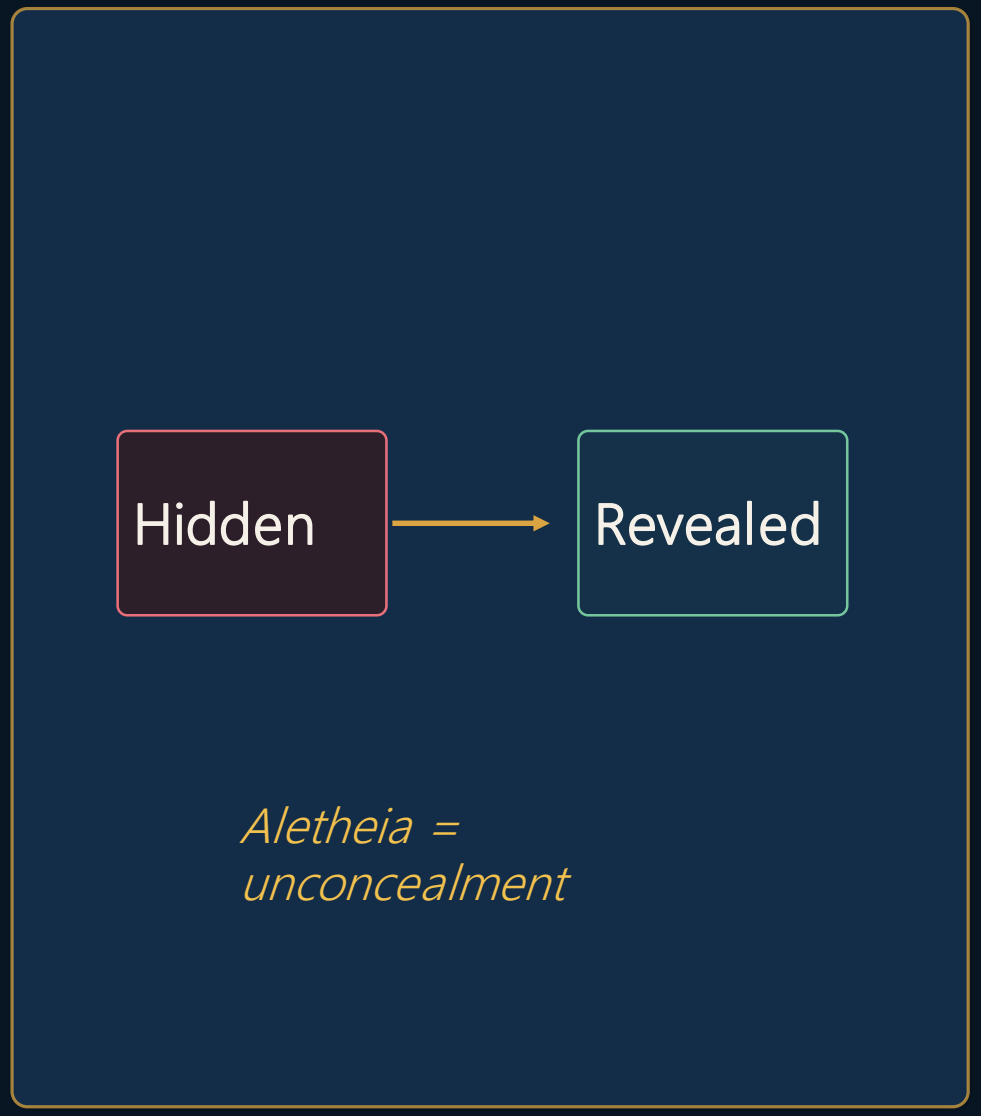
Each theory illuminates one dimension of truth, but none exhausts the whole problem on its own.

Correspondence	Coherence	Pragmatic	Conventional
Truth = match between statement and reality Best for factual and empirical claims	Truth = internal consistency of a system Strong in mathematics and logic	Truth = what works in practice Strong in action-guiding contexts	Truth = agreement or convention Important in terminology and classification

Truth theories are complementary lenses, not always mutually exclusive doctrines.

Truth as Openness: Heidegger's Aletheia

- In the existential interpretation, truth is not merely a correct sentence but an event of unconcealment.
- Aletheia means that being comes out of hiddenness and becomes manifest.
- This view stresses that knowing transforms the knower, not only the description of the object.



05

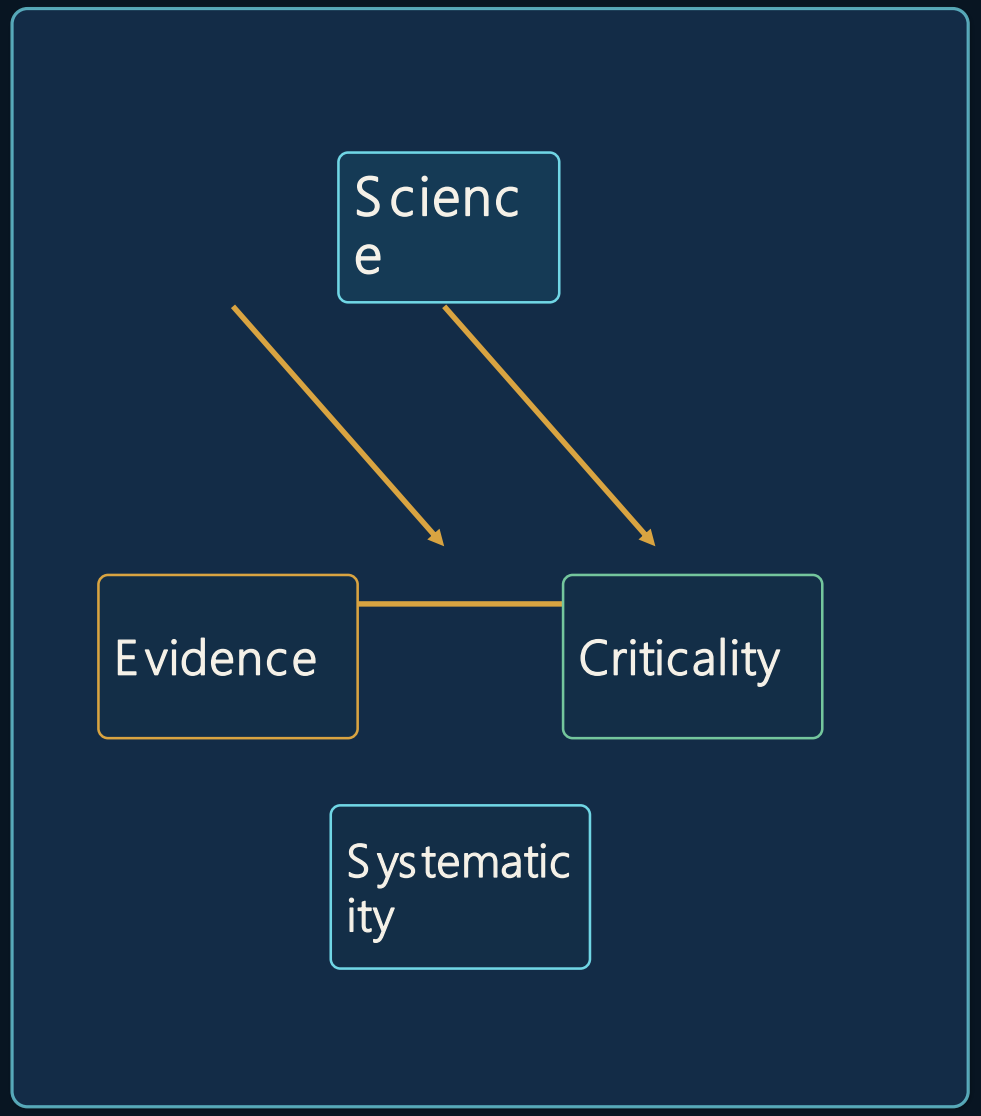
Scientific Knowledge

From empirical fact to paradigm change

1. What distinguishes science from opinion?
2. How do empirical and theoretical levels cooperate?
3. Why do scientific revolutions change the very framework of knowledge?

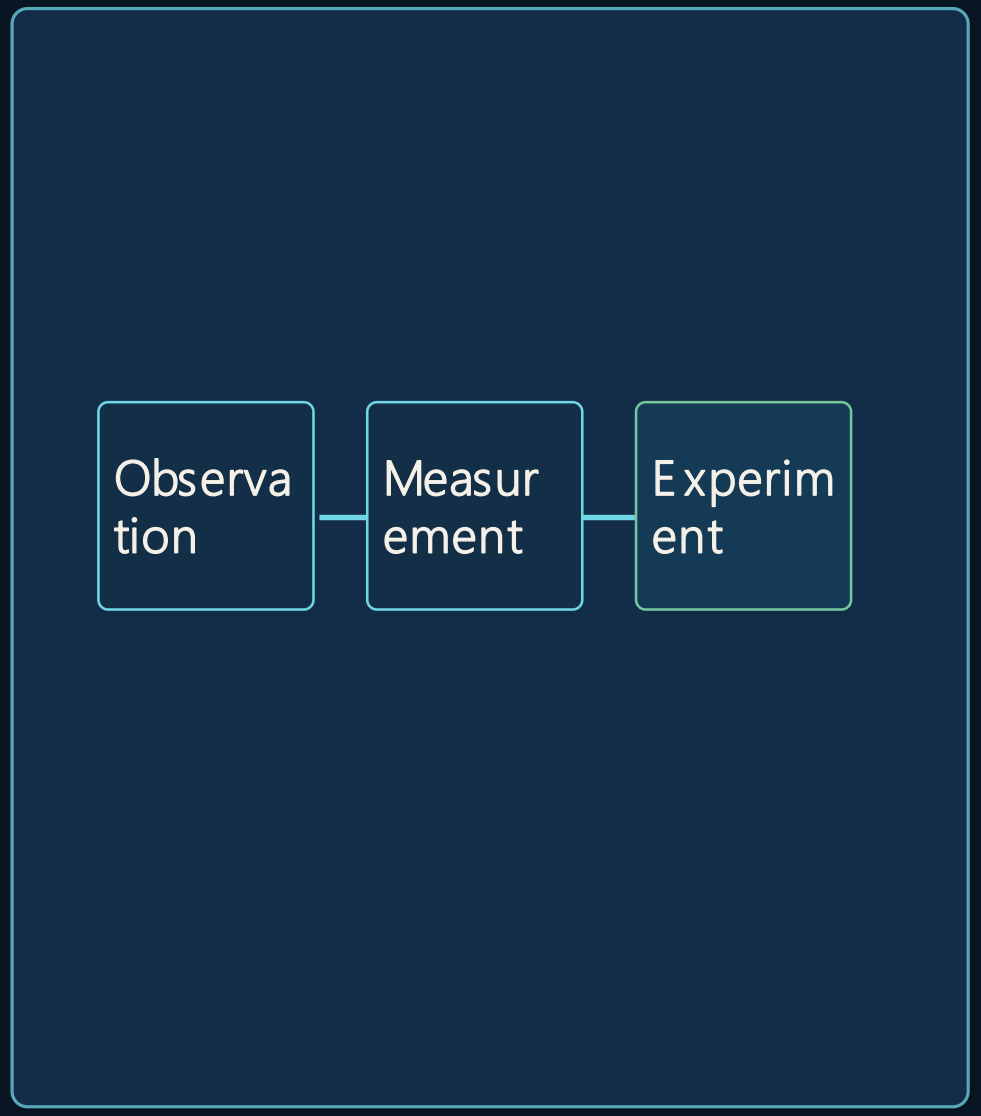
What Makes Scientific Knowledge Special?

- Science demands evidence, systematicity, and critical self-correction rather than mere opinion.
- Its claims must be justified by facts, logic, and repeatable procedures.
- Scientific knowledge remains revisable: strength comes from organized criticism, not from claiming infallibility.



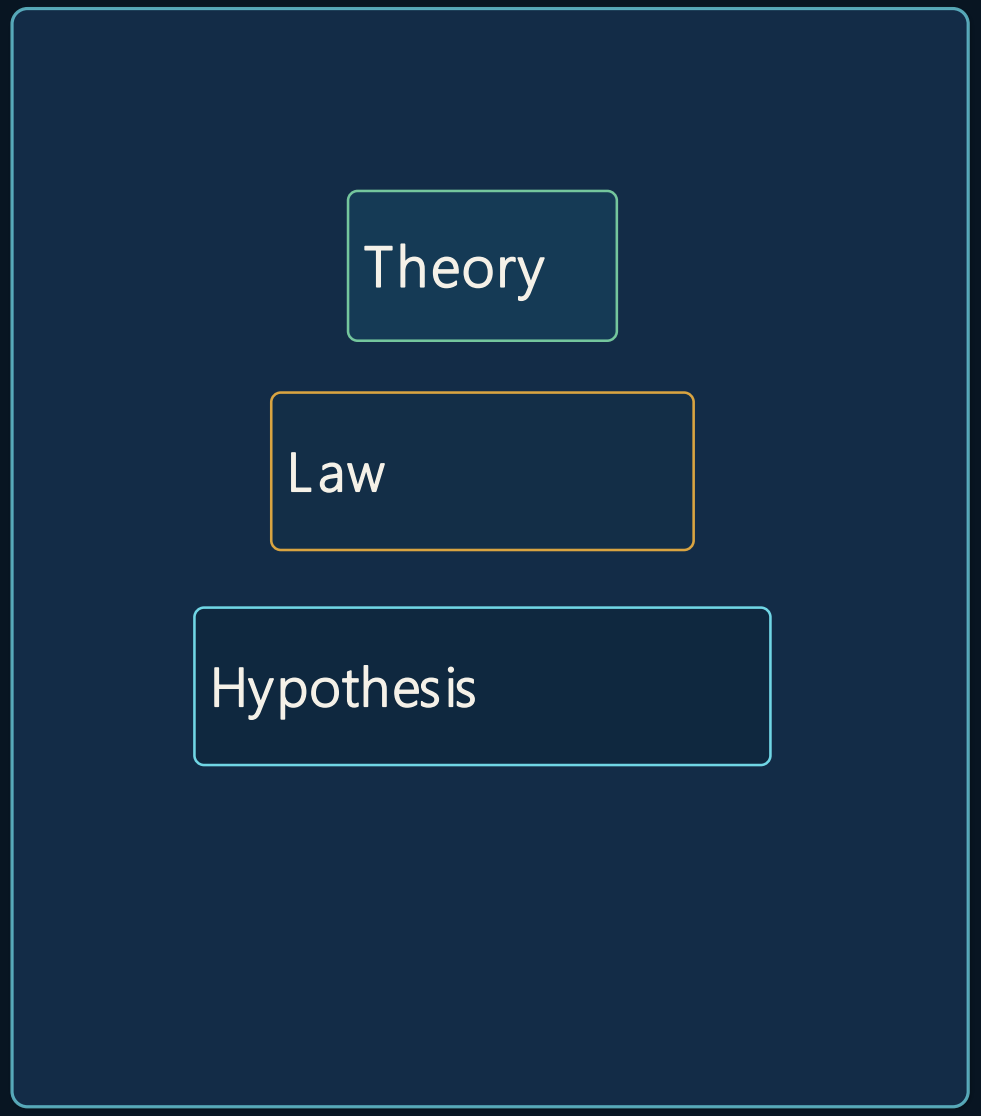
The Empirical Level

- Observation gathers facts under defined conditions and registers regularities in what is seen.
- Measurement translates qualities into quantities so that phenomena can be compared precisely.
- Experiment is the peak of the empirical level because it actively intervenes and tests behavior under controlled conditions.



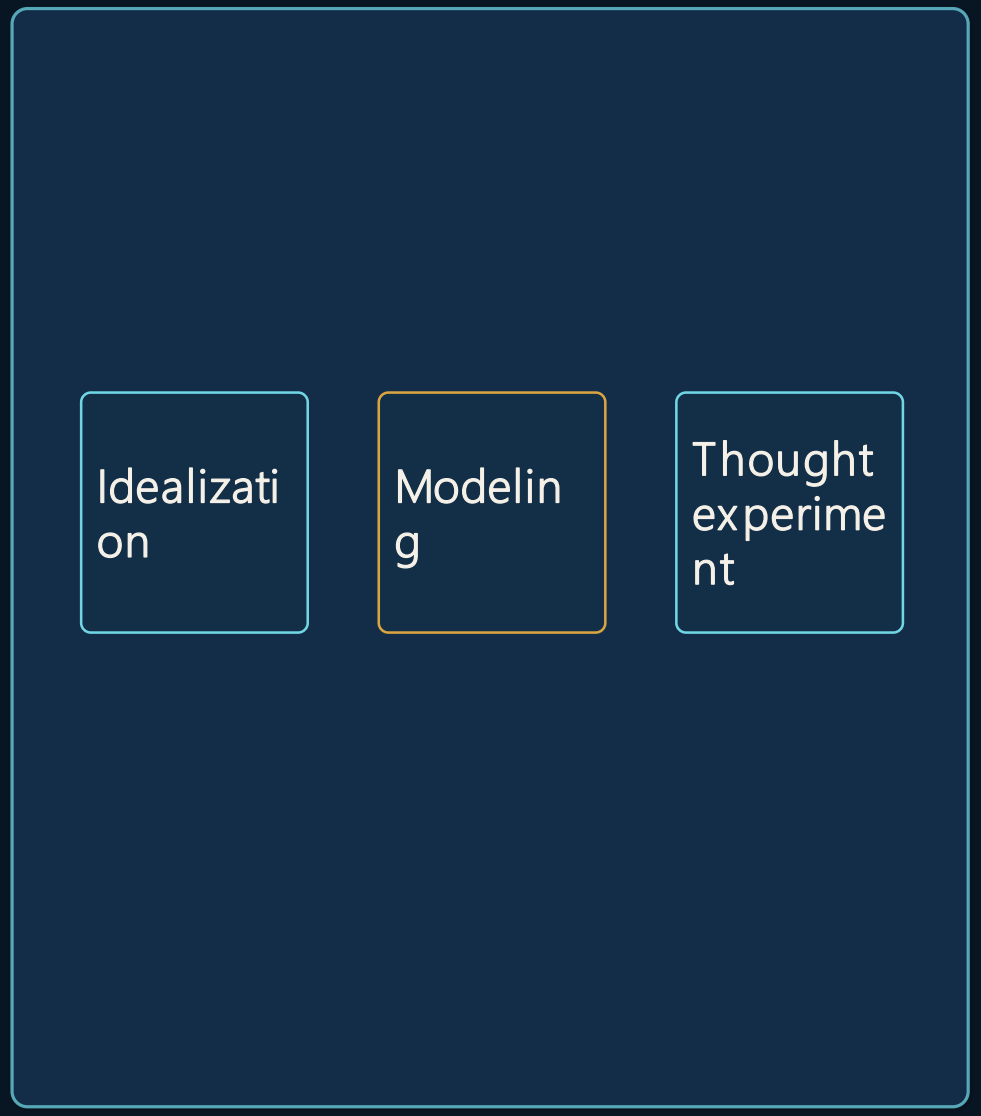
The Theoretical Level

- A hypothesis is a justified assumption that proposes an explanation.
- A scientific law formulates a stable, repeatable relation between phenomena.
- A theory unifies laws, concepts, and models into a systematic explanatory whole.



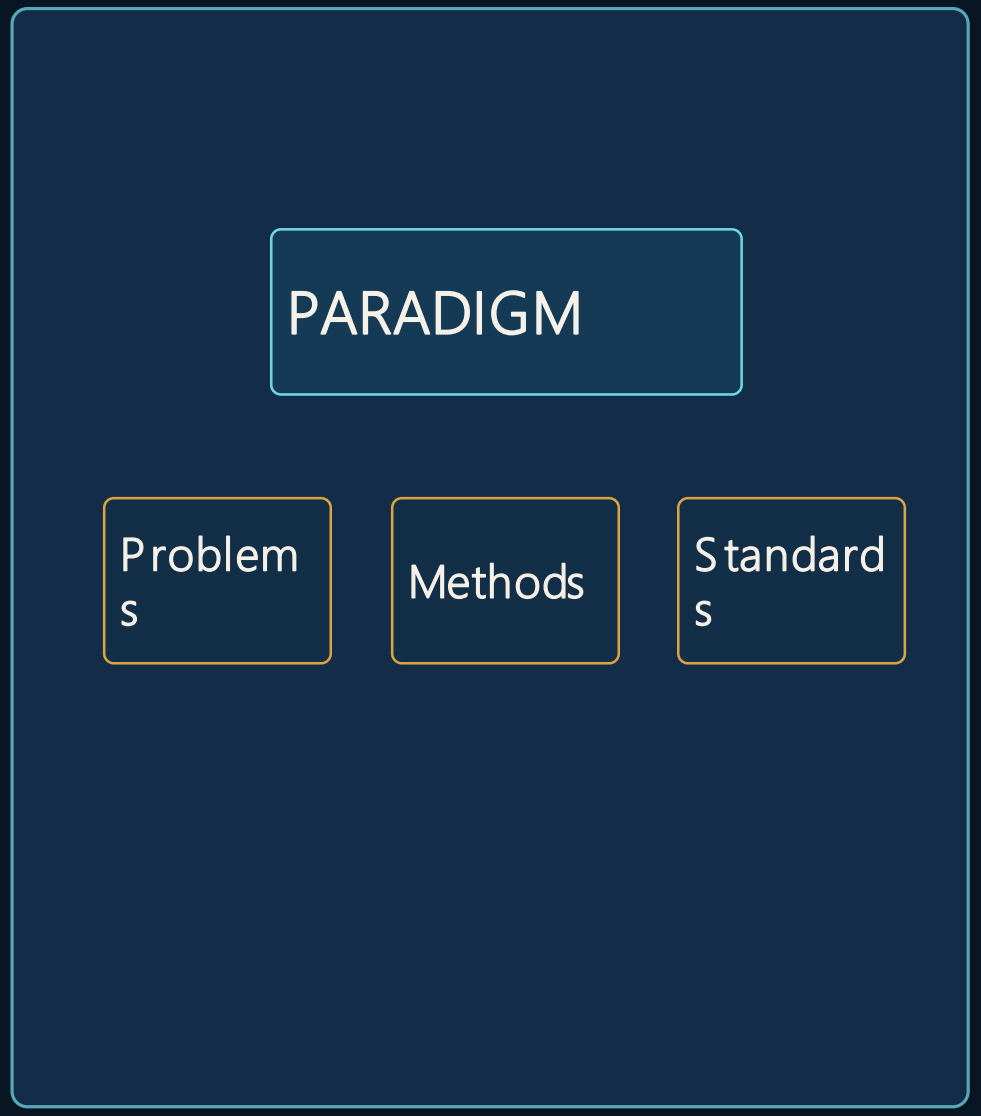
Key Theoretical Methods

- Idealization simplifies reality to isolate essential variables—for example, the “ideal gas”.
- Modeling builds manageable representations of complex systems so that they can be analyzed.
- Thought experiments test implications in imagination when direct experiment is impossible or premature.



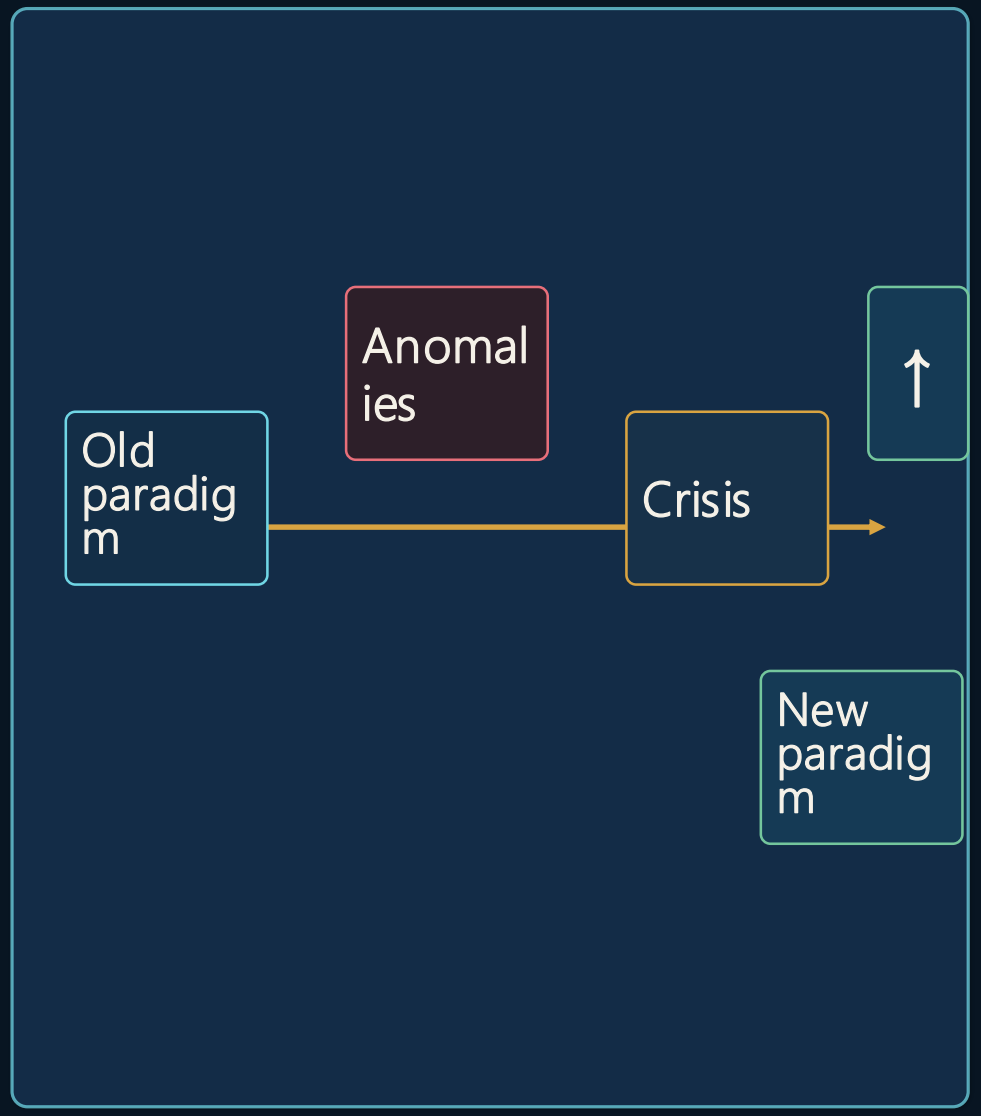
Thomas Kuhn and the Scientific Paradigm

- A paradigm is the accepted framework of problems, methods, standards, and assumptions shared by a scientific community.
- Normal science works within this framework, solving puzzles rather than questioning first principles.
- Anomalies begin to matter when they accumulate and resist assimilation.



Scientific Revolutions and Paradigm Shifts

- Kuhn argues that science does not grow only by adding facts; at times it changes its basic frame of interpretation.
- When an old paradigm can no longer handle anomalies, a crisis develops and a new paradigm emerges.
- A revolution changes what counts as a fact, a problem, and even a proper method.

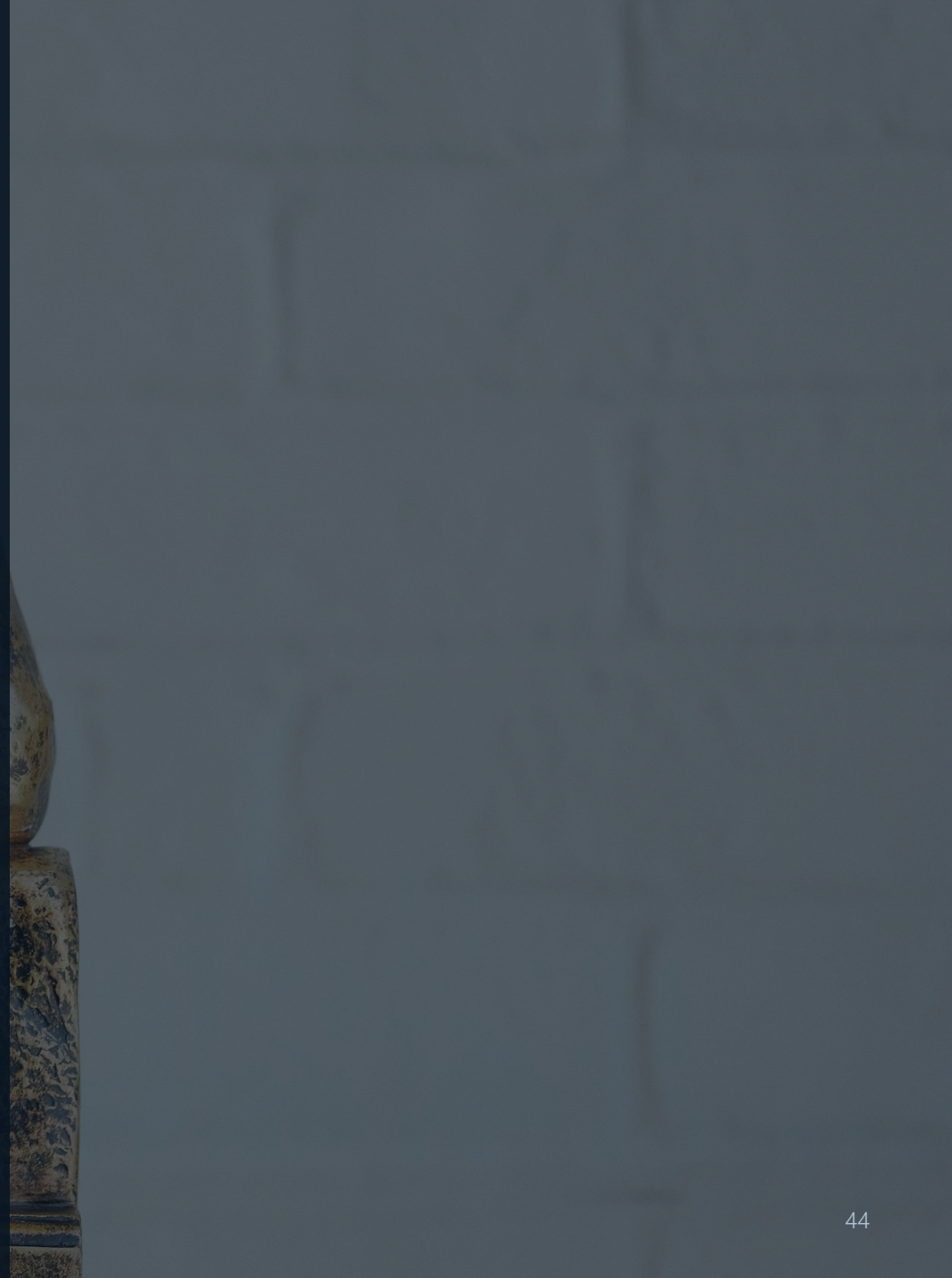


06

Cognition in the Digital Age

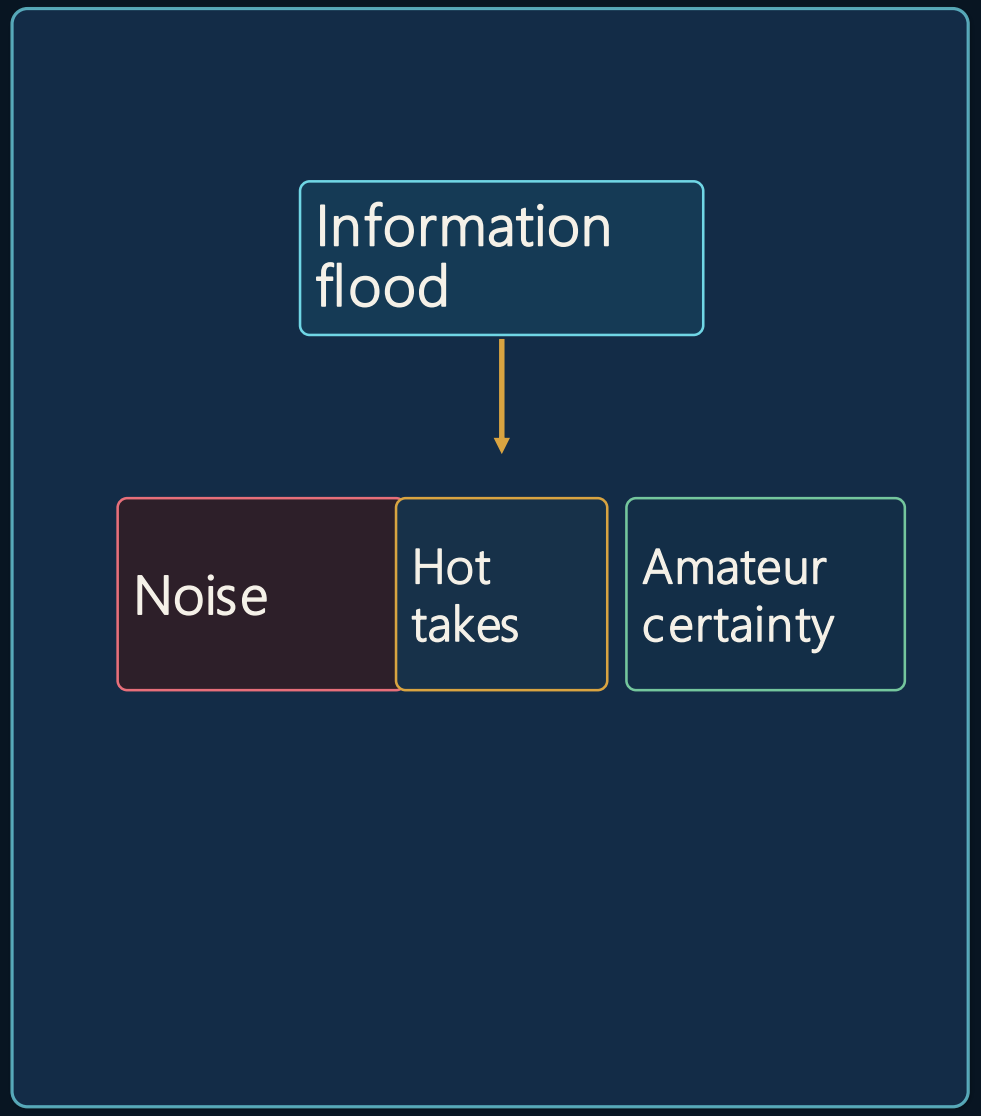
When information abundance becomes an epistemological problem

1. Why is information excess not the same as knowledge?
2. How do post-truth and cognitive bias distort objectivity?
3. Can AI produce knowledge without human understanding?



Information Excess and the "Death of Expertise"

- The central problem of the 21st century is often not scarcity of information, but overwhelming informational excess.
- Expert voices now compete with endless noise, quick takes, and algorithmically boosted confidence.
- Easy access to information can produce the illusion of competence without the discipline of knowledge.



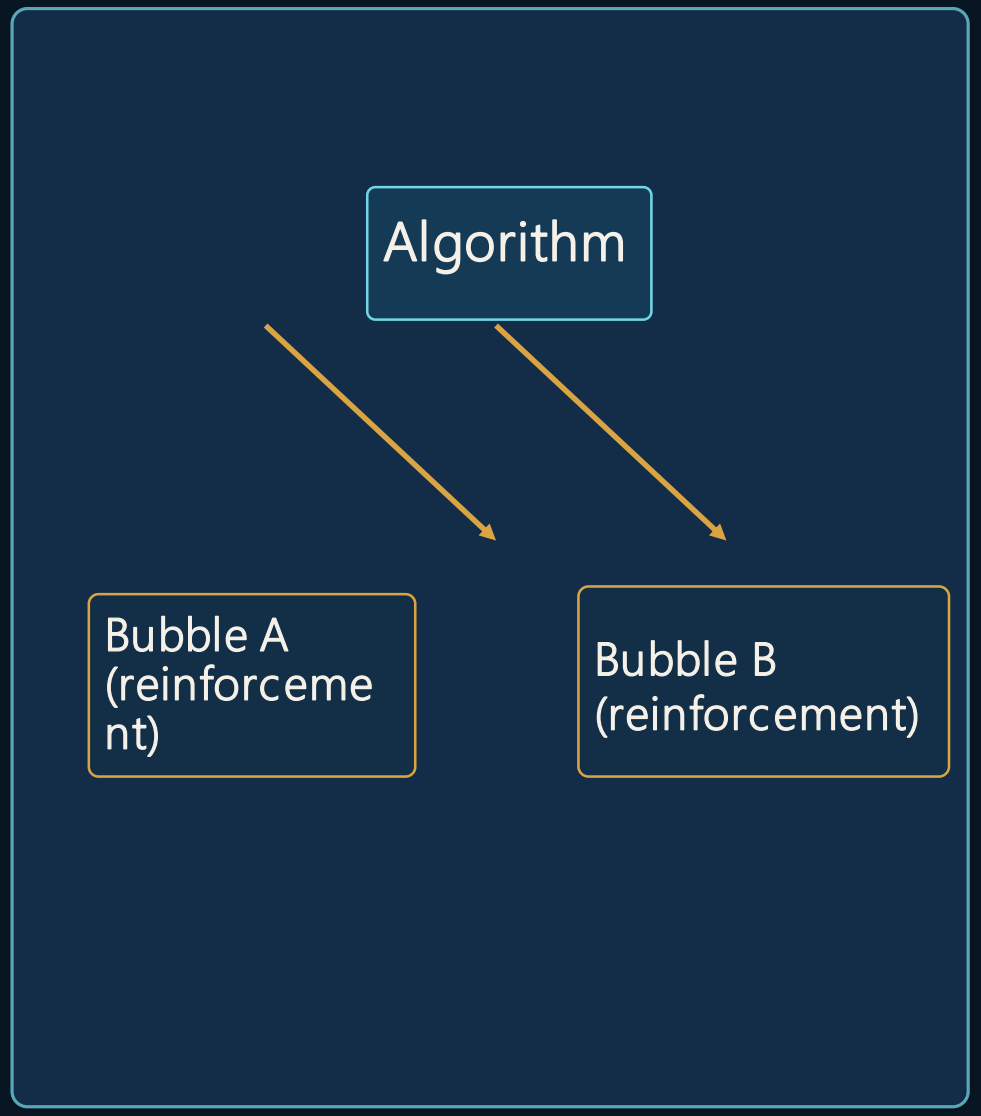
Post-Truth, Fake News, and Cognitive Biases

- Post-truth describes a situation in which emotional appeal outweighs objective fact in shaping belief.
- Fake news constructs parallel realities optimized for reaction, identity, and confirmation rather than for evidence.
- Cognitive biases—especially confirmation bias—make manipulation easier by filtering what we notice and trust.



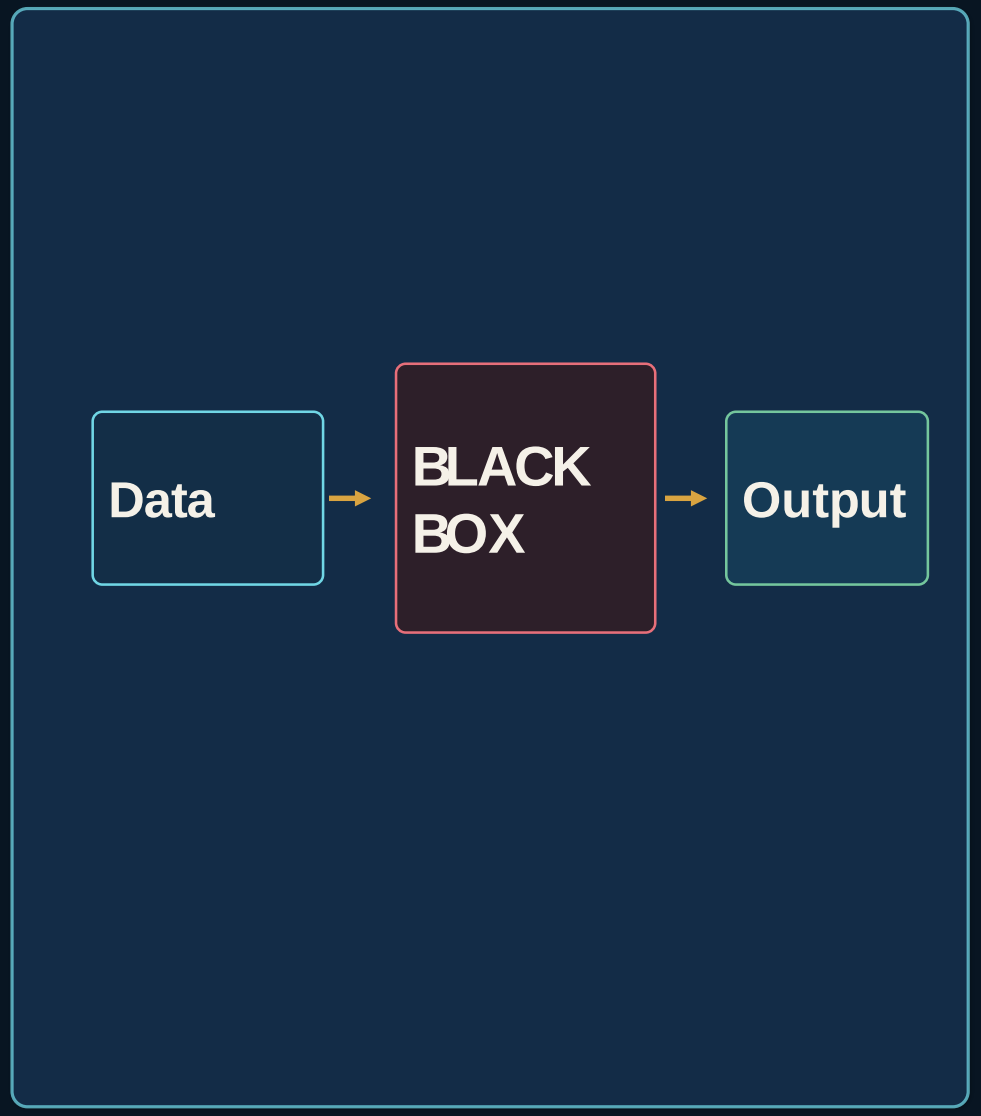
Filter Bubbles and Algorithmic Curation

- Digital platforms do not simply display the world; they sort it according to prior clicks, attention patterns, and engagement signals.
- This personalized curation creates filter bubbles in which users repeatedly encounter confirming information.
- The result can be epistemic narrowing: less diversity of evidence, more polarization, and weaker critical distance.



Artificial Intelligence as a New Subject of Cognition?

- AI systems can discover patterns in datasets too vast or complex for unaided human analysis.
- Yet many such systems function as “black boxes”: we see the output but cannot fully reconstruct the path of reasoning.
- This raises a new epistemological question—can we trust knowledge that works in practice if its inner logic remains opaque?



Discussion Prompts and Key Takeaways

Seminar connections

- Tabula rasa ↔ cognitive biases
- Agnosticism ↔ quantum microworld
- Practice ↔ AI “black box”
- Rationalism ↔ fake news
- Paradigm ↔ conventionalism

Essential vocabulary

- epistemology
- truth
- paradigm
- thing-in-itself
- post-truth
- inference

Core takeaways

• Knowledge is active construction, not passive reflection.
• Truth needs multiple criteria and remains historically deepened.
• Science grows through both disciplined method and paradigm change.
• Digital environments intensify old epistemic problems in new forms.