Asymmetries

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- **Introduction to Epistemic Asymmetry**
  - Defines "prehistory" and focuses on paleontology and geology.
  - Introduces epistemic asymmetry: more knowledge of the tiny (microphysical) than the past.
  - Highlights importance for philosophers, scientists, and others.

Limits to Our Knowledge of Prehistory

- **Example of Sauropod Trackways**
  - Differentiates wide-gauge and narrow-gauge tracks.
  - Explores hypotheses: same species, substrate, different species.
  - **Wilson and Carrano (1999) Biomechanical Analysis**
    - Titanosaurs likely made wide-gauge tracks; femur morphology supports this.
  - **Speculation on Titanosaur Locomotion**
    - Semi-bipedal hypothesis is speculative.
  - **Conclusion**: Transition from solid science to speculation in historical sciences.

The Time Asymmetry of Knowledge

- **Introduction to Time Asymmetry**
  - More knowledge of the past than the future.
  - **Paul Horwich's Explanation**
    - Recording systems provide past information; precording systems for future do not exist.
    - **Fork Asymmetry**: Correlated events have common causes, not common effects.
  - **Implications**: Explains extensive past records and limited future knowledge.

The Past vs. the Microphysical

- **Introduction to Epistemic Scope Asymmetry**
  - Contrasts knowledge of the past with the microphysical.
- **Asymmetry of Manipulability**
  - **Ian Hacking**: Scientists can manipulate microphysical entities, aiding theory testing.
- **Role Asymmetry of Background Theories**
  - **Dampening Role**: Historical theories limit evidence (e.g., taphonomy).
  - **Enlarging Role**: Microphysical theories create new evidence (e.g., optics).
  - **Conclusion**: Asymmetries create an epistemic asymmetry favoring the microphysical.

Scientific Realism

- **Overview of Scientific Realism**
  - Realists believe scientific theories describe both observable and unobservable aspects.
- **Epistemological Optimism**
  - **Boyd, Psillos, McMullin, Leplin, Devitt**: Knowledge of unobservables is possible and actual.
- **Critiques and Alternatives**
  - **Social Constructivists and Arthur Fine's NOA**: Share optimism but differ on metaphysical claims.
- **Skeptical Arguments**
  - **Pessimistic Induction**: Past scientific beliefs about unobservables often discarded.
  - **Underdetermination**: Observable evidence insufficient for unique truths about unobservables.
- **Realists' Defense**
  - **Inference to the Best Explanation**: Success of theories implies their approximate truth.

A Skewed Debate

- **Fictional Analogy**
  - Investigators study two kinds of unobservables (K and K*).
  - Philosophers focus on K, neglecting K*.
- **Epistemic Differences**
  - **Genus/Species Confusion**: Overgeneralizing from K to all unobservables.
  - **High-Level Generality**: Debate at genus level misses species-specific challenges.
- **Parallel to Realism Debate**
  - Realists focus on microphysical (K), neglecting historical (K*).
  - **Consequences:** Overlooks epistemic asymmetries, leading to incomplete conclusions.