



A Heuristic for Reasoning about PowerPoint Deck Design

David K. Farkas
*Department of Technical
Communication,
University of Washington*
farkas@u.washington.edu

Abstract

PowerPoint is both extremely prevalent and controversial. Unfortunately, much of the critical discussion concerning PowerPoint is both casually and poorly argued. A heuristic, offered here, can help reveal when claims about PowerPoint and deck design are poorly supported or ambiguous. This heuristic may prove useful to all those who reason about PowerPoint: those who formulate research questions, assess decks and presentations, teach students about PowerPoint, and create decks. The heuristic asks whether a claim truly addresses a PowerPoint problem, accounts for the different features of each slideware product, considers the role of genre, recognizes that a deck must be assessed with reference to the oral gloss on the slides and the overall performance, and allows for the different levels of skill and preparation time a deck may require. The heuristic also asks what is the basis of objections to bullet points (when they are at issue) and whether the slide metaphor is relevant to the claim. Finally, the heuristic asks us to recognize the complexities of PowerPoint, deck design, and visually supported presentations and to therefore formulate and assess claims in a careful, nuanced way that is respectful of the contingent and local.

Introduction

PowerPoint, along with other slideware applications, is very prevalent in industry, government, the military, education, religious practice, and other areas of life [1], [2]. PowerPoint is also highly controversial. Parker [1] opened a large and complex issue with the claim that PowerPoint has harmful mediation effects, that it “edits” thought by leading the authors of decks (sets of slides) to simplify their ideas. Tufte [3], [4] in his self-published booklet, *The Cognitive Style of PowerPoint*, elaborated upon this idea and added new arguments in a fierce diatribe that received a great deal of media attention [5], [6]. He very nearly blames PowerPoint for NASA’s

tragically over-optimistic assessment of the damage that had been sustained by the Columbia Space Shuttle. Tufte’s arguments have been answered by Doumont [7], Shwom and Keller [8], Norman [9], and others. Responding at least in part to Tufte’s attacks, the US Defense Department has funded projects intended to replace or greatly modify PowerPoint as a tool for military briefings [10].

Much of the discussion surrounding PowerPoint is, like Tufte’s commentary, casually argued and hyperbolic. For example, e-learning authority Eliot Masie called PowerPoint “the single most dangerous tool invented on the planet” [11]. Citing Colin Powell’s use of PowerPoint at the United Nations, Masie argues that “the level of ambiguity is so large that people die.” Masie also makes one of the familiar arguments pertaining to the affective domain—that PowerPoint presentations are inherently boring: “Storytelling stops; engagement decreases.”

The discussion of PowerPoint is such that it is often unclear whether a commentator flat-out opposes the use of PowerPoint, opposes using it under certain circumstances, or opposes certain design elements. Bullet points are routinely condemned. Often, however, it is hard to tell whether a commentator thinks bullet points are inherently bad or objects to their misuse or overuse.

Commentators often offer sweeping advice for presenters based on the particular presentation genre they are concerned with [12], [13]. Likewise, commentators tend to ignore the complex issue of the relationship between the deck and the presenter. In particular, when condemning a design element used in PowerPoint decks, they do not consider whether this element may in fact work with certain presentation styles and techniques. Although there are certainly clear and precise arguments and well-conceived research studies, much of the public discussion of PowerPoint is unhelpful and an unsteady platform for ongoing investigation.

In a previous project [14] I reviewed ten problems that have confused and hindered the study of PowerPoint (and other slideware applications). In this related project I offer a heuristic intended to promote precise and nuanced

thinking when we sort out and assess claims about PowerPoint, deck design, and presenting and when we entertain new distinctions and articulate new claims. The heuristic consists of just a limited number of questions, but they are wide-ranging questions that address societal context, media choice and the communication situation, genre, PowerPoint's slide metaphor, the features of specific slideware products, design choices (including bullet points), and the skills and style of the presenter.

The heuristic should prove useful to all those who reason about the many issues that have been raised in the published literature, including those who formulate research questions, assess decks and presentations, and teach students about PowerPoint. Precise and nuanced thinking about PowerPoint benefits those who create decks, but this is not a comprehensive set of deck design guidelines covering fonts, color, and all the many other aspects of deck design. Graphics are not emphasized in the heuristic because the role of PowerPoint graphics has proven less problematic than the role of slide text. The heuristic appears in summary form as Figure 1.

I do not pretend to have stepped away from my own convictions regarding PowerPoint, and so I will make them explicit at the outset. I regard PowerPoint as a beneficial communication technology that—despite

shortcomings—enables presenters to provide appropriate visual support for their presentations. I value slide text for persistently displaying the framework of the presenter's ideas to an audience. I believe that the standard layouts, including bullet points, are routinely employed effectively by competent presenters.

A preliminary issue of terminology: “PowerPoint” as the term for slideware

Microsoft's PowerPoint application is just one product in the category of slideware, or presentation graphics, products. This category includes Apple Keynote, IBM's Lotus Freelance Graphics, and the Web-based presentation application in Google Docs. However, because PowerPoint is by far the most prevalent slideware product, most discussions of slideware are, in fact, discussions of PowerPoint. Therefore, as long as PowerPoint is so dominant, it makes sense, I think, to follow the well-established convention of letting “PowerPoint” stand for both the Microsoft application and slideware in general. This usage, however, makes it necessary to be alert to occasions when it is necessary to

- 1. Is it really a PowerPoint presentation problem?**
 - 1.1 Was there a need for a meeting?
 - 1.2 Was there a need for a presentation?
 - 1.3 Did the presentation require visual support? Did it require PowerPoint?
 - 1.4 Are there deep-seated organizational dysfunctions? Is PowerPoint the cause?
 - 1.5 Should PowerPoint be the archive for the information?
 - 1.6 Is there cultural conflict surrounding PowerPoint use?
- 2. Are bullet points at issue? If so, what are the arguments?**
- 3. What are the implications of the slide metaphor?**
- 4. What are the features of each slideware product?**
- 5. What is the genre of the presentation?**
- 6. How is the deck glossed?**
- 7. What preparation effort and skill level will be required to create and present with the deck?**
- 8. Do we recognize the complexities?**

Figure 1. The heuristic in summary form.

refer specifically to Microsoft PowerPoint or to another slideware product. I am intrigued by the use of “PowerPoint” and “powerpoint” to distinguish between the Microsoft product and slideware [15], but hesitate to vitiate a product’s trademark.

1. Is it really a PowerPoint presentation problem?

PowerPoint is deeply embedded in organizational, disciplinary, and societal contexts [16], and it is often necessary to probe these contexts to properly assess or formulate positions regarding PowerPoint and deck design.

1.1 Was there a need for a meeting?

There is evidence [17] that meetings cause a great deal of dissatisfaction within organizations. Meetings are often poorly planned, poorly run, and simply unnecessary. The idea underlying several parodies of PowerPoint use in the military [18], [19] is that officers should be in the field rather than engaged in bureaucratic activities. This shows the need to recognize when complaints about PowerPoint are in large part complaints about unnecessary meetings.

1.2 Was there a need for a presentation?

If a meeting is appropriate, perhaps there need not be a presentation. Tufte relates with relish an anecdote about Louis Gerstner’s first staff meeting after becoming CEO of IBM. He immediately stopped a subordinate who had begun a presentation (in this case with overhead transparencies) and said, “Let’s just talk about your business.” Apparently, the communication situation called for a discussion rather than a presentation, and if so, well-designed visual support and skillful delivery would not have sufficed.

1.3 Did the presentation require visual support? Did it require PowerPoint?

If a presentation is appropriate, there may not be need for visual support. Norvig’s PowerPoint version of Abraham Lincoln’s Gettysburg Address [20], the very first attack on PowerPoint to gain wide notice, was motivated by Norvig’s frustration with “too many presentations where PowerPoint or other visual aids obscure rather than enhance the point” [21].

If visual support is in fact advisable during a presentation, perhaps it should take the form of handouts, sketching on a white board, or projecting a spreadsheet on a screen. Even if PowerPoint is appropriate, perhaps there should also be extended intervals of discussion within the presentation. In short, then, we need to recognize when an objection to PowerPoint is more nearly a complaint about

situations in which PowerPoint is not needed or is overused.

1.4 Are there deep-seated organizational dysfunctions? Is PowerPoint the cause?

As the Columbia Space Shuttle tragedy unfolded, the content and layout of the slide text on a deck used during an important NASA presentation certainly helped to obscure the severity of the problem [3], [4]. Tufte [3], [4] assails inherent characteristics of PowerPoint for causing or encouraging the bad slides. This is an important line of argument. One reason why PowerPoint has become an object of study is that it very arguably exerts harmful mediation effects [22]. At the same time there is strong evidence that internal communication at NASA, especially the upward channels of communication, was deeply and pervasively dysfunctional [23], [24]. Therefore, the presumed harmful influence of PowerPoint at NASA must be measured against the far larger influence of NASA’s overall organizational culture [9].

Along similar lines, a professional deck designer [25] describes a corporation in which most presenters have little to say but frivolously overuse PowerPoint’s ample capability for elaborate slide transitions and other distracting visual effects. But again, while PowerPoint certainly enables poor, “eye candy” presentations, it is hard to accept the designer’s implied argument that PowerPoint is a major driver of the dysfunctional organizational culture in which bad presentations flourish.

1.5 Should PowerPoint be the archive for the information?

A strong case can be made that organizations should not allow standard PowerPoint presentations to serve as a substitute for a complete written document on a topic of ongoing importance. Robert Gaskins [26], the co-creator of PowerPoint, makes just this point, “A lot of people in business have given up writing the documents. They just write the presentations, which are summaries without the detail, without the backup.” Tufte [4] cites this practice as one of the dysfunctional communication practices at NASA. I note simply that to make this criticism is not to challenge PowerPoint as a means of providing oral support for a presentation. It is worth noting, however, that PowerPoint’s notes pane allows for a deeper layer of information on slides and that digital video technologies now make it relatively easy to record, archive, and distribute multimedia files in which the complete oral presentation is captured.

At times presenters create highly detailed slides to facilitate the standalone use of a presentation deck. In other words, they are hoping (probably in vain) that a verbose deck will serve well as an archive of the presentation. A verbose deck, however, is an impediment

to an effective presentation [27]. Here bad design occurs because a second goal subverts the goal of effective presentation support. In assessing the effectiveness of decks and the consequences of PowerPoint use, we should recognize the problem of conflicting goals.

1.6 Is there cultural conflict surrounding PowerPoint use?

PowerPoint often conflicts with the expectations and values of a particular group or members within a group. In my academic department (Technical Communication at the University of Washington), Ph.D. students are expected to employ PowerPoint during their preliminary exam and their final oral exam. In my university's English department, such PowerPoint use would be surprising. A *New York Times* feature [28] records the hostility of many K-12 educators toward PowerPoint in the classroom.

Recent publications by members of a scholarly community of ethnographers and geographers [29], [30], and [31] reveal a profound ambivalence toward PowerPoint as a means of reporting research results. The ambivalence arises, at least in part, because PowerPoint embodies corporate values and power. Rose [30] asks: Does PowerPoint use "implicate geographers in the institutional power of Microsoft?" While such critiques of PowerPoint should certainly be respected and carefully considered, we should also take note when assessments of PowerPoint use and deck design depart from typical considerations of communication efficacy (the value of visual support for oral discourse) and are voiced instead from a specific cultural context or commitment.

2. Are bullet points at issue? If so, what are the arguments?

The great majority of decks employ the canonical layout for slides that consists of a slide title and one or more levels of bullet points (sometimes in two columns) along with various options for placing graphics. This is not surprising. Bullet points were widely used in the era of overhead transparencies. Also, Microsoft PowerPoint (and other slideware products) encourage this layout: Bullet points are part of PowerPoint's standard layouts and hence an easy-to-implement, default choice. Finally, there is much to be said for organizing elements of slide text in a straightforward visual hierarchy.

Bullet points have become the single most controversial aspect of PowerPoint, and discussions of PowerPoint generally assume bullet points and the canonical layout. We need to remember, therefore, that PowerPoint does not insist on any particular design. Atkinson [13] embraces PowerPoint but seeks to banish bullet points. Bullet points are also excluded in the design promoted by Alley and Neeley [32]. Furthermore, as

shown in Figure 2, bullet points can appear in non-canonical designs such as the Smart Art graphics in PowerPoint 2007.

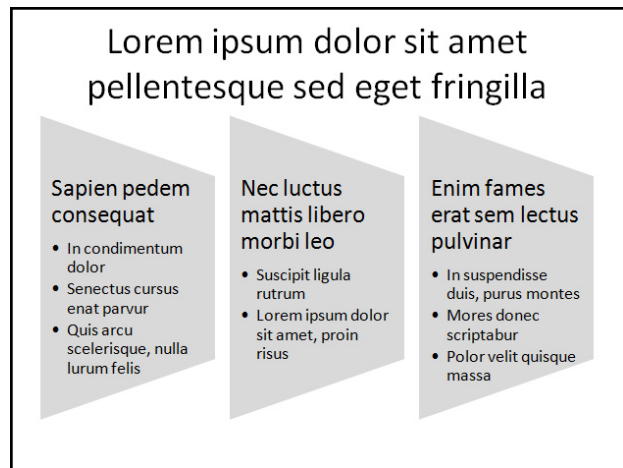


Figure 2. A non-canonical design that employs bullet points.

Often the objections to bullet points are not well articulated, and so it will be helpful to note the main arguments:

- Bullet points lead deck authors to over-simplify their ideas. This is the original objection to PowerPoint expressed first by Parker and then popularized by Tufte. The flaw in this argument is that bullet points need only and should only convey the presenter's main ideas, which the presenter then elaborates upon. Similarly, although Tufte is correct in that PowerPoint cannot effectively display large, highly detailed graphics, this is not usually a role that PowerPoint needs to fulfill.
- Typical slides with bullet points are boring. This argument is often expressed by graphic designers and people who create decks in genres for which aesthetic appeal and perhaps dramatic, eye-catching design are important. Designers such as Altman [33] and Reynolds [34], however, do not fully reject bullet points but use them sparingly and strive to incorporate them into visually compelling designs.
- Bullet points are often formatted in deep hierarchies (e.g., multiple levels). Deep hierarchies may embody unnecessary logical subordination that places an unwarranted burden on the audience [4], [7], and [13].

- Commentators may focus less on the presence of bullet points and more on how they are written. In particular, they note that lengthy bullet points detract from the presentation. Presenters will have trouble glossing (elaborating upon) such bullet points, and audiences are torn between reading extensive slide text or listening to the presenter [27].

3. What are the implications of the slide metaphor?

PowerPoint chunks content into a succession of digital “slides,” images with fixed dimensions. Whatever layouts we employ, whatever design decisions we make, whatever the features of a particular slideware product, the slide is the unit of content, and the successive display of slides is a fundamental behavior of the displayed deck. Hence, the slide metaphor has significant implications for creating a deck, rehearsing, presenting, and taking part in the presentation as a member of the audience. Reasonable claims regarding the slide metaphor include these:

- The restricted display area of slides causes authors to edit their content to fit slides [22].
- The succession of slides provides a staccato, stop-and-go rhythm that at least threatens to reduce the presenter’s momentum and dynamism and hence lessen the audience’s engagement [1], [4].
- The linear sequence of slides readily results in “linear inflexibility” [16]. This is the reluctance of presenters to skip slides or move from one section of a deck to another in response to circumstances that arise during a presentation (e.g., time pressure or discovering that the audience is already familiar with parts of your presentation).

These mediating effects of the slide metaphor can be addressed in various ways. Skillful authors can work successfully within the space constraints of their slides, and skillful presenters using appropriate strategies can reduce the stop-and-go rhythm of the slide metaphor and can overcome linear inflexibility.

While integral to PowerPoint and all slideware products, the slide metaphor is not inevitable for computer-based presentation support. We can, for example, envision a “teleprompter” model in which text and graphics scroll upward at a pace controlled by the presenter. A presenter might speak with an animated visual backdrop, perhaps created with Adobe Flash, in

which the presentation of visual content is more fluid and cinematic than is feasible with PowerPoint.

In the early 1990s (when PowerPoint was a less capable application), I often gave presentations using MS Word in Full Screen view. I scripted simple macros that would advance my Word file from one manually inserted page break to another (somewhat like advancing slides), but I could also scroll at my own pace through a long bullet list or a large graphic. (When I presented in this way, audience members often asked me what application I had used.) I once saw a presentation in which the HCI researcher John Carroll used Word’s outline mode for visual support. Carroll expanded outline entries as he proceeded through his presentation.

My point is not that we need to look for alternatives to the slide metaphor—although such a case can be made. My point rather is that we need to know when and how the slide metaphor is part of the issue we are considering.

4. What are the features of each slideware product?

Because Microsoft’s PowerPoint application is by far the most prevalent slideware product, discussions of slideware are very often framed as discussions of PowerPoint. But it is important to remember that each slideware product has distinctive features. For example, the Web-based slideware component of Google Docs is optimized for online collaboration but offers only basic formatting capabilities.

The obvious points here are that deck designers and presenters should knowledgeably choose the slideware product that best meets their needs and that those who formulate positions and reason about presentation issues should look widely at slideware software to identify relevant features. For example, highly relevant to the claim about the inflexible linearity of slideware is CounterPoint, a research prototype designed specifically to avoid inflexible linearity [35].

5. What is the genre of the presentation?

Just as there are genres of print documents, there are genres of PowerPoint presentations. There are important differences—familiar to audiences—between a welcoming talk at a banquet, a sales presentation, a review of policy options at a public meeting, a technical briefing within a workgroup, and a scholarly presentation at an academic conference. These differences have profound implications for the way in which visual support is provided, and so any claims about deck design and the ability of PowerPoint to effectively provide visual support must take genre into account.

Many unproductive claims about PowerPoint come from commentators who, rooted in certain presentation

genres, make sweeping claims about deck design in general. For example, Seth Godin's claim [12] that no slide should ever contain more than six words comes from his background as a marketing guru but is wildly inappropriate when applied more broadly. In contrast to Godin, Tufte's arguments privilege technical genres.

The many presentation genres can be usefully grouped along two dimensions: technical vs. non-technical and informational vs. emotional (typically for the purpose of persuasion). Technical presentations often require graphs, diagrams, and other information graphics, and when the speaker's content is technical enough to burden the cognitive capacities of audience members, audiences benefit when key ideas persist on the screen [36], Pinker, quoted in [1]. Slide text is apt to be less beneficial for "lite" presentations.

When the goal is an emotional response, the deck designer is apt to seek a concentrated effect. Slides may well employ a single carefully crafted, emotionally compelling visual that accords with the presenter's persuasive strategy. Only a limited amount of text (e.g., a striking statistic) or no text may be provided. Godin, for example, proposes a slide consisting solely of a photograph of the Viet Nam War Memorial as the centerpiece of a deck used in a fundraising pitch for an organization that provides social services to aging Vietnam War veterans.

The following claim by Seattle journalist Paul Andrews [37] about deck design and performance is skewed by assumptions about genre: "Good speakers use slides for supplemental information, not the text of the talk. Great speakers, like Microsoft Chief Executive Steve Ballmer and Apple Computer co-founder Steve Jobs, hardly pay attention to the slides at all, riffing off them in entertaining and informative ways." This claim assumes a genre such as a celebrity product rollout that poses only a modest technical challenge to the audience and has persuasive goals.

6. How is the deck glossed?

The central components of a PowerPoint presentation are the presenter's performance, the participation of the audience, and the deck. Another possible component is a handout. Much is encompassed by the performance—the presenter's physical appearance, the use of movement and gesture, and the oral dimension, which itself consists of both word choice and such aspects of oral delivery as voice quality, enunciation, fluency, pacing, and emphasis [38].

In a PowerPoint presentation, the oral dimension largely takes the form of the oral gloss, or elaboration, on the slide text and graphics [39]. (Introductory remarks, extended digressions, and Q/A discussion are distinct from the oral gloss.) Furthermore, there is a very close relationship between the deck and the gloss [27]. Even if

the presenter chooses not to refer to or gesture at the slides (the performance style described by Andrews), the presenter needs to carefully coordinate his or her words with the content of the slides and the transition from slide to slide.

Because of the close relationship between the deck and the oral gloss (both the word choice and the oral delivery), we need to observe the performance, whether live or via a video recording, in order to reliably assess the success of any deck. The performance and especially the glossing of the slides is a crucial variable that largely determines the audience's experience.

This close connection between the deck and the performance is a significant barrier to the study of PowerPoint because we so often encounter decks apart from the presentation they supported. For example, whatever judgments we make about bullet points are highly provisional without reference to the oral gloss. Envision six slides with multiple bullet points. Did the presenter mostly paraphrase the bullet points, or did each bullet point serve as the springboard for an extended discussion—Paul Andrews' riffs? Did the presenter do some of both? How smooth and expressive was the paraphrasing? Did the presenter move seamlessly from paraphrasing into riffs? If there was a long quotation on a slide, did the presenter read it expressively or mechanically, or did the presenter stand back and invite the audience to read it for themselves?

While we cannot reliably assess the success of any deck without experiencing the performance, we can reason knowledgeably about the barriers and pitfalls posed by certain decks and design choices and judge that particular design choices will require from the presenter a high level of talent and/or special performance techniques. For example, one might conclude that a free-form slide layout will benefit from a special presentation technique, the use of a light pen or similar device to direct the audience's attention to particular elements on the slide. There are also many decks with design flaws severe enough to sink almost any performance.

7. What preparation effort and skill level will be required to create and present with the deck?

Anytime someone steps to the front of a room to present, whether in a large hall or a small meeting room, that person has an ethical responsibility to the audience and to the sponsor of the event (often the presenter's employer) to be well-prepared. There is no case to be made for half-hearted, low-quality presentations. On the other hand, it is reasonable to consider what might be the appropriate and feasible time investment for developing a deck and rehearsing a presentation and, likewise, to consider what level of skill might be required to develop

and present with the deck. In particular, commentators should acknowledge when a design will require unusual preparation time and talent, an unusual rehearsal effort, or unusual presentation skills.

This problem arises because many PowerPoint experts are themselves celebrity/lecture circuit speakers or are in the business of creating presentations—presumably important presentations—for clients. (The first group includes Lawrence Lessig, Don Norman, and Edward Tufte, although Tufte does not use PowerPoint. The second group includes Garr Reynolds, Rick Altman, and Nancy Duarte.) The decks these individuals create are generally the product of an unusual amount of talent and effort. Many qualify as fine instances of commercial art. But the production values of such decks are very likely infeasible and inappropriate for the monthly update by a team of software developers to management.

Celebrity/lecture circuit presenters are also apt to be especially talented presenters (one reason why they became celebrities). In addition, these individuals very often give the same or similar presentations on many occasions. This justifies intensive rehearsal, and these presenters become very comfortable with their deck and presentation through repetition. It is unsurprising but unfortunate when these individuals offer guidance on presenting that is not fully applicable to people with average speaking ability who develop, rehearse, and deliver one-time presentations as one activity in a busy work week.

For example, Stanford University legal expert Lawrence Lessig [40] has received acclaim for an extreme departure from standard layouts [41], [42]. In “Lessig-style” presentations the presenter displays, in rapid succession, a very large number of slides generally consisting of the words, phrases, and sentences that the presenter is at that moment vocalizing. Whatever its merits from the perspective of the audience experience, this design, it seems to me, requires a great deal of preparation. Similarly, a presenter can certainly rehearse to the extent that he or she, like Steve Ballmer or Steve Jobs, hardly needs to look at the screen, but an employer may not want employees investing so much time preparing routine presentations. Better perhaps that employees (within limits) prompt themselves from the screen text.

8. Conclusion: Do we recognize the complexities?

A PowerPoint presentation is a complex hybrid of text, graphics, speech, the features of sophisticated software, and real-time interaction with an audience. PowerPoint is used in a great many settings with differing organizational imperatives, and in many presentation genres. Presenters exhibit a wide range of presentation styles and skill levels.

Furthermore, PowerPoint is just one of a number of slideware applications, all of which have different features and are periodically upgraded. Microsoft's PowerPoint application especially but slideware in general is socially embedded in complex ways and engenders attitudes ranging from enthusiastic acceptance to suspicion and hostility. For all these reasons and others, claims about the implications of PowerPoint use in our society and claims about deck design and presentation should be careful and nuanced and fully respectful of the contingent and local. Such claims should be assessed in the same spirit.

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About the Author

David K. Farkas is a Professor in the Department of Technical Communication at the University of Washington. He has published widely on software user assistance, hypertext, PowerPoint, and other topics. He is continuing his work on PowerPoint and is currently serving as a consultant for a DARPA-funded project that entails extending PowerPoint so as to serve as the user interface for a highly sophisticated knowledge-management environment. His website URL is <http://faculty.washington.edu/farkas>.