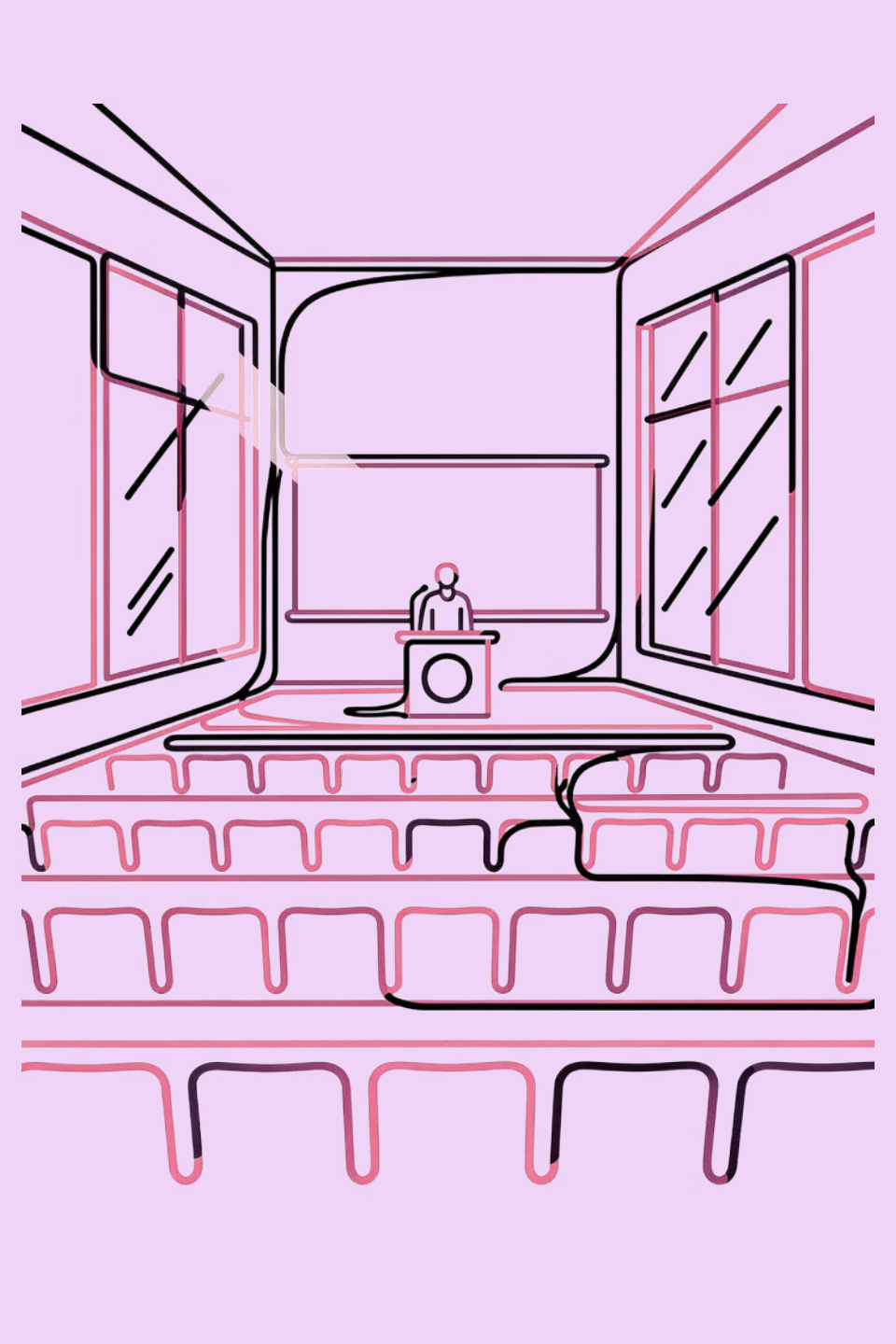




New Paradigms of Knowledge: Challenges for and in Higher Education

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How do different kinds of minds produce different kinds of knowledge — and what does this mean for how universities teach, structure curricula, and prepare students for a complex world?

Kinds of Minds, Kinds of Knowledge

Daniel Dennett's *Kinds of Minds: The Origins of Consciousness* (2007) links epistemic achievement to cognitive architecture — what a mind can **know**, and **how** it knows, depends on the mechanisms out of which that mind is built.

1

Darwinian

Knowledge without understanding

2

Skinnerian

Learned know-how via reinforcement

3

Popperian

Model-based, foresightful knowledge

4

Gregorian

Culturally scaffolded knowledge

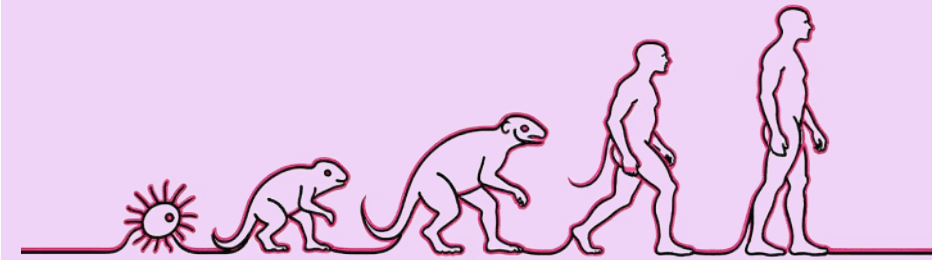
From Instinct to Skill: Darwinian & Skinnerian Minds

Darwinian Minds

Blind variation and selection "discovers" useful information encoded in bodies and instincts. Organisms **know how** to do adaptive things without representing reasons — knowledge without understanding.

Skinnerian Minds

Trial-and-error learning within a lifetime refines behavior. Practical skills are tuned by rewards and punishments — still largely without explicit models or reasons, but adaptive within a single lifespan.



From Models to Culture: Popperian, Gregorian & Scientific Minds

Popperian Minds

Run internal representations and "let their hypotheses die in their stead."

Understanding becomes explicit enough to guide choice — **competence with comprehension.**

Gregorian Minds

Inherit cognitive tools — language, writing, numeracy, computers — dramatically extending competence.

Much of what an individual "knows" is **offloaded to cultural artifacts.**

Scientific Minds

With public, cumulative methods — experiments, peer review, mathematics — communities build **objective, theory-laden knowledge** that far outstrips any one person's intuitions.

Key Takeaways from Dennett's Hierarchy



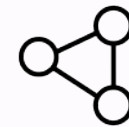
Know-How vs. Know-That

Lower kinds
(Darwinian/Skinnerian)
yield know-how; higher
kinds support know-that
and **explicit
justification.**



Representation Depth

From embodied implicit
information → internal
models → external
symbolic media →
**communal scientific
representations.**



Distributed Cognition

Gregorian and scientific
minds highlight that
much knowledge is
socially distributed
and artifact-dependent
— not held by
individuals alone.

Four Dimensions of Knowledge in Higher Education

Universities classify knowledge into four primary categories — derived from Bloom's Revised Taxonomy — to help educators design curricula and guide students from basic memorization to advanced critical thinking.

Factual

Basic elements: terminology, symbols, dates, foundational facts

Conceptual

Interrelationships: theories, models, classifications, principles

Procedural

How to do something: methods, algorithms, lab techniques

Metacognitive

Awareness of one's own cognitive processes and learning limits



Knowledge Types for the Workforce & Research

Beyond cognitive taxonomies, universities emphasize operational knowledge to prepare students for professional life and advanced research.

Declarative — "Knowing What"

Facts, definitions, and theories evaluated via essays, exams, and presentations.

Conditional — "Knowing When & Why"

Assessing context to select the right tools for complex, unpredictable problems.

Tacit Knowledge

Intuitive, experiential insight developed through mentorship, clinics, and peer collaboration — difficult to formalize.

Explicit Knowledge

Formalized, documented information communicated through textbooks, journals, and lectures.

Academic "Ways of Knowing"

At advanced undergraduate and graduate levels, higher education shifts focus from *consuming* knowledge to analyzing **how knowledge is produced**.

A Priori Knowledge

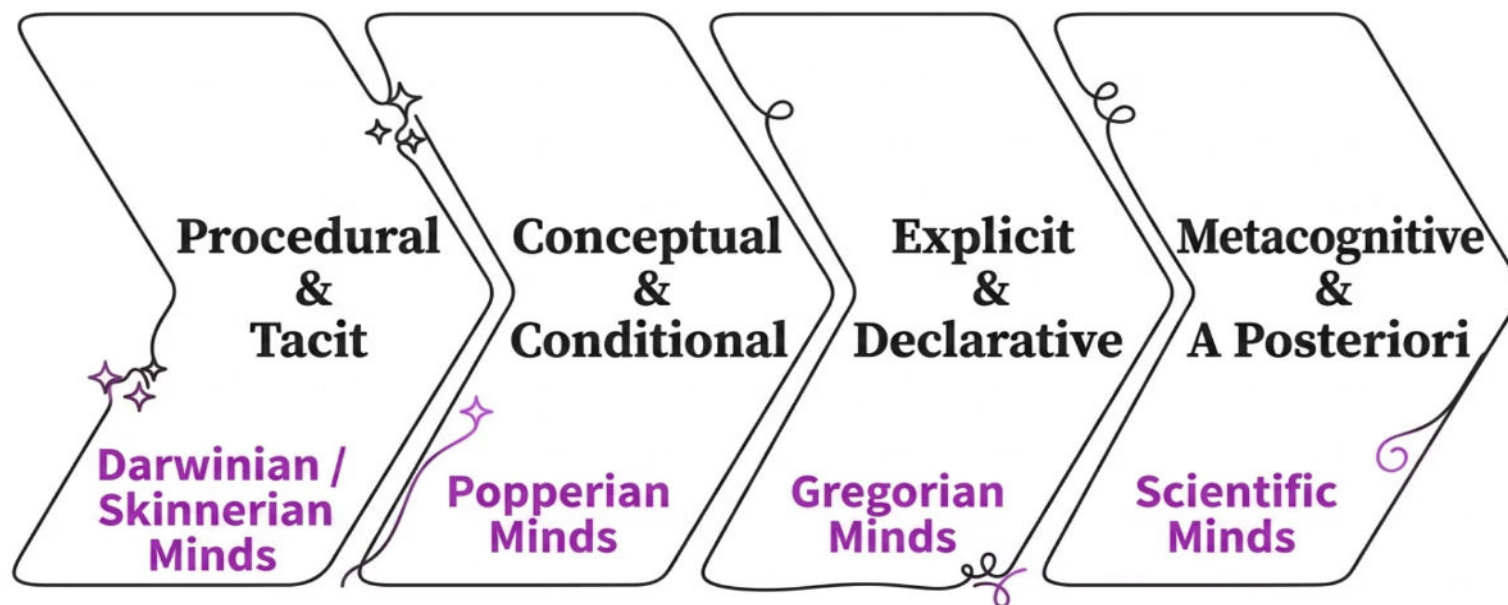
Derived strictly from independent reason, logical deduction, and mathematical proof — **independent of sensory experience**. The foundation of philosophy, logic, and pure mathematics.

A Posteriori (Empirical) Knowledge

Validated through direct observation, physical evidence, and experiential data gathering. Standard in **laboratory sciences and empirical social research**.

Mapping Dennett to the Classroom

Dennett's cognitive hierarchy and the academic knowledge taxonomy are deeply complementary — together they reveal how curriculum design can mirror the evolution of mind itself.



Designing curricula that move students **up this ladder** — from factual recall toward metacognitive, model-based, and culturally distributed knowing — is the central challenge of modern higher education.

CONCLUSION

Designing for the New Paradigms

These frameworks — Dennett's cognitive hierarchy and the academic knowledge taxonomy — offer powerful tools for curriculum design and self-directed study.

1 Define the primary goal

Developing a syllabus, improving study habits, or writing an academic paper each demands a different knowledge strategy.

2 Identify the discipline

Each academic field privileges different knowledge types — empirical, procedural, tacit, or a priori.

3 Scaffold toward comprehension

Move students from **competence without comprehension** to genuine, culturally distributed, model-based understanding.

