

## Homework Assignment #7, Evaluating Figures and Captions

---

Effective figures and captions are critical to communicate scientific work in meaningful, memorable, concise ways. Unfortunately, many figures and captions published in scientific articles are less than ideal. The purpose of this assignment is to give you practice in critically evaluating figures and captions so that you will be better able to design your own.

To prepare for this assignment, first read [Chapter 9, “Graphics and Their Place,”](#) in Scott Montgomery’s *Chicago Guide to Communicating Science* (Chicago, University of Chicago Press, 2003). A copy of the book is also on reserve at the Grainger Engineering Library. Montgomery provides a list of seven criteria on which to evaluate figures. First, find the criteria and write them down to guide you in doing the rest of the assignment.

Next, look at the figures in recent articles published in *Physical Review Letters*. Go to <http://prl.aps.org/> and click on the “Recent Papers” tab; then click on the title of a paper that looks interesting to see the abstract. From the abstract page, click on the “Download PDF” link to see the full paper.)

If you are working on this assignment from a computer not on the .illinois.edu network (e.g., from your apartment or a coffee shop), you’ll get a demand to pay a fee to download the paper. To obtain the paper free of charge, log on to the PRL website through the UI Library gateway. Click on the <Physics Library> link in the footer of any Physics Illinois webpage to access the site. If you’re outside the University domain, you’ll be asked to log on using your netid and AD password when you click on the link.

This homework assignment consists of several steps. Do them all to obtain full credit:

1. Read the Montgomery chapter. On the first page of your homework submission, write down the seven criteria he describes.
2. Select one “bad” figure and one “good” figure from the PRL articles that you looked at. Copy and paste the images and captions from the journal article into separate pages in your homework document, and be sure to label which figure is the good figure and which is the bad. Provide full bibliographic citations (authors, title, journal, volume, manuscript number, and year) for each figure.
3. Write a brief analysis (two to three paragraphs) of each figure and caption, using the criteria in the Montgomery book and the lectures presented in class, and justify your evaluations by giving specific examples. Don’t forget to specifically address the seven Montgomery criteria.

We’ve provided a [famous example](#) from Edward R. Tufte’s classic, *Visual Explanations: Images and Quantities, Evidence and Narrative* (Cheshire, CT, Graphics Press, 1997) to show how figures can be improved to communicate the maximum information clearly and compellingly. (You don’t have to analyze the Tufte figure—just see how he improved the information transfer from the original National Center for Supercomputing Applications’ figure.)

Due: **Friday, October 26, 9:00 p.m.** Email your figures in one file to [phys496@physics.illinois.edu](mailto:phys496@physics.illinois.edu). Assignments submitted after the deadline will have points deducted and will be ineligible for rewrite points.

Total—100 points (25 points each for the suitability of your two examples and 25 points each for your written analyses of the figures and captions).