

MONT 106N – Identifying Patterns
Paper 1 – October 14, 2009

General Information

Your next formal writing assignment for the course will be an essay responding to one of the groups of questions below, or if you prefer, to a question or questions of your choosing. If you decide to design a topic of your own, I ask that you discuss it with me no later than Wednesday, October 21 *at the latest*, to make sure it is acceptable. Your paper should be prepared using MS Word or equivalent software, about 5 double-spaced pages in length. You will be submitting it by email as for some previous assignments. The due date is *Monday, October 26*.

Description

This is not a “research paper” – you need not consult sources other than *Everyday Practice of Science* or possibly our main *Statistics* text. Instead, you should think of your paper as a detailed defense of a particular conclusion or response to all or some of the questions in one of the topics below, written in a reasonably formal style. By this I mean that the questions you are addressing and your response(s) to them should be clearly stated in the first paragraph. Then the body of the paper should be a presentation of the reasoning and the evidence that lead you to your conclusion. Your job is to convince your reader of the soundness of your conclusion, starting “from the beginning.” That is, you should not assume the reader has been present for any of the discussions that we have had in class, or that you might have had with other Natural World cluster students. You might try explaining a possible opposing point of view, then giving your reasons for rejecting it as part of your argument.

I will expect to see specific details from Grinnell or possibly our main text cited as *evidence* to support your assertions, and in many cases short quotations from the text will be a most effective way to provide evidence. Please identify any such quotations by the page(s) on which they appear. Use the following style:

Grinnell describes the process of scientific discovery as one full of uncertainty. For instance, he states that “at the frontiers of research, even the distinction between data and noise sometimes will be unclear” (*Everyday Practice of Science*, p. 26).

One word of caution – Grinnell himself uses a rather large number of quotations from other sources. If you are quoting one of those, look in the References section at the end to determine the source, and say what that source is and where Grinnell quotes it.

If you want to design a topic of your own, the same general ground rules apply.

A Suggestion

I will be happy to discuss (or read a first draft of) your paper and give you some preliminary comments by email. Or, you can come by my office hours if you want to “run your paper by me.” Alternatively, I think you may find it very helpful to have a first draft

of your paper read by another student in the class. I can set up “reading pairs” working on different topics if you are interested.

Evaluation

I will provide written comments on your work, and assign two grades for each paper – one for how well your conclusions are presented and supported (in other words, for how convincing your arguments are), the other for how well your writing follows the standards for formal written English. (For instance, how well is the paper subdivided into paragraphs each addressing a particular item in your argument? Are the paragraphs arranged in a logical, recognizable sequence? Are the sentences within each paragraph ordered well? Are they grammatically correct? Are there awkward sentences? Are there overly flowery, overly colloquial, or incorrectly-used words or phrases? Is punctuation used correctly? Are there spelling and/or typographical errors?)

Everyone will have the opportunity to submit a revised version of the paper after receiving my comments. If you choose to resubmit, I'll evaluate the new version in the same way and count only the better of the two sets of marks. The due date for resubmissions will be announced when the papers are returned.

Topic 1 – Practice of Science (and Mathematics)

Grinnell makes a pretty convincing case that the things scientists do as they pursue their research are much more interesting and exciting than the dry descriptions of the final results that make it into research articles and textbooks. If you think back to your high school geometry class, was there a related difference between the process of finding a proof, and the process of writing it down? Are there good reasons why there *should be* such difference? Is there a distinction to be made between what research articles should look like and what textbooks should ideally look like? How do mathematical techniques like statistics fit into the picture? Do you think they are more important on the “discovery” side of things (the left side of the diagram on page 5), or on the “credibility” side of things (the right side of that diagram)?

Topic 2 – Faith in science and religion

Chapter 6 in Grinnell’s book is called “Faith.” What does faith have to do with the everyday practice of science? Conversely, what does science have to do with religion? Grinnell says that he sees science and religion in a relation that he calls *complementarity*. What precisely does he mean by this? Give an example of what complementarity of viewpoints might mean by discussing some question Grinnell discusses or that we have considered. Does Grinnell’s view seem to you to be a reasonable way to reconcile these different aspects of human thought?