HPS/Pl 129
First Paper Assignment

Instructions: Write a paper of approximately 1,800 words (6 double-spaced typed pages). The general guidelines are as follows. First, your paper must critically engage one or more of the topics we have discussed in the first five weeks of class. Second, your paper should not *merely* summarize the position(s) of some of the authors you discuss; it should in some way locate them relative to each other, synthesize those ideas, criticize them, defend them against important objections, or develop them in your own way. Third, the topic of your paper should be of an appropriate scope given the length constraints. Some students will have strong backgrounds in some area of science that they may wish to bring to bear in their papers. This is fully encouraged, so long as: (i) all of the technical ideas are explained as clearly as possible within the constraints of the length limits of the paper; and (ii) your paper grapples directly with the philosophical issues raised in this course, and is not merely an exposition of the relevant science.

Due Date: You must submit your paper to me by email before the start of class on Thursday, November 3rd.

Grading: This paper is worth 30% of your final grade, and will receive a numerical grade out of 30.

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. Any suggestions or ideas contributed by another student must be acknowledged just as you would acknowledge an idea taken from any other source. The only restriction is that each student must write their own paper containing their own ideas and words.

References: All sources used in the writing of your paper must be properly referenced. This applies to material in the course readings, other published material, lecture notes from this class and other classes, material 'published' on the internet, and ideas contributed verbally by other students. Information about proper procedures and formats for references is included in my handout "How not to get BOC'ed," which is posted on the course website. Further information is also available at http://www.its.caltech.edu/~words/plagiarism/index.html. Failure to follow these guidelines may result in a lowered grade or even an automatic F in the course; it may also lead to charges being brought before the Board of Control. If you have any questions about these issues, please do not hesitate to contact me.

Advice on Writing a Philosophy Paper: The course website contains several handouts on writing a philosophy paper, as well as links to websites on the topic.

Reading Drafts: I am happy to read drafts of papers, on a time-permitting, first-come, first-served basis. If you get a draft to me by Monday the 1st, it is likely that I can get it back to you by Tuesday evening. Please indicate whether you would like to receive detailed comments, or only a general sense of whether you are on the right track. Please request the former only if you actually plan to make substantial revisions to your paper based on the feedback.

Topics: The topics offered below are given as suggestions: you may address one of them as is, you may modify one of these topics, or you may create your own topic. Whatever topic you may choose, your essay should have a title that clearly and accurately reflects what the essay is about. If you would like further readings that may be helpful in addressing some of these topics; I recommend starting with the Stanford Encyclopedia of

Philosophy. Asking me for advice for what to look at is also a very good idea.

1. Sober suggests that mathematical models with idealizing assumptions (like Fisher's sex ratio model) are relevantly like biological laws and function in biological explanations even though they seem like mathematical truths and also have assumptions which are false in the particular cases they are supposed to help explain. Is there a problem with this view?

2. Sober claims that Intelligent Design is untestable. Does this mean that views such as Michael Behe's claim that the bacterial flagellum is irreducibly complex are untestable? Ken Miller argues that we know it is false that the flagellum is irreducibly complex, so if that is right, it seems like it couldn't be untestable. What about other ID claims like that the flagellum has been designed by an intelligent designer? Is that testable?

3. In "The Two Faces of Fitness" Sober seems to argue that the propensity account of fitness can handle facts such as that the population size seems to affect the fitness of traits. Is the population size relevantly like other properties of the environment (say the average temperature) which obviously do affect fitness but in an apparently non-problematic way? Or is there a special problem with variance of probability distributions (or other moments of the distribution) or population size?

4. Ariew and Lewontin claim that since in different environments we use different schemes for calculating fitness, there is no single scalar number which represents the fitness of a trait. Is this a good argument?

5. Ariew and Lewontin give the example of extreme heterozygote superiority. In one case, we can imagine that homozygotes are non-viable. In another case, they are sterile. How should our theory of fitness account for such cases?

6. In cases of heterozygote superiority (like sickle cell anemia) Sterelny and Kitcher claim that we can think of the different alleles involved as directly having their own fitnesses which is a weighted average of the fitness they have when paired A and the fitness they have when paired with another little a. Sober (and Sober and Lewontin) claim that this kind of averaging is illegitimate because the alleles don't actually have the same effects so we can't say that selection favors that allele. Who is right?

7. Assuming that there are computationally equivalent ways of predicting future genetic frequencies from present ones that different in what they assign fitness to (for example, genic selectionism vs. multi-level selection theory), could there be a reason to think that one is really the "right story" in a particular case? Does this mean that there is no fact of the matter about the units or levels of selection in a particular case?

8. What is the relationship between a methodological adaptationism and an empirical version? Is the methodological version only a good method if some form of the empirical version is correct?

9. Is it possible to test adaptationism? For example, is there a relevant single general claim which is tested by repeatedly looking at specific instances?