This course will mainly consider parsimony arguments in science, though there will be some attention to parsimony arguments in philosophy. We will look at scientific case studies and also at how parsimony arguments get represented within different broad theories of scientific reasoning. The case studies will include C. Lloyd Morgan’s canon (roughly, the idea that you should explain an organism’s behavior by attributing to it only the most rudimentary mental abilities that are needed to explain the observations), the use of parsimony in evolutionary theory to infer phylogenetic relationships, and Copernican versus Ptolemaic astronomy. We will consider Bayesian and Popperian ideas about parsimony, and also the role of parsimony in frequentist statistics (especially in model selection theory). We will discuss Ockham’s razor, Newton’s ideas on parsimony in the Rules of Reasoning in Philosophy that he states in *Principia*, and Aristotle’s principle that “nature does nothing in vain.” The philosophical uses of parsimony that we’ll consider will include arguments against ethical realism in metaethics.

**Requirements:** You should attend all meetings of the seminar and participate in discussion. Three papers are required: a short (5 page double-spaced) paper by the 6th seminar meeting, another such by the 10th, and a term paper (15-20 pages) by the end of the semester. Each short paper should be on one or two points you want to criticize in one of the readings; you must hand in your paper on reading x before the session of the seminar occurs at which x is discussed. You should discuss your plans for your term paper with me before week 12.

**Weeks 1-2. Introduction**


**Week 3. Parsimony in Early Modern Philosophy (organized and led by Eric Stencil)**


**Week 4. Some History of “Ockham’s Razor” and a little bit on parsimony in the Scientific Revolution**


Isaac Newton, Treatise on Revelation (unpublished), section 1.1, “Rules for interpreting the words and language in Scripture,” Rule 9: [http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00135](http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00135)


**Week 5. Some Probability Tools (Bayesianism and Likelihoodism)**


**Week 6. Parsimony, Likelihood, and Common Cause versus Separate Cause Explanations**

On Reichenbach’s proof that there is a model that postulates a common cause for two or more effects that entails that the effects are positively correlated: Elliott Sober, Reconstructing the Past, MIT Press, 1988, pp. 78-81. Also see the handout “What Reichenbach Proved about Common Causes” on my web site.

Adapting Reichenbach’s idea to a likelihood comparison of common cause and separate cause explanations (both pertaining to token events): E. Sober, E&E, pp. 275-283, 293-4.


**Week 7. Parsimony, Likelihood, and Inferring the State of an Assumed Common (Token) Cause**


**Week 8-9. Parsimony in Comparative Psychology – Morgan’s Canon and the Principle of Conservatism (*= assigned reading).*


**Weeks 9-10. Parsimony and Model Selection**

E. Sober, *Evidence and Evolution*, ch 1.7-1.8, ch 3.7.


**Week 10-11. Bayesian Unification and Spearman’s Principle**


**Week 11-12. Parsimony, Likelihood, and Inferring Phylogenetic Trees**

David Baum and Stacey Smith, *Tree-Thinking: An Introduction to Phylogenetic Biology*, unpublished manuscript available at Social Science Copy Center under Botany 563, selections from chapters 4 and 7.

Sober, E&E, section 4.8.


**Week 13. Parsimony in Modern Philosophical Arguments**


**Week 14. Ockham’s Razor as a Pragmatic Principle**


**Week 15. Aristotle on “Nature does Nothing in Vain” (organized and led by Paula Gottlieb)**


**Week 16. Wrap Up**