

Improving Scholarly Communication: An Online Course by Morton Ann Gernsbacher, PhD

SUMMARY: I've long been fascinated by communication. For the 30-plus years that I've been an academic, I've been puzzled why so many smart people often write — and otherwise communicate about their research — so densely. I created this course to counteract that phenomenon. This course was designed to be conducted online (which works successfully), but it can also be conducted face-to-face (with ample outside-of-classroom time for practice). The curriculum comprises instruction and active learning assignments for improving communication in the written modality, spoken modality (talks and presentations), posters, and some of the newer forms of Internet-based scholarly communication (blogging and tweeting).

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Welcome to the Professional Development/Scholarly Communication Course. I'm looking forward to having a productive and rewarding course with you.

The Professional Development/Scholarly Communication Course will be a blend between seminar and lab course. We will have a high degree of discussion and interaction, such as one finds in a typical graduate seminar, but we will also engage in hands-on skill-based learning, such as one experiences in a lab course. Each week there will be two or so assignments, each usually due within two or three days. You are always welcome to work ahead on assignments.

All our reading will be off the web or via PDF; there will be no textbooks. There will be no quizzes or exams. There will be no midterm or final papers; however, we will be working on improving the writing in the manuscripts you are working on apart from this course.

We will spend the first six weeks on scholarly writing, because that's such a prominent component of academic communication. We will then spend five weeks on presentations, spending three of those weeks on oral presentations (aka: talks, aka: slide talks) and two of those weeks on posters. Lastly, we'll spend a couple of weeks touching on scholarly blogging and even tweeting.

The best way to hone one's skills in communication or other domains is through frequent short practice. One of the primary reasons I enjoy teaching online is because it enables distributed rather than massed learning (and you undoubtedly remember from Intro Psych the value of frequent, short learning sessions over once-a-week cramming). Therefore, I encourage you to log in almost daily (think of it like reading your favorite blog, catching up with the daily news, checking in on Facebook, or staying up with email). Your constant checking in will also build community among our class, which I'm looking forward to.

Each assignment will comprise (a) reading the information I post, some of which requires further reading of PDFs or posted URLs; (b) doing the actual assignment; (c) posting the results of your assignment on the discussion board; (d) reading *everyone else's* posts; and (e) reading my responses to yours and everyone else's posts.

Activities (a), (b), and (c) are the expected ones. But activities (d) and (e) are also crucial; they are enabled uniquely by our online platform. Think about it: In traditional courses, professors give individual feedback to each student, but the only feedback you, as a student see is that which you directly receive. In contrast, with the online platform, you can take advantage of feedback the professor gives to other students. So take advantage of this unique feature of online learning; you will gain from it. Read, process, and incorporate the advice I give other students as closely as you read, process, and incorporate the advice I give to you directly.

I'm eager to get to know you and to work with you to improve your scholarly communication. If you ever want to contact me one-on-one, feel free to do so through email. Otherwise, I'll see you in our virtual classroom.

Morton

UNIT 1: IMPROVING WRITTEN COMMUNICATION

Assignment #1: Getting Started

In this first assignment, **outline three strengths that you're proud of in your own scholarly communication and three weaknesses that you'd like to improve.** Don't worry about writing fancy sentences; just list the good and the bad (or even the ugly). Hold on to this list because we will return to it after completing all the assignments.

Assignment #2: Identifying Examples of Good Non-Academic Writing

As I mentioned in my introduction, I've hypothesized that one reason why academic/scholarly communication isn't as effective as it could be is that we academics are surrounded by poor examples. So, let's start outside academic writing and find some wonderful examples of written communication.

Identify one piece of non-academic writing that you think is beautifully written. The piece can be of any length, but its exquisiteness should be apparent in the first paragraph. The content can be on any topic. The goal is simply to identify a piece of non-academic writing that you enjoyed reading merely because it was so well written. (Another criterion is that the piece be accessible to other class members, either through a URL, a PDF or other upload, or if a book be sure it's one that other class members can read online, e.g., through Google books or even Amazon.com's "Look Inside" feature.)

[NB: See Appendix A for example student responses and instructor comments.]

Assignment #3: Writing – Emulating Features of Good Non-Academic Writing

For our next exercise, we will continue examining good non-academic models by identifying the features that make these models so delightful – and by evaluating academic writing that incorporates those specific features.

I've commented on each of your examples of good non-academic writing. In my comment, I've identified a feature of the example you've provided and tasked you with an assignment concerning that feature. **Do the task I assigned for you** (and post the results); **read all of the assignments** I assigned for everyone else; **and accomplish the task I assigned for one other person** (posting the results in that person's thread).

[NB: The tasks involve one of the following: (a) writing in the present tense as much as possible (e.g., when reviewing prior research and theoretical claims, when describing your study's results, when discussing the implications of your research); (b) writing in first person as much as possible; (c) writing shorter rather than longer sentences (aim for no more than 14 words per sentence); (d) writing shorter rather than longer paragraphs (aim for no fewer than 3 or 4 paragraphs per manuscript page); (e) using strong working verbs (e.g., reflects, indicates, suggests), rather than weak linking verbs (e.g., is suggestive of, is indicative of, is reflective of, is suggestive of). Examples are provided in the Appendix A.]

Assignment #4: Writing – Establishing Good Writing Habits

By examining compelling non-academic models, we've learned six ways to improve our academic writing:

- (a) write in the present tense as much as possible (e.g., when reviewing prior research and theoretical claims, when describing your study's results, when discussing the implications of your research);
- (b) write in first person as much as possible;
- (c) write shorter rather than longer sentences (aim for no more than 14 words per sentence);

- (d) write shorter rather than longer paragraphs (aim for no fewer than 3 or 4 paragraphs per manuscript page);
- (e) use strong working verbs (e.g., reflects, indicates, suggests), rather than weak linking verbs (e.g., is suggestive of, is indicative of, is reflective of);
- (f) identify, read, and re-read good models of non-academic writing;

Good writing is a habit; therefore, these newly learned ways to improve our academic writing need to become habitual. Each of you knows the best way you build habits. Maybe you post a sticky on your computer monitor reminding you to practice the new skills whenever possible. Maybe you carve out 25 minutes every day to practice the new skills (e.g., by spending 15 minutes every day revising material each of the five ways we practiced during this assignment and spending another 10 minutes every day reading and re-reading good models). Maybe you tell a friend or coworker that you are working to improve your writing and these are the six things you are doing; could they please remind you/reward you/applaud you when they see you doing them?

Identify and describe explicitly the technique you will use to make these six skills habitual.

One other action you should take right now is to make a folder or file on your own computer saving the justifications for each of the new skills we learned during this assignment (e.g., the quotes from APA manual that endorse writing in first person; the explicit instructions from literary studies regarding reviewing literature in the present tense). Having a file or folder to which you can quickly turn to educate your colleagues and even mentors -- fodder in the face of naysayers -- will be valuable.

Assignment #5: Identifying Examples of Good Academic Writing

We've examined good models of writing from the non-academic world. Now we'll examine good models from the academic world. Early in my career I was fortunate to read a lot of work written by Herb Clark (at Stanford) because Herb and I published in roughly overlapping areas. Everything Herb writes is an example of clarity; it's hard to limit myself to just a few. But here are four of his articles: "[Understanding by Addressees and Overhearers](#)," "[Repeating Words in Spontaneous Speech](#)," "[Referring as a Collaborative Process](#)," and "[Polite Responses to Polite Requests](#)." **Skim each of the four Herb Clark articles, and read closely a few pages of one of them.**

Maryanne Garry is also a great writer. **Read [this](#) article** of hers. It's basically a follow-up study of one of her previous studies. One might think that writing a follow-up study would make it bone dry and boring. Not so. In particular, note the fantastic opening paragraph; it's one of my two favorite openings in the psychological science literature.

My second favorite opening paragraph is from a 1990 article by Jakimik and Glenberg, two former UW-Madison psychology faculty members. In their introduction, Jakimik and Glenberg do an incredible job of placing in everyday context a laboratory phenomenon that by all other accounts would come off sounding painfully esoteric. **Read the first three paragraphs of their introduction** (included in Appendix B).

The above examples hail from my native turf -- language and memory. Moving beyond those research areas to social psychology, Elliot Aronson writes like a wizard. If you've never read his classic treatise, [The Social Animal](#), put it on your summer, winter break, or spring break reading list. For those of you who don't know who Elliot Aronson is, he is listed among the 100 most imminent psychologists -- a list that includes Freud, Skinner, Piaget. One attribution reads: "Aronson applied theory to real-world problems and presented his work in language that was accessible to the public." It's hard to choose just one Aronson example, but because students often want to learn how to write review articles and review chapters, [here's an oldie but a goldie from Elliot](#): a review of dissonance theory. **Skim this review chapter.**

From each of these examples, **identify (with quotes and page numbers) and comment on three features that most if not all of the authors employ that you think makes their academic writing more readable (and enjoyable).** Try to stay away from the four features we identified in good non-academic writing (viz., short

sentences, short paragraphs, present tense, first-person, and strong action rather than weak linking verbs). You'll see that most of these authors incorporate those general features as well, but let's probe for features that are related to writing academic articles (here's a hint for one feature: in-text citation style). I want to note that even these well honed authors nonetheless do things in their writing that could be improved (e.g., Garry creates abbreviations, which as we'll talk about later actually impedes readers, and a couple of the authors write the dreaded, "Research has shown" phrase). But those occasional flaws illustrate that good writing really is a developing skill.

Assignment #6: Writing – Implementing Good Features of Academic Writing

Now that you've identified features that you liked in the samples of good academic writing, practice implementing, in either your own writing or a manuscript/article from your lab or in your research area, one of the features you identified. As you did before, **create a before vs. after comparison illustrating your incorporation of the feature.**

Also, **start a folder or other way to save these good examples of academic writing.** Take a look at the papers (or even just your favorite paper of the group) every now and then to remind you how engaging and fun good writing can be.

Lastly, remember: Good writing begs to be read (and in most cases cited). The masterful writer Herb Clark has an [h-index of 75](#). There's a reason for that.

Assignment #7: Avoiding Bad Features of Academic Writing

Identifying examples of bad academic writing is like shooting fish in a barrel. As I mentioned at the course's start, I think one of the reasons most academics write poorly is that they are smothered by bad examples. Sometimes an entire paper is simply just a mess: obtusely long sentences, intractably long paragraphs, stilted passive voice, and generally unclear ideas. But sometimes otherwise decent papers are simply marred by unfortunate features.

Here's my list of pet peeves:

1) Undefined jargon. Every field has its own specialized terms, and it's fine for authors to use those terms. But they have to define them first. Otherwise, the writing becomes impenetrable to anyone but 20 experts in that field. Here's an example of a journal article abstract filled to the brim with jargon (and a grammatical, subject/verb disagreement, error thrown in for good measure).

*The purpose of this study was to investigate postural control in children with Autism Spectrum Disorders (ASD) during static and dynamic postural challenges. We evaluated **postural sway** during **quiet stance** and the **center of pressure (COP) shift mechanism** during gait initiation for 13 children with ASD and 12 age-matched typically developing (TD) children. Children with ASD produced 438% greater **normalized mediolateral sway** ($p < 0.05$) and 104% greater **normalized anteroposterior sway** ($p < 0.05$) than TD children. Consequently, normalized sway area was also significantly greater ($p < 0.05$) in the group with ASD. Similarly, the maximum separation between the COP and **center of mass (COM)** during quiet stance was 100% greater in the **anteroposterior direction** ($p < 0.05$) and 146% greater in the **resultant direction** ($p < 0.05$) for children with ASD. No significant difference was observed in the mediolateral direction, in spite of the 123% greater **separation** detected in children with ASD. During gait initiation, no group differences were detected in the posterior COP shift mechanism, suggesting the mechanism for generating forward momentum is intact. However, significantly smaller lateral COP shifts ($p < 0.05$) were observed in children with ASD, suggesting instability or an alternative strategy for generating momentum in the mediolateral direction. These results help to clarify some discrepancies in the literature, suggesting an impaired or immature control of posture, even under the most basic conditions **when no afferent or sensory information have been removed or modified**. Additionally, these findings provide new insight into dynamic balance in children with ASD.*

2) Author-created acronyms/initializations. When authors form acronyms for terms (e.g., Morton's Rules for Acronyms, MRA), authors think they're saving someone time. But it ain't the readers; it's only the authors. Reading

a journal article is neither the place nor the time to learn the mapping between a heretofore unknown string of letters (MRA) and a heretofore unknown concept (Morton's Rules for Acronyms). That's one too many unknowns. Before any reader really understands an acronym, they need to be familiar enough with the term itself so that boiling the term down to its initial letters still reminds them of the fuller term. But when authors introduce their own acronyms, they frequently do so when introducing the novel term itself. Readers are given only one shot both to learn the new concept and to map it onto an abbreviation that has only one letter per word as a hint to its identity. That's a recipe for failure. Throwing gasoline on the fire, most authors don't stop at foisting just one author-created acronym on their readers; they pile them on. Here's an example abstract from a scholarly journal article:

Recent research suggests that nonword repetition (NWR) and sentence repetition (SR) tasks can be used to discriminate between children with SLI and their typically developing age-matched (TDAM) and younger (TDY) peers. Fourteen Cantonese-speaking children with SLI and 30 of their TDAM and TDY peers were compared on NWR and SR tasks. NWR of IN nonwords (CV combinations attested in the language) and OUT nonwords (CV combinations unattested in the language) were compared. SR performance was compared using 4 different scoring methods. The SLI group did not score significantly lower than the TDAM group on the test of NWR (overall results were TDAM = SLI > TDY). There were nonsignificant group differences on IN syllables but not on OUT syllables. The results do not suggest a limitation in phonological working memory in Cantonese-speaking children with SLI. The SR task discriminated between children and their TDAM peers but not between children with SLI and their TDY peers matched for mean length of utterance. SR but not NWR discriminates between children with SLI and their TDAM peers. Poorer NWR for English-speaking children with SLI might be attributable to weaker use of the redintegration strategy in word repetition. Further cross-linguistic investigations of processing strategies are required.

I counted ten acronyms in that 200-word nine-sentence abstract, which means that readers were expected to learn at least one new concept and its acronym per sentence. That's a lot of work to expect your readers to do when you really want them to be working on understanding your ideas — not memorizing your nomenclature.

Just as a test: How many of us can immediately parse this sentence, without having to consciously puzzle out what the abbreviations mean: "SR but not NWR discriminates between children with SLI and their TDAM peers." Point proved. So MRA is to avoid all author-created acronyms.

Also, go sparingly on acronyms that might be well known within your field (e.g., SLI, ISI, IAT, SOA, TRS) unless you want only the 20 experts in your field to read your paper, or unless you only use the term and its acronym within the bowels of your methods section (which non-experts often skim over). Morton's Rule of Thumb (MRT) for well-known acronyms (e.g., IQ, RT, ISI) is to use an acronym only if you're going to be referring to the concept three or more times. If you're only referring to the concept once, what's the point? But if it's a concept that plays a prominent role in your paper, and you'll be using the term three or more times, then, yes, you can use it. But as soon as you introduce the well-known acronym, be sure to use it again soon. Nothing's harder to remember than an acronym, even a well-known acronym, that's introduced way back in the introduction but doesn't get used it again for pages. Readers will forget the reference by then.

3) Condition labels that don't stand alone. Make all condition labels – both in your text and in your figures and tables – as self-sufficient as possible. Parker, Garry, Engle et al. illustrated this principle beautifully. They called their two conditions Told Drug and Told Inactive. Most other researchers would have called these two conditions Drug and Inactive, and you can see why Parker et al.'s labels would be more effective. A handy litmus test is to ask someone who hasn't read your paper if they can understand your condition labels. If they can't, then your labels need to be more informative. You might be thinking, "but people who will see my condition labels will have read my paper." But you can't be sure of that. Besides, as is the case with struggles over acronyms, why do you want your readers to struggle over learning condition labels. Why do you want to subject your readers to a learning-memory-recall test? You don't. You want your readers to enjoy your paper. I also hope it goes without saying: Do not, under any circumstances, ever use acronyms for your condition labels – even if you think the conditions are well known, such as NV and V (nonverbal and verbal); ASC and TC (autistic spectrum condition vs. typical condition); Load0, Load3, Load5. Remember: The terms that you used for your own shorthand (and for SPSS) were for you – they were not for your readers.

4) “This” as a grammatical subject. We all know that sentences have grammatical subjects (who or what is doing something) and verbs (what that who or what is doing). The word *this* is great as an adjective (Which book? This book). The word *this* sucks as a subject (a noun). Why? Because it is meaningless; it doesn’t tell you who or what is doing something.

Below is a paragraph from a report that a panel of experts (including me) compiled after a review of all U.K. psychology departments. (I was not the author of the paragraph.)

*Although there appears to be a sufficient number of highly qualified U.K. postgraduates to fill university positions, they face two problems: (1) they must complete their postgraduate training within 3 years, which is too short to publish effectively while accumulating sufficient advanced training in research, and **this** in turn makes them less competitive on the job market; (2) there are few postdoctoral positions available to them, which would broaden their research training and give them more time to increase the number of publications. **All of this** puts U.K. early career researchers at a disadvantage because doctoral training is longer and postdoctoral experience more prevalent in other countries. For example, in the U.S. graduate students typically take 5-6 years to finish their doctorate, and **this** is often followed by a 2-year postdoctoral fellowship. This preparation allows foreign postgraduates to be highly competitive for U.K. jobs.*

The above paragraph has three instances of *this* as a subject, and each instance means something different. Writers who use *this* as a subject are either too lazy to spell out what they really mean — or they can’t think of a way to say it. But if the writers can’t think of a way to say it, how do they expect their readers to understand it? (And if the writers are just being lazy, they’re making their readers work too hard.)

5) Beginning a sentence with “There are” or “There is.” Every use of *there are* and *there is* can be removed. The sentence, “There are five factors that attenuate ...” can be rewritten to “Five factors attenuate ...” The sentence, “There is no known answer,” can be rewritten as “No answer exists.” There is not a sentence that contains *there are* or *there is* that cannot lose that meaningless, wordy expression. (Every sentence containing *there are* or *there is* can lose that meaningless, wordy expression.)

6) Nonspecific terms, such as relate to, affect, influence, change, effect, etc. You know your data; you know your results; and you should know the previous literature. So why write that something *is related* to something else? Tell your readers HOW it is related. Why write that something *influences* something else? Tell your readers HOW it influences something else. And for heaven’s sakes, why write that something *affects* something else? Tell your readers EXACTLY what effect it has. Does it increase, decrease, improve, worsen, augment, diminish, strengthen, weaken, cause, negate? And while you’re at it, try to steer clear of terms such as moderate, modulate, interact with, if you don’t also, right then and there, tell your readers exactly HOW something is moderating, modulating, or interacting with something else.

7) Fluffy, throw-away, feel-good sentences, for example:

“These findings provide new insight into ...” (e.g., the final sentence of the jargon-laden abstract we read previously.) You know the humorous expression, “I’ll be the judge of that.” Well, let your readers be the judge of whether your work is insightful, interesting, or important, which also applies to sentences that start with the terms, “Interestingly, ...” or “Importantly, ...” for which the rest of the sentence might not be a fluffy, throw-away feel-good sentence.

“Future research is needed ...” (e.g., the final sentence of the acronym-laden abstract we read previously). All research is cumulative; further research is always needed. No need to waste readers’ time stating the obvious. Indeed, one of my favorite academic blogs, Collectively Unconscious, has a great parody blog post on this very topic: [Scientists conclude: ‘No further research is needed’](#).

8) Gratuitous claims. See my OpEd, [Reaching for Relevance](#).

9) The phrase “These results suggest ...” Like the *There are/There is* phrase, the phrase, *These results suggest* (which appears almost 50 million times on the Internet) can always be ditched.

These results suggest that antidepressant use among individuals without psychiatric diagnoses is common in the United States. -> Antidepressant use among individuals without psychiatric diagnoses is common in the United States.

These results suggest that persistent capital inflows, coupled with securitisation, played a significant role in the housing boom. -> Persistent capital inflows, coupled with securitisation, played a significant role in the housing boom.

And my biggest pet peeve of all:

10) Beginning a paper or even a paragraph (or even a sentence) with the red letter words: “Recent research has shown” (or its affiliate expression, “Much research has shown ...”) We will work soon on ways to avoid this snare.

Feel free to ask questions about these pet peeves in the discussion topic below. Then, **find at least two instances of at least five of these pet peeves** in your own writing, the writing of others in your lab or your research area, **and fix them**.

Assignment #8: Writing – Getting Down to the Structure

We’ve looked at good (and bad) examples of academic and non-academic writing; we’ve identified mechanisms that work (and those that don’t); and we’ve doctored up our writing to utilize helpful features (and remove unhelpful ones). Now it’s time to delve into the structure of writing – both at the paragraph level and the journal article level.

We’ve talked about paragraph length, but let’s get down to basics and examine the core components of the paragraph. As Strunk and White espoused almost 100 years ago:

- *Begin each paragraph with a topic sentence; end [each paragraph] in conformity with the beginning. The object is to aid readers, [to] enable them to discover the purpose of each paragraph as they begin to read it, and to retain the purpose in mind as they finish reading it. For this reason, the most generally useful kind of paragraph, particularly in exposition and argument, follows this structure:*
- *A. the topic sentence comes at or near the beginning;*
- *B. the succeeding sentences explain or establish or develop the statement made in the topic sentence; and*
- *C. the final sentence either emphasizes the thought of the topic sentence or states some important consequence. Ending with a digression, or with an unimportant detail, is particularly to be avoided.*

The Purdue Online Writing Lab dispenses similar advice:

- *The Basic Rule: Keep One Idea to One Paragraph*
- *The basic rule of thumb with paragraphing is to keep one idea to one paragraph. If you begin to transition into a new idea, it belongs in a new paragraph. There are some simple ways to tell if you are on the same topic or a new one. You can have one idea and several bits of supporting evidence within a single paragraph. You can also have several points in a single paragraph as long as they relate to the overall topic of the paragraph. If the single points start to get long, then perhaps elaborating on each of them and placing them in their own paragraphs is the route to go.*
- *A topic sentence is a sentence that indicates in a general way what idea or thesis the paragraph is going to deal with. [The best] way to make sure your reader understands the topic of the paragraph is to put your topic sentence near the beginning of the paragraph.*

In public school teaching (and I used to teach high school English), a common metaphor for paragraph structure is the hamburger. In fact, if you Google Image search “paragraph structure,” you’ll see figures like the following all over the place:

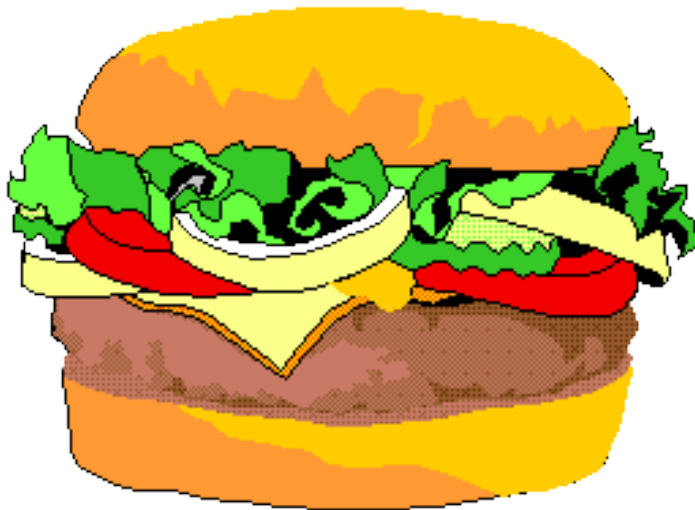


Image: SchoolWorkHelper.net

- ▶ The top bun is your topic sentence.
- ▶ The sentences that come next are your supporting detail. They are like the lettuce, tomato and hamburger patty in the middle.
- ▶ Holding everything together is the bottom bun of the hamburger. It is a concluding sentence.

One of my favorite hamburger-metaphor-for-paragraph-structure image is the following, which includes the indentation:

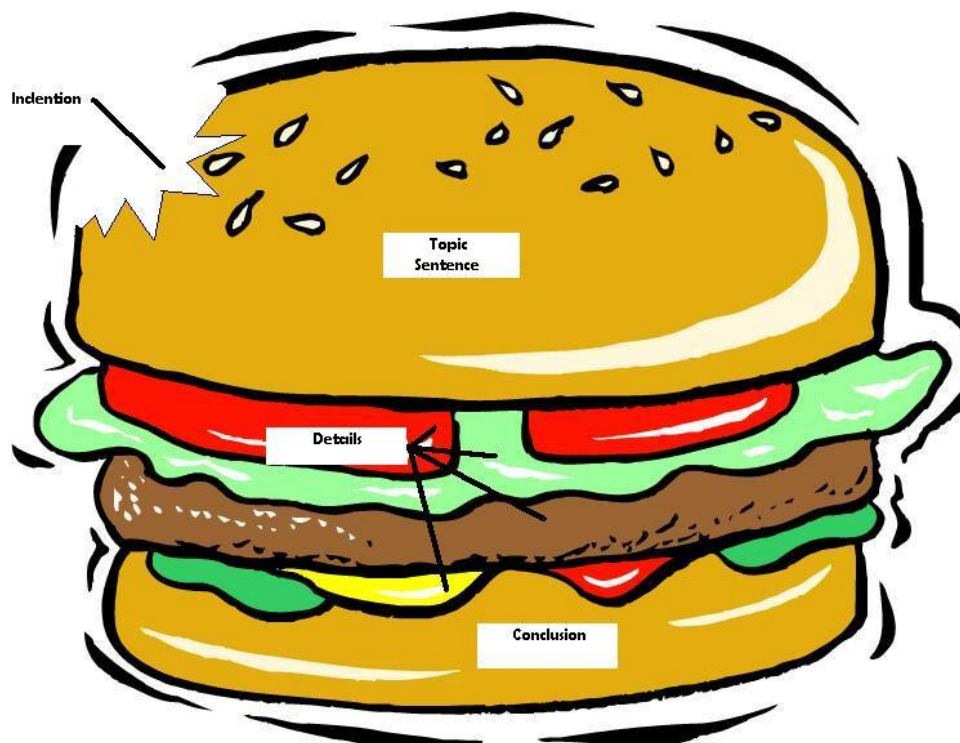


Image: GrammarAndComposiiton.Wikispaces

In this hamburger metaphor, the top bun (representing the topic sentence) introduces your paragraph's main idea; the tomatoes, lettuce, condiments, and meat patty provide supporting evidence, examples, or details to flesh out your paragraph's main idea; and the bottom bun (the concluding sentence) holds everything together.

You might be thinking, well, that's cute. But it's elementary. Surely highbrow academic writers don't structure their paragraphs so methodically and seemingly simplistically. Actually, they do. All the authors of the good academic

writing who we have read follow exactly this structure for their paragraphs. For example, here is the opening paragraph of Parker, Garry, Engle et al. (2008):

One of the puzzles of human behaviour is how taking a substance that does nothing can cause something. Phoney painkillers can lessen our pain or make it worse; phoney alcohol can lead us to do things we might otherwise resist, and phoney feedback can even cause us to shed body fat (Cheong & Negoshi, 1999; Colloca & Bendetti, 2006; Crum & Langer, 2007). Perhaps Kirsch (2004, p. 341) said it best: "Placebos are amazing."

- Topic sentence: *One of the puzzles of human behaviour is how taking a substance that does nothing can cause something.*
- Example/Evidence/Detail 1: *Phoney painkillers can lessen our pain or make it worse;*
- Example/Evidence/Detail 2: *phoney alcohol can lead us to do things we might otherwise resist,*
- Example/Evidence/Detail 3: *phoney feedback can even cause us to shed body fat*
- Conclusion: *Perhaps Kirsch (2004, p. 341) said it best: "Placebos are amazing."*

Good academic writers follow the hamburger-paragraph structure in all parts of their journal articles: introduction, discussion, and even methods and results. For example, here is a paragraph from the Methods section of Bem's controversial PSI article:

Stimuli. Most of the pictures used in this experiment were selected from the International Affective Picture System (IAPS; Lang & Greenwald, 1993), a set of 820 digitized photographs that have been rated on 9-point scales for valence and arousal by both male and female raters. This is the same source of pictures used in most presentiment studies. Each session of the experiment included both erotic and nonerotic pictures randomly intermixed, and the main psi hypothesis was that participants would be able to identify the position of the hidden erotic picture significantly more often than chance (50%).

- Topic sentence: *Most of the pictures used in this experiment were selected from the International Affective Picture System (IAPS; Lang & Greenwald, 1993)*
- Example/Evidence/Detail 1: *[the International Affective Picture System is] a set of 820 digitized photographs that have been rated on 9-point scales for valence and arousal by both male and female raters.*
- Example/Evidence/Detail 2: *[the International Affective Picture System] is the same source of pictures used in most presentiment studies.*
- Example/Evidence/Detail 3: *Each session of the experiment included both erotic and nonerotic pictures [from the International Affective Picture System] randomly intermixed,*
- Conclusion: *the main psi hypothesis was that participants would be able to identify the position of the hidden erotic picture significantly more often than chance (50%).*

And here is a paragraph from the Results section of Clark and Wasow (1978):

The complexity hypothesis, in brief, has excellent support. The articles the and a are repeated more often the more complex the local NP, and also the more complex the constituent of which the NP is the left-most constituent. These findings go counter to models in which syntactic complexity is categorical and not hierarchical (Ford, 1982; Holmes, 1988). Likewise, pronouns are repeated more often the more complex the constituent they are the left-most words of. Nominative pronouns are the most apt to be repeated, dependent possessives the next most, and accusative, reflexive, and independent possessives the least.

- Topic sentence: *The complexity hypothesis, in brief, has excellent support.*
- Example/Evidence/Detail 1: *The articles the and a are repeated more often the more complex the local NP,*
- Example/Evidence/Detail 2: *[The articles the and a are repeated more often] the more complex the constituent of which the NP is the left-most constituent.*
- Example/Evidence/Detail 3: *pronouns are repeated more often the more complex the constituent they are the left-most words of.*
- Conclusion: *Nominative pronouns are the most apt to be repeated, dependent possessives the next most, and accusative, reflexive, and independent possessives the least.*

Outline the structure (as I've done above) **of a few paragraphs from our good-example academic authors.**

Student Group A, from Schober and Clark (1989), outline the three paragraphs that start with the phrases/clauses (1) "The collaborative model leads to several predictions" (which is from the middle of p. 214); (2) "Speakers in the first task" (which is the first paragraph of the Results section, bottom of p. 216); and (3) "Both matchers and overhearers got more accurate as they ..." (from Results section, bottom of p. 218).

Student Group B, from my "Reaching for Relevance" OpEd, outline (1) the paragraph that starts with the sentence, "As we know, times have changed," (2) the paragraph that starts with the phrase, "A superior ability to disembodied perceptually" but consider the sentences, "Do autistics have 'problems with visual object recognition?' Nothing could be farther from the truth" as the topic sentence of the paragraph that starts with the phrase, "A superior ability to disembodied perceptually"; (3) the paragraph that starts with the phrase, "Admittedly I have a dog in this fight ...", and (4) the paragraph that starts with "Indeed, I submit ..."

Student Group C, from Clark and Wasow (1978), outline the three paragraphs that start with the sentences/clauses (1) "Spontaneous speech is filled with disfluencies," (2) "Why might speakers prefer a continuous delivery?", and (3) "These findings cannot be accounted for by raw frequency alone."

Assignment #9: Revising Paragraphs to Improve Structure

Wasn't it great to see how all good writers structure their paragraphs? Good writers follow the basic formula: Topic Sentence, Evidence/Example/Detail 1, Evidence/Example/Detail 2, Evidence/Example/Detail 3, etc., Conclusion?

As Indiana University Writing Service reminds us:

Most paragraphs [in good academic and non-academic writing] have a three-part structure--introduction, body, and conclusion. You can see this structure in paragraphs whether they are narrating, describing, comparing, contrasting, or analyzing information. Each part of the paragraph plays an important role in communicating your meaning to your reader.

- *Introduction: the topic sentence, the main idea of the paragraph*
- *Body: facts, arguments, analysis, examples, or details that support the main idea*
- *Conclusion: the "so what"*

As I suspect you noticed in the paragraphs you outlined, although all the paragraphs follow the structure of Topic Sentence, Evidence/Examples/Details, Conclusion, very few of these paragraphs overtly cue that structure. Only Schober and Clark's paragraph that begins (with the topic sentence), "The collaborative model leads to several predictions," actually numbers each of the predictions ("First, overhearers should have greater difficulties ... Second, misunderstandings by overhearers ... And third, overhearers should have even more difficulties ..."). Note that NONE of the paragraphs begin their concluding sentences with the overt cues of "Therefore," or "Thus," or "In summary."

Coherent paragraphs that follow the Topic Sentence, Evidence/Examples/Details, Conclusion structure don't need those overt cues. The structure is already built in. Weak paragraphs that don't follow the Topic Sentence, Evidence/Examples/Details, Conclusion structure have to rely on those cues. Obviously, the goal is to write well-structured paragraphs that don't have to depend on those overt cues. So if you find yourself feeling compelled to stick in a "Therefore," or "Thus," or "In summary," or overly using numbering ("First, ... Second, ... Third, ..."), chances are your paragraph needs to have better internal structure.

Now it's time to get some practice writing well-structured paragraphs. **Revise three paragraphs** of your own writing (or the writing of members of your lab or other researchers in your research area) and **write three new paragraphs** (for a paper you might be working on or a summary of something interesting you've read — or whatever you want to write). All six paragraphs should follow the structure we've been discussing: a topic sentence (top bun); at least 2, preferably 3, sentences that support your main idea with evidence, examples, or details (lettuce, cheese, meat, pickles, and onion); a conclusion (bottom bun), and all of the paragraph's sentences should focus on

the paragraph's main idea. **For each of the six paragraphs, outline their structure** the same way you did in the previous assignment.

Assignment #10: Writing – Telling a Story

For our penultimate topic in the Writing section of this scholarly communication course, we'll be focusing on the big picture – how to structure a research paper. By structure I don't mean the traditional sections of Abstract, Introduction, Methods, Results, Discussion, and References. Those section headings are best thought of as punctuation marks, like commas, periods, quotation marks, and semi-colons. Those section headings of Abstract, Introduction, Methods, Results, Discussion, and References are not the structure we'll be talking about in this assignment.

Rather, the structure that we'll be talking about is how to structure the story that you are going to tell in your article. By story, I don't mean a tall tale. We're not telling stories in the sense of fabricating information. Rather, our articles tell stories in the sense of having a problem and a resolution to that problem.

James Coyne is “the author of over 350 publications including numerous citation classics, and he has been identified by the Institute for Scientific Information Web of Science as one of the most cited psychologists and psychiatrists in the world.” As Coyne tells us, “*What are the essential characteristics of a successful paper? Coyne: ... the first essential characteristic of successful paper is that it tells a well-crafted story: that it catches the reader's interest by pointing to a question the reader will want to see answered, answers the question persuasively, and leaves the reader if not with a sense of resolution, at least a sense of what the next step should be.*”

Thus, journal articles should present well-crafted stories. Indeed, they have Three Acts. Act 1 is the Set Up (the problem); Act 2 is the Confrontation (how you will solve the problem that you set up in Act 2), and Act 3 is the Resolution (the solution you found for the problem that you set up in Act 1 and what that solution means). Sure, for some journals, Act 1 might be considered the Introduction, whereas Act 2 comprises the Methods, and Act 3 comprises the Results and Discussion. But it's the overall story, told in Three Acts, that you're really writing.

Let's focus on just Act 1. During the first act, the author has three tasks: set up the premise, explain the ‘inciting incident,’ and motivate what follows. All first acts have those three ingredients: Premise (aka: “Life as we know it”), Inciting Incident (aka: the “But ...”), and What Follows (aka: the “Therefore”). For example:

Juno

PREMISE: Juno is teenage girl who gets pregnant.

BUT: Juno doesn't want to have an abortion.

THEREFORE: Juno searches for an adoptive family.

(And the Second Act takes us through the details of Juno obtaining an adoptive family.)

The Hunger Games

PREMISE: Katniss's sister, Primrose, is chosen to be this year's tribute.

BUT: Katniss doesn't want her sister to die.

THEREFORE: Katniss volunteers to take Primrose's place.

(And the Second Act takes us through the competition.)

Morton's “Understanding acronyms: The time course of accessibility” chapter

PREMISE: Acronyms are commonly associated with concepts that are not literally contained in their component words (e.g., the acronym, *CD*, which stands for *compact disc*, is commonly associated with music).

BUT: Which meaning is more accessible: the literal component (e.g., *disc*) or the conceptual associate (e.g., *music*)?

THEREFORE: This chapter describes a series of six laboratory experiments conducted to answer this question.

(And the Second Act takes us through how those experiments were conducted.)

For the first part of this assignment, **identify the Premise, the But, and the Therefore** of the first act of **three of your favorite books, movies, or plays**. For the second part of this assignment, **identify the Premise, the But, and**

the Therefore of three research papers (either published articles, manuscripts on which you are working, or manuscripts on which your colleagues are working).

Assignment #11: Learning From Feedback

For our last topic on academic writing, let's tackle two of the most important steps — getting feedback and revising according to that feedback. My experience has been that academic writers often fall short on both of these steps. The only feedback that they typically get is from a co-author (or advisor), and even then they are reluctant to revise.

Almost 20 years ago, one of my PhD students, Matt Traxler (who is now a Vice Provost at UC Davis), and I conducted a couple of experiments examining [Improving Written Communication Through Minimal Feedback](#), as well as [Improving Written Communication Through Perspective-taking](#). Skim both of those two papers.

After skimming those papers, **DISCUSS WHY** it is important to get feedback on every written paper from someone who is not a co-author or advisor; **IDENTIFY HOW** you will seek that feedback on the paper(s) on which you are currently working (or plan to work in the near future), and **EXPLAIN** the truism: If a reader tells you that something is unclear in your writing, it is by definition unclear.

UNIT 2: IMPROVING ORAL PRESENTATIONS

Assignment #12: Oral Presentations – Reviewing History and Analyzing Good vs. Bad Non-Academic Presentations

Now we are going to shift focus to another form of academic communication: oral presentations. Much of what we've learned so far with regard to written academic communication applies to spoken academic communication:

- communicate in short rather than long sentences;
- use present tense;
- use first person;
- choose strong working verbs (e.g., reflects, indicates, suggests) rather than weak linking verbs (e.g., is suggestive of, is indicative of, is reflective of);
- specify terms (e.g., increases, decreases, improves, worsens, augments, diminishes, strengthens, weakens, causes, negates) rather than using nonspecific terms (affects, influences, changes, is associated with);
- avoid abbreviations, particularly author-created abbreviations;
- avoid fluffy throw-away expressions ("these results suggest ...");
- avoid making researchers and studies the subjects of sentences ("Much research has shown ...");
- craft first acts that have a premise, a but, and a therefore; and
- receive feedback from persons not familiar with your topic – and revise whenever anyone says something's not clear

All these tricks of the trade should be old hat to you now. In fact, what a person says during a scholarly oral presentation doesn't actually differ that much from what they write in a scholarly paper – if the paper is well written. I frequently try to give an oral presentation on each study or set of studies I conduct before I write them up for publication. If I can convey the information orally, then I can definitely convey it in writing. And writing a paper from an oral presentation ensures that the tone in the written paper will be demonstrably more accessible, which is what we are aiming for.

We tend to think that the primary feature that distinguishes oral presentations from written papers is that oral presentations have accompanying visuals. However, accompanying visuals have not always been the rule for scholarly oral presentations. In fact, accompanying visuals are a feature of just the past 50 or so years. Many illustrious academics – William James, Marie Curie, Albert Einstein, Rachel Carson – gave all of their oral presentations without any accompanying visuals.

The decade or so before I went to graduate school began the first use of accompanying visuals. They were 2x2 photographic slides, such as the slides in the packet below.

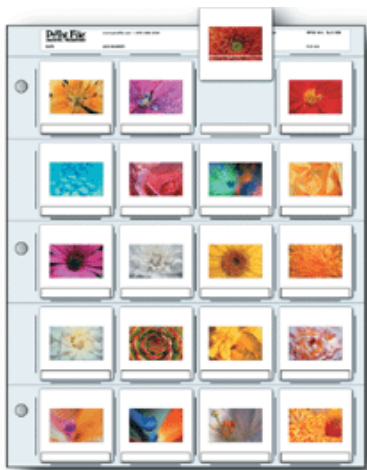


Image: [amazon.com](https://www.amazon.com)

These slides were literally photographs; to prepare the slides, the scholar had to take the materials they wanted photographed to a photographer, which cost money. So academics were picky about what they put on a slide, which was a good thing. Academics also tended to walk around conferences carrying slide carousels, which probably wasn't a good thing.



Image: bhphotovideo.com

Shortly after I left graduate school, overhead transparencies became the preferred form of accompanying visuals for academic talks. These overhead transparencies were initially hand drawn and hand written (considered tacky, but quick); then, the technology to photocopy onto overhead transparencies became available.



Images: c-lineproducts.com

PowerPoint, the primary accompanying visual of current day oral presentations, came into vogue in the mid-1990s. Its advent is recent enough that just a few years ago when one of my PhD students asked one of our Psychology Department faculty members to observe her teaching a statistics course, the faculty member was concerned that the PhD student was using PowerPoint to teach statistics (rather than writing on overhead projectors or – gasp – writing on the chalkboard).

My point in taking us through this walk down memory lane is to highlight the fact that for centuries academics gave inspiring, insightful, and easily comprehended talks without any visuals. For a couple of decades, right before, during, and after I was in graduate school, academics gave inspiring, insightful, and easily comprehended talks with only photographs. It was only when overhead transparencies became the norm that a plethora of text began appearing on accompanying visuals; then, PowerPoint catapulted heavily text-based visuals to the extreme, spawning books, websites, blogs, cartoons, and even t-shirts titled, “Death By PowerPoint.”



Image: memefuns.com

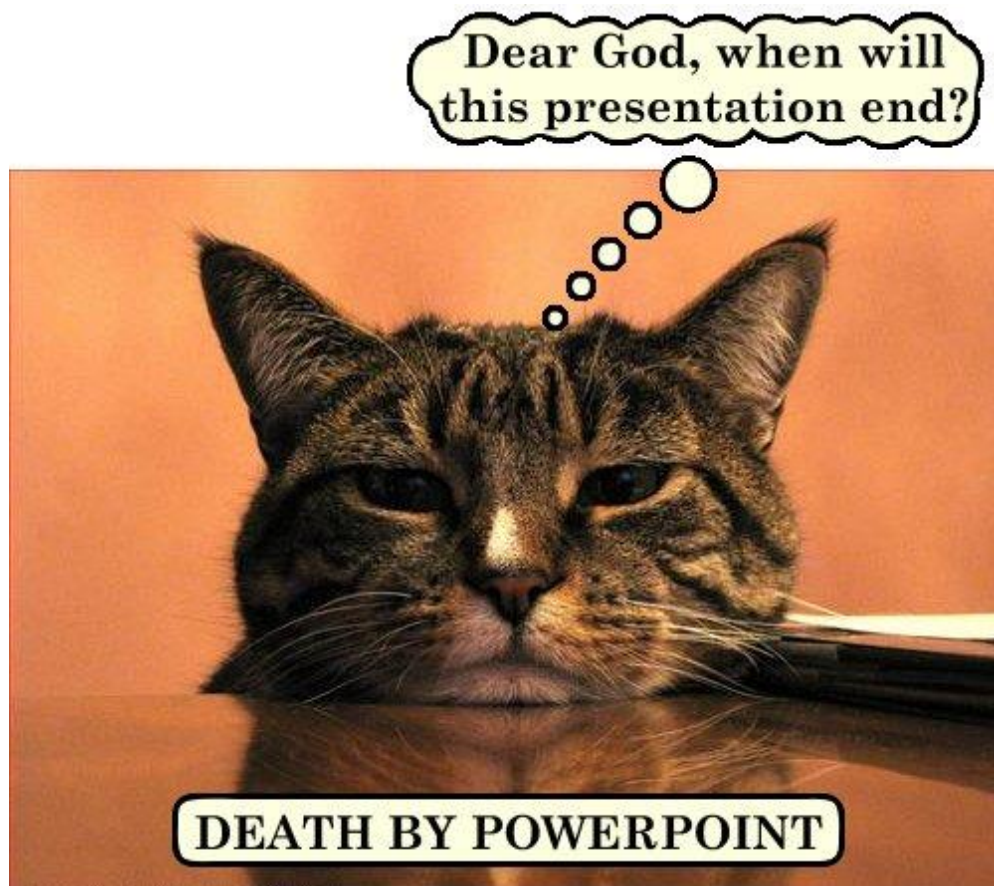


Image: trinidarlin.blogspot.com



Image: theprocessninja.com

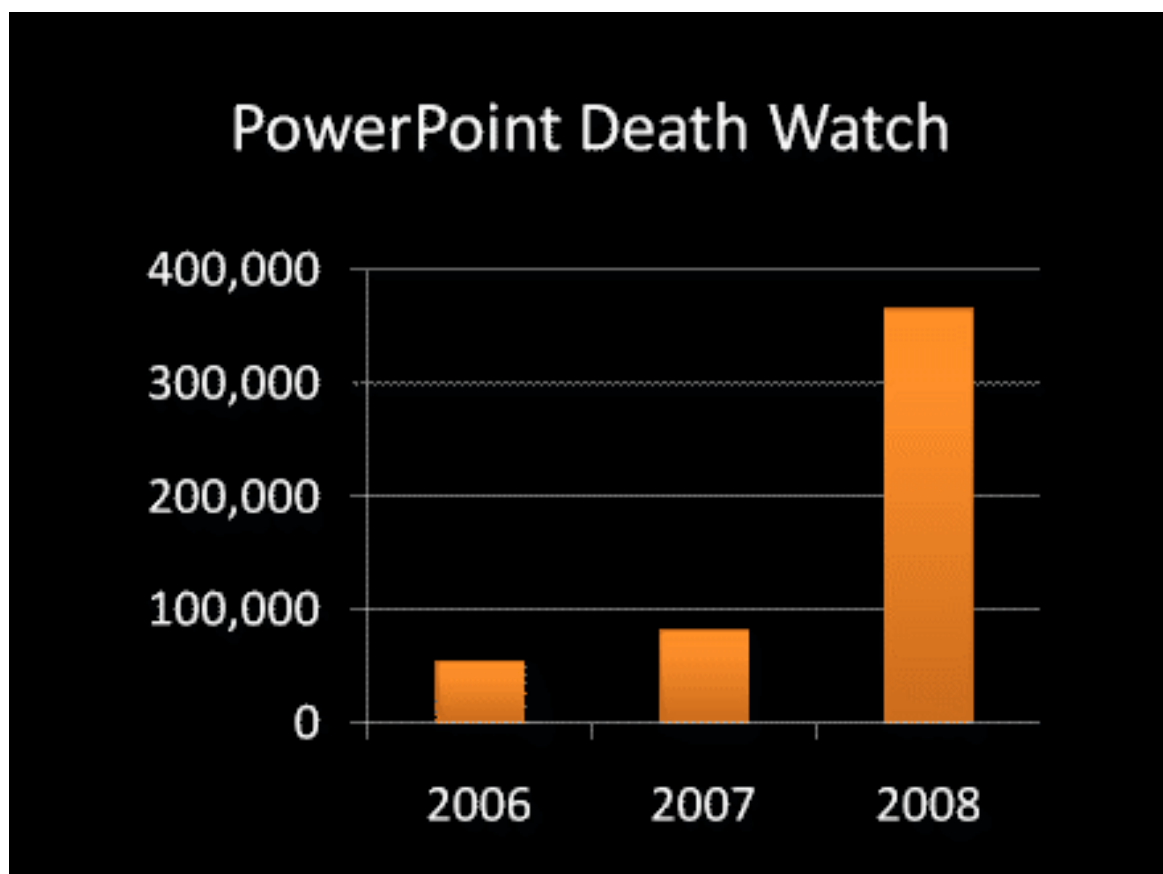


Image: maniactive.com



Image: presentationzen.com



Image: leadershipisaverb.blogspot.com



POWER POINT: MAKING TERRIBLE
SPEAKERS EVEN WORSE SINCE 1987.

Image: [Krishna Sadasivam](#)



*"I need someone well versed in the art of torture—
do you know PowerPoint?"*

Image: [Alex Gregory](#)



"In today's presentation, I am going to teach you why Powerpoint doesn't work well for learning. If you look at my first slide...."

Image: learningppt.com

In response to the battle cry of ‘Death By Powerpoint,’ comes the tongue-in-cheek adage: PowerPoint doesn’t kill audiences; bullets do. In this course, we will learn how to use PowerPoint (or my preferred software, Keynote) and not bore one’s audience to death (or bore holes in their brains with bullets).



Image: [Alexi Kapterev](#)

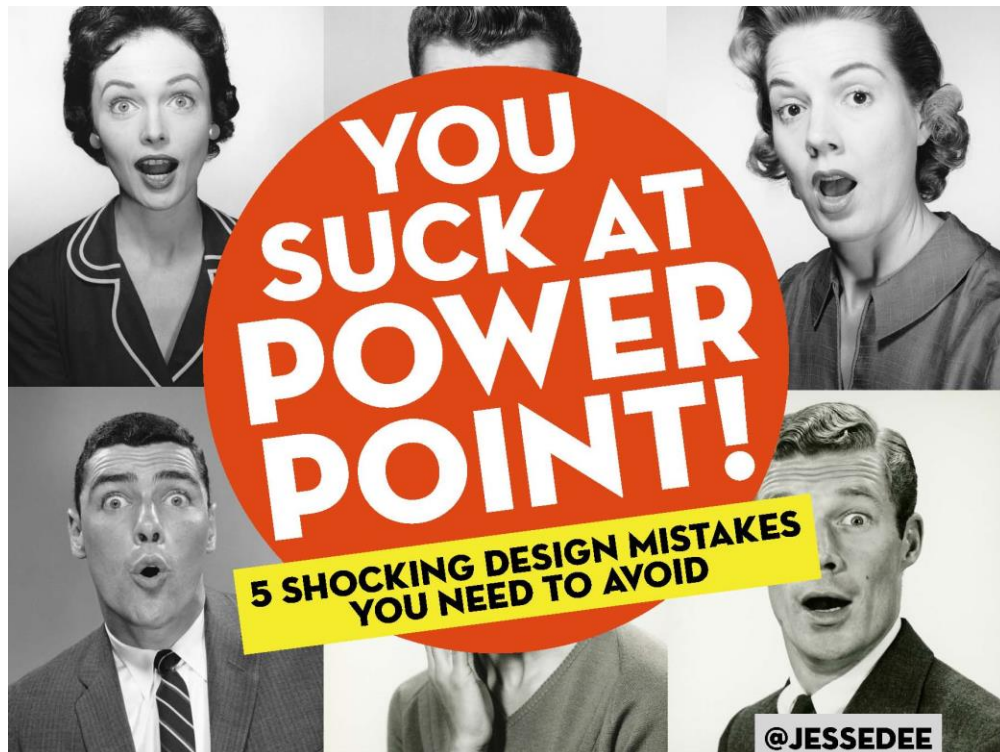


Image: [JesseDee](#)

Let's begin this unit as we did the unit on written communication by looking at good and bad examples. The contrast most heavily employed by presentation gurus is Bill Gates versus the late Steve Jobs. Although I'm a hard-core Apple aficionado, this contrast goes beyond PC vs Mac. Take a look at both CEOs' keynote addresses, from the same year, 2005: Bill Gates [here](#) and Steve Jobs [here](#). Observe their presentation style (oral delivery) and look particularly at their visual accompaniments. Because the video camera placement for Bill Gates' keynote doesn't always allow viewers of the video to see all of his slides, I'll post a few below. (Steve Jobs' slides are easily viewable in the video of his keynote.)



Image: biz.colostate.edu



Image: corporatesidekicks.com



Image: uta.edu

Post three differences that you see between the two CEOs' presentation style, paying particular attention to their visual accompaniments (i.e., slides).

Assignment #13: Oral Presentations – Analyzing Good vs. Bad Academic Presentations

Here is Psychology's Bill Gates vs. Steve Jobs: [Marty Seligman's TED talk](#) vs. [Dan Gilbert's TED talk](#).

Both Marty Seligman and Dan Gilbert are smart men who have been doing public speaking for decades. Both have research vitas the length of a football field. Both have written books for the general public. In these two talks, both address similar and fascinating topics (positive psychology, Seligman, and the science of happiness, Gilbert). However, you will see a difference. Seligman uses bullets and text; Gilbert uses great visuals. Gilbert's TED talk has been viewed 400% more frequently than Seligman's.

One caveat: One suggestion for "how to give a great talk" of which I'm not a fan (and which Gilbert emulates in the previously mentioned TED talk) is to walk around while speaking. As an audience member, I find speakers walking around the stage distracting. [Here's another Gilbert talk](#) where he doesn't walk around (and in fact, he almost appears to be consulting heavily written notes) that I find just, if not more, successful. And to contrast Gilbert's Jobs-style, [Here's another psychologist, Kevin Dunbar](#), who has more of a Gates-style (which I think is less successful). Note particularly how much text is on Dunbar's slides — some of which he never even comments on, in contrast to Gilbert who uses interesting, large graphics as illustrations, rather than slides that summarize in writing his points.

Post three differences that you see between the two academics' presentation style, paying particular attention to their visual accompaniments (i.e., slides).

Assignment #14: Oral Presentations – Designing for Delivery

You've now had a chance to contrast two sets of example oral presentations (Bill Gates vs. Steve Jobs and Marty Seligman vs. Dan Gilbert). In watching and contrasting these examples, you've undoubtedly noticed that the two

major components — **design** (of the visual accompaniments) and **delivery** (of the spoken words) — are intricately intertwined.

Presentation guru, Garr Reynolds, who authors the blog, [Presentation Zen](http://PresentationZen.com), and who has authored several books on improving presentations, sums up the symbiotic interconnection between design and delivery in the following way:

Bill's slides vs. Steve's slides



Image: presentationzen.com

Both Steve and Bill use slides to complement their talks. Steve's visuals are a big part of his talk. The visuals are necessary not decorative. The visuals do not overpower him but they are an important component of the talk not just icing on the cake. Steve uses the slides to help him tell a story, and he interacts with them in a natural way, rarely turning his back on the audience ... Steve uses the huge backlit screen behind him in the same spirit that George Lucas uses his screen: to help tell a story. Lucas uses actors, visuals, and effects to convey his message, Steve uses visuals and his own words and natural presence to tell his story. In Bill's case the slides are not only of low aesthetic quality ... they simply do not really help Bill's narrative very much.

It's not the slides, it's the way they are used

But the biggest difference is not the fact that Steve's slides are simpler with fewer elements and fewer bullet points, the biggest difference is in the way they are used. ... Steve's slides flow smoothly with his talk. Bill's slides aren't really necessary; they are more of an ornament or a decoration off to the side.

However, [as Garr Reynolds notes](#), even Bill Gates has learned the principles of good oral presentations, and Gates' more recent talks illustrate those improvements. Garr writes:

The visual transformation of Bill Gates the presenter

Many years ago I began pointing to the [presentation style of Steve Jobs](#) as a good example of how to present with visuals on a large stage. Often I would contrast Jobs' presentation techniques with [those of Bill Gates](#). Bill Gates is a man with a big heart and a big brain. I'm a fan. Yet, in spite of all his talents and contributions, delivering effective presentations — especially if slides were involved — was not one of his strong points. Things, however, started to change in early 2009. When I attended TED in Long Beach that year, I witnessed an engaging presentation by Bill Gates. Even his visuals were better than the usual cluttered and bullet-point filled slides, though they still had a ways to go. [For example], the charts and graphs were way too small (bottom photos), curiously using only half the screen available and using colors with no clear reason.

Image: presentationzen.com**Improvement continued: Bill and Melinda Gates**

In October of [2009], we began to see much more improvement in Bill's delivery, and especially in his visuals. In this presentation in Washington, D.C. last October, Bill and Melinda Gates explained why they are "impatient optimists." They clearly illustrated in this formal keynote that they are optimistic because they have seen first hand that the investments are working, yet they are impatient because more needs to be done soon. They used a good mix of data and real examples to make the case that the world is getting better, but (1) not fast enough, and (2) not for everyone. And that's what they mean by "impatient optimists." With the help of high-impact visuals and video clips, Bill and Melinda did an effective job of showing the good news about how real people have been transformed. Telling the stories of how investments are indeed paying off and making big differences, though you rarely see this in the media, is a way to generate even more aid. The visuals in this presentation were the best I have ever seen in a Bill Gates presentation by far. (Yes, Bill is still a bit stiff and looks at the monitors too much, but it's not a bad keynote.) Watch [here](#) on the Bill and Melinda Gates Foundation website.

Image: presentationzen.com

How can we get our own presentations to move from Bill-Gates-blah to Steve-Jobs-wow? In the first discussion post below I've attached two "How Tos." Both are actually slide presentations, with written text where speech could go; looking through these two presentations will also give you a sense of how to design effective slides.

Identify seven not-so-good things you have done in previous presentations. If you're brave enough to post a jpeg of one or more of your slides that illustrate any of these not-so-good habits, please do; I promise we will support you (like all good support groups), because we've all been there.

Assignment #15: Oral Presentations - Learning Best Practices

Now that we've looked through examples of good and not-so-good oral presentations and we've identified from our own experience our not-so-good habits, let's go farther down in the weeds and discuss some Dos and Don'ts on planning a talk, designing the slides, practicing, and delivering.

Some of the pointers in the list below derive from my own pet peeves; others derive from other scientists' pet peeves or recommendations. Perhaps because every scientist has been subjected to listening to many not-so-good talks, the list is long. Let's jump in.

Planning Your Presentation

1) From Morton: Begin with a hook, which is how you will reel in your audience. All good speaking and writing begins with a hook. Do NOT begin by saying, "My study is about ..." and then proceed to read your title. That's not a hook; that's an invitation to snooze. Google the terms "hook writing" if you're unsure what a hook is, but always, always begin with a hook.

2) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): "Simplicity is a virtue. Avoid using jargon or acronyms. Aim for simplicity in every aspect of your talk, not just language. Can you organize your data more clearly? Can you make simpler graphs? Can you remove unnecessary nuance from your literature review?"

3) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): "*But my study didn't work.* There is something interesting about your study, even if it did not work out. ... Sometimes this means reframing your study as about something different than you planned. **Give the talk your data fit, not the one you would have given before you began.**"

4) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): "Know your audience and drop down the sophistication one step. For example, when presenting to Developmental Psychology professors and graduate students, speak for professors and graduate students in any area of psychology. Why drop down a step? Your most sophisticated audience is listening to your talk as a scientific argument for your hypothesis. They would like you to take them through your argument step by step and, ideally (from your perspective) they should nod at each premise and step you take. Just because people know something does not mean it is at the front of their mind when it is relevant to you."

5) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): "*Everyone knows more than me.* Your audience might know a lot. Your advisor might know more about the subject matter than you. However, you know more about your study than anybody else. For example, your advisor cannot respond to questions with anecdotal descriptions of participants spontaneous responses." Own that confidence.

Designing Your Visual Accouterments (e.g., "slides")

1) From Morton: Resist the temptation to place a "Title" (i.e., the thing PPT prompts you for when it says, "Click to Add Title") at the top of your slides. In an interesting and engaging talk, your slides are visual accouterments; they

are not written outlines. Unfortunately, the standard PPT (and even Keynote) templates solicit speakers to type in a title and follow that title with bullets, making their slides look like written outlines. Resist this temptation.

2) From Morton: If you find yourself saying to your audience, “You probably can’t see the ____” (e.g., box on the far left, figure at the very bottom, yellow circles around interesting data points, etc), you should have not made your slide that way.

3) From Morton: Similarly, if you find yourself saying to your audience, “That’s probably too small for you to see it,” then you should have not put it on the slide. I recommend never using font that’s smaller than 48 point on any portion of any slide.

4) From Morton: Try not to put anything of interest or importance in the lowest third of your slide. Why not? Because many rooms in which you are presenting will not have graduated seats (in contrast to what is found in movie theater, for which seats farther from the front are higher in the vertical plane); therefore, in a typical seminar room and in most hotel conference venues, the short people sitting in the back are unlikely to see the bottom third of your slide.

5) From [Ellen Finkelstein](#): “Illustrate one point, and one point alone, on each slide. Feel free to use as many slides as you need. Covering 5 points on 5 slides doesn’t take any longer than covering 5 points on 1 slide—but your audience will thank you for it!”

6) From [Ellen Finkelstein](#): “Don’t use a slide if there isn’t anything to show. There’s no reason to put everything you say on a slide. It’s fine to just talk to the audience and let them listen to you. Good speakers do it all the time. Use a slide when you need a graphic to improve understanding.”

Morton’s corollary to this pointer: Because I liberally use the Presenter’s Notes feature (more on this later), if I don’t have the need to show a new slide (i.e., my audience doesn’t need to see anything new at this point), but I’ve run out of space on the current slide’s presenter’s notes, I duplicate the current slide and write in new presenters’ notes. I click to the next slide so that I can see my additional notes, but from the audience’s perspective, they simply see the same slide as though nothing has changed.

Practicing Your Presentation

1) From Nancy Duarte’s, [10 Ways to Prepare for a TED-Format Talk](#): “The amount of rehearsal time is inversely proportionate to the length of the talk. The shorter the talk, the longer the rehearsal time. In this case, for an 18-minute talk, we took approximately 18 hours to rehearse. An hour a minute? That’s probably fair for someone who’s a professional presenter like me. A less seasoned speaker may need more!”

2) From Nancy Duarte’s, [10 Ways to Prepare for a TED-Format Talk](#): “Rehearse with a great (honest) communicator. In my case, I rehearsed with my ExComm Manager Krystin. She has gotten very good at rehearsing me and became a trusted coach. She would say “When you say it that way, it can be interpreted differently than you intended”, “When you use that term, you come across derogatory”, “I thought that when you said it last time it was better, you said...”. She worked hard tracking phrases and rounds of what was said. Honesty is the best policy. Make sure your coach is not afraid to speak up. 18 minutes goes by fast—you love your material and you want to include all of it—but for a TED-format talk you need someone you trust to help you murder your darlings.

3) From Nancy Duarte’s, [10 Ways to Prepare for a TED-Format Talk](#): “Practice with the clock counting up. The first few times, rehearse with the clock counting up. That’s because if you go over, you need to know how much you’re over.”

4) From Nancy Duarte’s, [10 Ways to Prepare for a TED-Format Talk](#): “Practice with the clock counting down. Once you’re within the timeframe, begin practicing with the clock counting down. You need to set a few places in your talk where you benchmark a time stamp. Calculate where you need to be in the content in four-minute or six-minute increments. You should know the slide you should be on and what you’re saying so that you will know immediately ... if you’re on time or running over.”

5) From Nancy Duarte's, [10 Ways to Prepare for a TED-Format Talk](#): "Have two natural ending points." Morton's comment: I love this pointer. Here's more of what Nancy Duarte recounts on this issue regarding preparing for her own TED talk: "I wanted to accuse the India show operators of not really giving me a full 15 minutes on the clock. But I was the one who blew it. It might have been the meds I was on for my chest cold, but my timer was *blinking* before I was done. Fortunately, I'd embedded two natural places to end my talk. I had an ending that made the talk complete and I stopped there. What I didn't have time to get to was the inspirational ending that would have had them on their feet and screaming (well, they did end up on their feet, they just weren't screaming)."

Delivering Your Presentation:

1) From [science blogger, SciCurious](#): "Try not to leave your mouse arrow hanging out in the middle of the screen for 3/4 of your talk." Morton's Comment: Every time I see a presenter do this, I have an overwhelming urge to run up to the speaker's computer and move their cursor. And that's just about all I can think of during the presentation. It's like what George Carlin used to say about a car with its turn signal stuck on while it drives over a bridge (i.e., a stretch of road with no opportunity for a turn). Every flash of that turn signal tells you the driver is, well, in non-George Carlin terms, the driver isn't paying attention. If you do need to bring your cursor onto the screen during your presentation (to start a movie, for example, although you actually don't have to do this; just set PPT or Keynote to start the movie on a mouse click), then move the cursor in once, and move it back out as quickly as you can.

2) From [science blogger, SciCurious](#): "There are things called 'crutch-words'. You should...um...know what your ... um ... crutch ... um ... words are ... um ... they can be really... um ... distracting."

3) From [science blogger, SciCurious](#): "Never, never, please never, begin or end your talk with a variation on 'it's my first talk, and I'm totally nervous'. *Eyeroll*. In the best case scenario, we should not be able to tell it was your first talk. We should assume you've got lots of experience. Being told that you don't know what you're doing doesn't inspire a lot of confidence. Statements like that don't earn you sympathy."

4) From Jerry Weissman's post, [Interacting with Slides](#): "PAUSE each time you put on a new slide. The instant a new image appears on the projection screen, the audience suddenly shifts their attention to the screen and away from the presenter, and they do so *involuntarily*—driven by the reflex actions of their eyes. So focused is the audience on the slide, they do not hear anything the presenter says. There is a simple solution to all of this: Pause. How will the pause feel to you, the presenter? Awful. An eternity. How will that discomfort appear to the audience? They won't feel it, because they will be focused on the screen."

5) From Morton: **Walk your audience through the components of your slides with the timing of a comedian.** Check out [this YouTube of a comedian giving a PPT](#), as part of his standup comedy routine. Note the way the speaker presents his first transitional probability graphic at 1:58 (the one about the salmon life history), for which all info in the graphic is shown simultaneously. That's the way most academics would present such a graphic. Most academics would show all components of the graphic at once and then talk the audience through the components. Compare that all-at-once style of simultaneous presentation with the piece-by-piece style of presentation of a similar graphic starting at 2:23. The piece-by-piece style is more powerful, and there's a reason: Timing during spoken delivery is crucial (which is a skill comedians know well and academics should hone).

6) From Les Posen's [Presentation Magic](#): "Use Presenter's Tools. Apart from Steve Jobs' legendary rehearsal work ethic, he and his fellow Apple executives employ Keynote's Presenter display option, such that presenters can see both the current slide and the next one, invisible to the audience. Powerpoint has incorporated this feature in recent updates, although in almost every workshop I offer on presentation skills the vast majority of trainees are unaware of PPT's presenter display, and indeed the way most conferences are setup, it's very difficult to use it, given you're so often expected to hand over your slides to "central control" (which I never do) and forced to use a mirrored display."

Morton's comment: I cannot sing loudly enough the praises of Presenter's Tools. Find out how to use them and use them.

7) From Dorothy Bishop's [blog](#) (Note that these pointers are actually Don'ts; Dorothy was writing tongue-in-cheek): "Rapidly flick through the slides that you don't have time for - this creates a sensation that you could give them far far more exciting stuff if only you had more time." Morton's Comment: If you are using either PPT's or Keynote's

Presenter Tools, you will see the slides before and after the current slide and you will be able to very gracefully jump ahead (or back if needed), without flashing all of your slides to your audience.

8) From Dorothy Bishop's [blog](#) (Note that these pointers are actually Don'ts; Dorothy was writing tongue-in-cheek): "Spend at least 5 minutes on the Acknowledgements slide. Your audience is deeply interested in the many people whom your work depends on, and you should give their name, photograph, country of origin, role in the research, together with a quirky story illustrating their personality." Morton's Comment: Touché! My own practice is to throw the acknowledgements slide up when I ask for questions. That way, people who don't have questions can study the slide, if they want to, but I haven't spent any of my precious presentation time on acknowledgments (which, btw, are really only important to you, the speaker). Relatedly, I am *not* a fan of the custom I've seen in several First-Year-Project talks of having a slide that says "Questions?" or a slide that has a big question mark on it. In fact, and I apologize if I'm hurting anyone's feelings, I think that looks hokey.

Responding to Questions During and After Your Presentation:

1) From Morton: During my presentations, I typically welcome only questions that require immediate clarification (e.g., "Did you just say ___?"). I do not begin my presentation, or state elsewhere during my presentation, that I am encouraging the audience to stop me and ask questions at any time. Why not? Because I have spent days preparing my presentation, and the organization I've labored over is the organization that I think best serves the topic. When the audience begins jumping in to ask questions (beyond the need for immediate clarification), they've now hijacked my organization and replaced it with their organization, and all of my efforts fly out the window. Therefore, I recommend strongly against speakers beginning their presentation by inviting questions during it. I think speakers want to extend that invitation because they think it makes them look more causal or more knowledgeable. Maybe speakers do this simply because they've seen other speakers do it. But I strongly recommend against it. Giving an engaging, well-organized talk will make a speaker look more knowledgeable than getting sidetracked by questions. So I never invite questions during my talk, and if an audience member does ask a question that's beyond a need for immediate clarification, I smile, make eye contact, and say either "I'll be covering that soon," (hint, hint) or "Let's talk about that during the question period" (an even bigger hint).

As for how to respond to questions after your presentation:

2) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): "Anticipate questions you are likely to be asked. Be able to justify your decisions. Why did you choose one method over another (e.g., between-subject vs. within-subject, interview vs. survey)? Why did you choose one analysis over another (e.g., ANOVA vs. regression)? How would someone who is skeptical of your 'big idea' counter your findings? How would you respond?"

3) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): "Extra Slides. Some questions that you can anticipate will be easy to answer with a sentence or two. 'Were there gender differences?' 'No.' Other questions are harder to answer. For those, and for general information, prepare extra slides [that you can show] after your talk ... when needed. For example, prepare histograms of each measure. Have complex analyses you did not present. Block quotations from famous papers can be helpful for theoretical points. For example, if you said Piaget claims something, have direct quotations prepared."

4) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): Take time to answer the question. "Questions can be tough, especially when you have not anticipated them. [So, you should take the time right then] to think about the question before you begin to answer it. Silence for ten seconds is nothing for your audience, even when it feels excruciating to you. Avoid filling the time with "um's" or fidgeting.

Morton's Comment: I witnessed recently a veteran of this course handle unanticipated questions perfectly. The student stated straightforwardly: "Let me think about that for a moment." And there was silence, which actually felt ever so brief to me, as a member of the audience. Then, the student answered the question. The student's behavior provided an excellent model.

5) From DevPsych.org, [How to Give a Good Talk in Psychology or Other Sciences](#): How to handle what feel like challenging questions (challenging in the sense of opposition, rather than in the sense of merely difficult). "Even if

questions feel like a competition, try to reframe them as collaborative efforts to find out the truth. Help your thoughts flow by acknowledging the question and reframing it as a plan for scientific progress. ‘That is an interesting question because if it is true that ... then I should have found that As I mentioned, I found ...’ Or ‘these results can’t tease apart these possibilities. In a future study we might ... to answer your question.’ Remember that great scientists do not necessarily have truth; great scientists pursue truth.”

Learn each of these pointers and examine your own presentations (past and current), with these pointers in mind. Then watch (online) or attend (in person) five oral presentations. These can be TED talks; they can be brown bags, they can be departmental colloquia. **During each of the five talks, play one game of Great Talk Bingo.** What’s Great Talk Bingo? It’s a game I made up. In Appendix C are 14 Bingo Cards composed of phrases referring to most all the pointers discussed above. Therefore, to play Great Talk Bingo, you’ll use one card per presentation, and — like all games of Bingo — a completed row, column, or diagonal wins. In this case, the winners will be both you and the presenter whose talk you observed.

Assignment #16: Oral Presentations – Improving Our Own Presentations

Now that we’ve compared good vs. bad examples of oral presentations, identified not-so-good habits in our previous presentations, and worked through 25+ Dos and Don’ts, it’s time to get some practice improving our own presentations.

For next assignment, you can use one of your previous presentations (improved, of course) or if you are preparing a new presentation, jump ahead and develop it. **The first assignment will involve posting your fantastic slides and speaker notes (improved from a previous presentation or newly developed, but fantastic nonetheless); the second assignment will be providing feedback to other students in the course on their fantastic posted slides and speaker notes, and the third assignment will be polishing to perfection your posted slides and presenter notes based on other students (and my) feedback.**

Your presentation can be any length; it doesn’t matter if it’s five minutes or an hour. Whatever length presentation you need and want to work on is fine. For your visual supports, you can use PPT, Keynote, or if you’re really feeling like you need a fresh change of pace, [check out Prezi](#). I’ve seen Prezi used in several academic talks recently, and the talks were always terrifically engaging. Prezi helps you resist giving talks that are outlines, which is what most people fall prey to when using PPT.

The most important points to remember are, first, tell a story, rather than show and read to the audience an outline, and, second, design compelling visual accompaniments that support your presentation but are not outline forms of your presentation (think Steve Jobs not Bill Gates). Here are a few more websites for you to consult for inspiration and guidance:

[Best Presentation Design](#) (each of these 15 pointers you’re already familiar with from other presenters we’ve discussed, but repetition never hurts, and every point is right on the mark)

[Design Tips by Garr Reynolds](#) (we’ve discussed his ideas before, but here’s a whole webpage on them)

[Rule of Thirds](#) (which is a principle in photography that works great in slide design; you’ll see it’s just the opposite of what most speakers do, which is to place the information in the center)

[Examples of Bad to Good to Better Slides](#) (this set of slides has a strong fundamental Christian bend, but the pastor who made these slides did a great job of showing how to go from poor design to ok design to great design)

Please note that I’m expecting that your first post will be fantastic. Thus, your first post should show strong evidence of your having incorporated all of the techniques we’ve discussed.

Assignment #17: Oral Presentations – Improving Our Own Presentations - Redux

Over the past few years, I've wondered why developing lively talks with visual accompaniments, which are supportive illustrations rather than detailed outlines, is so difficult for current students and postdocs. Recently, I've gotten an insight: instant coffee.

Instant coffee, you ask? What the heck is instant coffee? It's freeze-dried coffee that comes in a jar and you mix it with boiling water. How does it taste? To quote from [Wise Geek](#), "akin to drinking rat poison." Maybe that's a bit harsh, but instant coffee tastes as similar to real (brewed) coffee as cherry-flavored cough syrup tastes to a bowlful of fresh cherries or as Beggin' Bacon Strips tastes like bacon. It's true that I've never eaten Beggin Bacon Strips, but I have had cherry-flavored cough syrup, and I've definitely had my share of instant coffee, and the latter sucks. It's awful.

Back in the 1950s and 60s, instant coffee was all the rage. It remained the rage till the early 70s when the world's taste buds were reclaimed by the invention of Mr. Coffee coffee-makers ("automatic drip coffeemakers designed for household use").

Before the advent of Mr. Coffee coffee-makers, for almost two decades, everyone drank instant coffee. My father, who was a creative and eccentric architect, a man for whom the expression 'form over function' was a desideratum, even drank instant coffee – all day long. That's how pervasive the use of instant coffee was; in fact, instant coffee was considered the progressive way to drink coffee, ironically enough. My father was a man who refused to eat margarine, only real butter; he refused to eat mac'n cheese (or any casserole for that matter), but he steadily drank yucky tasting instant coffee. Every dorm room in my freshman dorm had a jar (or more) of instant coffee, alongside an electric teapot for boiling water. For almost two decades, virtually all coffee drinkers drank instant coffee. Horrible tasting, vile instant coffee.

How did that happen? Instant coffee per se had been invented during World War II as a convenience to the military. The war-time instant coffee, unlike the instant coffee the general population would later drink, was a powder that didn't mix that well, or taste that good, but war requires sacrifice. Prior to and apart from the war, the primary means for making coffee was the percolator, usually electric. But percolated coffee took a lot of time to make, and the advent of the 1960s with space food (concoctions placed in toothpaste like tubes) and other fast foods, drove coffee drinkers to want to speed things up. Enter Nescafe and their patented process for freeze drying coffee, and the rest is history. Here's [a 1950s commercial](#) introducing the world to the wonders and time-saving value of instant coffee.

Trust me; when I was in grade school and through to college, everyone drank instant coffee. And it sucked. So why does instant coffee remind me of last assignment's hard work? Well, I think the advent of and current reliance on PPT and its templates are like the advent of and past reliance on instant coffee. PPT and its templates were designed as an easy way to show visual media when giving a talk; they were considered a quick way to prepare your talk (just write an outline; PPT will even prompt you for a title and for bullet points); and they were lauded (and still are) for the fact that if a person misses attending a talk, you can just send that person your PPT. The audience doesn't even need to be there, doesn't need to experience the oral presentation. They can just read what you had to say off of your PPT slides. Instant oral presentation!

Therein lies the rub. Like instant coffee, if making a presentation is that easy and that quick, it's probably not that good. And, like instant coffee, if it's all you've grown up with, as I suspect is the case for most of you with regard to PPT, it's all you know how to use. Indeed, back during the heyday of instant coffee, it was the older coffee drinkers who remembered coffee before it was instant (and freeze dried) and who knew there was a better way. Similarly, older audience members like me, who remember back when speakers gave engaging, understandable, and memorable talks with beautiful 2x2 photographic slides as visual support, know there is a better way.

For this assignment, we are going to practice one more time creating engaging, understandable, and memorable talks with engaging, understandable, and memorable visual supports (rather than bullet-laden PPT outlines). We'll follow the same process as before: **Post your fantastic version; post feedback to other students; and post polished-to-perfection versions.** You may retool another talk that you've given in the past or design one from scratch. Length doesn't matter. But the talk needs to be different from the one you worked on during the last assignment.

Some reminders:

If you're displaying a photograph, try to fill the entire slide. Here are examples of Bad to Good to Great from the site we've examined before (the one with the fundamental Christian bend, which must be a preacher giving advice to other preachers on how to improve their PPT slides; good for them). Compare these pairs of slides:



Image: [Michael Hite](#)



Image: [Michael Hite](#)

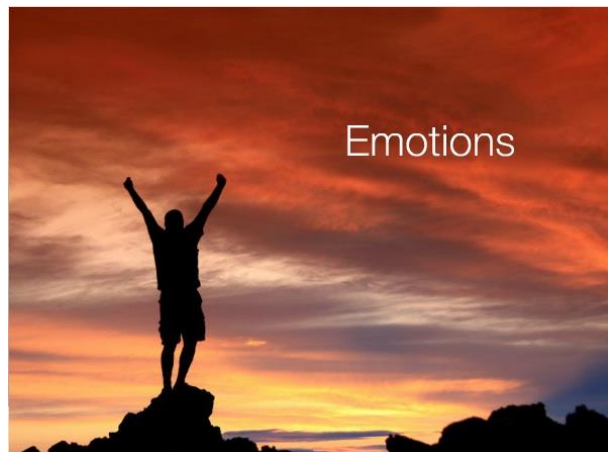
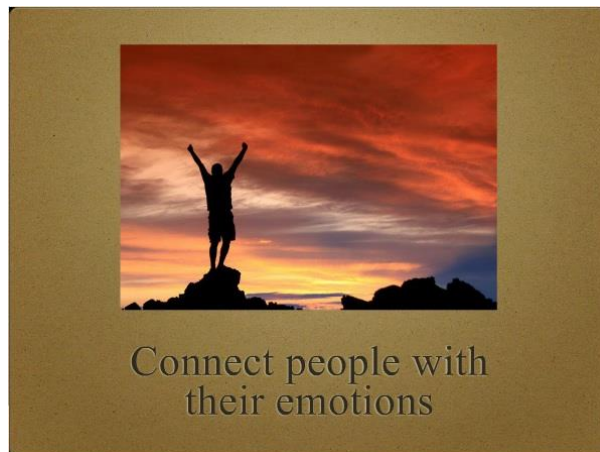


Image: [Michael Hite](#)

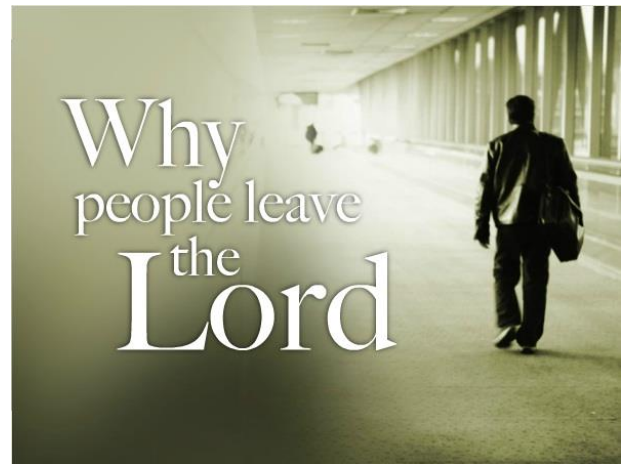
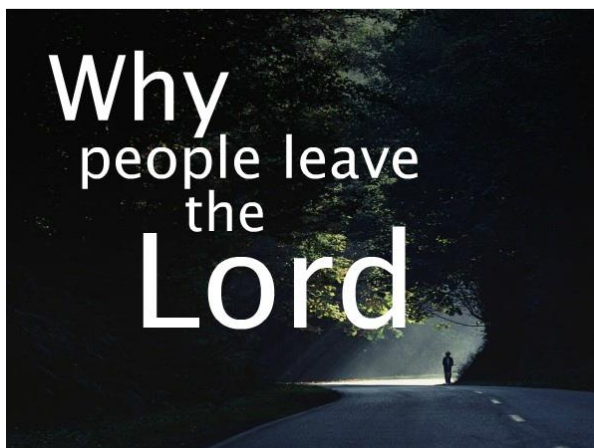


Image: [Michael Hite](#)

Try to avoid text only slides.



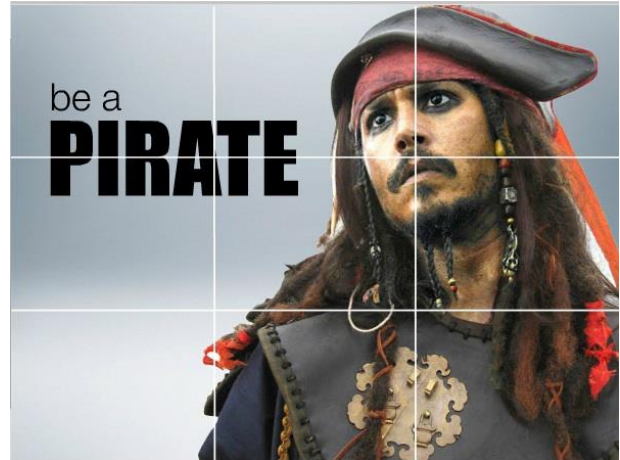
Image: [Michael Hite](#)



Remember the Rule of Thirds.



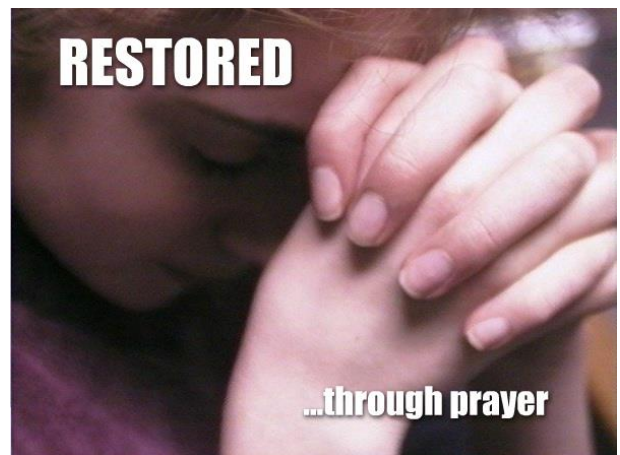
Image: [Michael Hite](#)



If you do need text on a slide, simplify the text as much as possible.



Image: [Michael Hite](#)

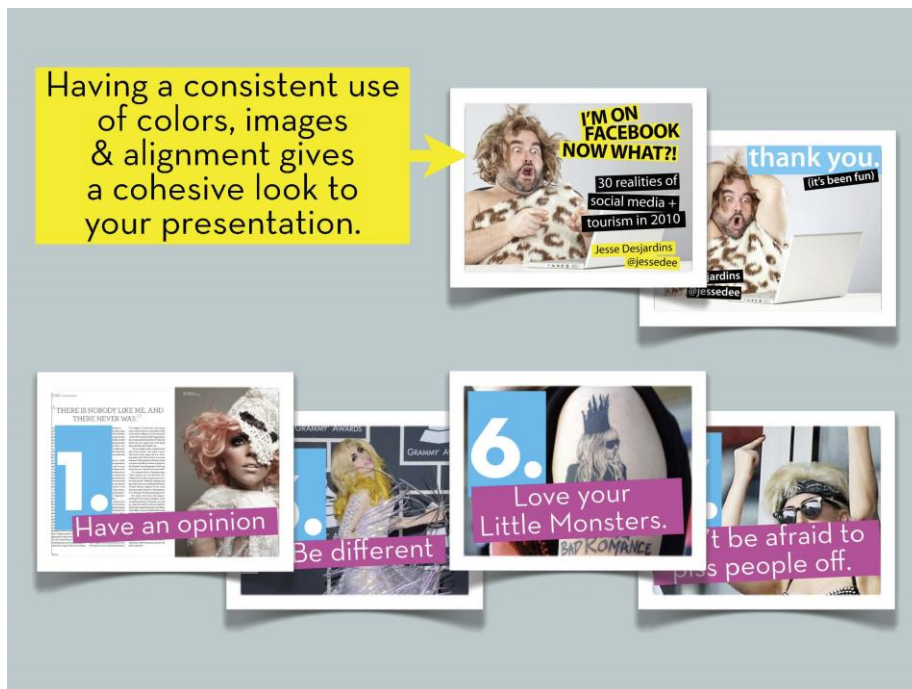
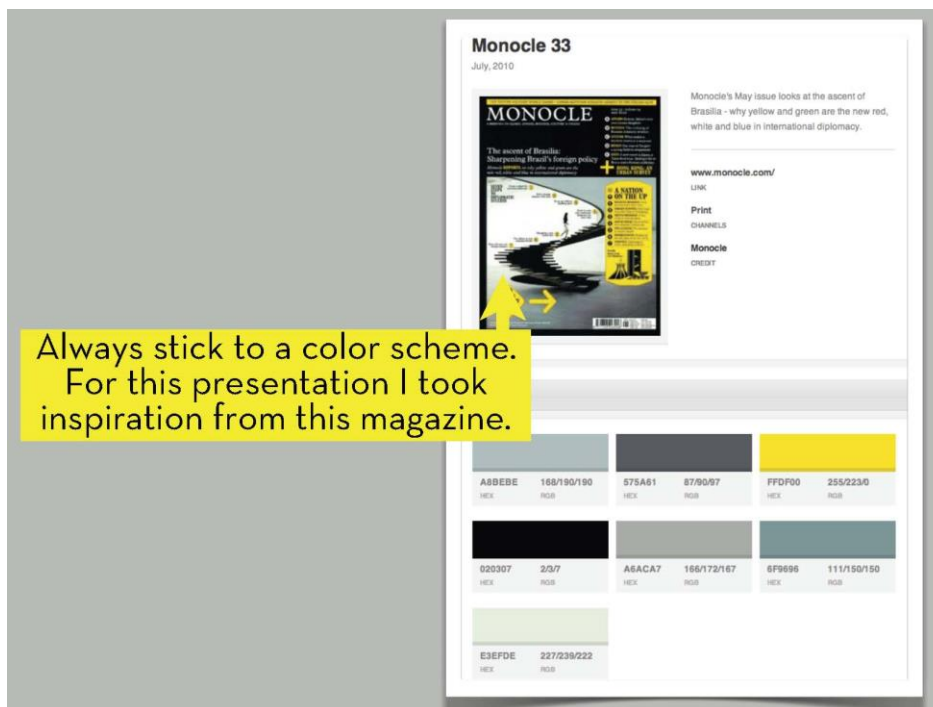


And keep your font large:



Image: [Michael Hite](#)

For this assignment, I'd also like you to focus on using a “consistent use of color, images, and alignment [to give] a cohesive look to your presentation.”

Image: [JesseDee](#)Image: [JesseDee](#)

Have fun, create, and let's see what another round of practice will do for weaning you off of instant coffee.

UNIT 3: IMPROVING POSTER PRESENTATIONS

Assignment #18: Poster Presentations – Relating Your Experiences

In this unit, we'll focus on another medium of scholarly communication: the scientific poster. I honestly don't know the temporal origin of conference posters; they've been around as long as I've been in academia.

In fact, in 1981, as a first-year PhD student, I presented my first scholarly poster at the annual APA conference, which was held in Los Angeles. The three things I remember from this debut were a) spending hours, including long-into-the night hours, before my poster session was held the next morning, stenciling in my poster's title using Mark-a-lot; these were the days before Kinkos and other consumer print shops, much less software for poster design; b) being assigned a poster board space at the far back of a cavernous hotel ballroom; and c) having the good fortune to be assigned a poster board space immediately adjacent to Nelson Cowan, who at the time was a first-year postdoc at NYU. Because few if any other conference attendees found their way back to Nelson's and my ghetto, he and I had a chance to chat, with the upshot that Nelson and I have been friends and colleagues for 30-plus years. Indeed, Nelson's friendship might have been the only accomplishment of my maiden poster session.

I've asked numerous conference organizers whether anyone really knows the origin of conference poster sessions, and no one really does. But everyone's best guess is that poster sessions were designed as a means to increase dramatically the number of presentations on the conference program, without having to allocate 15-minutes per additional presentation. For example, at the APS annual convention, holding 10 poster sessions over the three-day conference allows the conference to place another 2000 (!) presenters on the program. The ability to cram so many presenters onto a convention program should be our first hint for why poster sessions are often less than the ideal mechanism for presenting scholarly research.

As communication guru, [Cory Doctorow](#), relates: *The best general advice I can give a first-time poster constructor is to describe the circumstances in which a poster will eventually be viewed: a hot, congested room filled with people who are there primarily to socialize, not to look at posters. Because poster sessions are often concurrent with the "wine and beer" mixer, chaos is further increased by hundreds of uninhibited graduate students staggering around hitting on each other. It's not a pretty sight.*

Cory provides this illuminating birds-eye-view of at typical poster session at a large-size conference.



Image: [Cory Doctorow](#)

Not all poster sessions are massive ballrooms filled with hundreds of posters, although the majority are. Poster sessions can also accompany smaller conferences. I've attended poster sessions comprising only 20 or 30 posters,

but over the years I've also spent a lot of time wandering around poster sessions (e.g., at APA and APS) that comprise hundreds of posters.

How do conference attendees size up poster sessions? Data collected by Zen Faulkes, who writes a highly-recommended blog, [Better Posters](#), match my intuitions. The majority of conference attendees prefer giving spoken presentations and attending other presenters' spoken presentations; the next highest preference is for giving posters, but attending spoken presentations. Giving spoken presentations and attending posters or giving posters and attending posters are the least preferred options. In other words, attending posters, any way you slice it, is the least preferable way to learn about another person's research at a conference.

In this unit, we will deal head on with the core question of why posters notoriously fail to engage their intended audience and maintain their intended audience's attention. We will examine bad and not-so-bad examples (with just a handful of reasonably good posters). We will try our hand at designing novel layouts that will lead to greater success.

But, first, let's share our experiences. **Answer the following questions: Have you attended any poster sessions? If so, how many poster sessions have you attended? Where were they held? What were the sessions like (room size or other environmental features)? How many posters were displayed during each session? What did you enjoy about attending the poster session(s) and what didn't you enjoy?**

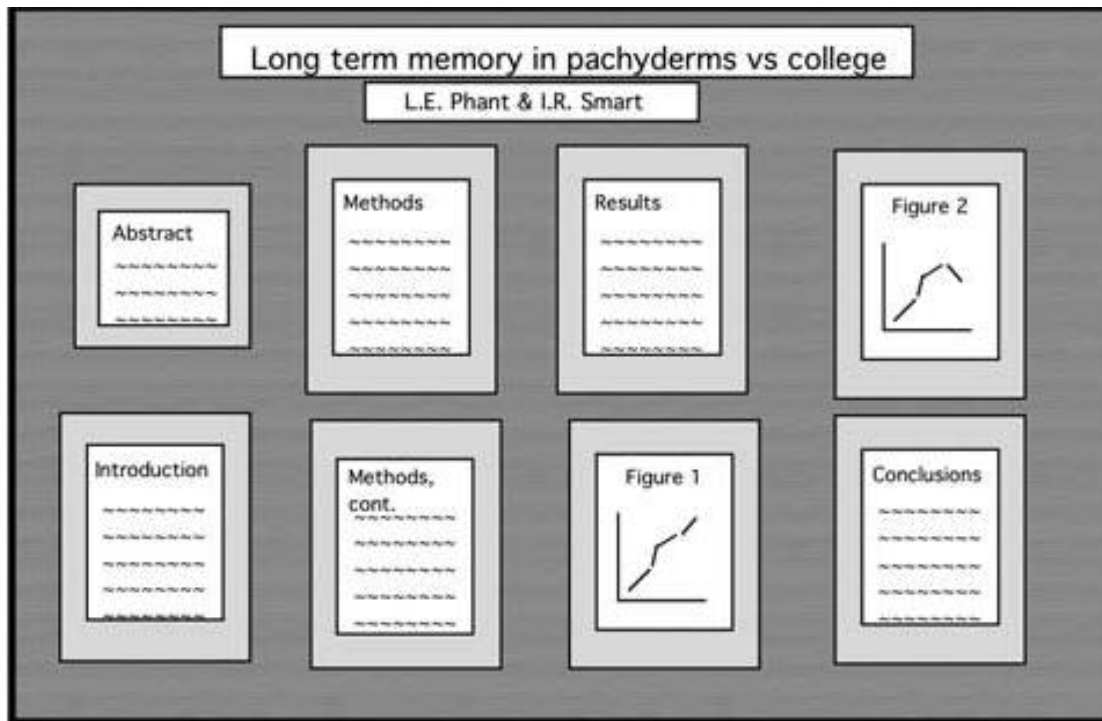
Have you ever presented any posters? If so, how many? Where did you present? What was the room like? What was the audience like? And what did you enjoy most about presenting at the poster session(s) and what didn't you enjoy?

Assignment #19: Poster Presentations – Designing Better Layouts

While no one really knows *when* poster sessions arrived on the scientific conference scene, everyone knows *why* they did: to dramatically increase the number of persons on the conference program, without having to dedicate 15-minutes to each and every one of those additional persons. Therefore, early poster presentations looked a lot like written presentations — in fact, a lot like written presentations. Preparing a poster presentation back then meant simply posting, with thumb-tacks, your completed written paper to a bulletin board. Really.

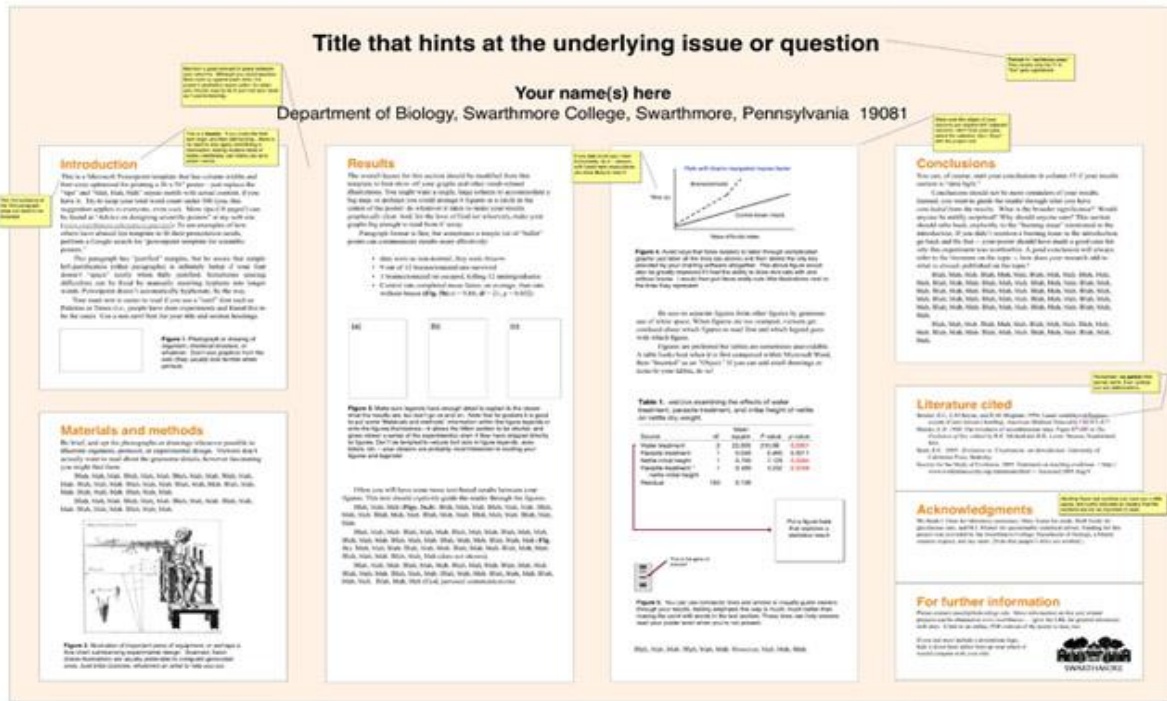
By the time I began attending and presenting at poster sessions (c. 35 years ago), the routine had changed only slightly. Rather than posting their entire paper, authors typed (yes, typed on a typewriter) one- or two-page summaries of each of the various sections of their written paper. So there might be one 12-point font, double-spaced page for the Abstract, another 12-point font, double-spaced page or two for the Introduction, another page or two for the Methods, for the Results, and for the Discussion. A typed page of References usually rounded up the poster, along with a figure or two (though making figures back in the days before computer-graphic programs was painstaking, involving rub on letters, exact-o knives, t-squares, and this putty type stuff that you'd use if you made a mistake and rubbed on something you then needed to rub off).

Presenters who wanted to go a bit fancier would mount each of their typed pages onto colored construction paper and hand-letter a larger-than-typewriter-allowed title. We'd tack the title at the top, the authors' names underneath the title, and then spread the individual pages (abstract, introduction, methods, etc) across the bulletin board, resulting in a layout that looked like this:

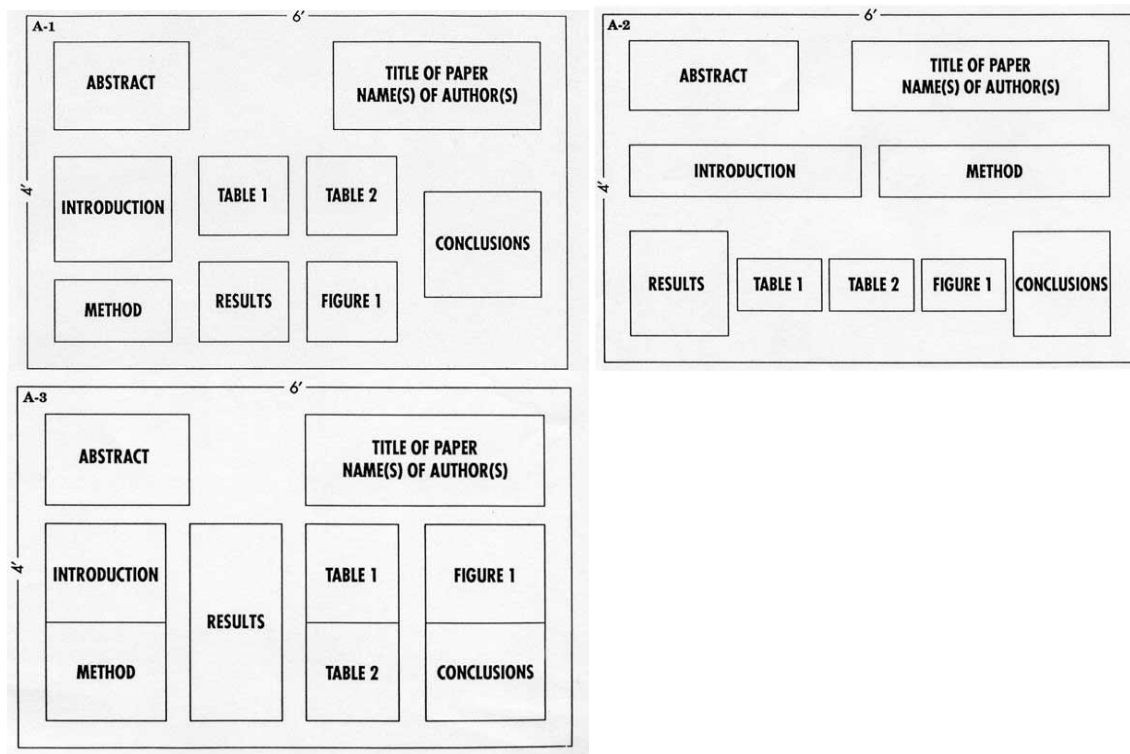
Image: miamioh.edu

Around the mid 1990s, when PowerPoint gained traction, presenters began using PPT to create actual posters, rather than typing individual-page components on a typewriter (or even a word processor) and later arranging those individual pages onto a poster board.

But the odd thing was – and still is – that PowerPoint, or any design software (Adobe Illustrator, Keynote, etc), isn't limited to replicating that old-style poster (for which presenters thumb-tacked a page for their abstract, another page or two for their introduction, another page or two for the methods, for the results, and for the discussion). Nonetheless, and strangely, that's the way virtually all posters are still laid out in the 21st century.

Image: Baidu.com

Indeed, the templates offered by PowerPoint, and other sources, derive completely from the old days when poster presenters tacked up type-written pages. The templates vary only with regard to where the various (formerly type-written) components are located in the whole ensemble.

Image: Allegheny.edu

Abstract

Identification of novel drug targets in ovarian cancer has focused on epigenetic genes and protein-kinase genes. We have previously shown that SYK is a novel drug target in ovarian cancer. SYK is expressed in 73% of ovarian cancer specimens, compared to 3% of 50 ovarian cancer specimens. Previous studies established the role of SYK in tumor progression. Among its many targets, SYK can test microtubules and other molecules associated with the cytoskeleton. We found SYK to be expressed in 61 of 10 ovarian cancer cell lines. Because of the ability of SYK to bind to microtubules, we hypothesized that inhibition of SYK expression to cellular migration. We examined several SYK inhibitors and found that the SYK inhibitor, AYA-1001, inhibited SYK expression. The potential effects of SYK on cell migration. Our results demonstrate that knockdown of SYK expression resulted in a decrease in cell migration of cells to migrate using a traditional wound healing assay. The inhibition of this effect was dependent upon the use of SYK suggesting that additional proteins may be involved in the migratory process. The potential effects of SYK expression on cell migration are currently being investigated. We will evaluate potential upstream and downstream targets involved in the pathway(s) responsible for SYK effects and compare with the cell examined. Understanding the growth and migration of SYK potentially contributes for invasion and metastasis in ovarian cancer cell lines and tumor samples may eventually lead to new therapeutic approaches for ovarian cancer.

Background

Ovarian epithelial cancers are the leading cause of death from gynecological malignancies in the United States with 21,500 new cases and 14,800 deaths estimated for 2009 [1]. The high mortality results from the fact that ~70% of these cases are diagnosed at a late stage (2), and that most patients have reached their stage of metastases (3-5). Thus, the use of novel drugs to target the pathways in this disease, we examined our ovarian cancer specimens (6, 7), and found that SYK (tyrosine kinase) was overexpressed in a majority of the specimens.

SYK is a non-receptor tyrosine kinase that has a well-known role in lymphocyte development and function [8]. SYK is involved in the signaling for molecules, including signaling associated with the inflammatory response, and has been found to be involved in lymphoid malignancies and melanoma. Inhibitors of SYK have been found to inhibit SYK expression, protein activity, and vasculature [9, 10].

The role of SYK in epithelial malignancies is not well understood. In breast [11, 12], gastric [13], pancreatic cancers [13] SYK expression is low, whereas it is highly expressed in some cases of nasopharyngeal [14], head and neck cancers [15], and large cell lymphomas [9].

Because SYK was expressed in 73% of our ovarian cancer clinical specimens, in contrast to breast cancers, we chose to initially study the relevance of SYK in cellular proliferation and metastasis.

SYK promotes tumor progression in ovarian cancer cell lines.

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Supported by NIH R01 CA 114037 from the U.S. Public Health Service (Sikic) and the Ovarian Cancer Research Fund (OCRF)

Table 1: Genomic profiling reveals SYK expression in clinical specimens of ovarian cancer and minimal to absent expression in breast cancers.

Tissue	Gene Expression				
	Negative	Low	Medium	High	0
Ovarian	27	22	42	9	0
Breast	71	23	4	3	0

Figure 1: SYK expression in ovarian cancer cell lines can be silenced using SYK-specific siRNA.

Legend, Panel A: SYK was expressed in six of the ten ovarian cancer cell lines. The cell lines were seeded at a concentration to achieve 30% confluency on the day of the experiment and allowed to attach overnight. Cells were collected after 48 hr incubation at 37°C, 5% CO₂, and total cell protein extracts using lysis buffer (10 mM Tris-HCl, pH 8.0, 140 mM NaCl, 1% Triton X-100, 1% DMSO, and 1% deoxycholate) with fresh proteinase inhibitors. **Panel B:** OVCAR-3 cells transfected with the SYK-specific siRNA inhibitor have ~90% knockdown of SYK protein. OVCAR-3 cells were transfected with siRNA to achieve 30% confluency to achieve 30% confluency on the day of the experiment and allowed to attach overnight. SYK protein levels were simultaneously transfected to give a final concentration of 15 nM siRNA. Cells were allowed to attach and collected after 48 hr incubation at 37°C, 5% CO₂. Total cell proteins were extracted using lysis buffer (10 mM Tris-HCl, pH 8.0, 140 mM NaCl, 1% Triton X-100, 1% DMSO, and 1% deoxycholate) with fresh proteinase inhibitors. Under these conditions, the SYK gene product was silenced >90% relative to OVCAR-3 wild-type cells and scrambled controls. Blots in panel A and B were re-probed with anti- β -tubulin antibody to verify equal protein loading among the various conditions.

Figure 2: Knockdown of SYK expression or inhibition of SYK activity decreases cell density.

Legend: Examination of SYK effects on cell density. OVCAR-3 cells plated in 96-well tissue culture plates were grown in media with 10% FBS and exposed to either scrambled siRNA, Neg, 20 nM siRNA, or transfected with the same SYK-specific siRNA (15 nM final concentration). Confluency was delayed when compared to cells grown in media transfected with scrambled siRNA. Neg, 20 nM siRNA concentration, showed minimal effect on the ability of these cells to form confluent monolayers. Cells transfected with SYK siRNA with PEG500 resulted in a similar decrease in confluency, suggesting that kinase activity is required. All cells were incubated at 37°C, 5% CO₂, total time 96 hrs. Cell density (4 spots) was analyzed by the softluciferase blue (SRB) assay. (n=3)

Figure 3: Inhibition of SYK does not result in an increased rate of apoptosis.

Legend: OVCAR-3 cells transfected with the SYK-specific or non-targeting siRNA (15 nM), or siRNA to control cells for 24 hr. Cells were then exposed to paclitaxel for 24 hr (Upper panel) or 48 hr (Lower panel). The cells were then harvested using Tris-Cl EDTA, and stained with an enhanced green fluorescent protein (EGFP) fused to annexin and propidium iodide (PI). Flow cytometry was performed and FACS plots for control and untreated controls. All cells were incubated at 37°C, 5% CO₂.

Figure 4: Inhibition of SYK expression or SYK kinase activity resulted in decreased capability of cells to migrate.

Legend: OVCAR-3 cells were plated in 6-well tissue culture plates with media alone, transfected with the SYK-specific siRNA (15 nM final concentration), 1% FBS, and cells allowed to grow to 80% confluency. The solution in all wells was then replaced with media containing 1% FBS and cells allowed to grow and additional 24hrs. A wound scratch was then performed (indicated by time 0hr). Following a 24 hr incubation, the cells were re-examined and degree of migration noted (by time 24hrs). Cells were incubated at 37°C, 5% CO₂ (total time 120hrs). 10x magnification under confocal microscopy.

Figure 5: OVCAR-3 cells transfected with the SYK-specific siRNA result in increased vimentin expression.

Legend: OVCAR-3 cells were seeded in the LAB-Tek 4-well chamber slide in the presence of media alone or transfected with SYK-siRNA (15 nM). Cells were then exposed to paclitaxel for 24 hr (Upper panel) or 48 hr (Lower panel). The cells were then harvested using Tris-Cl EDTA, and stained with an enhanced green fluorescent protein (EGFP) fused to annexin and propidium iodide (PI). Flow cytometry was performed and FACS plots for control and untreated controls. All cells were incubated at 37°C, 5% CO₂ (total time 120hrs). 10x magnification under confocal microscopy.

Figure 6: Direct and indirect targets of the SYK protein.

Legend: OVCAR-3 cells transfected with the SYK-specific siRNA (15 nM) or siRNA to control cells for 24 hr. Cells were then exposed to paclitaxel for 24 hr (Upper panel) or 48 hr (Lower panel). The cells were then harvested using Tris-Cl EDTA, and stained with an enhanced green fluorescent protein (EGFP) fused to annexin and propidium iodide (PI). Flow cytometry was performed and FACS plots for control and untreated controls. All cells were incubated at 37°C, 5% CO₂.

Image: Betterposters.blogspot.com

Try that. Try standing in front of another person, who is standing next to their computer with some information on the screen (place the above poster on the other person's computer screen, for best effect). Try standing there for 10 minutes silently reading the information next to another person. That person (our make-believe presenter) can't say a word until you read through their information. Try that. For a full 10 minutes.

If you're like me, you'll be lucky to last one minute. And one minute of standing time is equivalent to 250 words, which to me is the maximum number of words that you should ever put on your poster. Ever. And I think 250 words is too much. I'd aim for more like 125 words. Max.

I'm not the only person who says

- “The most effective posters provide minimal text. (Didn’t we warn you that we’d be saying that a lot?)” ([The American Society of Primatologists](#)’ How To Design a Poster)
- “[The number one problem is] Too much text. A poster is not a manuscript. In fact, a poster could best be thought of as a manuscript with only figures, tables, and legends—a manuscript without any (or very little) text.” ([Mike the Mad Biologist](#) at Science Blogs)
- “One of the biggest pitfalls of poster presentations is filling your poster with so much text that it overwhelms your viewers and makes it difficult for them to tell which points are the most important.

Viewers should be able to skim the poster from several feet away and easily make out the most significant points.” ([University of Wisconsin-Madison Writing Center](#))

- “Keep text to an absolute minimum. Write what you think is the absolute minimum, then force yourself to cut it in half. Continually remind yourself ‘There is ALWAYS too much text in a poster.’ Tell your story with graphics as much as possible. An efficient way to structure a poster presentation is to choose the graphics first, then ... arrange the spatial flow of the poster around them. As with text, a few well-chosen and large graphics are more effective than 10-12 smaller ones.” ([Scientifically Speaking: Tips for Preparing and Delivering Scientific Talks and Using Visual Aids, published by the Oceanographic Society](#))
- “Edit Ruthlessly! There is almost always too much text in a poster. Posters primarily are visual presentations; the text should support the graphics. ... An abstract may not be necessary. If you’ve kept the amount of text on your poster to a minimum, an abstract is likely redundant. The poster is not a publication of record, so excessive detail about methods, or vast tables of data are not necessary. Such material can be discussed with interested persons individually during or after the session, or presented in a handout.” ([BIO810: graduate course titled, “Scientific Literature and Writing”](#))
- “Minimize text – use graphics. Keep text in blocks of no more than 50-75 words – don’t create large, monolithic paragraphs of prose.” ([Georgetown University Medical Center Writing Lab](#))
- “Don’t clutter your poster with too much text!” ([Humboldt University](#))
- “Too much text should be avoided: Illustrations should support the presentation.” ([IEEE International Conference on Communication](#))
- “Too much text is the most prolific problem among scientific posters, and, in many cases, a lot of text will discourage viewers from stopping at all. Reduce the text down to a bare minimum ... If you feel providing details is important, then prepare a separate handout with this information and have plenty of copies available for distribution.” ([University of Washington, Fish & Wildlife Department](#))
- “The three most common mistakes made in constructing a poster are (1) including too much text, (2) using a font that is too small, and (3) not planning for the available space.” ([European Vision Research](#))
- “Posters ALWAYS have too much text. Strive for 20% text, 40% graphics, 40% empty space.” ([MIT Biology Department](#))
- “Remember: There is always too much text!” ([Dalhousie University, Computer Science Department](#))
- “When in doubt, rephrase text or delete it. (Keep chanting this mantra: There is always too much text. Always too much text.)” ([Florida State University, School of Medicine](#))
- In cartoon form (from [Nature Education](#))



Everyone will advise you not to use very much text; in fact, if you Google the term Poster Presentation and the quoted expression “too much text,” you will see over 10,000 websites forwarding this advice. Everyone says “too much text”—well, everyone but the company offering this poster template:

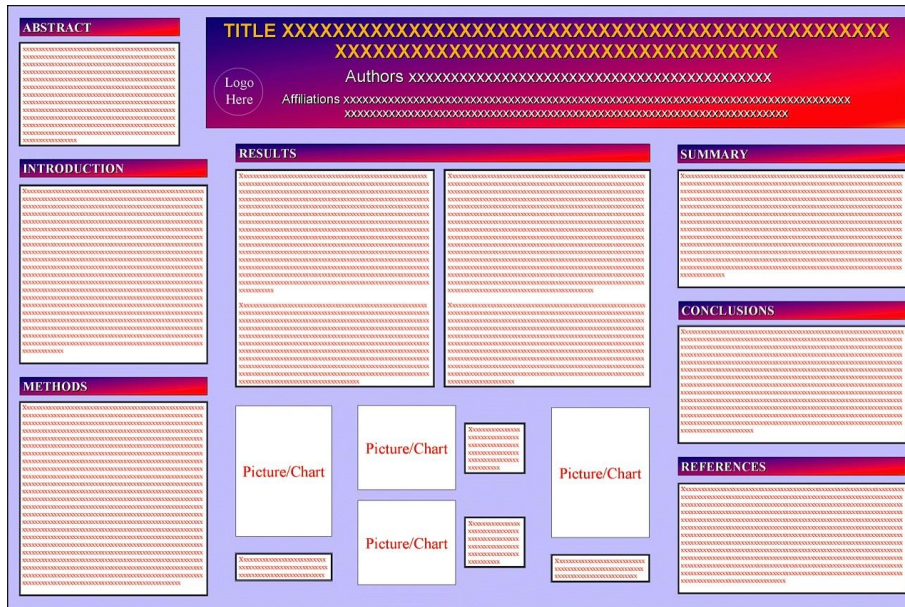


Image: Posters4research.com

Rule #1: No more than 250 total words and more preferably no more than 125 total words.

Here's a poster that abides by the no-more-than-125 words. See how inviting this poster is. You could read this poster in under a minute and then ask detailed questions to the presenter to follow up.



Image: aou.org

Here's another poster that's slightly more text heavy, but nothing near the Stanford poster (though the layout of the below poster could use a bit more creativity).



Image: civil.iitb.ac.in

Here are two other posters that are parsimonious with their text (from [BetterPosters](http://BetterPosters.com)):

Studying the Effects of Affective Feedback in Embodied Tutors

HERIOT-WATT UNIVERSITY Mei Yui Lim, Mary Ellen Foster, Srinji Janarthanam, Amol Deshmukh, Helen Hastie, and Ruth Aylett
School of Mathematical and Computer Sciences, Heriot-Watt University

Activity: 37 students aged 11-12 carried out a real-world "treasure hunt" around Edinburgh

Conditions:

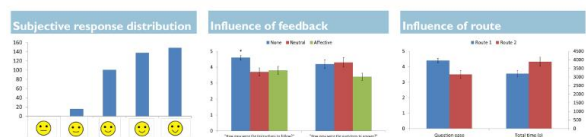
- ♦ Paper-based
- ♦ Android app with embodied robot agent
- ♦ Neutral feedback ("Correct", "Incorrect")
- ♦ Affective feedback ("Brilliant", "Oh no")

(Also: two different routes)

Evaluation: GPS traces; subjective questionnaire ("smileyometer")



Results



Do missing megafauna limit the distributions of some trees?

Benjamin J. Seliger and Jacquelyn L. Gill
Climate Change Institute and School of Biology and Ecology, University of Maine, Orono, ME

The Problem

The mysterious fruits of some trees are best explained when viewed in the megafauna filled world in which they evolved? (Fig. 1). Tree species like Joshua Tree, which produce fruit largely uneaten today, were among common foods of now-extinct megaherbivores¹. Since the Pleistocene megafaunal collapse, trees dependent upon these dispersers should have a reduced ability to track changing climates.

Figure 1: Six North American fruit with adaptations for megafauna dispersal. Megafaunal fruit are often too large to eat or too difficult to open for extant animals, and are sugary or otherwise rich in nutrients. Many are not dispersed today.

We can test this hypothesis using the percentage a species realizes of its bioclimatically potential range as a proxy for dispersal during the Holocene². On this poster, we estimate potential ranges with MaxEnt for Joshua Tree and Honey Mesquite, two species thought to have been dispersed by the community of megaherbivores that lived in the arid American Southwest³ (Fig. 2). Results are shown as maps below.

The Data

Joshua Tree (*Yucca brevifolia*)
Holocene Dispersers: Secondary dispersal by seed-caching rodents⁴

Honey Mesquite (*Prosopis glandulosa*)
Holocene Dispersers: Deer, capreolus, raccoons, muskrats, turkeys and other birds⁵

Legend: Occurrence (red dot), Potential Range (green outline), Realized Range (grey outline).

Joshua Tree and Honey Mesquite differ in the percentage of potential range filled by an order of magnitude. We attributed this difference to the disparity in Holocene dispersers between the two trees. Seed-caching rodents are the only documented dispersers of Joshua Tree today⁴, while several megafauna species disperse Honey Mesquite⁵. These preliminary data suggest that Joshua Tree's range could be limited due to the loss of megaherbivore dispersers. Future work is going to apply this analysis to suspected megafauna-dispersed species in Eastern North America.

Model Specifications
MaxEnt Model
Occurrence data (GBIF)
Climate Data (WorldClim) & CGCM
Evaluation: 80% training, 20% testing
Threshold: True specificity & sensitivity

Model Parameters
Environment: BIOCLIM
Winter minimum, water balance, and precipitation seasonality
Realized Range: defined by 1000 (10 Lines)
Potential Area: predicted to exist at 4 out of 5 iterations
5 iterations each with different testing data

Contact info
benjamin.seliger@maine.edu

Literature Cited
1. Lovejoy, T.E., & Bawa, K.S. (1980) The evolution of large fruits and seed dispersal in the Neotropics. *Journal of Tropical Ecology*, 1, 1-10.
2. Seliger, B.J., & Gill, J.L. (2015) The evolution of large fruits and seed dispersal in the Neotropics. *Journal of Tropical Ecology*, 1, 1-10.
3. Seliger, B.J., & Gill, J.L. (2015) The evolution of large fruits and seed dispersal in the Neotropics. *Journal of Tropical Ecology*, 1, 1-10.
4. Seliger, B.J., & Gill, J.L. (2015) The evolution of large fruits and seed dispersal in the Neotropics. *Journal of Tropical Ecology*, 1, 1-10.
5. Seliger, B.J., & Gill, J.L. (2015) The evolution of large fruits and seed dispersal in the Neotropics. *Journal of Tropical Ecology*, 1, 1-10.

Rule #2, from Mike the Mad Biologist: “Use informative headings. I see too many posters with sections labeled ‘Abstract’, ‘Methods’, ‘Results’, and ‘Conclusions.’ You have a summary! And some methods! Results and conclusions too! Bully for you. [So does everyone else!] Use the section headings to inform the reader, while simultaneously describing the figure or table. Something like, “xyz genes are found only in clinical isolates.”

Here’s an example of a poster that avoids the traditional Abstract, Methods, Results etc. headings. Although I think this poster still suffers from too many words, it looks more inviting than most posters.



Image: Petr Pavlovich Kuznetsov

Note that the artistic author of this poster (who has a PhD in molecular genetics from Washington University in St. Louis and did a NIH-funded postdoc at Harvard, so no puff ball) had a packet of handouts underneath her poster describing more of the details of the study. The poster worked as a billboard to attract attention; once an audience member was attracted, the presenter herself could answer questions, and for more details, the audience member could consult a handout. That's exactly what you want in a room of hundreds of posters. You want to entice. You want to attract. You want to advertise your research. You want the poster to be aesthetically pleasing.

Here's another poster that engages attention (even though it uses the traditional headings, e.g., Background, Objective, Methods, Results, etc).

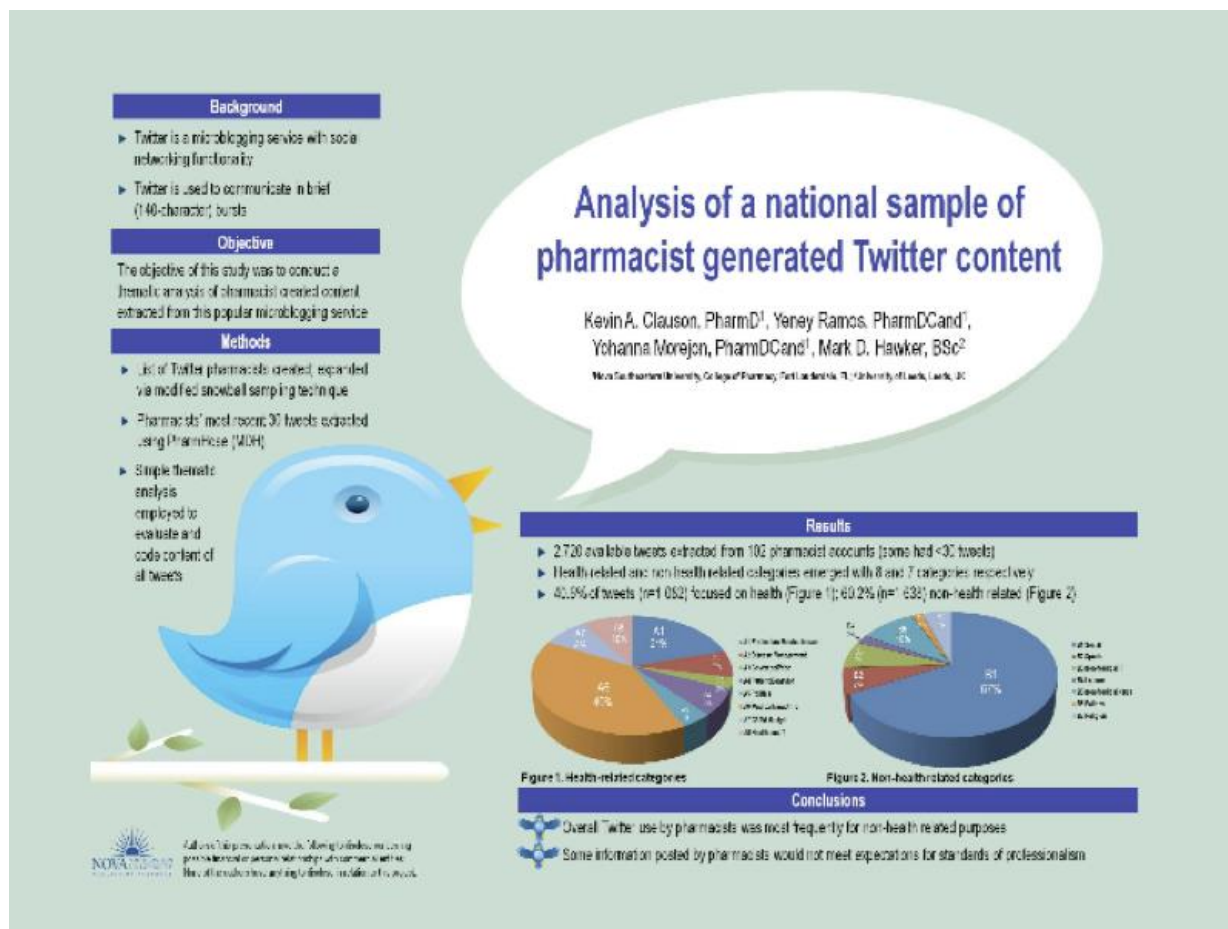


Image: kevinclauson.com

Rule #3: Keep in mind what we discussed when designing PPT slides with regard to consistent color schemes and Rule of Thirds. For example, I really like the layout of the next poster in terms of its color scheme, graphics, and the way it uses circles to identify important information (although it probably still has too much text and it cleaves to traditional headings).

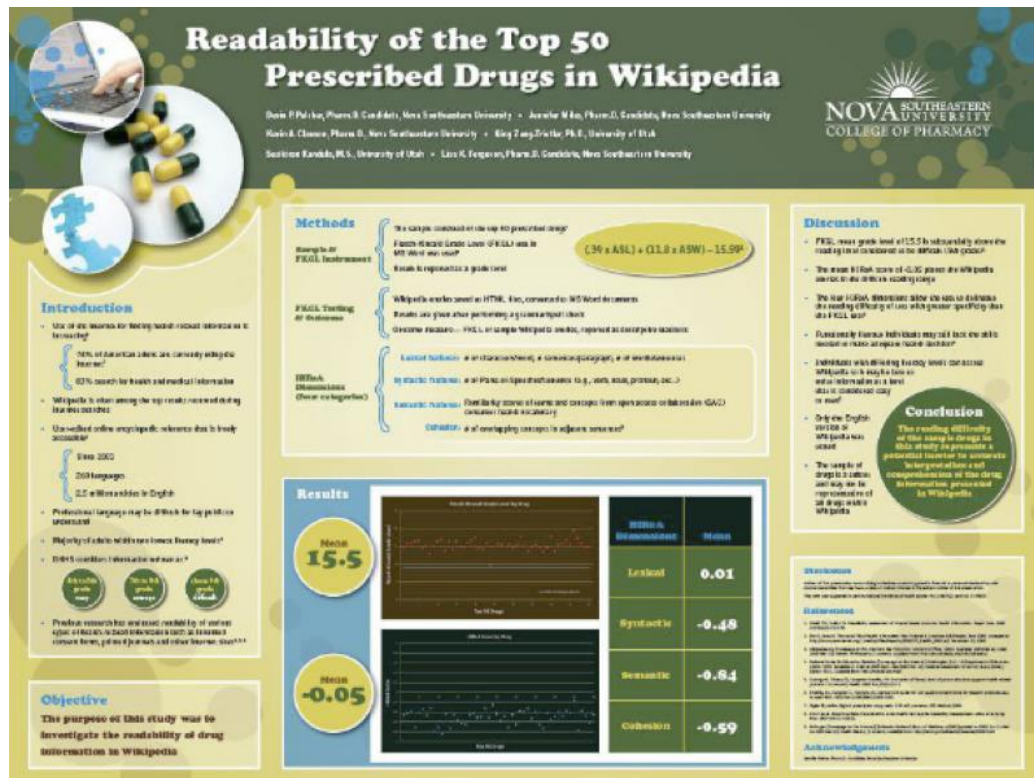
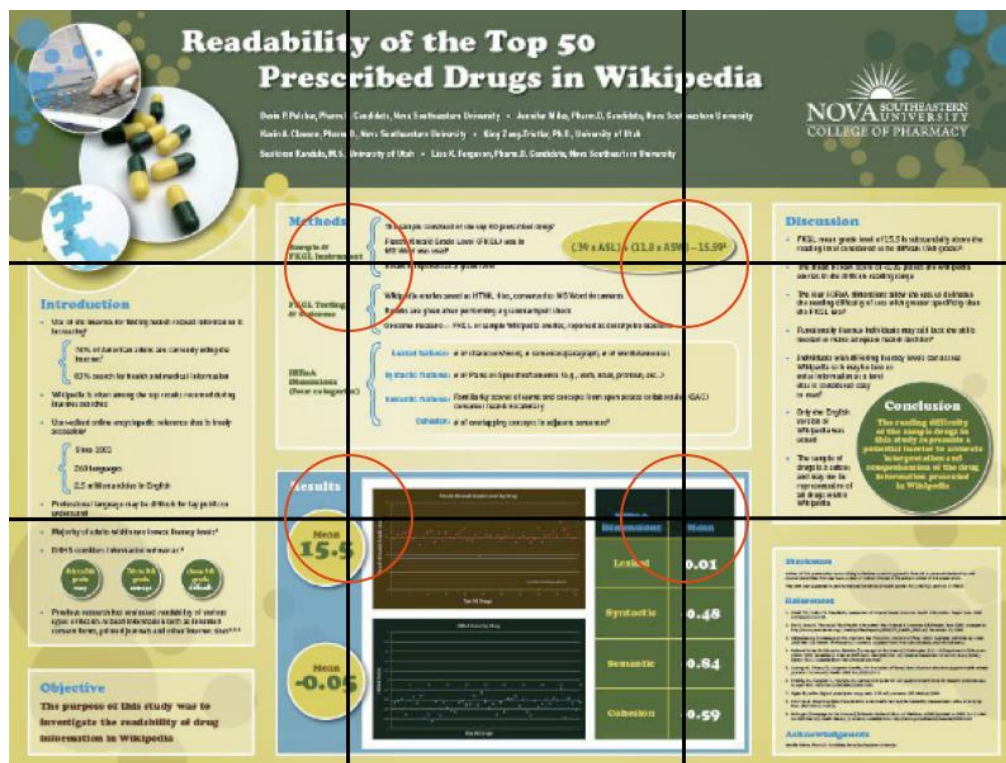
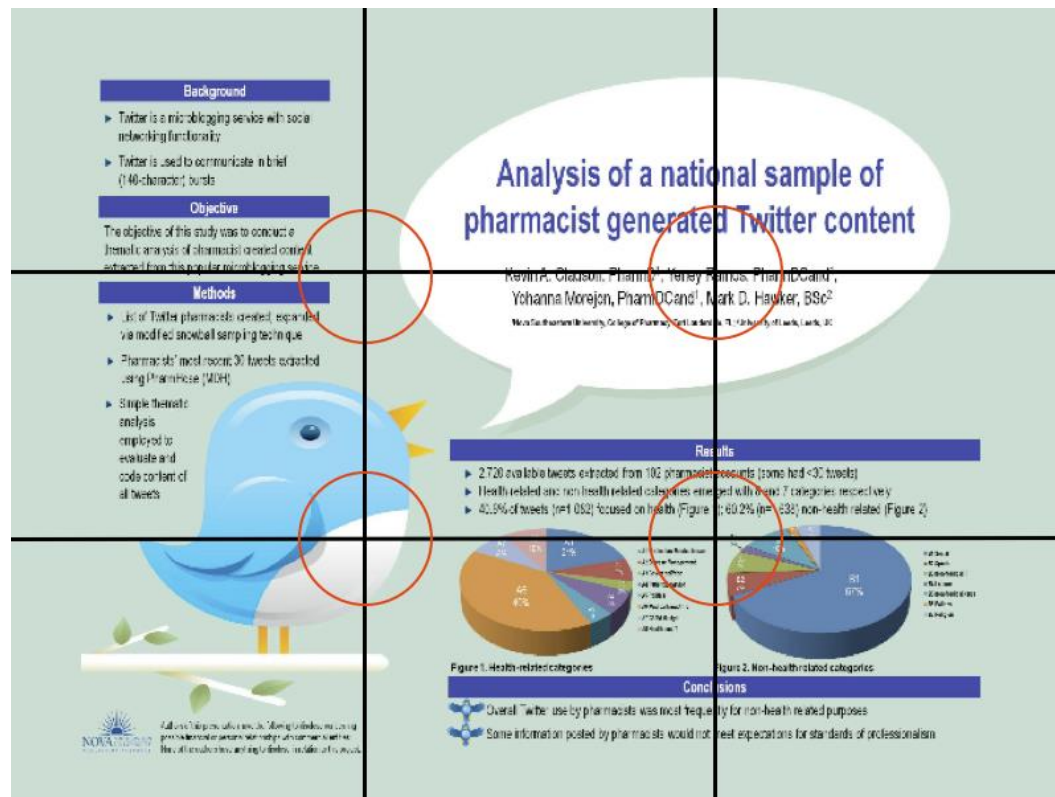


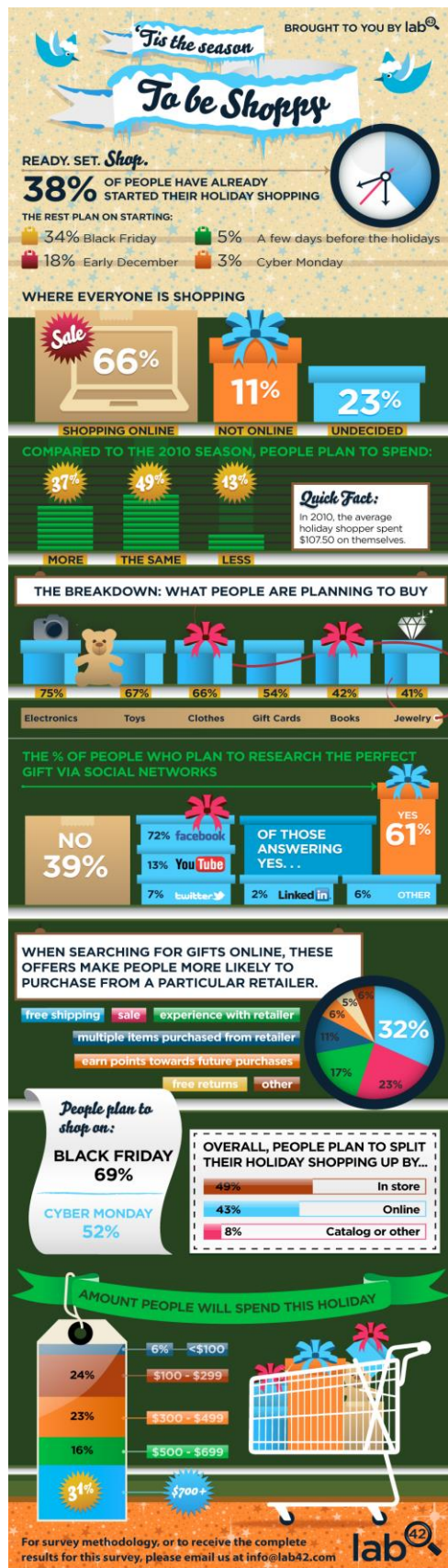
Image: cchir.org

However, the above poster doesn't abide by the Rule of Thirds. Instead, my eyes were directed to the some of the less informative parts of the poster.



The two above posters remind me of the fantastic infographics that many of us love to look through.

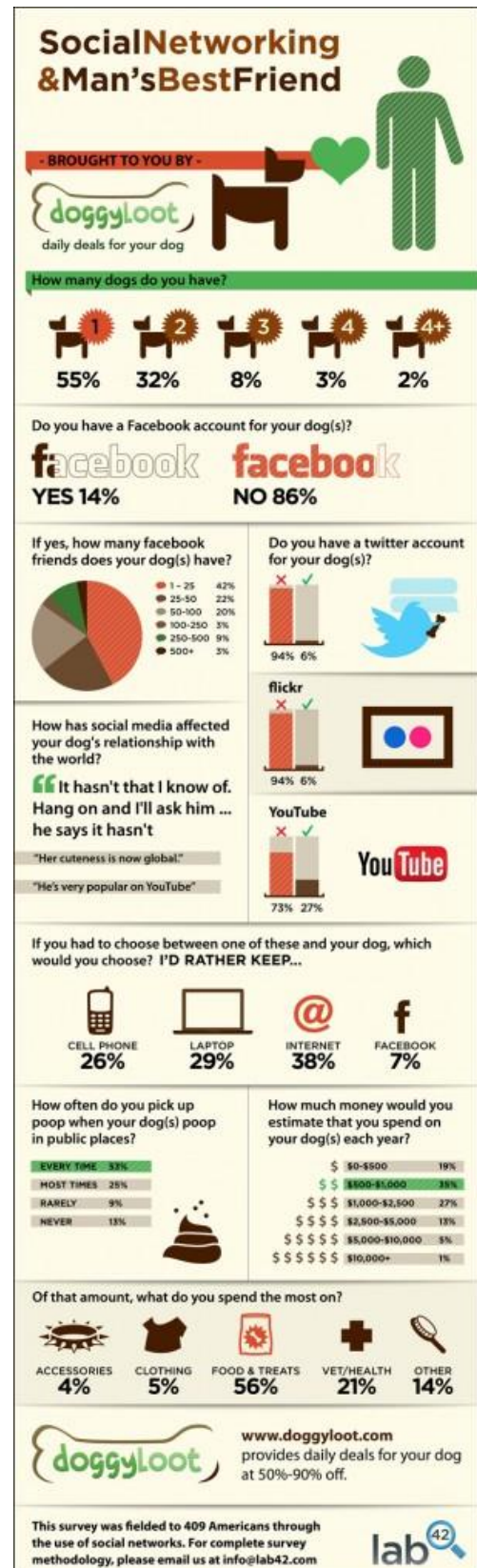


Image: mashable.com

How much more fun would it be to see that type of graphic than the heavily-text based posters that line convention halls?

Here's another infographic (from the same graphic design team); this one reports research on dog owners. Note, the clever use of icons, the highlighting of information in the tables, and the pleasing color scheme.

Image: adweek.com



What these infographics and some of the successful posters illustrated above have in common is that they use their research questions as their headings (e.g., “Where Everyone Is Shopping,” “Amount People Will Spend This Holiday,” “Look Who’s Talking,” “And Who’s Being Talked Up,” “But Who’s Talking Back?”).

These infographics also have in common the use of visually meaningful ways to illuminate their data. Rather than presenting a boring chart like this:

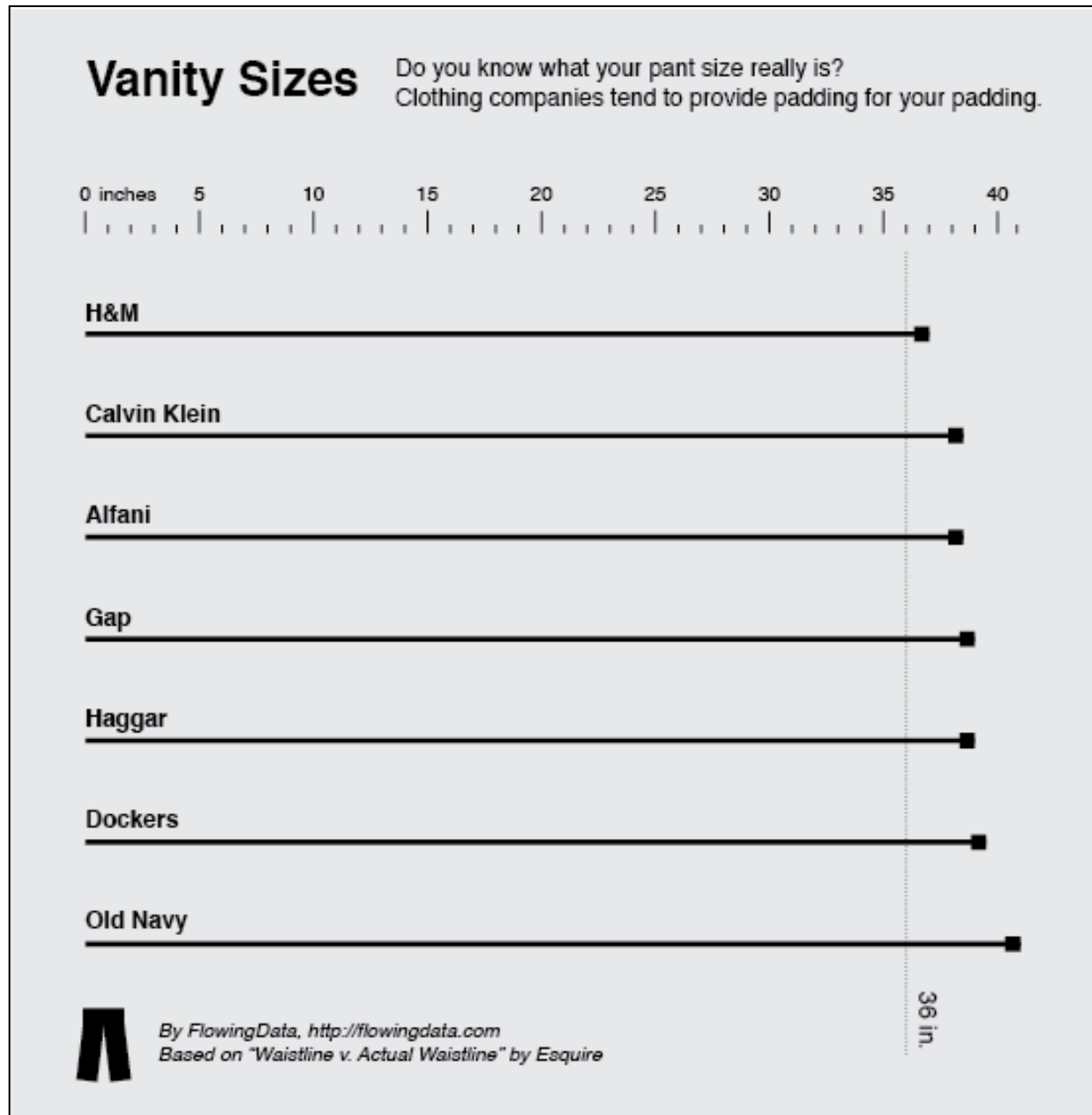


Image: FlowingData.com

Good infographics take the time to think of creative ways to present their data, like this:



Image: Esquire.com

Lastly, Rule #4, do NOT feel that you need to fill every square inch of your poster. Note how the infographics contain a lot of information, but they don't fill the banners edge-to-edge. Leave some unfilled space, preferable at the edges so you can abide by the Rule of Thirds. And everything else you place on your poster needs to be BIG. Professor Zen Faulkes) provides [a great rule of thumb](#): "A useful test is to print the poster, at reduced size, on a regular sheet of paper, like 8½ × 11" ... Most graphics programs, and Acrobat Reader, will have a "Shrink to page" somewhere in their print menus. Then, hold the printed page at arm's length. You should be able to [easily] read [every word of] the text and make sense of any pictures or graphs, even at this reduced size."

Create a visually interesting layout for either a real or a hypothetical poster. If hypothetical, you do not need to fill in the actual text or the graphs. Just put "Blah blah blah" for text and create graphs and figures with bogus data. You can use PPT, Adobe Illustrator, or simply hand-draw your layout. The purpose of this assignment is to get you to move away from using canned poster templates that encourage you to rely heavily on text and to create instead your own template that will please aesthetically, engage visually, use minimal text, present interesting graphs and graphics, abide by the Rule of Thirds, and come together via a consistent color scheme. Keep in mind, what you create need only be a layout. But if you want to try your hand at an actual poster, which contains actual content, feel free to do so. I'm sure you'll benefit from the feedback.

Assignment #20: Poster Presentations – Ensuring Self-Explanatory Posters

During this assignment, we will work to ensure that each poster is self-explanatory to your audience.

I previously mentioned that Googling the term Poster Presentation along with the quoted phrase "too much text" brings over 10,000 hits. Googling the quoted term "Poster Presentation" along with the quoted phrase "self-explanatory" brings over 14,000 hits. Examples include the following:

- "*A poster presentation should be self-explanatory*, allowing different viewers to proceed on their own while the author is free to supplement and discuss particular points raised in inquiry. The poster session offers a more intimate forum for information exchange than does the traditional spoken presentation, but discussion becomes difficult if the author is obliged to spend most of the time merely explaining the poster to a succession of visitors." ([Society for Music Psychology of China](#))
- "Turn your idea into *a succinct message that is self-explanatory*, eye catching, and communicates to the audience quickly" ([University of Georgia, Computer Science](#))
- "Ideally, *a well-constructed poster is self-explanatory*, achieving both coverage and clarity. Have you provided all the obvious information? Will a casual observer walk away understanding your major findings after a quick perusal of your material? Will a more careful reader learn enough to ask informed questions?" ([American Statistical Association](#))
- "Information flow is most effective if it is from left to right and top to bottom. *Your posted materials should be as self explanatory as possible*. Attract the audience's attention and then answer detailed questions." ([IEEE International Conference on Communication](#))
- *A well-constructed poster will be self-explanatory*, allow for a quick review that will provide the reader with an understanding of the major findings of your presentation and enough information to ask informed questions. This will free you from answering obvious questions so that you are available to supplement and discuss particular points of interest." ([Eagelson Institute](#))

Take a look back at the infographics I posted above, which are all self-explanatory. You want your poster to succeed at that same level. Therefore, think about why those infographics are self-explanatory and model those techniques. Here are other websites with infographics:

[Cool Infographics - Blog](#)

[*Infographics - GOOD*](#)

[*The Infographics Showcase - Data Visualization - Infographic Design*](#)

[*40 Useful and Creative Infographics*](#)

And you can Google many others.

Make any changes to your poster layout suggested by other class members, then show your poster layout to two persons unfamiliar with your study. Can those persons grasp the story your poster is telling? If not, you need to build in more coherence and other explanatory glue to your layout.

UNIT 4: IMPROVING SCHOLARLY COMMUNICATION: BLOGGING

Assignment #21: Blogging – Understanding Why and How

Let's start this unit by answering the fundamental questions:

[What's blogging?](#) (by the editor of the *Scientific American* blog network)

[Why do bloggers blog?](#) (by Andrew Sullivan, one of the most widely read bloggers in the world)

[Why should academics blog?](#) (from the *Times HigherEd*)

[Why should scientists blog?](#) (by Dorothy Bishop, language-cognitive neuroscience-behavior genetics researcher at Oxford, and my friend for over 20 years)

[Why should scientists \(and non-scientists\) read science blogs?](#) (from the journal, *Nature*)

[What should scientists blog about?](#) (from the UK equivalent of the *New York Times*)

[How can you get readers to read your blog?](#) (from the most read blog in the world, *Mashable*)

[You aren't blogging yet?](#) (seriously, that's the title, and it's from *The Scientist*)

[Does science back up the claimed benefits of scientific blogging?](#)

Read all of the links above and answer the questions: Have you ever blogged? Do you have any science friends or colleagues who blog? Do you read any science blogs? If so, which ones?

Assignment #22: Blogging – Getting Your Feet Wet

1) Find and read through five different science blogs that are authored by an academic (e.g., a graduate student, postdoc, or professor) **and three different science blogs that are authored by science writers** (e.g., persons without PhDs or persons with PhDs but not working in academia). If you aren't sure who the blogger is and what their day job is, usually clicking on the "About" link will give you some information and further Googling will fill you in more.

2) Write a comment on three different blogs OR write a blog post. You do not need to post anywhere beyond this discussion board the comments or blog post -- unless you want to (post the comments on the actual blog or publish your blog post elsewhere beyond this discussion board). If you choose the blog post assignment, be sure to mirror the style, length, and format that you've seen in the blog posts you've just read.

3) Share with the rest of the class what you have learned -- either about the topic of the blog post or about the blogging enterprise itself.

UNIT 5: IMPROVING SCHOLARLY COMMUNICATION: TWITTER

Assignment #23: Tweeting – Getting Started

Last but not least, let's venture into the newest form of scholarly communication: Twitter. Of course, unlike journal articles and scholarly posters, Twitter isn't just for academics. I think that's good. I think every now and then that academics need to get out of our ivory towers and communicate in the non-academic world.

I also think Tweeting (as the action is called) is a great way to learn precision. Remember back at the beginning of the semester when we focused on writing short, comprehensible sentences? Twitter forces brevity. That's a good thing — so good that some business schools are now requiring Tweet-length application essays, for example, [Columbia Business School Only Wants 200-Character Application Essays](#):

Earlier this summer the University of Iowa's Tippie School of Management made headlines by ditching the traditional essay in favor of allowing would-be students to use Twitter to write a 140-character application. Now Columbia Business School is following suit by asking applicants, "What is your post-M.B.A. professional goal?" and limiting responses to just 200-characters—not words, characters. Are admissions officers tired of reading long-winded, here's-why-I'm-awesome-and-you-should-admit-me essays? Maybe. The Common Application, which is used by over 400 colleges and universities for undergraduate admissions, decided in June to cap essays at 500 words. With the previously unlimited essay length, admissions officers simply didn't have time to read them all.

*Another probable factor is that since so many business-school applicants, especially to a top-tier school like Columbia, are already pretty accomplished, they're including links to personal websites and digital portfolios with their applications. Admissions officers can learn more about a potential student from those than they can from several hundred words co-written by an essay coach. **And with such a small amount of space allotted, Columbia applicants need to be incredibly focused about what they plan to do with their degree.** Given the time and financial investment to earn an M.B.A., that's probably a good thing.*

The motivation for Columbia's B-School using 200-character application essays is the same as what attracts me to Twitter. I read it for the links and for the pointers to interesting discussions. A [study from the London School of Economics concluded the following](#):

1. *Twitter adoption is broad-based: Scholars from different fields and career stages are taking to Twitter at about the same rate.*
2. *Scholars are using Twitter as a scholarly medium, making announcements, linking to articles, even engaging in discussions about methods and literature.*

Let me focus on the use of Twitter for reading the scholarly literature. Thirty-five years ago, when I first got into academia, I would read the scholarly literature (aka: journal articles) by walking myself over to the university library. I tried to make that trek at least once a month, and I'd spend the entire day reading journal articles (and taking notes with paper and pen). If I found an article that I needed, or just liked, I'd photocopy it. We graduate students kept a lot of coins on us for this very reason.

Ten years later, as a tenured professor, I would read the literature in the comfort of my own office. I would subscribe to all the journals in my field (all seven or eight of them!), and they would arrive in hard copy form, issue by issue. Whenever a new issue of a journal arrived, I'd scan through the issue and read those articles that seemed most interesting or relevant to me. So about every other week, I'd receive a fresh copy of a journal, which I'd scan through and then read. If I ever wanted to read an article in a journal to which I didn't subscribe, I'd send one of my RAs over to the library to photocopy the article for me. (Or I'd postal mail the author of the article and ask them to send me, via postal mail, a copy of the article. Reprint request cards, which were basically postcards into which one would write in the name of the article and the author's address, were popular commodities.)

Ten years after that, many journals began publishing electronic versions of their journals. To entice a larger readership, journals would email non-subscribers a list of their table of contents each time they produced a new

issue. Therefore, about once a week, I'd work through the table of contents of a various journal, and I'd click through any links that I wanted to read.

But over the past ten years, the number of scholarly journals has exploded. Here's a graph showing the average number of journals (aka: serials) held in a typical university library that's large (top line) or small (bottom line) As you can see, starting a bit after the new millennium, the number of journals has sky-rocketed.

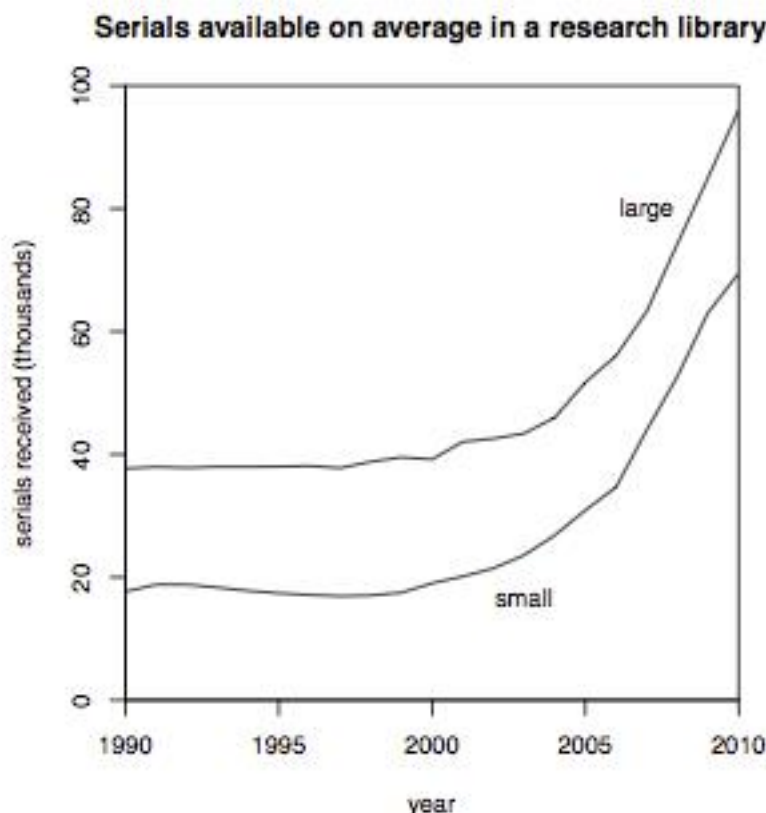


Image: [Andrew Odlyzko](#)

These days, to keep abreast of new and important articles, I'd have to scour the Table of Contents of at least 70 journals that connect with my interests. Scouring the new issues of 70 journals would be a full time job in and of itself. Instead, I look to Twitter. If my colleagues are Tweeting about an article, I'll go read it — or at least click through. Therefore, Twitter has become my index for what's new and important.

Twitter can play that same role for you, and it can also play the role of pointing other scientists to your research (your articles that are new and important). A couple of years ago when I published an article in a not-extremely-mainstream journal, it was Tweeted by someone with nearly 50,000 followers (someone deemed one of TIME Magazine's power Tweeters), and the article received the most downloads in the journal's history.

So, let's get started using Twitter. A few good getting started guides are

- 1) The London School of Economics' "[Using Twitter in university research, teaching and impact activities](#)"
- 2) Our friend Dorothy Bishop's "[A Gentle Introduction to Twitter](#)"
- 3) The Next Web's "[Complete guide to Twitter's language and acronyms](#)"

Read the above three guides and set up a Twitter account. You can set your Twitter account to private, if you prefer. You can also delete your Twitter account as soon as this course is over. But I want you to get experience

setting up a Twitter account (it's free). I also want you to **read several scientists' Tweets**. You can do that most easily by "following" those scientists, but if you'd prefer to keep your Twitter account private, you can't follow other users, but you can still read their tweets by simply going to their Twitter page and reading their tweets there (similar to reading a blog). The convenience of following someone is that their tweets, as well as everyone you're following, will appear all together in your own Twitter feed, making it one-stop shopping. But you can also read tweets by going to the person's Twitter feed, rather than having their tweets show up in your Twitter feed.

In the post below, let us know your Twitter handle (mine is @GernsbacherLab), which Tweeters/scientists you are following/have read, and what you think so far.

BTW, as Dorothy Bishop notes in her "Gentle Introduction to Twitter" post: *It's OK to be a purely passive user of Twitter, just following people who interest you. In the circles I move in, a high proportion of tweets are messages pointing to a web link, which may be a newspaper or journal article or a blog. This is where Twitter is such a useful resource for the academic: if you follow those who share your academic interests, they will point you to interesting stuff. When I first joined up I was impressed to find that within the first few days, I'd been directed to two new papers in my field that were very relevant to my work and that I hadn't known about.*

I tend to be a relatively passive user of Twitter (I have only 450 followers and I've tweeted fewer than 200 tweets). So for the first part of this unit, let's get familiar with Twitter by being a passive user of Twitter. Next assignment, we'll practice the art of tweeting, and you'll have the option of tweeting to the public or tweeting privately.

Assignment #25: Tweeting – Shaping a Tweet

Congratulations, everyone, for jumping into the new communication, Twitter. Mark my word, in years to come, Twitter will be as much a mainstay as faxing once was. (What is faxing, you ask?)

I appreciate the concern often raised that a scientist hasn't dipped their toes into Twitter because they already have so many other avenues of social media, including email and Facebook. I held the same concern. Therefore, I decided to use Twitter in a different way than I use email or Facebook. Email I use for direct one-on-one communication (both personal and professional), and Facebook I use for group communication, primarily personal. Twitter I use for professional communication.

Therefore, a Twitter style that I'm not keen to read from others (and that I, for the most part, try not to emulate) is what the London School of Economics calls the detached and headline-sounding mode (e.g., "Phone hacking: Durham police called in to review evidence"). That headline-beaming information I can get from other sources. Moreover, most of the Tweeters who Tweet in headline mode are just copying/pasting from press releases and the like. I want my information curated.

Another Twitter style I'm not so fond of is the gabby and self-reflective style, what the London School of Economics calls the "conversational" mode (e.g., "On my way to Jonathan Ross studio now. Spilled marmalade on my Garrick Club tie"). This type of Tweet reminds me of Facebook, and I barely have time to hang out on Facebook.

Rather, the Twitter style I enjoy the most is what the London School of Economics calls the "middle ground." Three Tweeters who I think do a terrific job of tweeting in the "middle ground" mode are @BrainPicker, @EdYong209, and @SteveSilberman.

@BrainPicker self describes as an "Interestingness curator and semi-secret geek obsessed with combinatorial creativity. Editor of @brainpickings." She has half a million followers and only rarely tweets @-initial tweets (i.e., tweets addressed directly to another user, with that other user's Twitter handle as the first word of the tweet). In contrast, @BrainPicker curates interesting things all around the web, including her own blog, and she motivates the links with helpful – and witty – prefaces. Here are some of her recent tweets:

- End your night with this gem: TimeScapes, a stunning timelapse documentary about the beauty of the American Southwest <http://j.mp/w3KANv>
- Gorgeous vintage illustrations from the first color edition of Alice in Wonderland, 1949 <http://j.mp/w2A90L>
- Asylum – inside the haunting world of 19th-century mental hospitals j.mp/p9HiZK
- Yep, this wooden smartphone with removable blocks is just fantastic j.mp/tOrOp8
- As if the mystery of the universe wasn't mind-bending enough, new evidence for quantum physics found in photosynthesis <http://j.mp/vKCRJ7>
- Oh wow. @theartofdancing has to be the best thing since, wait, ever – a “dancing Advent calendar” j.mp/tSDno6 (HT @culturebrain)
- Old but gold – from Edison's YouTube to Voltaire's Facebook, 5 vintage versions of modern social media j.mp/nDv1Xw
- If you missed it ☞ The science of smiles, all 200 years of it j.mp/s6GUJJ #TED

Notice that @BrainPicker always gives a brief but enthusiastic shout out (“fascinating read,” “oh wow,” “old but gold”). That's a style I like.

@EdYong209 is a British science writer (author of the recently published book, *Science Ink*, which presents scientists' tattoos, and author of the Discover blog, *Not Exactly Rocket Science*). Ed has over 60,000 followers, and he engages in a bit of the personal back-and-forth, using @-initial tweets (e.g., “@TimHarford Yeah yeah it's all laughter and amusement, until the leaproach comes for your family ;-)” and “@PyroClaire The world is not yet ready for such miracles”), but the tweets of his that I like the most are the ones that point to interesting science links, for example:

- For am crowd, my Nature piece on a scientist who uses body illusions to warp, stretch and displace our sense of self <http://bit.ly/tDUwgH>
- Why cognitive-enhancing drugs probably won't make you that much smarter. Interesting argument, via @garystix <http://bit.ly/t6TJwv>
- New fossils of Anomalocaris' eyes show that each had 16,700+ lenses, more than most living insects/arthropods. <http://bit.ly/t2OIQE>

@SteveSilberman self-identifies as “Investigative reporter for Wired & other magazines, writing a book about autism/neurodiversity for Avery/Penguin 2013. One of @Time's selected science tweeters.” I know Steve personally, and he's one of the nicest guys in the world. Steve has nearly 40,000 followers, he usually only engages in the @-initial style tweeting in response to someone who @-initial tweets him first. But he RTs other tweeters a lot, often with his own mini-preface, and he builds interest in the links he tweets:

- Close look at the claim, again making the rounds, that Amish don't get #autism (false). [via @lizditz] <http://bit.ly/tpgDvp>
- Important by @ejwillingham: #Autism is not the monster. Postpartum depression is, and there's help. <http://bit.ly/sPd9WR>
- Placebo city! RT @markmorford Coca-Cola brings back red cans after purists complain white cans make soda taste funny <http://wapo.st/vfL4t2>
- The marvelous, highly-ordered drawings of autistic savant Gregory Blackstock. <http://bit.ly/uRC2dr>
- Excellent. RT @LynneSoraya @thinkingautism An Autistic's Advice: 10 tips for teachers. <http://ht.ly/7POag>

For our penultimate assignment, continue following the Tweeters you're following, though feel free to unfollow anyone whose Twitter stream isn't what you expected for whatever reason and to follow new people if you'd like to. Then, let's get some practice in writing tweets.

At least for me, composing tweets is not as easy as it looks. 140 characters seem to fly by, and I still have words I want to say. I try not to do too much abbreviating (though my friend Dorothy Bishop does, so if that's your style, that's fine). But I have on a few occasions found myself spending fifteen minutes crafting a tweet. However, each time I did, it paid off; one of my tweets was RT'd – retweeted – by psychologist Richard Wiseman, who has

135,000 followers; another was RT'd by economist Tyler Cowen, who has nearly 50,000 followers; and another was RT'd by @UWMadison, who has 78,000 followers.

Draft (no need to post to Twitter if you don't want to, though of course you can post to Twitter if you want to) **the following:**

- 8 Tweets that summarize and link to one of your own articles or an article from your research group or in your research area
- 5 Retweets of a tweet that you found interesting (try to emulate @SteveSilberman and @BrainPicker by adding your own mini-preface prior to the RT)
- 5 Tweets that summarize and link to a website or blog post that you find interesting

Be sure to count the number of characters, including spaces so as to not exceed 140 characters (Twitter will count the characters for you automatically, but if you're just drafting Tweets, you'll need to do this yourself – or you'll need to type into the Twitter box but not hit the “Tweet” button). And remember to shorten links (Twitter will also do this for you, but to do this outside of Twitter, you can use [the UW link shortener](#)).

Finally, if you're still not quite sure about some aspect of Twitter, here's [another guidebook](#).

Assignment #26: WRAP UP

Now we come to the end of the course. I hope you feel more confident about your scholarly communication skills. We've covered many techniques; here is a summary.

For Scholarly Writing:

1. write in the present tense as much as possible (e.g., when reviewing prior research and theoretical claims, when describing your study's results, when discussing the implications of your research)
2. write in first person as much as possible
3. write shorter rather than longer sentences (aim for no more than 14 words per sentence)
4. write shorter rather than longer paragraphs (aim for no fewer than 3 or 4 paragraphs per manuscript page)
5. use strong working verbs (e.g., reflects, indicates, suggests), rather than weak linking verbs (e.g., is suggestive of, is indicative of, is reflective of)
6. identify, read, and re-read good models of non-academic writing
7. avoid jargon (if it's a phrase that your poly sci roommate doesn't know, it's jargon)
8. avoid author-created acronyms/initializations and go sparingly on acronyms that might be well known within your field (e.g., SLI, ISI, IAT, SOA, TRS) but not as common as CD, MP3, or FBI.
9. label conditions so that they can stand alone (e.g., for a placebo experiment, rather than Drug and Inactive, Told Drug and Told Inactive)
10. avoid “this” as a grammatical subject
11. avoid beginning a sentence with “There are” or “There is” (because every use of *there are* and *there is* can be removed, e.g., “There are five factors that attenuate ...” can be rewritten to “Five factors attenuate ...”; “There is no known answer,” can be rewritten as “No answer exists.”)

12. resist using nonspecific terms, such as *relate to*, *affect*, *influence*, *change*, etc. Tell your readers HOW two variables are related; HOW one variable influences another; WHAT effect a manipulation has. Does it increase, decrease, improve, worsen, augment, diminish, strengthen, weaken, cause, negate?
13. avoid fluffy, throw-away, feel-good sentences, such as “These findings provide new insight into ...” or “Future research is needed ...”
14. never begin a paper or even a paragraph (or even a sentence) with the red letter words: “Recent research has shown” (or its affiliate expression, “Much research has shown ...”)
15. keep one idea to one paragraph
16. utilize the hamburger format for every paragraph (
 - Topic sentence (top bun)
 - Example/Evidence/Detail 1: meat
 - Example/Evidence/Detail 2: lettuce and tomato
 - Example/Evidence/Detail 3: mustard, ketchup, pickles
 - Conclusion: (bottom bun))
17. structure your introduction so that it reads like a first act: Premise (aka: “Life as we know it”), Inciting Incident (aka: the “But ...”), and What Follows (aka: the “Therefore”)
18. seek feedback on every written paper from someone who is not a co-author or advisor (i.e., someone who is not familiar with the research project)

For Oral Presentations:

1. Be a Steve Jobs not a Bill Gates
2. Design for delivery
3. Minimize text
4. Resist the temptation to place a “Title” (i.e., the thing PPT prompts you for when it says, “Click to add title”) at the top of your slides
5. Use the entire slide (e.g., enlarge pictures to fill all the real estate)
6. Apply the Rule of Thirds
7. Avoid cheesy clip art
8. Start your presentation with a hook, end with a bang
9. Keep your font large (no smaller than 36 pt and preferably much larger)
10. Choose a pleasing color scheme

For Poster Presentations:

1. Avoid the temptation to use a pre-made template
2. Limit the number of words to 250 max, 125 preferable
3. Use informative headings (rather than the traditional Intro, Methods, Results, Discussion)

4. Choose a pleasing color scheme
5. Be creative!

We also dabbled in the new realm of blogging and tweeting, which I hope whet your appetite for the coming world of science communication.

Answer the following three questions:

What three principles or practices did you find the most beneficial?

On what areas of scholarly communication do you think you still need further practice?

Do you have any suggestions for improving this course?

Appendix A – Examples of Individualized Student Task**STUDENT A:**

I chose a couple of paragraphs from the epilogue of a book called *Acquainted with the Night*. I highly recommend reading the book if you haven't already--it's by Paul Raeburn, a parent whose son and daughter had Bipolar Disorder and Major Depressive Disorder, respectively. The book describes both his children's struggles with their disorders and Paul's experiences navigating the mental health system. Grammatically, the passages could have been written a little better. However, I think that Paul's writing style mimics that of what could be his thought process, and that's what makes the passages so intriguing.

"It is an unusually chilly night in April. I am driving fast on a dark, nearly deserted highway, in an unfamiliar place, struggling to keep up with an ambulance in the headlights in front of me. My hands are steady enough if I grip the wheel hard. The ambulance is headed toward a psychiatric hospital forty miles from my home. My son, Alex, eleven years old, is inside, strapped to a gurney and bound at the hands and feet."

...

"Two dozen children, most of them older than Alex, are playing, relaxing, and joking. It's noisy, but no noisier than an art or physical education class at Alex's school. Who are these children? They look normal. A few seem a little rambunctious, but I wouldn't know they were mentally ill. If that is what they are. One girl sits alone in a chair. I wonder why she is here. I look at other children and wonder the same thing. They seem normal enough to me, but what had I expected? I'd never seen a kid with mental illness. This must be what they look like. Just like other kids. I suppose I had been hoping they would look sick, or different somehow from Alex, so I would know he was not one of them."

MORTON:

STUDENT A, thanks for sharing that literary example. When I read parental memoirs like that I can't help but be grateful for how incredibly easy my life as a parent has been. We haven't even had any broken bones or stitches (despite a very active lifestyle). Not an hour goes by, when either my husband or I are with our son, that we haven't smiled and laughed with him at least once. Thanks for opening my eyes to real pediatric mental health issues.

Two features I noticed in the passage you shared are the consistent use of 1) present tense and 2) first-person perspective. Even though the events being relayed are of the past, the author relates them using present tense ("It's a chilly night; I am driving fast; My hands are steady; The ambulance is headed; My son ... is inside; Children are playing; It's noisy; One girl sits alone").

The author could have chosen to relate these ideas using the past tense -- after all, all the events occurred in the past; they're over. But my guess is that author purposely chose to write in the present tense to build a sense of relevance: Although the events happened years (or even months) ago, the author wants her readers to feel the events' relevance right now, in the moment that readers are engaging with her book.

Building a sense of relevance should also be a primary goal in academic writing, but many academic authors forget that. Or they don't know how to do it. Think of most literature reviews (or introductions to empirical articles) that you've read in academic writing. I'm betting that the majority use the past tense. But by cleaving to the past tense, academic authors diminish the relevance of the events they describe (i.e., the findings they review). The authors describe events and phenomena that feel historical and distant.

For your assignment, STUDENT A, I'd like for you to take three passages from the literature review/introduction section of academic articles or manuscripts; these can be manuscripts on which you're working (or from the labs in which you work); already published articles from those labs; or already published articles in your area of investigation from other labs. Each passage should be about three or four paragraphs long. Rewrite these passages changing the past tense to the present.

I also want us to talk about first-person perspective, which is the other feature I identified in the non-academic example you posted, but that will need to wait for another assignment.

Happy verb tense changing – Morton

STUDENT B:

One of my favorite pieces of writing is the poem *Desiderata*. According to the source of all knowledge (Wikipedia), it is in the public domain, so I'll just post the full text here.

Go placidly amid the noise and haste,
and remember what peace there may be in silence.

As far as possible without surrender
be on good terms with all persons.
Speak your truth quietly and clearly;
and listen to others,
even the dull and the ignorant;
they too have their story.
Avoid loud and aggressive persons,
they are vexations to the spirit.

If you compare yourself with others,
you may become vain or bitter;
for always there will be greater and lesser persons than yourself.

Enjoy your achievements as well as your plans.
Keep interested in your own career, however humble;
it is a real possession in the changing fortunes of time.
Exercise caution in your business affairs;
for the world is full of trickery.
But let this not blind you to what virtue there is;
many persons strive for high ideals;
and everywhere life is full of heroism.

(etc.)

MORTON: I too enjoy “*Desiderata*.” One of its most compelling features is its strong action verbs: *strive*, *nurture*, *avoid*. Rather than saying, “Be cautious about business deals,” it says, “Exercise caution in your business affairs.” Rather than saying, “Be strong in spirit,” it says, “Nurture strength of spirit.”

Be, a linking verb, is considered a weak verb; ditto for *is*, *are*, *was*, *were*. It’s amazing how many times we as writers use weak linking verbs rather than strong action verbs. As one of my favorite resources, the Purdue University Online Writing Lab (OWL), admonishes: “You should use action verbs in workplace writing because they make sentences and statements more concise. Since concise writing is easier for readers to understand, it is more reader-centered. Because reader-centered writing is generally more persuasive, action verbs are more convincing than non-action verbs.”

Yet, a lot of times when I’m writing scientifically, I want to use a strong action verb rather than a wimpy linking verb. I really do. But I don’t know what verb to use, and I’ve exhausted the pool of action verbs that I’m familiar with (e.g., *proposed*, *hypothesized*, *predicted*, *evaluated*, *examined*, *identified*). Well, the good folks at OWL have posted [a list of a hundred or so action verbs](#) that Rice University grad students in science and engineering have identified as being suitable for scientific writing.

So, STUDENT B, for your assignment, I’d like for you to take three academic articles or manuscripts; these can be manuscripts on which you’re working (or from the labs in which you work); already

published articles from those labs; or already published articles in your area of investigation. For each article, I want you to find four linking verbs and replace them with four action verbs, and post as an attachment the before vs. after passages.

LATER

MORTON:

STUDENT, you whacked away at three cumbersome expressions with your edit ("it is widely believed," "is generally taken as an indicator," and "is influenced by"). Good work.

Great work, STUDENT B. You're brave to tackle your own work.

Many of your examples show how easy (but important) it is to move the action out of serving as a (predicate) adjective to its rightful place as a verb. For example:

A significant portion of these studies **is** also **restricted** in scope -> Many of these studies **restricted** their scope

Changing predicate adjectives back to verbs (or better yet, writing with verbs in the first place) is one of the easiest ways to invigorate one's writing (I almost wrote "make one's writing more invigorating"). Here are some other examples:

At the end of the tournament, Tiger Woods **was the leader**. -> At the end of the tournament, Tiger Woods **lead**.

For many of us on the team, the fans **were an embarrassment**. -> The fans **embarrassed** many of us on the team.

Also be aware that the verbs *became*, *seem*, *appear*, and *look* are linking verbs (i.e., weak verbs). Here are some examples of how to convert those verbs' predicate adjectives to active verbs.

During the heat wave, dehydration **became a threat** for active citizens. -> During the heat wave, dehydration **threatened** active citizens.

The assistant's attitude **seems a mystery** to everyone involved. -> The assistant's attitude **mystifies** everyone involved.

I can't tell you how many times I read the verb *seem* (particularly its past tense version, *seemed*) in academic writing. It's such a weak verb.

STUDENT B, and everyone else, I encourage you to continue practicing converting linking verbs + predicate adjectives to strong verbs. As the classic gurus on good writing, Strunk & White, extol: "Write with nouns and verbs, not with adjectives and adverbs. The adjective hasn't been built that can pull a weak or inaccurate noun out of a tight place."

Appendix B – First Three Paragraphs of Jakimik & Glenberg (1990)**Verbal Learning Meets Psycholinguistics:
Modality Effects in the Comprehension of Anaphora**

Jola Jakimik and Arthur Glenberg

Journal of Memory and Language, 29, 582-590

You're zipping through an article in your favorite journal when your reading stops with a thud. The author has just laid out two alternative hypotheses and then referred to one of them as "the former approach." But now you are confused about which was first, which was second. You curse the author and your own lack of concentration, reread the set-up rehearsing the order of the two hypotheses, and finally figure out which alternative the author was referring to. We have experienced this problem, too, and we do not think that it is simply a matter of lack of concentration.

The subject of this article is the reason for difficulty with referring devices such as "the former approach." We propose that this comprehension problem is related to a phenomenon seen in verbal learning studies, hence the title of our article. We coin the expression "temporal anaphora" for phrases or expressions that refer to one of a set of alternative antecedents via their order of mention in a discourse. These expressions are often found in formal scholarly discourse and include "former/latter," "first/second" and "first mentioned/last mentioned." In our experiments we used exemplars of all three.

We propose that the source of the difficulty with temporal anaphora is that it is (relatively) difficult to remember temporal order for verbal materials presented visually. This proposal is inspired by the temporal coding explanation offered by Glenberg and his associates. Simply put: Memory for recently presented auditory material is better than memory for recently presented visual material.

Appendix C: Great Talk Bingo cards

Defuses challenging questions	Only uses necessary slides	Doesn't kill with bullets	Dropped down in sophistication	FREE BINGO SPACE!
Avoids jargon	Had extra slides for questions	Defers questions to end	One point per slide	Doesn't say it's First Talk
Anticipated questions	Begins with a hook	Avoids abbreviations	Well-rehearsed	Gives talk that data fit
Uses interesting visuals	Doesn't belabor acknowledgements	Pauses after showing each slide	Doesn't have a slide for Questions?	Doesn't have a title on slides
Doesn't leave cursor out	Takes time to answer questions	Doesn't use crutch words	Has two natural endings	Doesn't fly through unused slides

Doesn't leave cursor out	Begins with a hook	Uses interesting visuals	Well-rehearsed	Avoids abbreviations
Doesn't use crutch words	Doesn't have a slide for Questions?	One point per slide	Only uses necessary slides	FREE BINGO SPACE!
Doesn't belabor acknowledgements	Defuses challenging questions	Dropped down in sophistication	Has two natural endings	Anticipated questions
Had extra slides for questions	Doesn't kill with bullets	Avoids jargon	No hard to read text	Takes time to answer questions
Doesn't have a title on slides	Doesn't fly through unused slides	Pauses after showing each slide	Defers questions to end	Gives talk that data fit

One point per slide	Doesn't belabor acknowledgements	Doesn't kill with bullets	Well-rehearsed	Anticipated questions
Doesn't have a title on slides	Dropped down in sophistication	Uses interesting visuals	Begins with a hook	Avoids jargon
No hard to read text	Gives talk that data fit	Defuses challenging questions	FREE BINGO SPACE!	Avoids abbreviations
Only uses necessary slides	Pauses after showing each slide	Defers questions to end	Doesn't use crutch words	Doesn't leave cursor out
Doesn't have a slide for Questions?	Had extra slides for questions	Takes time to answer questions	Has two natural endings	Doesn't fly through unused slides

Has two natural endings	Anticipated questions	Only uses necessary slides	Avoids abbreviations	Avoids jargon
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