Philosophy 5311: Bayesian Epistemology
Homework 3
Due before class Wed, Oct 22nd

Do the following problems from *Foundations of Bayesian Epistemology*

5.1, 5.2, 5.3, 5.5, 5.6

In addition, choose two of the following four problems to answer.

1) The Laws of Large Numbers are mathematical theorems that relate the probability of a single event on a single trial to the probability of getting different relative frequencies of given outcomes of repeated trials of the same type of event. But on some interpretations of probability such as von Mises's version of Frequentism, the probability of an outcome on a single trial doesn't even make sense. On other kinds of Frequentist views (and on some propensity views), the single trial probability is just defined to be something about this long-run frequency. Can any sense be made of the probability of the single case apart from its long-run behavior? Could these come apart? If so, is this an argument against these interpretations?

2) Describe the Principle of Indifference and describe a particular case which is meant to be a problem for it (for example, the cube factory from van Fraassen or the driving problem from Titelbaum). Is this a decisive objection to the principle? Is there some kind of restriction that you can place such that a restricted version of the principle would hold?

3) (after 5.3 in Titelbaum) – Can you think of any real-world situation in which it would be rationally permissible to violate the Reflection Principle? Explain the situation you are thinking of, why it violates reflection, and why this is rationally permissible. Alternatively, you could give an argument why such a situation is impossible.

4) Bruno de Finetti believed that the proper axioms for probability theory included only finite additivity and not countable additivity. Explain the difference between the two and carefully describe the 'infinite lottery' example which he took to be an argument to choose between the two. Is this a good argument?