Philosophy and ethics in science

ENV 550a Fall 2020

N.R. Sommer

Philosophy vs. ethics

- Philosophy is the study of the "fundamental nature of knowledge, reality, and existence"

- Ethics is the application of philosophy – it parameterizes right and wrong behavior

- Before you can categorize a behavior as right or wrong, you have to define your framework

Philosophy

- Philosophy moves discourse from assertion to argument:
  - An assertion declares something without any support or need for justification.
  - An argument is a connected series of claims leading to a conclusion, and when we proceed to examine every step in the series, we find that each individual claim may be true or false, or the links between them may be invalid.
- In philosophy all assumptions are up for reexamination.
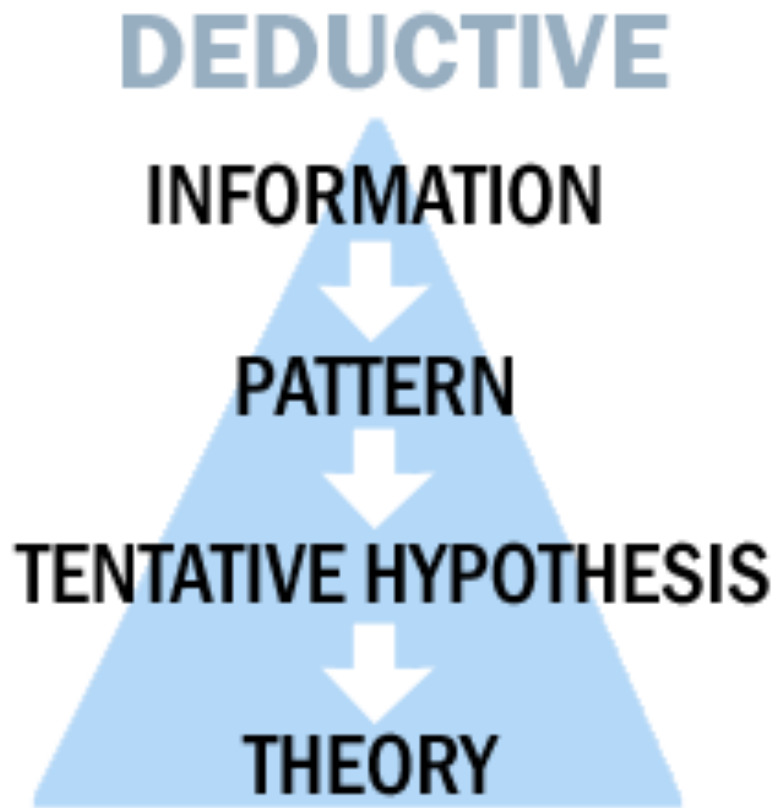
Ethics

- Ethical theory gives an analytical framework to help make distinctions, following context-dependent pathways for behavior.
  - It won't by itself, provide answers.
- Ethics does not conclude in the impractical.
  - Individuals cannot be held to doing the impossible.
- You are ultimately responsible for your own moral decisions, and there is rarely someone else better suited to make those decisions.
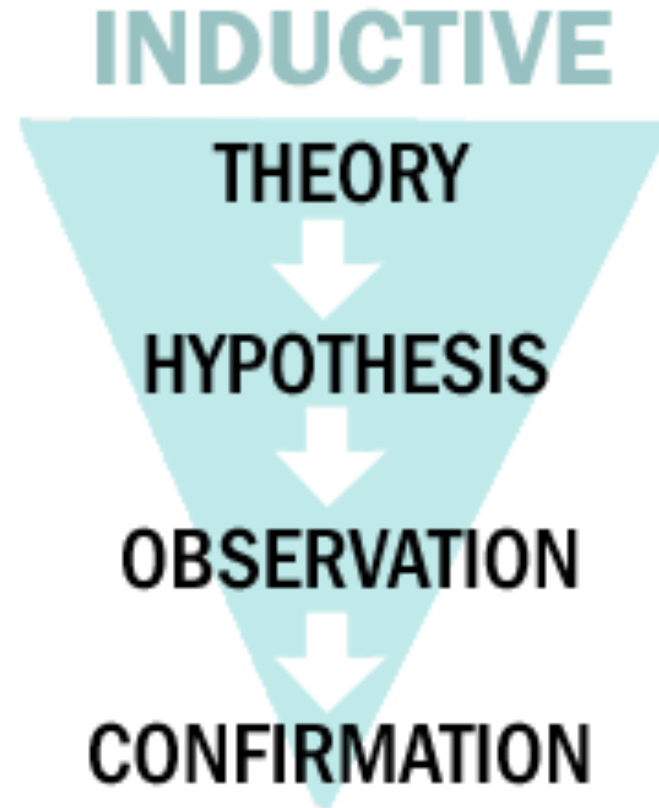
Philosophy of science

- Philosophy <u>of</u> science deals with:
    - What is science?
    - How does it work?
    - How does it build logic through the scientific process?

- Philosophy and science share the tools of logic, conceptual analysis, and rigorous argumentation

- Broad areas you might be familiar with:
    - Falsification
    - Parsimony
   - Induction
    - Deduction

Qualitative — DEDUCTIVE: INFORMATION → PATTERN → TENTATIVE HYPOTHESIS → THEORY

Quantitative — INDUCTIVE: THEORY → HYPOTHESIS → OBSERVATION → CONFIRMATION

Ethics in science

- Process
  - IACUC – Minimizing pain for vertebrates
  - Human Subjects – Respect, beneficence, non-maleficence, justice
- Application
  - Declaring conflicts of interest
- Informal norms
  - Don't fabricate or falsify data
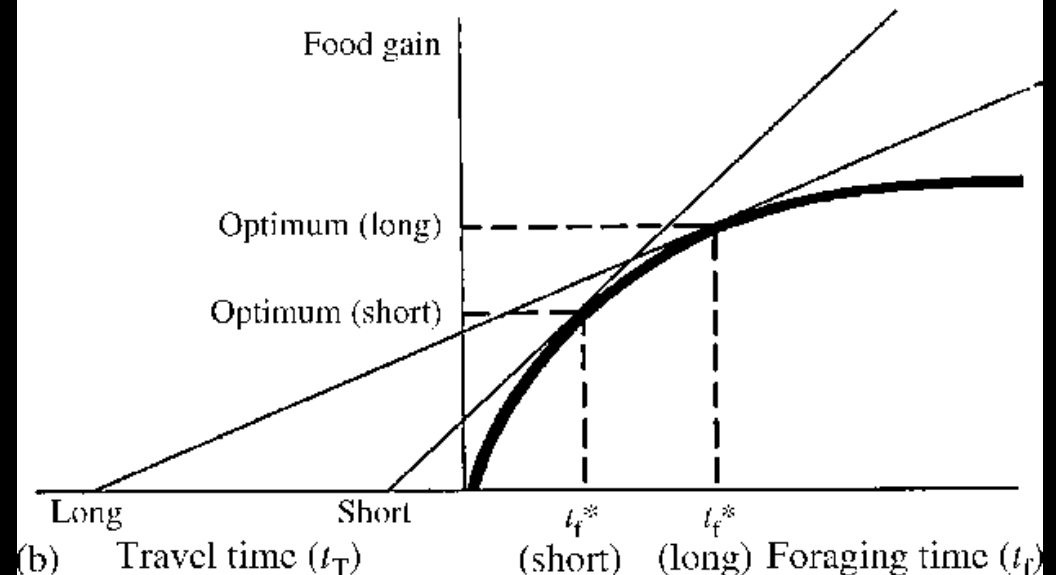 - Attribute appropriate credit
  - 'Duty' in service of society
  - Objectivity
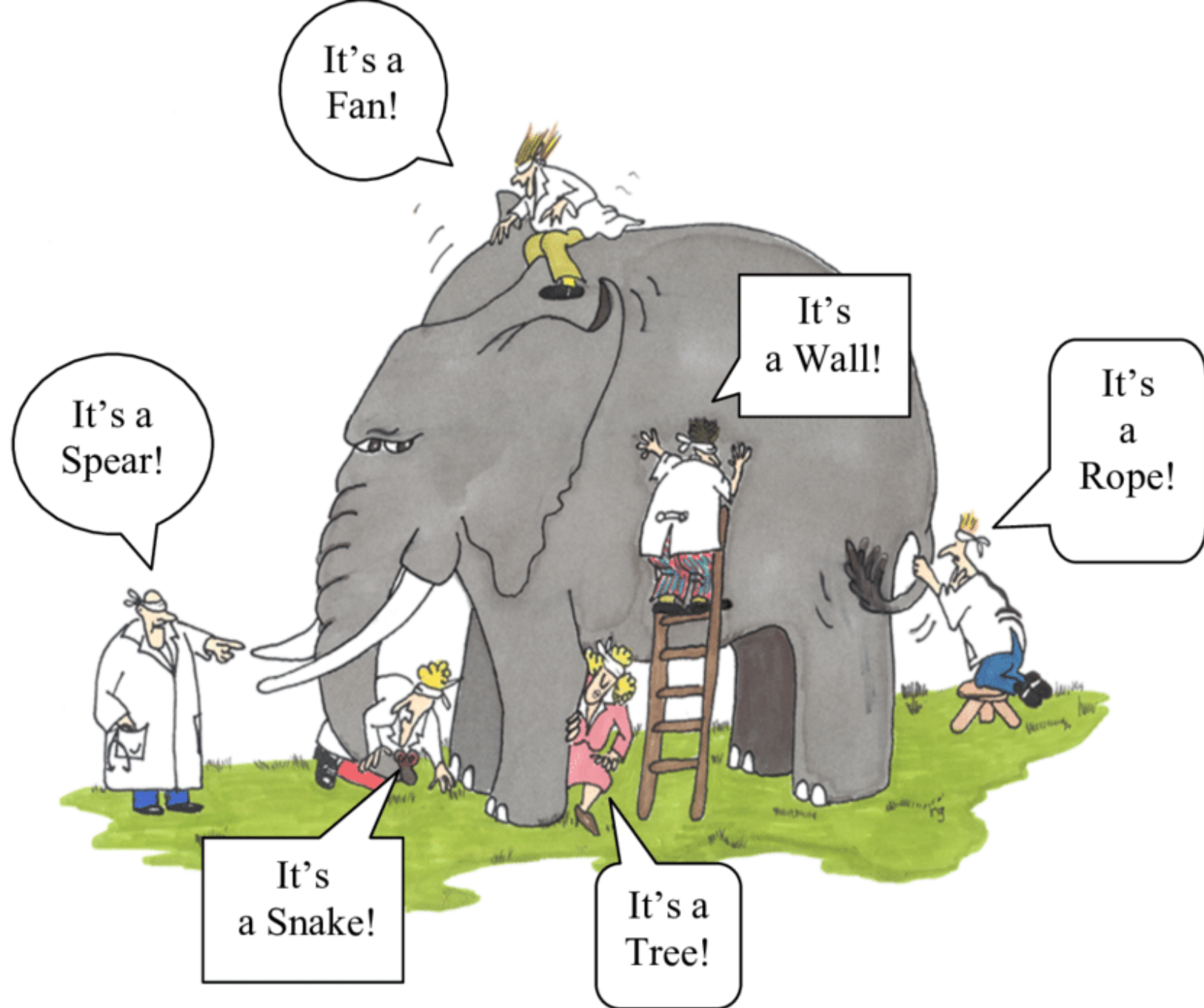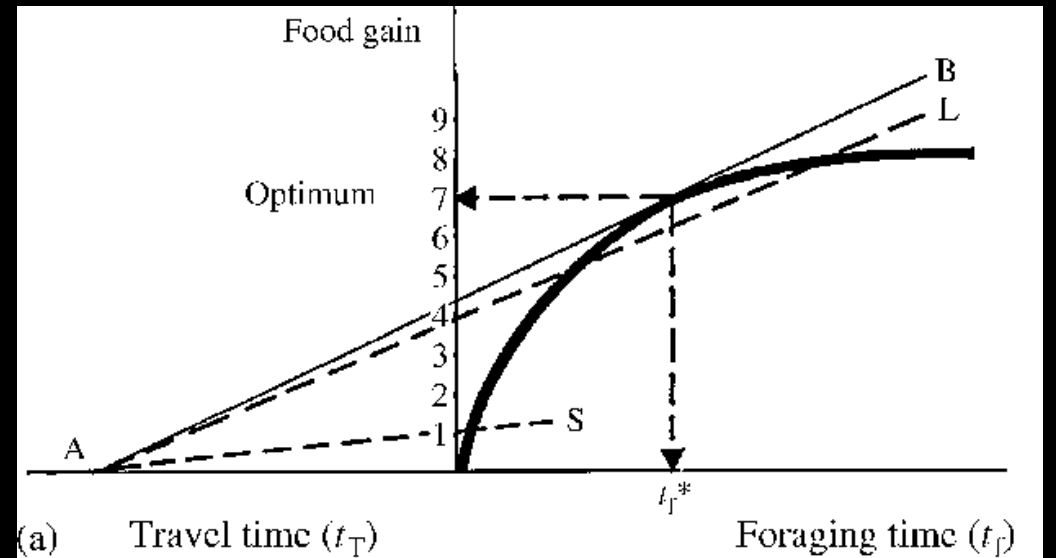
Science is not objective

- Disciplines over time → eugenics
- Experimental design → assumptions of optimal foraging theory
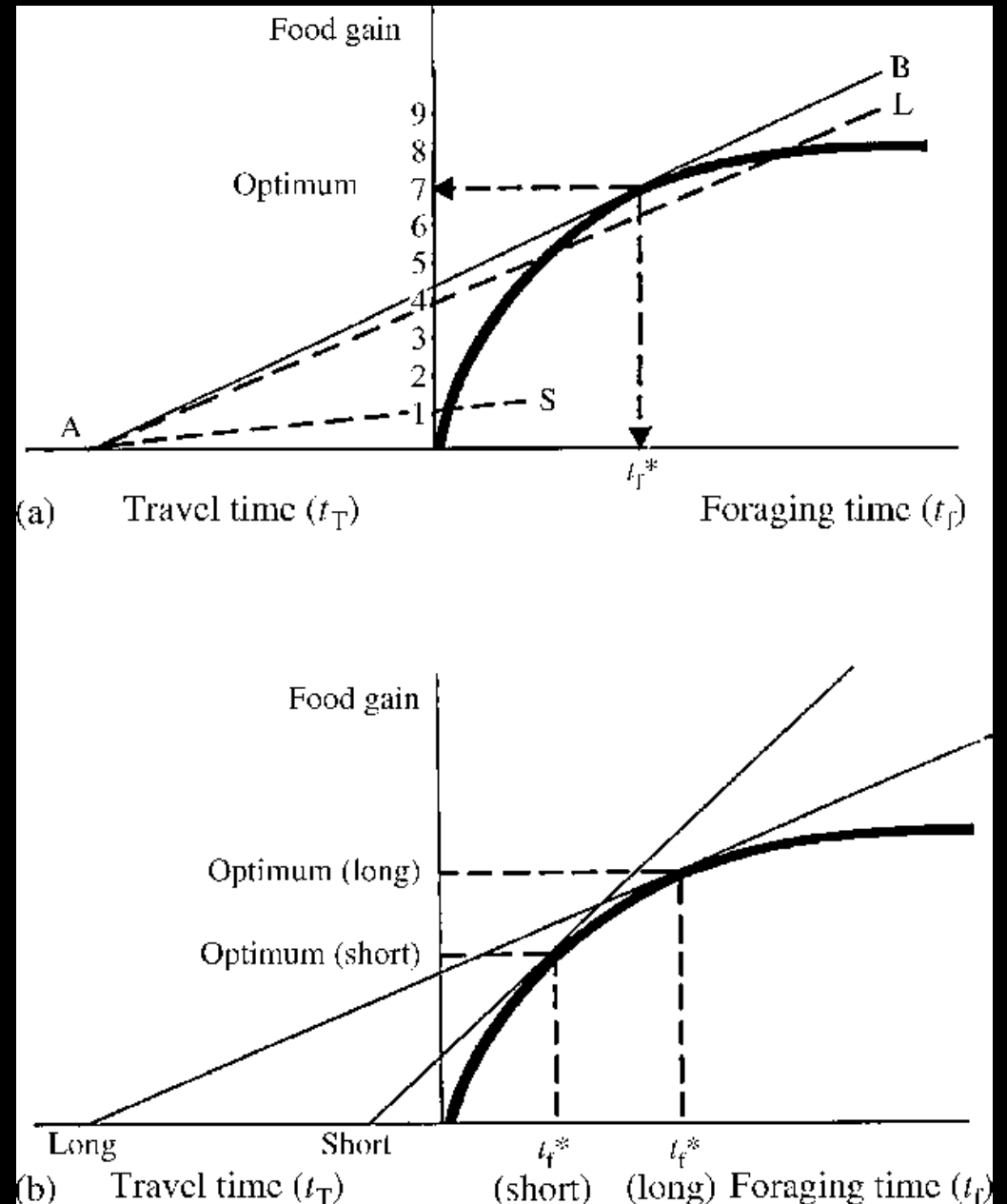
Optimal foraging theory

- Borrowed from economic models of marginal value

- Foraging theory says that behaviors have been shaped by selection to maximize fitness

- BUT, we usually find that animals aren't as efficient as the theory predicts.

Optimal foraging theory

- Some possible explanations:
  - Animals are not as good at tracking their environment as we thought
  - Animals are maximizing something other than energy gain
  - Animals do not forage optimally

- If you ascribe to optimal foraging theory, which hypothesis are you going to test next?

Science is not objective

- Subdisciplines over time → eugenics
- Experimental design → assumptions of optimal foraging theory
- Data analysis → outliers and "significance"

- Articulate your worldview
- Challenge assumptions in your science
- Challenge assumptions in your ethical frameworks

Soapbox #1: Climate change is our modern ethical reckoning

- Ethics are created and changed when:
  - An ethical lapse leads to reactionary guidelines
  - Science advances, leading to new fields
  - There is a shift in cultural, behavioral norms
  - There is a historical event that lead to a reckoning

- We don't have a framework to guide human-nature relationships

Soapbox #2: Scientists have an obligation to engage with philosophers

- Philosophers often don't see the relevance of science

- Applied philosophers often don't have the requisite background to create <u>useful</u> ethical frameworks

- Most scientists have never engaged with philosophy or ethics, and see ethics as a frustrating barrier to accomplishing science

Journal of
APPLIED PHILOSOPHY

Special Issue

Painlessly Killing Predators

Ben Bramble ✉

First published: 15 September 2020 | https://doi.org/10.1111/japp.12461

Some recommended reading

- Laplane et al (2019). Why science needs philosophy. *PNAS.*

- Resnik (1998). *The Ethics of Science: An Introduction.*

- Fraser (2019). Why We Need a New Ethic for Animals.

- Gelman & Hennig (2017). Beyond subjective and objective in statistics. *J.R. Statist. Soc. A.*