

Study Questions for Part 1 of Grinnell, “Everyday Practice of Science”

1. Part 1 of Grinnell’s book is devoted to a discussion of how the ways science is presented in textbooks and in published scholarly work are different from the way science is actually done by practicing scientists. What are some of the key differences, according to Grinnell?
2. Refer to the diagram on page 5. What might each of the *arrows* in that diagram represent? How might the interactions shown there account for the differences you pointed out in your answer to 1? How does this relate to Grinnell’s “characters” Professor Particular and Professor Anybody?
3. In the standard view, scientists should be objective, and should not let their personal beliefs or preconceptions affect their research.
 - a. What does Grinnell think about that view?
 - b. What is the *post-modernist* view of science that Grinnell discusses on page 13? What does it mean to say that beliefs are “culture-dependent” and “normative?” Does Grinnell agree with this point of view?
 - c. What is *intersubjectivity*, according to Grinnell? How does this relate to the diagram on page 5?
 - d. How does all of this relate to the three types of umpires (see page 13)?
4. What science courses did you take in high school? To what extent do you think courses like the ones you took generate interest about science in the students who take them? What would Grinnell suggest to improve the teaching of science? Do you agree? Is something like this more feasible now than it was in the past? If so, why? What are the obstacles to implementing changes in science teaching?
5. According to Grinnell, what does the story of Christopher Columbus’s “discovery” of the Americas show about the process of discovery in general (and discovery in science in particular)?
6. Did you find the “out-of-place” element in Figure 2.2 on page 29 yourself? How long did you spend looking for it? What do you think about this example?
7. What does Grinnell say about “thought styles” and the way they change over time in a person? What is the challenge here for a scientist who wants to discover new things?
8. What mechanisms has the scientific community evolved to ensure the *credibility* of research results? What do the *arrows* in Figure 3.2 on page 79 represent? What are the possible opportunities for abuse of this “credibility system?”
9. Where do you think mathematical techniques of data analysis and statistics fit into the whole picture that Grinnell is describing? Do people discover patterns by doing statistics? Or is it that they demonstrate that patterns are there to others by doing statistics?