

**Phil 5330 Fall 2017**  
**First Assignment**

**Part I:** Look at the “Tree-Thinking Challenge Quiz 1” on the course website (under extra readings for week 1). Attempt to do all of the problems on your own. Then look at the answers and make sure you got them all correct and you know that you could do similar problems without guessing. If you can’t do that, talk to other people in the class or come and talk to me about this.

**Part II:** Now find the document containing exercises from *Tree Thinking: An Introduction to Phylogenetic Biology*. Do the following problems:

Chapter 3: 1, 2, 4, 5

Chapter 4: 2, 3, 8, 9

Chapter 5: 1, 2, 3, 4

**Part III:** In chapter 2, Hempel seems to suggest that you can know that a hypothesis is false (by Modus Tollens) but that you could never know that a hypothesis is true – you could only get confirming evidence for it. But then later in chapter 3, he introduces the idea that auxiliary assumptions are needed in order to get the hypothesis to actually entail any observations. Does this mean that not only can you never prove a hypothesis true, but that you can never falsify a hypothesis either? In other words, did Semmelweis actually rule out the hypothesis that childbed fever was caused by miasmas in the air? Could you rule out the priest hypothesis?

Write a short answer to this question (a few paragraphs - no more than one page) which shows that you understand what the worry might be and that you also at least attempt to address it or say what you would need to address it.

**Part IV:** How well does Hempel’s “Hypothetico-Deductive Method” correspond to Parsimony inferences for determined evolutionary history? (For example, whether a particular phylogenetic tree is the correct history). Describe some basic similarities (if there are any) and differences (if there are any). A few paragraphs – perhaps with one key example. No more than one page is expected.

**Due Date:** You must submit your homework to me by email before class on Monday, September 11th. Any easily readable format such as .pdf or .docx is okay.

**Collaboration:** Collaboration on this assignment is encouraged. Students are free to discuss the topics with one another, read each other’s papers, and offer suggestions. The only restriction is that each student must do their own work and write their own paper containing their own ideas and words.