Approaches to understanding reality: Ways of Knowing

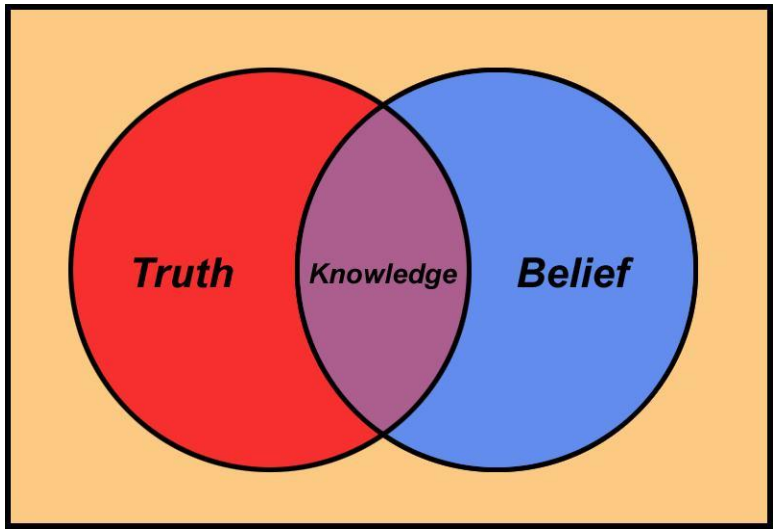
Philosophy and Sociology of Science

Why do we need to understand ways of knowing? Why do we need to understand how we construct reality?

What are the consequences or implications of what we project or present as reality?

Is evidence important? Why or why not?

How do we interpret? Should we interpret?



Philosophical questions are unavoidable in in knowledge gathering and discovery / invention / innovation. What questions to ask? What methods to use? Why? Can everything be subjected to research? Are there some questions we cannot ask? Some things we cannot know?

Knowing, not knowing, ignorance, knowledge of ignorance

How do we know that we know or not know?

What do we know? The power of concepts

How much do we know?

Aristotle: Episteme, Techne and Phronesis ;

- Tacit knowledge; Ability to use knowledge

Does it really matter?

Realism, Representative Realism

Idealism: reality is mentally constructed; cannot know any mind-independent thing

- Human ideas (eg. beliefs and values) shape society

Realism: Reality is independent of observation; reality exists independently of observers

Perception / observation as sources of knowledge about the world out there

Representative realism: we cannot 'see' or know the external world directly: ideas and interpretations; no first-hand knowledge; know via some means or mechanisms or procedures or tools; use of sense organs and instruments

- Einstein-Heisenberg debate

Critical realism: Sense-data do and do not represent external objects accurately: connection between mind-dependent and mind-independent external world
Philosophy of science vis a vis social /human sciences; uncertainty as a problem

Meaningful and non-meaningful questions

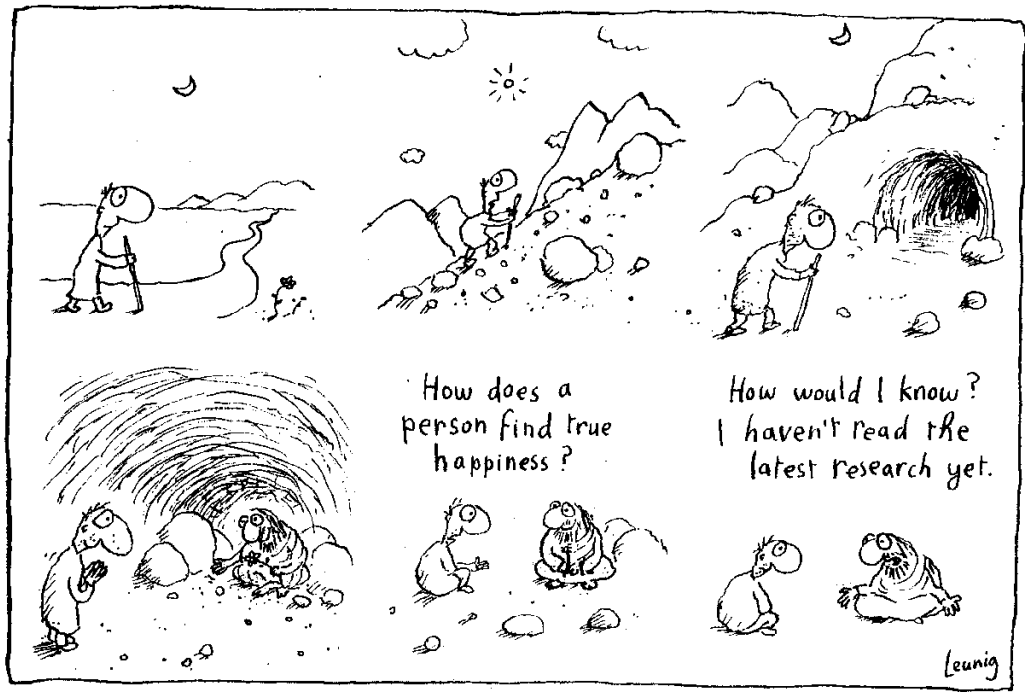
Positivism and Empiricism

Knowledge using sense organs; hard facts; knowledge comes (only) from primary or secondary sensory experience; experience and evidence lead us to knowledge; scientific method and knowledge generation

No role for pure reasoning, revelation, intuition

Knowledge can be of quantitative or qualitative kind

- Classification, generalization, prediction



Critique of empiricism

Can facts alone constitute knowledge? How do we make sense of facts? Role of concepts, theories, frameworks, analytical schemes

Can we obtain facts without theories and concepts? Do theories and concepts prejudice us? How do we know where to look, what to observe, how to interpret?

Social Construction / Constructivist Approach:

How and why do we accept or reject knowledge? Laboratory studies (Latour, Woolgar, and Bloor); science as one among many knowledge cultures; funding, methodology, tools and techniques, publication, ideology, networks, personal preferences, everyday practices

Do / should we always go by facts in human endeavour?

- Science / Technology and Development

Positivism, Logical Positivism, Empiricism, Quantification

- **Postulates**

▪postulate of **natural kinds**: all instances of classes and categories of phenomena exhibit the same properties

▪postulate of **constancy**: all phenomena remain the same or change only very slowly over time

▪postulate of **determinism**: there is orderliness and regularity in nature, constancy in terms of cause and effect

- **Advantages and disadvantages**

What can and cannot be measured; what is evidence

- **Critique of positivism**

Evidence, Interpretation, analysis, context, wholism

- **False dualisms**

truth and non-truth, cause-effect, fact-interpretation, facts-theory

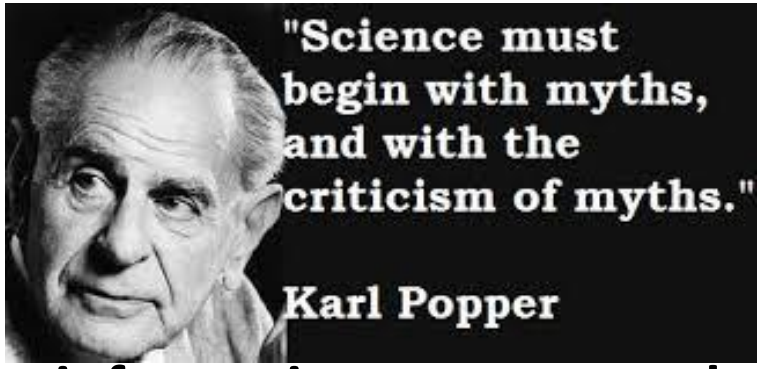
Post-positivism, critical realism, critical sciences

- Little difference between how scholars / academics think and how common people think; difference of degree, not kind; similar processes in scientific and common sense reasoning; in *indigenous* knowledge and *science*.

- Importance of multiple measures and tools, triangulation, openness to methods and techniques

Karl Popper

- Induction and Deduction
- Verification vs Empirical Falsification
- Conjectures and Refutations

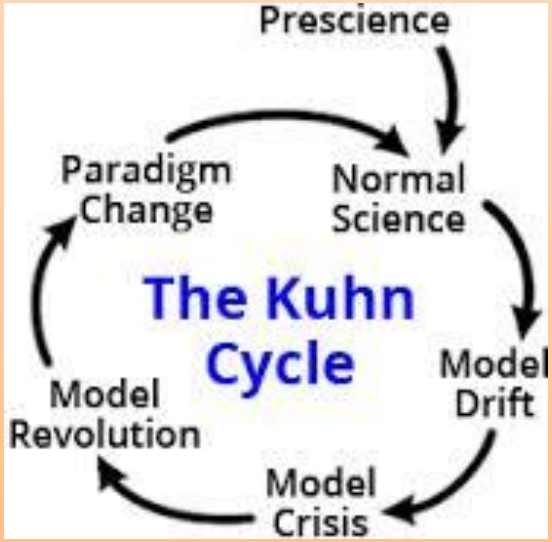


- Critical Rationalism: levels of probability, information content, and preferred knowledge – good reasons, corraboration not acceptable
- Science vs Non-science / pseudo-science

Thomas Kuhn

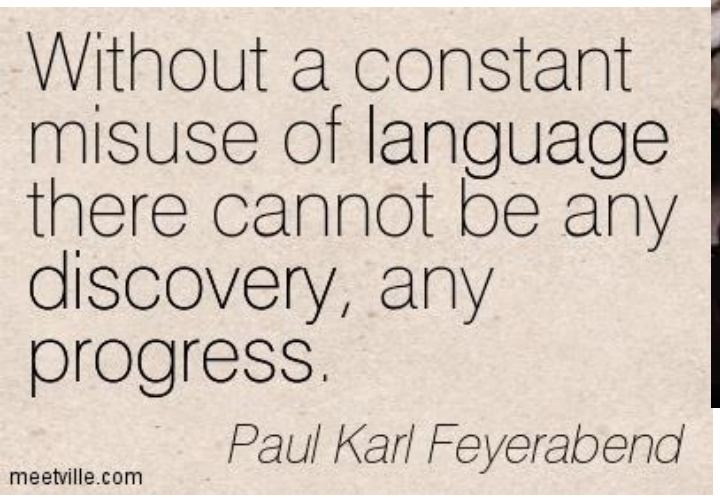
Structure of Scientific Revolutions: “progress” in science, new discoveries and knowledge growth

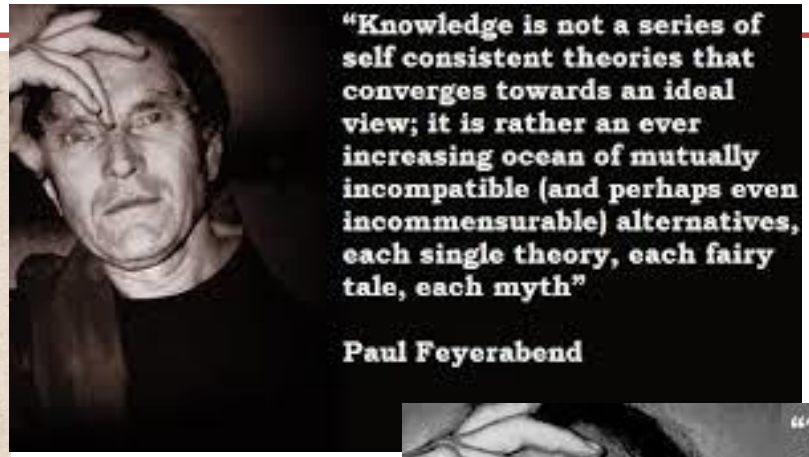
- Paradigms, Paradigm shifts, and Scientific Revolution
- Objectivity and Subjectivity
- Pre-science, normal science, revolutionary science
- Incommensurability
- <u>Theory Choice:</u>
  - *Accurate*
  - *Consistent*
  - *Broad Scope*
  - *Simple*
  - *Fruitful*

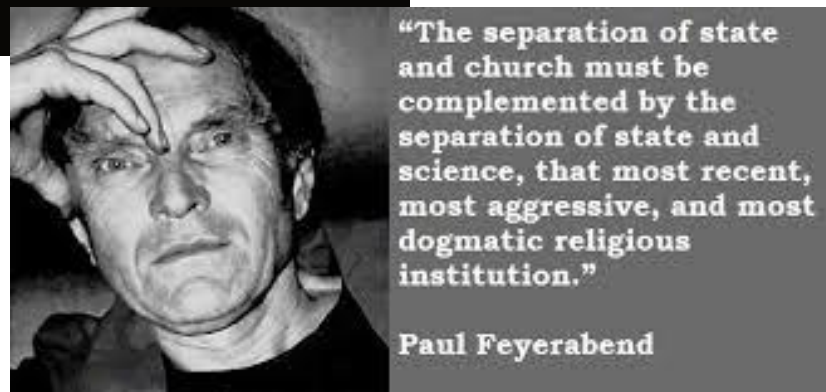


Paul Feyerabend: Against Method

- Methodological pluralism / individualism
- No universal methodological rules?
- Methods, Scientific Activity, and Scientific Progress
- Theoretical anarchism and humanitarianism / freedom
- Critique of consistency criterion and falsificationism







Values

Facts and values: what is and what ought to be?

Gunnar Myrdal: Acknowledge Values explicitly

What is a fact?

- Impossibility of value free / neutral research? Role of Ideology?
- Weber: Verstehen (Empathy, sympathetic understanding); intuitive interpretation; multiculturalism and interpretation; gender and interpretation

verstehen

(n.) "*meaningful understanding*"; the concept of putting yourself in the shoes of others in order to see things from their perspective and understand them better

Process of observing, selecting and naming phenomena is a normative act: reflects social and ethical norms

Empiricism / positivism: do they guarantee objectivity?

Why do we need to be scientific? Do we need to be scientific?

What is meant by science?

Why do we need to be concerned about methodological issues?

What are the implications for thinking about development?

Is science and technology what scientists and technologists do?

Do only scientists and technologists do science and technology?

Tracing Science-Technology-Development linkages historically

- Geographical differences: does it matter? Historical evolution and lag?
  - Can it be explained in cultural terms?

- Ideas of development and the future: role for science and technology
  - Universal visions?

- Import/Transfer, Copy/Imitate, Adapt/Innovate, Invent/Re-invent
  - Importance of context for shared and dis-similar goals and visions

Technological trajectories: how to explain?

Nathan Rosenberg: Inside the Black Box

- Evolution, Economy, Endogeneity in technological growth
- Technological, and Economic/Social/Political Feasibility
- Short and Long term consequences; immediate and larger implications – revolutionize knowledge, production, thinking, social and economic structures and processes
- Technological change across sectors: institutions, skills, strategies are different
- Path dependence of technological change: history of the economy, but also of cultures of innovation and sicovery