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The PowerPoint Channel

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The PowerPoint Channel

Lynn M. LoPucki*

17 U. MASS. L. REV. 41

ABSTRACT

This Article is the first to present a comprehensive theory and style for using PowerPoint to teach law. The theory is that presentation software adds a channel of communication that enables the use of images in combination with words. Studies have shown that combination to substantially enhance learning. The style is based on an extensive literature regarding the use of PowerPoint in teaching law and other higher education subjects as well as the author's experimentation with PowerPoint over two decades. The Article states fourteen principles for slide or slide sequence design, provides the arguments from the literature for and against them, and explains the techniques by which the author implements them. It argues that PowerPoint is effective for eight purposes: (1) providing high-level overviews, (2) explaining concepts, (3) listing sets of rules or possibilities, (4) analyzing statutory or other language, (5) comparing statutes, rules, and concepts, (6) showing physical manifestations of the legal system such as documents or websites, (7) diagramming concepts, relationships, and transactions, and (8) supporting discussions by displaying the assumptions on which the discussions are based. The Article contains miniatures of fifteen full-color slides that exemplify both these uses and the design principles. It concludes that a PowerPoint channel that is on all the time is inevitable. But before that happens, law teachers must design the imagery through which law will be taught.

AUTHOR'S NOTE

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Before classroom projection, law teachers relied on the spoken word. Teachers and students could see one another—a visual channel of sorts. But that visual channel carried no substantive information. Teachers occasionally drew images in chalk but, for the most part, law teaching was a single, two-way audio channel of communication. In the 1970s and 1980s, overhead projectors added a one-way visual channel—from teacher to students—that could operate alongside the pre-existing audio channel. That new channel allowed teachers to combine words with complex imagery.¹ Beginning in the 1990s, presentation software—largely PowerPoint—has superseded the overhead projector.

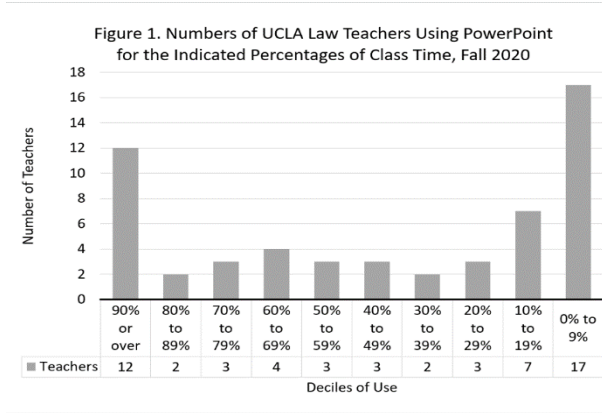
PowerPoint has long been described as “ubiquitous” in law teaching.² But a survey I conducted of UCLA Law faculty suggests otherwise. In the fall of 2020, UCLA teaching faculty displayed a PowerPoint³ slide

¹ For remote teaching, some teachers are using Zoom capabilities to enable two-way written communication. But the technology does not yet exist to bring those capabilities into the classroom.

² See Rachel G. Stabler, *Screen Time Limits: Reconsidering Presentation Software for the Law School Classroom*, 23 LEGAL WRITING: J. LEGAL WRITING INST. 173, 173 (2019) (“If anything, it is now ubiquitous even to say that PowerPoint is ubiquitous. Gone are the days when law professors ‘engaged only modestly’ with PowerPoint.”); Paul Wangerin, *Technology in the Service of Tradition: Electronic Lectures and Live-Class Teaching*, 53 J. LEGAL EDUC. 213, 220 (2003) (referring to “the now ubiquitous PowerPoint”).

³ PowerPoint is one type of presentation software. Other types exist. They include Prezi, Haikudeck, Google Slides, Keynote, and Powtoon. I refer to and discuss only PowerPoint because it completely dominates the law-teaching market.

for an average of about 42% of class time.⁴ Only eight of the fifty-six responding faculty (14%) displayed slides during the entire class, while nine (16%) did not display any slides.⁵ Figure 1 shows the numbers of teachers in each decile of usage rate.⁶



In this Article, I illustrate what I believe are better uses of PowerPoint that will yield greater improvements in learning. I describe my style, explain my theory, and leave it to the reader to extrapolate into other fields or teaching styles. Part I of this Article explains PowerPoint's function. That function is to provide a one-way, visual channel of communication from teacher to student. Part II discusses PowerPoint's problems. Part III argues for the application of fourteen basic principles of slide design. The principles address the form slides should take, including font sizes, paragraph sizes, the amount of

⁴ E-mails from UCLA Law Faculty, to Lynn LoPucki, Sec. Pac. Bank Distinguished Professor, UCLA School of Law, Survey on PowerPoint Use, (Oct. 27, 2020, at 1:23 PM PST) (on file with the UMass Law Review). I conducted the survey by email on October 27, 2020. During that semester, all teaching at the UCLA School of Law was remote. The survey asked: "1. Are you teaching at least one law course this semester? (yes or no) 2. Are you using PowerPoint in teaching a law course this semester? (yes or no) 3. During what percentage of your total class time this semester have you displayed a PowerPoint slide? (0% to 100%)." Fifty-six of the 116 faculty members teaching that semester (48%) responded. At least three respondents used PDF or other software to display slides initially composed in PowerPoint. I categorized them as using PowerPoint.

⁵ *Id.*

⁶ I found only one study on the extent of PowerPoint use in legal education. See Daved M. Muttart, *Power Point in Legal Education: Pedagogical Paradox-An Exploratory Study*, 42 OSGOODE HALL L.J. 303, 313 (2004) ("[O]nly one-third of Osgoode professors use PowerPoint regularly . . .").

material that should appear on a slide, and how that material should appear. Part IV identifies the types of content PowerPoint is most effective at delivering. In addition to pictures, diagrams, and other images, the types include overviews, concept explanations, statutory analysis, comparisons, and document display. Part V uses two diagramming systems, entity structures and lien stacking, to illustrate the conversion of law into images to facilitate its teaching. Part VI explains how teachers can use PowerPoint to frame discussions. Part VII concludes that a shortage of high-quality images is now the principal impediment to development of the PowerPoint channel.

I. POWERPOINT'S ROLE

As previously noted, PowerPoint's contribution is to add a one-way visual communication channel, from teacher to student. Even if that visual channel carries only the same words as the audio channel, it provides important benefits.⁷ Students process the written and spoken word differently.⁸ The student who does not understand a word or phrase as spoken may understand it as written and vice versa. For example, students for whom English is a second language often have better reading than auditory comprehension.⁹ The spoken word dissipates quickly, while the written word lingers on the slide. The student who fails to recognize a spoken word has a second, and better, chance to get it from the PowerPoint. The two channels are complementary. Only the spoken word conveys pronunciation; only

⁷ If the spoken and written words are the same, they must be brief.

Small amounts of duplication, such as when a professor displays and reads pieces of statutory text to focus students' attention, probably do not have this effect. But more extensive repetition, such as when a speaker reads at length from bulleted slides, can reduce learning by imposing a separate burden on working memory.

Deborah J. Merritt, *Legal Education in the Age of Cognitive Science and Advanced Classroom Technology*, 14 B.U. J. SCI. & TECH. L. 39, 48 (2008) (footnote omitted).

⁸ RICHARD E. MAYER, *MULTI-MEDIA LEARNING* 6 (2nd ed. 2009) ("humans have two information processing systems – one for verbal material and one for visual material.").

⁹ See e.g., Erwin Tschirner, *Listening and Reading Proficiency Levels of College Students*, 49 FOREIGN LANGUAGE ANNALS 201, 210 (2016) (empirical study finding that "[l]istening proficiency levels were substantially lower than reading levels for both French and Spanish.").

the written word conveys spelling. A skilled teacher can provide both channels in the same amount of time the teacher would otherwise devote to the spoken word alone.

If PowerPoint is used well, the written and spoken words will not always be the same. The written words will be succinct, the spoken words colloquial.

More importantly, the PowerPoint channel can convey combinations of words and images. The combinations unlock entirely new avenues for learning.¹⁰ “[S]tudents perform better on transfer tests when they learn from words and pictures than from words alone.”¹¹ “The brain stores words and images separately, offering two independent avenues for recollection. These enriched memory stores increase most learners’ access to material.”¹²

The images that appear on PowerPoint slides fall into three categories. The first category is images that are irrelevant to the subject of the class. Commentators overwhelmingly agree that images in this category are distracting and should not be used.¹³ The second category is images relevant to the subject, but which do not constitute knowledge of the subject. For example, Deborah Merritt proposes use of a picture of one child kicking another child in teaching a case in which that occurred.¹⁴ Although the law student gains no useful knowledge from such a picture, Merritt and other commentators argue that the picture assists in “anchoring” or “chunking.”¹⁵ In essence,

¹⁰ Angela Caputo, *Four Pointers to Effective Use of PowerPoint in Teaching*, 10 PERSP.: TEACHING LEGAL RES. WRITING 132, 132 (2002) (“The strength of PowerPoint lies in its ability to visually convey information, in both text and images, and reach students with a variety of learning styles.”).

¹¹ MAYER, *supra* note 8, at 274. See also David S. Wallace et al., *The Effect of Knowledge Maps that Incorporate Gestalt Principles on Learning*, 67 J. EXPERIMENTAL EDUC. 5, 8-12 (1998) (explaining that students learned the process by which bills become laws more readily when studying well-constructed diagrams than when reading text).

¹² Merritt, *supra* note 7, at 44.

¹³ *Infra* notes 31-35 and accompanying text.

¹⁴ Merritt, *supra* note 7, at 52-53 (arguing for the use of “anchor” images as mnemonic devices that merely relate to the case without portraying anything legal).

¹⁵ *Id.* at 53 (“By projecting a picture . . . a professor can give all students a mental image that will help them organize their understanding of the case.”); James B. Levy, *Teaching the Digital Caveman: Rethinking the Use of Classroom Technology in Law School*, 19 CHAP. L. REV. 241, 287-88 (2016) (approving Merritt’s use of the picture as a “chunking technique”). Although the kicking

such a picture provides a memorable image to which the student can mentally attach useful knowledge. The third category are images that constitute legal knowledge. Nearly all of the images I use fall into the third category. Examples appear in Parts III and IV below. My images are of concepts in business associations and secured transactions, but there is no reason why the concepts underlying other areas of law should be less susceptible to presentation as images.¹⁶

Another advantage of PowerPoint is that it can focus the students' attention on a single text—the text on the slide.¹⁷ A teacher's command to "look at section 409(b) of the statute on page 247" is not nearly so effective. Some students will not have their books with them, some will land on the wrong page or section, and some will keep taking notes and wait for the teacher to tell them what is on page 247. PowerPoint instantly puts the same version of the text in front of all of them.

Another one of PowerPoint's roles is as a repository for hundreds or thousands of the teacher's decisions as to the best way to present concepts and frame discussions. A PowerPoint slide deck for an entire course is analogous to a set of teaching notes. The deck retains the order in which concepts are best presented and the images through which they are presented. The slides capture these decisions at a level of detail that is not possible in teaching notes. In doing so, they facilitate a process of continuous improvement from semester to semester. I rely entirely on the PowerPoint slides and maintain no teaching notes. PowerPoint does, however, offer the option of associating teaching notes with specific slides and printing hard copy for the teacher to use during class.

Classroom events undermine even the best of class plans. Adjusting the plan on the fly is difficult under any circumstances, and particularly difficult with a plan embodied in PowerPoint.

child image may accomplish the purposes stated, I do not regard such images as "relevant" or as capturing what we teach in law.

¹⁶ See e.g., Benjamin V. Madison, III, *The Elephant in Law School Classrooms: Overuse of the Socratic Method as an Obstacle to Teaching Modern Law Students*, 85 U. DET. MERCY L. REV. 293, 307 (2008) (advocating the use of images in teaching Civil Procedure).

¹⁷ Derek Muller, *It's Time to Have the Talk... About PowerPoint*, PRAWFSBLAWG, (Apr. 20, 2018, 12:53 PM), <https://prawfsblawg.blogs.com/prawfsblawg/2018/04/its-time-to-have-the-talk-about-powerpoint.html> [https://perma.cc/62WK-73ZY] ("[T]he giant actual text of the rule miraculously helps [students] pay attention to the words.").

PowerPoint's lack of flexibility is probably its greatest weakness. That weakness is offset, however, by the advantage of having a structure to which to return after dealing with unexpected diversions. In short, PowerPoint keeps the teacher's place while the teacher and class go off on tangents. If the slides have been named correctly, a shortcut feature within PowerPoint will pop up a menu of the slide titles, giving the teacher the opportunity to jump to any slide.¹⁸ The teacher can also escape from the slide show, fix a troublesome error, and in seconds resume the show from the current slide.

II. POWERPOINT'S PROBLEMS

The PowerPoint channel developed more slowly than expected for at least seven reasons. First, PowerPoint has received devastating reviews.¹⁹ Most dramatically, information-display guru Edward Tufte plausibly argued that PowerPoint has characteristics that encourage shallow presentation and even contributed to the Columbia space shuttle disaster.²⁰

Second, studies show only modest improvements in learning when teachers use PowerPoint.²¹ Those studies are of undergraduate, not law school classes. More importantly, studies of the current uses of

¹⁸ This shortcut feature is activated by pressing the "ctrl" and "S" keys simultaneously during the slideshow.

¹⁹ See e.g., Lucy Kellaway, *Anti-PowerPoint Revolutionaries Unite*, FINANCIAL TIMES, (Jul. 17, 2011), <https://www.ft.com/content/059e7092-af27-11e0-914e-00144feabdc0> [<https://perma.cc/6HUC-HDD5>] (offering some particularly scathing reviews of PowerPoint).

²⁰ Edward Tufte, *PowerPoint Does Rocket Science: Assessing the Quality and Credibility of Technical Reports*, EDWARDTUFTE, https://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg_id=0001yB [<https://perma.cc/Q9BY-DML5>].

²¹ Compare Karl R. Kunkel, *A Research Note Assessing the Benefit of Presentation Software in Two Different Lecture Courses*, 32 TEACHING SOCIO. 188, 192 (2004) (finding that students in two courses taught with presentation software performed better on exams than students in "traditional sections"), and Roy B. Lowry, *Electronic Presentation of Lectures – Effect upon Student Performance*, 3 UNIV. CHEM. EDUC. 18, 20 (1999) ("For two successive years after the introduction of PowerPoint presentations, the mean examination performance of the cohort of over 130 students was significantly increased."), with Joshua E. Susskind, *PowerPoint's Power in the Classroom: Enhancing Students Self-Efficacy and Attitudes*, 45 COMPUTERS & EDUC. 203 (2005) ("[A]ccompanying lectures with PowerPoint presentations does not significantly affect student achievement.").

PowerPoint can tell us little or nothing about the effectiveness of better uses of PowerPoint.²²

Third, many teachers implement PowerPoint poorly. That is, they do a poor job of designing and presenting their slides. Even though students, at least in the abstract, prefer to be taught using PowerPoint,²³ the reaction to the way teachers use PowerPoint can be negative. My informal UCLA study is the first to compare the student evaluations of law school courses using PowerPoint with those of law school courses not using PowerPoint. The data showed that PowerPoint use was weakly associated with *lower* course evaluations.²⁴

The fourth reason the PowerPoint channel has been slow in developing is that legal academics associate PowerPoint with lecturing. In law, lecturing is stigmatized as lacking in interactivity and

²² Yukiko Inoue-Smith, *College-based Case Studies in Using PowerPoint Effectively*, 3 COGENT EDUC. 1, 4 (2016), <https://www.tandfonline.com/doi/pdf/10.1080/2331186X.2015.1127745>

(discussing an unpublished study in which Benassi redesigned half of slides submitted by volunteers to conform to good multimedia design principles and then found that correct responses on quizzes at the end of each class were 14 percent higher than for unmodified slides).

²³ Stabler, *supra* note 2, at 202 (“[A] significant body of empirical research does support [the] belief” that “students like [PowerPoint] and want their professors to use it.”).

²⁴ PowerPoint use was associated with higher enrollments. ($p=.026$). PowerPoint use was also weakly associated with lower course evaluations ($p=.08$), but that association was no longer significant when controlling for enrollment ($p=.13$). Although PowerPoint use was not associated with gender, whether the instructor was tenure track, or both together, the relationship between PowerPoint use and Course Evaluation was weakly significant when controlling for Tenure Track and Gender ($p=.06$). These data points weakly support the inference that PowerPoint use is associated with lower course evaluations in the UCLA data. I found a curvilinear (quadratic) relationship between levels of PowerPoint use and instructor evaluations. Teachers who used PowerPoint for part, but not all, of class time had significantly higher evaluations than those who did not use PowerPoint or used PowerPoint all the time (coefficient positive and $p=.023$ for PowerPoint percentage; coefficient negative and $p=.007$ for PowerPoint percentage squared). The finding was robust to the inclusion or removal of one outlier, gender, enrollment, whether the teacher was tenure-track, and whether the evaluation was of the course or instructor. It may be that higher evaluations go to teachers who vary their classes more. Emails from UCLA Law Faculty, *supra* note 4; Course Evaluations of UCLA Law Faculty Collected by Lynn LoPucki (on file with the UMass Law Review).

so lacking in “rigor.”²⁵ As illustrated in Part VI of this article, however, PowerPoint does more than support lectures. It is an indispensable tool for framing discussions.

Fifth, PowerPoint is designed principally for linear presentation. That is, the slides must be in an order that is difficult to change. Change is not, however, impossible. Pressing control-S allows the presenter to skip to any slide in the set, based on the slide titles.

A sixth reason the PowerPoint channel has been slow to develop is the difficulty of producing well-designed slides with high-quality content. Most law schools are ambivalent about PowerPoint and provide little support for slide set creation. Only a small number of law teachers are skilled in creating PowerPoint slides and know the principles of good design. Even a teacher skilled in slide creation might have to devote hundreds of hours to create a high-quality slide set for an entire law school course—and many more hours updating the set each year. Many teachers are unwilling to devote that much time.

Casebooks exacerbate the problem. Each slide set is specific to a casebook, so a teacher who changes casebooks must develop a new set. To save time, many teachers favor casebooks that come with slide sets produced by the casebook authors. This leads casebook publishers to pressure casebook authors to prepare and update slide sets for the authors’ books. The ultimate responsibility for slide sets is thereby left to casebook authors, who may not have the aptitude, interest, or expertise to produce high-quality slides sets. For example, only four of the thirteen Business Associations casebooks Wolters Kluwer offers come with slide sets.²⁶

²⁵ E.g., Douglas L. Leslie, *Approaches to Teaching Contracts: How Not to Teach Contracts, and Any Other Course: Powerpoint, Laptops, and the Casefile Method*, 44 ST. LOUIS UNIV. L.J. 1289, 1305 (2000) (“What I found [in a survey of students] was a strong, near universal, association between Power[P]oint and the classroom lecture.”); Lisa Penland et al., *New Ways to Teach Drafting and Drafting Ethics*, 12 TRANSACTIONS: TENN. J. BUS. L. 187, 193 (2011) (recommending teachers ask themselves whether a class idea is “an online discussion or . . . a PowerPoint with voiceover for lecture?”).

²⁶ See WILLIAM T. ALLEN ET AL., COMMENTARIES AND CASES ON THE LAW OF BUSINESS ORGANIZATION (6th ed. 2021); LYNN M. LOPUCKI & ANDREW VERSTEIN, BUSINESS ASSOCIATIONS: A SYSTEMS APPROACH (2020); DEBORAH E. BOUCHOUX & CHRISTINE SGARLATA CHUNG, BUSINESS ORGANIZATIONS LAW IN FOCUS (2nd ed. 2020); THERESA A. GABALDON & CHRISTOPHER SAGERS, BUSINESS ORGANIZATIONS (2nd ed. 2018).

Even if casebook authors provide excellent slide sets, the teachers who use them will want to customize them to meet their own teaching styles. The teacher is the only person who can do that. Thus, to complete the PowerPoint channel, every law teacher must develop expertise in visual presentation.

The seventh reason for slow development of the PowerPoint channel is that the channel will consist largely of color images. Those images must not only be conceived and developed, they must also be communicated to and adopted by the teachers who will use them. For non-casebook authors, the only practical, credible medium for communicating them and arguing about their quality and effectiveness is the law review. But law reviews other than the UMass Law Review²⁷ have shown little interest in imagery and have not published color. Even when law journals do publish images, Westlaw removes them and HeinOnline renders them black and white.²⁸ These barriers to communication reinforce one another. Law teachers don't produce high-quality images because law reviews don't publish images and law reviews don't publish images because teachers don't produce high-quality images.

Similar barriers to the use of images exist in legal practice. Judicial opinions, pleadings, briefs, and oral arguments traditionally have consisted almost entirely of words. Those barriers are now breaking down.²⁹ Judicial opinions include photographs, complaints include full-color images, and legal memoranda integrate full-color images into their arguments.³⁰ Most of the images that are effective in arguing

²⁷ See Michael D. Murray, *Cartoon Contracts and the Proactive Visualization of Law*, 16 U. MASS. L. REV. 98, 101, 127-29 (2021) (containing numerous full-color images).

²⁸ A Westlaw search of Law Reviews and Journals for "Tabular or graphic material set forth at this point is not displayable" returns more than ten thousand articles. *Search Results - Tabular or Graphic Material Set Forth at this Point is Not Displayable*, WESTLAW, <https://www.westlaw.com> (follow "Secondary Sources" hyperlink; then follow "Law Reviews & Journals" hyperlink; then enter a search for "Tabular or Graphic Material Set Forth at this Point is Not Displayable").

²⁹ Elizabeth G. Porter, *Taking Images Seriously*, 114 COLUM. L. REV. 1687, 1781-82 (2014) (noting that "images are taking center stage in legal argument and legal decisions, reinforcing textual arguments, and conveying implicit messages that support litigation narratives.").

³⁰ *E.g.*, Third Amended Consolidated Class Action Complaint for Violation of The Federal Securities Laws at 46, 49, 176, *In re PG&E Corp. Sec. Litig.* (N.D. Cal. filed June 12, 2018) (No. 5:18-cv-03509-EJD), ECF. No. 121 (color maps showing the locations of fires allegedly started by PG&E).

cases will not be the images that are effective in teaching legal concepts. Some, however, will be, with the result that the transformation of practice will help drive the transformation of teaching.

Although PowerPoint does have characteristics that contribute to poor presentation practices, those practices are not inevitable. The solution is to understand the characteristics and avoid the poor practices. This article seeks to contribute to the development of the PowerPoint channel by presenting a theory and style for using PowerPoint to teach the law. As the term is used here, “style” refers to a particular combination of techniques for slide design and content. I developed this style by using PowerPoint to teach secured transactions and business associations over a period of roughly twenty years. Given the physical constraints of the classroom, the projection equipment, and the PowerPoint software, some aspects of the style are universal. Other aspects may differ by subject matter or with the teacher’s preferences.

III. THE PRINCIPLES OF SLIDE DESIGN

This Part states fourteen principles of slide or slide sequence design and explains how they improve communication. A *slide sequence* is a series of slides that appear to the viewer to be a single slide. As the slides advance through the sequence, some text and images remain in place while others are added or removed. Sometimes the effect is animation.

1. *Slides should not contain decorative material or irrelevant animation.*³¹

The purpose of each part of every slide should be to advance students’ understanding of the subject. Decorations, bands of color, and slide “themes” do not advance that understanding.³² Nor do dynamic decorations in the form of fades, fly-ins, float-ins, splits, and

³¹ Inoue-Smith, *supra* note 22, at 5 (reporting student preference that slides “include only the necessary information”); *id.* at 9 (“[S]tudents’ preferences and the professors’ slides were relatively matched in terms of five most important concepts: (1) choosing a solid color background . . .”).

³² Merritt, *supra* note 7, at 62 (“PowerPoint offers hundreds of designer templates, but a plain background works best for educational purposes.”).

swipes.³³ All should be omitted because they distract students from the information the slide is intended to convey.³⁴ Such distractions have been shown to substantially impair learning.³⁵

2. *The minimum font size should be 24-point Calibri.*

The ideal font size for a presentation varies with the screen size and the distance between audience and screen.³⁶ Changing the font size to fit the screen and distance would be ideal. But to change the font size of a well-designed PowerPoint slide set may require an almost complete redesign. The amount of work required is prohibitive.

Instead, the solution is to create slides with a minimum font size suitable for a wide variety of classrooms.³⁷ Through experience making PowerPoint presentations in hundreds of classrooms and other settings, I have found that 24-point Calibri³⁸ is nearly always comfortable for everyone in the room, including Zoom rooms.³⁹

³³ I confess to having one slide containing a fade out. It is of the Cheshire cat's grin after informing my students that which way they should go with their client strategies depend very much on where the client wants to get to.

³⁴ Caputo, *supra* note 10, at 134 (“A teacher can cause his or her words to come spiraling from the center of the slide, and make the students dizzy in the process. Each point can literally ‘shoot’ onto the screen with the sound of a laser. These effects can be distracting.”); *Teaching with PowerPoint*, N. ILL. UNIV. CTR. FOR INNOVATIVE TEACHING AND LEARNING, <https://www.niu.edu/citl/resources/guides/instructional-guide/teaching-with-powerpoint.shtml> [https://perma.cc/KU2U-PNBQ], [hereinafter CITL] (“Avoid distracting animations and transitions. Excessive movement within or between slides can interfere with the message and students find them distracting. Avoid them or use only simple screen transitions.”); Merritt, *supra* note 7, at 57 (citing a survey in which students expressed their annoyance at PowerPoint’s “special effects”).

³⁵ Merritt, *supra* note 7, at 57; Robert A. Bartsch & Kristi M. Cobern, *Effectiveness of PowerPoint Presentations in Lectures*, 41 COMPUTERS & EDUC. 77, 84 (2003) (empirical finding “that unrelated graphics in a presentation have a negative effect on the enjoyment and the learning of the material.”).

³⁶ Caputo, *supra* note 10, at 135 (“Fonts should be kept large for ease of reading. Sit in the back of the classroom and run the presentation: are the words hard to read?”).

³⁷ See e.g., Merritt, *supra* note 7, at 64 (“A font size of 32-44 points for titles and 24-32 points for text usually keeps text readable from the back of the room.”).

³⁸ The Microsoft Design Team, *Beyond Calibri: Finding Microsoft’s Next Default Font*, MICROSOFT (Apr. 28, 2021), <https://www.microsoft.com/en-us/microsoft-365/blog/2021/04/28/beyond-calibri-finding-microsofts-next-default-font/> [https://perma.cc/ATK7-VH39] (“Calibri has been the default font for all things Microsoft since 2007 . . .”). The font, not just its point size, matters. A text in

The hazard of using fonts smaller than 24-points is illustrated in room 1314 of the UCLA School of Law. Both faculty meetings and scholarly presentations to the faculty take place in that room. The room has two small projection screens. Presenter after presenter fails to reach their audience because they have 18-point fonts—Microsoft’s default size—on many of their slides. About half the audience in room 1314 can’t read an 18-point font.

3. *A slide should be about one subject and contain only the most basic and important information about the subject.*

Each slide or slide sequence should ideally present a single concept or idea. The slide should include everything basic and important to that concept or idea and nothing else. If the basic and important information will not fit on a single slide, the slide can be stretched into a sequence by retaining the slide’s title and perhaps some of its content, while changing other content. To the viewer, it appears to be the same slide with some content changed. The technique is especially effective if the retained content is an image to which both the old and new text relate.⁴⁰

4. *Each slide should have a one-line title in 36-point Calibri that describes the slide’s subject.*

Slide titles should be 36-point Calibri to make them easily recognizable as titles. Titles should appear at the top center of the slide for the same reason. If a 36-point title will not fit on a single line, the title is too long and should be shortened.

Michael Alley, et al., show that inclusion of a detail in a slide “headline” of no more than two lines results in audiences being more likely to recall the detail than if it were in the slide’s text.⁴¹ I have not

24-point Arial appears larger and occupies more space on the PowerPoint slide than does the same text in 24-point Calibri.

³⁹ Other commentators would require larger font sizes. *E.g.*, CITL, *supra* note 34, (“Ensure the typeface is large enough to read from anywhere in the room: titles and headings should be no less than 36-40-point font. The subtext should be no less than 32-point font.”).

⁴⁰ Jamal Raiyn, *The Role of Visual Learning in Improving Students’ High-Order Thinking Skills*, 7 J. EDUC. & PRACT. 115, 115 (2016) (“Based on various studies, students remember information better when it is represented both visually and verbally.”).

⁴¹ Michael Alley, et al., *How the Design of Headlines in Presentation Slides Affects Audience Retention*, 53 TECH. COMM. 225, 233 (2006) (“The main conclusion is that if technical presenters desire to emphasize assertions in a

adopted their headline style because (1) no single detail is the point of any significant number of my slides, (2) single-line titles make it easier to find a particular slide during a presentation, and (3) two-line titles occupy too much space on the slides.

5. *Justification should be used to emphasize similarities and differences in slide titles.*

The use of right justification on slide titles can aid in student comprehension. For instance, when the slide title changes only slightly from one slide to the next, instead of centering each title, align as much of the titles as possible on the two slides. The aligned portion of the title will appear to the viewer to remain on the slide, thus emphasizing the words that change. For example, if the titles of successive slides are “Grant of Security Interests in Securities” and “Foreclosure of Security Interests in Securities,” right-justifying both and aligning them will cause the word “Grant” to change to “Foreclosure” when the slide changes, while the remainder of the title remains the same. That makes it easier for the viewer to see what changed.

6. *Don't use font sizes to signal the importance of text.*

PowerPoint users often employ a variety of font sizes to indicate levels of importance. This is a mistake because importance is highly subjective and font size conveys no clear meaning.⁴² Multiple font sizes are more likely to confuse than clarify. Additionally, the use of fonts larger than 24-points reduces the availability of space for other material on the slide. For these reasons, I use 24-point fonts for all text other than slide titles.

7. *Slides should not contain words in all capital letters.*

Passages in uppercase are harder to read than passages in lowercase. Study participants have been shown to read lowercase 5% to 10% faster than uppercase.⁴³ Accordingly, commentators and

presentation, they would do well to place those key assertions in succinct sentence headlines.”).

⁴² CITL, *supra* note 34 (“Limit the number of typeface styles to no more than two per slide. Try to keep typeface consistent throughout your presentation so it does not become a distraction.”).

⁴³ Kevin Larson, *The Science of Word Recognition*, MICROSOFT (Feb. 5, 2018), <https://docs.microsoft.com/en-us/typography/develop/word-recognition> [<https://perma.cc/HJP9-MYJJ>] (“Participants were asked to read comparable passages of text, half completely in uppercase text and half presented in standard

students oppose the use of text in capital letters on PowerPoint slides.⁴⁴ I extend this principle to slide titles for the same reasons.

8. *Each slide should simultaneously display as much relevant information as fits on the slide.*

The conventional wisdom limits the text on a PowerPoint slide to about forty words.⁴⁵ The effect is to require the use of numerous slides. As Edward Tufte put it:

[w]ith so little information per slide, many, many slides are needed. Audiences consequently endure a relentless sequentiality, one damn slide after another. When information is stacked in time, it is difficult to understand context and evaluate relationships. Visual reasoning usually works more effectively when relevant information is shown side by side.⁴⁶

I agree with Tufte. Each slide should contain as much information on a single point as will fit on the slide without violating the one-subject and readability principles. Allowing the inclusion of more information on a single slide increases the slide's ability to show related information side by side and reduces the number of slides needed.

Information is "structured" if it is in a fixed relationship to other information on a slide and the reader understands that relationship. Examples are information in tables or on timelines. To the extent that the information on a slide is structured, the number of known relationships within the data increases exponentially as the number of

lowercase text. In each study, participants read reliably faster with the lowercase text by a 5-10% speed difference.”).

⁴⁴ Inoue-Smith, *supra* note 22, at 5 (reporting student preference that slides “not use all capital letters in text”); Catharina F. de Wet, *Beyond Presentations: Using PowerPoint as an Effective Instructional Tool*, 29 GIFTED CHILD TODAY 29, 37 (“Do not use upper case letters only.”).

⁴⁵ Caputo, *supra* note 10, at 135 (“A good rule of thumb to follow is the 6 x 6 rule. Use no more than six words per line and six lines per slide.”); Carmine Gallo, *Avoid the PowerPoint Trap by Having Less Wordy Slides*, ENTREPRENEUR (Mar. 17, 2014), <https://www.entrepreneur.com/article/232217> [<https://perma.cc/L3XW-24HY>] (“It’s well established in research literature that too much text on a slide is the worst way of transferring information”).

⁴⁶ Edward Tufte, *PowerPoint Is Evil*, WIRED MAG. (Sept. 1, 2003), <https://www.wired.com/2003/09/ppt2/> [perma.cc/46Z7-RH6T].

items on the slide increases.⁴⁷ That is, adding an item shows its relationship to each item already in the structure. Figure 2 illustrates this concept. The information in each cell of this table has an easy-to-understand relationship to the information in every other cell on the slide.

Figure 2

Default statutory decision making, by entity type			
	Who can bind in ordinary course?*	Who can make entity decisions in the ordinary course?	Who can make entity decisions out of the ordinary course?
Corporation	The board or CEO, text at 38	Board at a meeting, §141(b)	Board at a meeting; or directors plus shareholders
Partnership	Any partner §301(1)	A majority of partners, no meeting, §401(k)	Consent of all partners, §401(k)
Member-managed LLC	No one §301(a)	A majority of members, no meeting, §407(b)(3)	Consent of all members, §407(b)(4)
Limited partnership	Any general partner §406(a)	A majority of general partners, no meeting, §406(a)	Consent of all partners. §406(b)
* Has authority by reason of the office.			13

Pedagogical considerations alone should determine what material is so basic and important that it should be displayed. Authors should not include more just because space is available or less because the information won't fit. Instead, the author should leave white space on the slide when less text meets the standard for inclusion or expand the slide into a sequence when more text meets the standard.

9. *Each chunk of text on a slide should be brief, to the point, grammatically easy to parse, and separated from adjacent text by six to twelve points of white space.*

“Brief” text is text of one to two lines—about ten to twenty words.⁴⁸ Once outside of that range, text starts to become difficult to

⁴⁷ EDWARD R. TUFTE, *THE COGNITIVE STYLE OF POWERPOINT: PITCHING OUT CORRUPTS WITHIN 24* (2nd ed. 2006) (“The number of possible pairwise comparisons in a table increases as the square of the number of cells.”).

⁴⁸ Caputo, *supra* note 10, at 135 (“Each point should be kept as concise as possible. Choose short words over long words.”); CITL, *supra* note 34 (“Use brief points instead of long sentences or paragraphs and outline key points rather than transcribing your lecture. Use PowerPoint to cue and guide the presentation.”); MAYER, *supra* note 8, at 277-78 (“[O]nly the core cause-and-effect explanation should be presented, without extraneous words, sounds, or pictures.”).

read efficiently.⁴⁹ “To the point” means that the teacher has distilled the thought to its essence, the text conveys only the most essential components, but without sacrificing the overall concept. Text is “grammatically easy to parse” when it is in the form of a simple sentence—subject and verb followed by direct object. Such text is not only easier for students to read; it is easier for the teacher to read when the teacher doesn’t remember what comes next.

10. Slides should not contain abbreviations or acronyms.

Abbreviations and acronyms interfere with readability because they require what is essentially a translation.⁵⁰ Some students will not know what the abbreviation or acronym means, and others will take a moment to figure it out. Because reading ease and speed are crucial, abbreviations should rarely be used.

11. If a slide is composed of chunks of information that should be explained separately, those chunks should appear separately.

A teacher should carefully consider the flow of the presentation. Causing text and images to appear incrementally directs the student’s attention to the new material while building on that already before them. Additions to a slide should simply “appear.”⁵¹ The number of additions should be minimized because each requires the students’ renewed attention. To minimize the number of additions, each slide should initially show the slide title, the first chunk of information, and perhaps an image. The presenter should explain what is already visible on the slide before adding more content. To make it easier for students to see what is added, new material should generally be added below the material already on the slide. The motion of appearance directs the students’ attention. When text must be added above existing text, it should appear in a brightly colored font to call attention to its location.

⁴⁹ Inoue-Smith, *supra* note 22, at 5 (reporting student preference that slides “avoid long sentences”); Virginia Clinton, *Reading from Paper Compared to Screens: A Systematic Review and Meta-analysis*, 42 J. RES. READING 288, 288 (2019) (“Based on random effects models, reading from screens had a negative effect on reading performance relative to paper ($g = -.25$).”).

⁵⁰ Andrew H. Hales et al., *Alienating the Audience: How Abbreviations Hamper Scientific Communication*, ASS’N FOR PSYCH. SCI. (JAN. 31, 2017), <https://www.psychologicalscience.org/observer/alienating-the-audience-how-abbreviations-hamper-scientific-communication> [perma.cc/43AW-FZQ5].

⁵¹ Caputo, *supra* note 10, at 135 (“[O]pt for transitions that cause a point to ‘fly’ from left to right, or to simply ‘appear,’ as these movements are easier to follow than a spiral or a flash.”).

When changes to a diagram already in the slide sequence appear, the presenter should consider toggling back and forth between the two versions while explaining the changes. The motion on the screen caused by toggling highlights the changes, making it easier for students to see what changed.

Tufte sarcastically refers to the technique of adding incrementally to what appears on a slide as “the dreaded slow reveal” which ends with the audience fleeing.⁵² His objection to using the build sequence on a slide appears to be the same as his objection to the division of PowerPoint into slides: one damn addition after another.⁵³

But an addition *to* a slide is fundamentally different from the addition *of* a slide. When a presenter moves on to the next slide, the prior slide disappears, and the viewer can compare the prior slide’s contents only by memory. By contrast, when a presenter adds to the slide, nothing disappears and the viewer can compare the additions visually, creating an avenue for achieving deeper understanding for those without photographic memories.

Tufte’s larger point is that content should be organized according to its own character, not according to the limitations of the presentation technology.⁵⁴ I agree. PowerPoint could and should be more flexible about the size of a slide.⁵⁵ That said, however, the build sequence is not a limitation imposed by PowerPoint. The build

⁵² TUFTE, *supra* note 47, at 6.

⁵³ See Tufte, *supra* note 46 and accompanying text.

⁵⁴ TUFTE, *supra* note 47, at 6 (“[F]ormats, sequencing, and cognitive approach should be decided by the character of the content and what is to be explained, not by the limitations of the presentation technology.”) (emphasis in original).

⁵⁵ PowerPoint does allow the user to change the aspect ratio of the slide set from 4:3 to 16:9. Christopher Jan Benitez, *How to Change the Slide Size in PowerPoint for Better Presentations*, HELPDESKGEEK (Sept. 12, 2019), <https://helpdeskgeek.com/office-tips/how-to-change-the-slide-size-in-powerpoint-for-better-presentations/> [<https://perma.cc/N6UN-L6KD>]. All slides in a set must have the same ratio and the change has little or no effect on the usable area of the slide. The projector and screen in the classroom limit the area on which PowerPoint can be projected and so limit the “size” of a slide. PowerPoint could triple the usable area of a slide by allowing the user to design primary slides that have secondary slides of the same size above and below them. Only the primary slides would appear unless the user “grabs” the primary slide and moves it up or down to reveal one of the secondary slides. For example, that would enable the teacher to show students a document that was the equivalent of three slides tall—though the students could not see the entire document at once.

sequence performs the necessary function of directing the viewer's attention to each successive piece as it is added to the whole.

12. Color should be reserved for images, titles, and backgrounds for quoted text. Only occasionally should color be used for other fonts or backgrounds.

Slides should be on a white background for the same reason that books are printed on white paper.⁵⁶ Text is easiest to read when it is black on a white background.⁵⁷ In addition, (1) a background color will bleed into, alter, and detract from adjacent colors, and (2) white slides will produce a brighter presence at the front of the room.⁵⁸ Other commentators are less adamant about white backgrounds.⁵⁹

Because colored fonts are more difficult to read, they are best reserved for emphasis or to direct attention. When text appears on a dark background of any color, the font should be white. When a black font is used on a colored background, the background should be about 85% to 90% transparent to maintain the contrast between the font and the background. A PowerPoint add-on that checks the adequacy of the contrast between any font-background combination is available free of charge.⁶⁰

That said, splashes of color can make slides aesthetic, distinctive, and memorable. Slide titles and images are the best places to use color because legibility is less likely to be an issue. Colors used in titles should be relatively dark reds, blues, greens, or browns rather than

⁵⁶ Stefan Brown, *Free Color Contrast Checker for PowerPoint*, BRIGHTCARBON (Nov. 17, 2020), <https://www.brightcarbon.com/blog/free-color-contrast-checker-for-powerpoint/> [<https://perma.cc/LSM2-KKBQ>] (“There is a reason most word processing tools default to black text on a white background, and why we use black ink to fill in forms. For written content to be legible, text needs to have as high a contrast with the background color as possible.”).

⁵⁷ Inoue-Smith, *supra* note 22, at 5 (reporting a student preference for “[t]ext contrast[ing] with background color”).

⁵⁸ Caputo, *supra* note 10, at 134 (“Dark backgrounds darken the front of the room and can disconnect the teacher from the class—this removal is perceived by the students.”).

⁵⁹ *Id.* (“Be sure to take advantage of ambient light by choosing a PowerPoint background color scheme or a background template that is light in color.”); Inoue-Smith, *supra* note 22, at 9 (approving the use of background colors).

⁶⁰ Brown, *supra* note 56 (explaining the add-in BrightSide, which “allows you to get an idea of which [color] combinations will work best before you begin designing your presentation.”).

relatively light yellows, oranges, or beiges, because the lighter colors are more difficult to read.

“Light” fonts (such as Calibri light) should not be used for titles because the amount of color may be insufficient to make the colors easily distinguishable.⁶¹ Even the viewer who can distinguish the colors may be less likely to notice the patterns in their use. Changing the slide title color at the end of a slide sequence is an effective technique for visually tying the sequence slides together. A light font title may not contain enough color to accomplish that purpose.

13. The contrast between slide brightness and ambient lighting must be sufficient to show legible text and true colors.

Slide projectors vary widely in their ability to produce bright images. If you must use a projector that will not produce bright, colorful, legible images, one solution is to dim the lighting in the room. But in dimmer light, it will be more difficult for both teacher and student to read from the casebook or a statutory supplement. In addition, a movie theater atmosphere discourages discussion.⁶² Dimming should therefore be used only in moderation. Merritt states that “[p]reserving as much illumination as possible is one key to maximizing the human link between professors and students.”⁶³

14. Slides should be numbered in the lower right corner using a 24-point font.

Slide numbers serve two purposes. First, students taking notes can refer to the slide by number. Second, both the students and the teacher have a convenient way to refer to the slide in class, review session, office hours, or email. To serve these purposes, the slide number should be in a 24-point font, not PowerPoint’s 12-point default font. The lower right corner is a good location because it is the PowerPoint default location and the slide area least likely to be needed for some other purpose.

PowerPoint automatically rennumbers the slides when a slide is added or removed. Once a slide set is presented, slides should not be

⁶¹ *Id.* (“Font size and weight will affect the contrast and readability of text, so it’s generally best to avoid overly stylized or very thin fonts and avoid trying to cram lots of text on one slide.”).

⁶² Merritt, *supra* note 7, at 58.

⁶³ *Id.* at 59; Inoue-Smith, *supra* note 22, at 9 (“It is important not to turn off all the lights in the classroom, to maintain eye contact with students, and to remove the slides from the screen when they are not needed . . .”).

added to or removed from the set until the semester is over, so that the slide numbers will not change. To assure that only one set of slides is in circulation, slides should not be provided to students before they are presented. After presentation, necessary additions or removals for the following year should be made to a copy of the slide set.

Three additional conventions can make slides more effective. First, use boldface text to create left-justified subtitles for portions of a slide or to distinguish the citation to quoted material from the quoted material. Second, use the symbol “[y/n]” in red to indicate a question appropriate for yes-no polling.⁶⁴ Third, use “◆” to indicate the end of a slide or slide sequence. The diamond unobtrusively signals the instructor when to stop for questions and enables students to know when questions will be most welcome.

IV. SLIDE CONTENT

Casebooks can be an effective way to provide large amounts of information to students.⁶⁵ PowerPoint presentations cannot.⁶⁶ PowerPoint presentations are, however, effective at meeting a variety of other teaching needs, including: (1) providing high-level overviews, (2) explaining concepts, (3) listing sets of rules or possibilities, (4) analyzing statutory or other language, (5) comparing statutes, rules, and concepts, (6) showing physical manifestations of the legal system such as documents or websites, (7) diagramming concepts, relationships, and transactions, and (8) supporting discussions by displaying the assumptions on which the discussions are based. The first six of these uses are described in this Part. The seventh is the subject of Part V, and the eighth is the subject of Part VI.

⁶⁴ On Zoom, the actual polling must be done using the polling feature rather than the yes-no feature of Zoom, so that students cannot observe other students' responses. Based on anecdotal observation, my students at UCLA appear to be highly influenced in favor of the majority view, whether that majority view is right or wrong.

⁶⁵ See generally, LOPUCKI & VERSTEIN, *supra* note 26; LYNN M. LOPUCKI ET AL., SECURED TRANSACTIONS: A SYSTEMS APPROACH (9th ed. 2020) (providing large amounts of information in the form of expository text).

⁶⁶ Inoue-Smith, *supra* note 22, at 12 (“PowerPoint is good for visually enriching the content and illustrating complex concepts, but it is not good at providing large amounts of information.”).

Figure 3

The Business Judgment Rule

Five conditions for the rule's application:

1. Business judgment. The managers made a discretionary business decision.
2. Rational decision. The decision is not waste—"beyond the range at which any reasonable person would be willing to trade."
3. Loyalty. The director's intent was to act in the entity's interests.
4. Good faith. Conduct that is not disloyal and not more culpable than gross negligence, **and**
5. Process due care. The managers informed themselves to the degree they reasonably believed necessary.

The care, loyalty, and good faith elements are presumed satisfied.

If all five conditions are satisfied:

1. The managers/control shareholders aren't liable for their decision.
2. The court will not invalidate their decision.

23

High-level overview. Legal materials are complicated, and it is easy to get lost in the details. The informality of PowerPoint makes it an effective tool for providing an overview that students will not consider a substitute for the material. Figure 3 is a high-level overview of the notoriously complex and shape-shifting business judgment rule. The single slide explains when the rule applies and the effect of its application. I explain the underlined words during my presentation.

Explaining concepts. PowerPoint is great for explaining complicated concepts. To illustrate, Figure 4 presents one slide in a slide sequence that explains the concept of securitization—the exchange of rights in assets for rights in an entity that will own the assets. The assets' value and the number of shares fluctuate during the slide sequence. After each change in the number of shares, the total width of the yellow boxes—the aggregate value of the shares—automatically adjusts to equal the value of the assets. Figure 4 shows the situation after the addition of a fourth share without an increase in asset value, but before the share values snap back to \$60 each to equal the \$240 total asset value.

Figure 4

Securitization: Division of Assets into Shares

1. Absent an entity, the owner owns the assets; can sell a percentage.
2. With an entity, the Owner owns shares of the Entity that owns Assets. This is securitization.
3. The shares have (about) the same total value as the assets.

\$80	\$80	\$80	\$80
Corporation			
Assets \$240			

4. If the assets increase in value, so do the shares.
5. If the entity trades shares for new assets of equal value, each share retains its value, but has less voting power. "Voting dilution."
6. If the entity issues new shares without new asset value . . .

13

Lists. PowerPoint is also effective in providing lists of rules or possibilities. For example, Figure 5 is an exhaustive list of the non-bankruptcy rules governing possession of non-real property collateral during lien enforcement. With these five rules, the students can solve any problem that arises in that setting. Presenting a list in this way, as opposed to listing one rule at a time, allows students to develop a workable mental model from the start instead of having to adjust their models as the teacher adds rules.

Figure 5

The Rules Governing Possession

1. **§9-609(a)** After default, a secured party may take possession of the collateral.
2. **Vitale v. Hotel California** [A judgment creditor] may cause the . . . property of the defendant . . . to be seized and sold and the proceeds applied to the judgment . . . by way of execution.
3. **§9-609, comment 5** A senior claimant is entitled to possession as against a junior claimant.
4. **Frierson v. United Farm Agency** [A senior lienholder] cannot refuse to exercise its rights under the security agreement . . . while it impairs the status of other creditors by preventing them from exercising valid liens.
5. The wrongful exercise of dominion and control over a secured party's collateral constitutes conversion. The converter must buy the collateral for its market value.

26

Statutory analysis. In teaching law, it is often necessary to examine carefully the specific language used. The teacher can accomplish that by displaying the language on a slide. The language may be from statutes, cases, or other material. To signal that the language is quoted, I place it on a lightly colored background. Most of the backgrounds used should be about 85% or 90% transparent so that the black font will be legible against them. Ideally, material from the same source should appear against the same background color. Color enables students to more easily make the association. For example, on the business associations slides, I use red for the Revised Uniform Partnership Act, green for the Uniform Limited Liability Company Act, and black for the Uniform Limited Partnership Act. I use the same colors—without transparency, but with white fonts—for the symbols that represent entities created under each of those laws.

Application of a rule of law—whether from a case, statute, or other source—to a fact scenario may be the most common exercise in the teaching of law. PowerPoint enables the teacher to display both the rule and the facts on the slide while the application discussion occurs.

Statutes and rules are often verbose. Fitting them to a Power-Point slide in a 24-point font often requires shortening. To shorten text, I use the accepted conventions: ellipses to indicate the removal of text⁶⁷ and brackets to indicate the substitution of other text that has the same meaning.⁶⁸ The shortened version of ULLCA § 105(c)(8) on Figure 6 illustrates both techniques. Shortening the excerpts on Figure 6 made it possible to display all three modification limitations on a single slide along with a brief statement of the point made about them.

⁶⁷ The Bluebook is the preeminent style guide for law journals and other legal scholarship across the country. According to Rule 5.3, ellipses are used when omitting parts of a sentence. See THE BLUEBOOK: A UNIFORM SYSTEM OF CITATION R.5.3, at 86 (Columbia L. Review Ass'n et al. eds., 21st ed. 2020).

⁶⁸ *Id.* at 84 (“Substituted words or letters and other inserted materials should also be bracketed . . .”).

Figure 6

Problem 16.5, page 291

Client, Olivia, wants a black entity—one in which the investors have no information rights. But the rights seem unmodifiable:

Jones Apparel v. Maxwell Shoe (Del. 2004) Section 220 . . . codifies the important public policy that “any” stockholder must be permitted to obtain corporate information so long as she can demonstrate “any proper purpose,” and a charter provision that divests all but the most significant stockholders of that right is one that is contrary to the laws of this State as expressed through the policy reflected in § 220 and the decisional law emphasizing the fundamental importance of that right.

ULLCA §105(c)(8) An operating agreement may not . . . unreasonably restrict the [information] duties and rights.

MBCA §16.02(f) [T]he right of inspection granted by this section may not be abolished or limited by a corporation’s articles of incorporation or bylaws . . .

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Students are often surprised that legal materials can be shortened in this manner prior to application. Of course, the teacher exercises judgment in determining that some words can be removed or changed without changing the meaning of the words that remain. Cases have long been edited for inclusion in casebooks, and the deletions from those cases increasingly are made without ellipses.⁶⁹ On my slides, the ellipses are visible. Students have copies of the full text of the statutes, and I invite them to challenge my analyses by referring to other portions of the full text. Thus, explicit edits on the slides enhance rather than impede the analyses.

Even after shortening, legal texts often exceed the two-line comfort limit for reading text on a slide. If the text is divisible—for example, two sentences—the teacher can cause one sentence to appear, discuss it, and then cause the second sentence to appear while the first remains on the screen. If the text is not divisible, a second solution is to highlight portions of the text that constitute a sentence-within-a-sentence that captures the gist of the excerpt. The teacher can read the highlighted text or wait while the students read it.⁷⁰ Once the students

⁶⁹ See generally JOSHUA DRESSLER & STEPHEN P. GARVEY, CRIMINAL LAW CASES AND MATERIALS (8th ed. 2019); OLIN GUY WELBORN, III, CASES AND MATERIALS ON THE RULES OF EVIDENCE (7th ed. 2017).

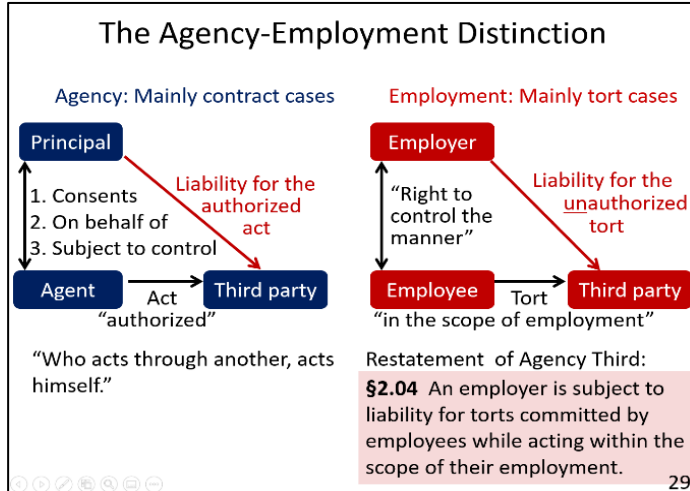
⁷⁰ Merritt, *supra* note 7, at 57 (“When discussing a statute, rule, or central passage from a judicial opinion, for example, a professor might project the relevant text on a PowerPoint slide. The most effective way to build upon a slide like this is

have the gist, the teacher and students can consider the exceptions, limitations, or additions contained in the unhighlighted remainder of the excerpt.

The highlighting may be underlining, as shown on Figure 6. Some commentators eschew underlining because they believe underlining interferes with legibility or they fear their students will confuse underlined text with hyperlinked text.⁷¹ Highlighting may instead be boldface, a brightly colored font, highlighting similar to that made with a marker on paper, or a combination of them. To simulate highlighting with a marker on paper, a bright yellow box with no outline is placed beneath the text box. If the text has no background color, the effect is the same as highlighting text on a printed page using a yellow highlighter. If the text has a background color it may be necessary to adjust the highlight color to achieve a highlighting effect.

Comparison. PowerPoint facilitates comparison in at least three ways. First, when comparing similar concepts such as agency and employment, the typical diagrams embodying them can be placed side by side, as shown in Figure 7. Second, if the comparison is of statutory

Figure 7



to read aloud only a few key words or call on a student to identify those words.”).

⁷¹ *E.g.*, Inoue-Smith, *supra* note 22, at 9 (stating that “[m]ost of the participating professors . . . avoid using underlines for emphasis, which signifies hypertext in digital media.”); Merritt, *supra* note 7, at 65 (“Underlined words can be difficult to read on slides.”).

language, one of the provisions can be placed immediately beneath the other on a single slide, as shown in Figure 8. Third, if the provisions are highly similar, they can be placed on successive slides and aligned so that the identical words remain stationary as the teacher toggles between the two slides. Only the text that differs changes.

Figure 8

3. Registered Office / Registered Agent

DGCL §131(a) Every corporation shall have and maintain in this State a **registered office** which may, but need not be, the same as its place of business.

MBCA §5.01(1) Each corporation shall continuously maintain in this state . . . a **registered office** that may be the same as any of its places of business.

How do you comply if you are not in Delaware?

Answer: Hire a contractor.

285,000 corporations have registered offices at this Delaware address.
(Corporation Trust Company)



20

This third technique makes it possible for students to penetrate the otherwise impenetrable language of Delaware General Corporation Law § 145(a) and (b).⁷² The technique is also useful in comparing provisions of the Revised Uniform Partnership Act, the Uniform Limited Liability Company Act and the Uniform Limited Partnership Act. The Uniform Law Commission harmonized those laws to use the same words in all three, except where a difference in meaning was intended.⁷³ As a result, much of the language is identical. Because PowerPoint positions successive slides precisely and can advance them almost instantly, toggling between slides provides an excellent way to show small differences in largely identical text.

Pictures. “Visual learning offers better results than traditional learning systems.”⁷⁴ If a concept can be expressed through a picture, diagram, table, or other graphic, that graphic should appear in the

⁷² DEL. CODE ANN. tit. 8, § 145(a)–(b) (2021).

⁷³ See UNIF. BUS. ORGS. CODE (UNIF. L. COMM’N. 2013); UNIF. P’SHIP ACT (UNIF. L. COMM’N. 2013); UNIF. LTD. LIAB. CO. ACT (UNIF. L. COMM’N. 1996); UNIF. LTD. P’SHIP ACT (UNIF. L. COMM’N. 2013).

⁷⁴ Raiyn, *supra* note 40, at 120.

slides in proximity to the text that addresses the concept. Richard Mayer states that “[t]he process of integrating relevant words and images is a key step in meaningful learning, and is facilitated by presenting an explanation using words and pictures rather than using words alone.”⁷⁵

Pictures are usually a welcome break from the monotony of text on PowerPoint slides. They should not, however, be used solely to relieve monotony. Each picture should make a substantive point about the material.⁷⁶

As shown in Figure 8, I use a picture of a single-story, Wilmington, Delaware building that is the registered office of 285,000 corporations. The single door onto the street, with CT Corporation’s sign beside it, makes the point: despite statutes deeming corporations’ registered offices to be the corporations’ offices, they are not. The office shown is the resident agent’s office.

Other examples include (1) group photos of the members of the Delaware Chancery Court and the Delaware Supreme Court to make the point that twelve people decide the huge number of important cases that constitute Delaware corporation law and (2) a photo of a Mobil Mart to show the “mere use of franchise logos and related advertisements” that the court held not to “indicate that [Mobil] has . . . control over any substantial aspect of the franchisee’s business”⁷⁷

Figure 9

Pall Corp. Preliminary Proxy Statement

Annual Meeting Proxy Card (1234 5678 9012 345)

IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE.

Proposals	For	Against	Abstain
05 - Ronald L. Hoffman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06 - Lawrence D. Kingsley	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07 - Dennis N. Longstreet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Documents. I often show my students legal documents and provisions within those documents. For example, a picture of a Pall Corporation proxy card shows that shareholders can vote for or against management’s slate of candidates but cannot vote for anyone else. The first slide in the “blow-up”

⁷⁵ MAYER, *supra* note 8, at 277.

⁷⁶ CITL, *supra* note 34 (“Again, only use photographs that are relevant to the content and serve a pedagogical purpose. Images for decorative purposes are distracting.”).

⁷⁷ Mobil Oil Corp. v. Bransford, 648 So. 2d 119, 120 (Fla. 1995).

sequence shows the entire Pall Corporation proxy card. Students cannot read it because the font sizes are well below 24 points, but it gives them an overview. On the second slide, the location of the provision to be blown up is indicated by a red box around it. The third slide, Figure 9, shows the provision blown up to about 24 points, overlaid, and still framed by the red box. Students then can read the candidates' names and their choices, knowing where that information appears on the card.

V. LEGAL CONCEPT DIAGRAMS

Graphics play an important role in thinking and learning. In the education literature, graphics are referred to as “external representations.”⁷⁸ External representations can be more effective in conveying information than traditional text. For example, Mayer reports that “students perform better on transfer tests [and retention] when they learn from words and pictures than when they learn from words alone.”⁷⁹ Merritt asserts that images—and only images—can provide the “initial anchor” on which “students master new material by building clusters of information.”⁸⁰

PowerPoint makes it possible to present facts and legal concepts in both words and pictures. Teachers can present in words and pictures using a chalkboard, but PowerPoint is more powerful. PowerPoint images can be crafted in advance, have detailed and animated imagery, and be deployed instantly. Once the student has grasped the relationship between the abstract concepts—for example, entities, shares, and directors—and their external representations—rectangles, miniature share certificates, and small photos of seven businesspeople—the teacher can use those symbols to present increasingly complex business structures and transactions.

A diagramming system is a set of conventions for representing fact patterns that recur and vary. The teacher explains the convention and

⁷⁸ Shaaron Ainsworth & Richard Lowe, *Representational Learning*, in *ENCYCLOPEDIA OF THE SCIENCES OF LEARNING* 2832, 2833 (Norbert M. Seel ed., 2012) (“Various types of *external* representations of the to-be-learned subject matter (such as text, pictures or animations) need to be distinguished from the *internal* (mental) representations that are assumed to be constructed mentally as learning occurs.”).

⁷⁹ MAYER, *supra* note 8, at 274.

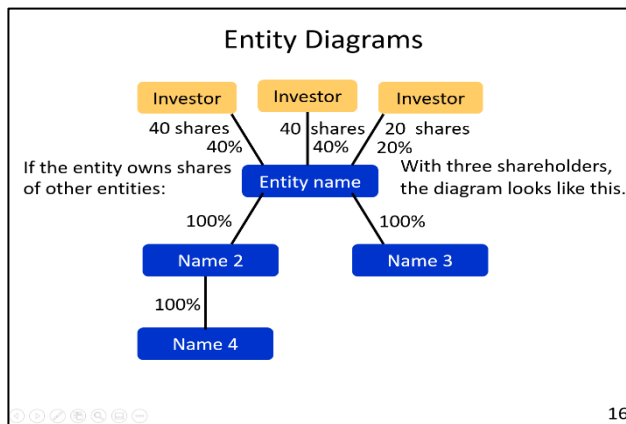
⁸⁰ Merritt, *supra* note 7, at 53 (“Without an anchoring image, legal concepts lack traction, making it difficult to make sense of those abstract ideas. This is not a gap that professors can fill by offering additional verbal explanations . . .”).

then employs it consistently. Once the student learns the convention, it provides an efficient means for future communication.

This Part presents two of the diagramming systems I use. The first is for entities in the business associations course, and the second is for liens in the secured transactions course. Neither system requires PowerPoint. But PowerPoint's use makes the diagrams more visually appealing and easier to create, replicate, and deploy. Using PowerPoint reclaims the class time that would otherwise be spent drawing the diagrams on the chalkboard.⁸¹ Most importantly, PowerPoint enables the teacher to change the facts as a scenario progresses.⁸²

A. Entity Diagrams

Figure 10



“Entity” is a generic term that includes corporations, partnerships, limited liability companies, and limited partnerships. Through share ownership and contracts, entities can form groups and other entity structures. Lawyers, businesspeople, and courts have routinely used diagrams to depict entity structures.⁸³ Some entity structures are so

⁸¹ Caputo, *supra* note 10, at 133 (“PowerPoint slides . . . can save valuable in-class time by reducing the amount of writing on the board during class.”); Madison, *supra* note 16, at 307 (“Because of the complexity of the parties and claims in *Owen*, PowerPoint slides are an effective tool to depict the scenario and address the rules. The professor doubtlessly saves valuable time by this means.”).

⁸² I show changes through animation. I achieve the animation by positioning the changed objects at different locations on successive slides. PowerPoint offers an “animation” feature that moves objects on a single slide, onto the slide, or off of the slide. With the exception of “appear,” I do not use those animation features.

⁸³ See e.g., *Simplified Scheme of the Corporate Structure of the Group*, IBERDROLA (2019),

complex that diagrams are the only practical way to comprehend them. Students not only need to know how to read and understand entity diagrams, they also need to know how to make them. Both skills are necessary to solve business associations problems in law school and in practice.

In entity diagrams, shareholders appear as one or more boxes above the box that represents the entity whose shares the shareholders own. A line connects each shareholder box to the box that represents the entity. If relevant, the shareholder's number of shares, percentage of shares, or both appear adjacent to the line. If the entity owns the shares of other entities, the pattern repeats. For example, Figure 10 shows an entity group consisting of four entities. The lines indicate share ownership.

Once the students understand what the diagram's elements represent, teachers can use the diagrams to explain increasingly complicated entity structures. The diagrams are more powerful than text because each show at a glance the number of entities present and the relationships among them.

Entity diagrams can also be used to show the effects of transactions in which entities merge with other entities, split into multiple entities, convert into different kinds of entities, transfer some or all of their assets to other entities, or engage in other entity acrobatics.

Figures 11, 12, and 13 are overlays used to depict and explain the steps in a corporate spinoff. Displayed in sequence, they create the illusion of motion by phi phenomenon.⁸⁴

https://www.iberdrola.com/wcorp/gc/prod/en_US/corporativos/docs/infografia_sociedades.pdf [<https://perma.cc/Y5KB-QLVY>]; *Holding Company Structure for LLCs*, FORTENBERRY <https://www.fortenberrylaw.com/holding-company/> [<https://perma.cc/BWN5-GC49>].

⁸⁴ Phi Phenomenon is the illusion of movement produced when pictures with the same object in different positions are presented in rapid succession. See, Robert M. Steinman et al., *Phi is not Beta, and Why Wertheimer's Discovery Launched the Gestalt Revolution*, 40 VISION RES. 2257, 2257 (2000) (describing Phi phenomenon as "pure apparent movement").

Figure 11

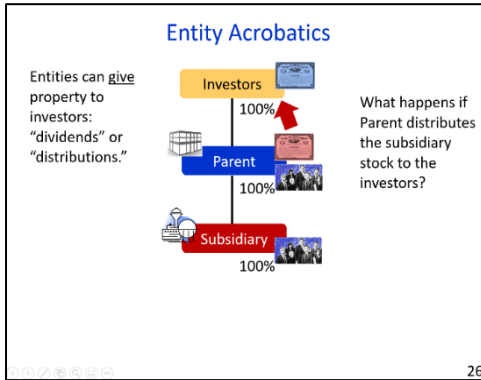


Figure 12

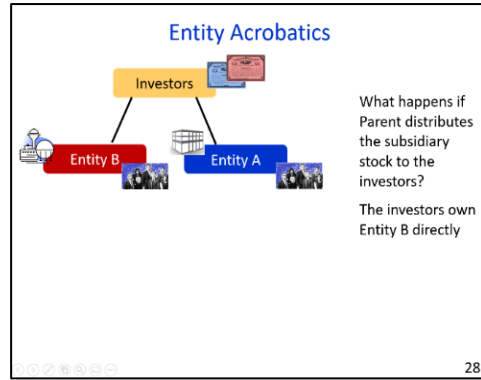
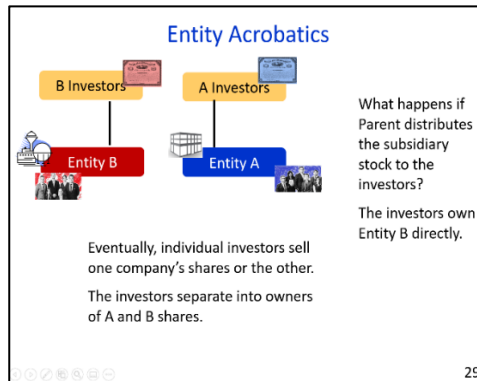


Figure 13



A spinoff is a transaction in which an entity transfers part of its business or assets to an independent entity owned by its shareholders.⁸⁵ The first step, shown by the red arrow in Figure 11, is that Parent distributes Subsidiary's shares to Parent's shareholders as a stock dividend. The effect is shown in Figure 12. Each shareholder owns the same percentage of shares in each of the two entities. Figure 13 shows the separation of the two entities' shareholders as some shareholders sell their shares in one or both entities. The entities become increasingly independent of one another, each with its own shareholders.

⁸⁵ Amy Fontinelle, *Spinoff*, INVESTOPEDIA, <https://www.investopedia.com/terms/s/spinoff.asp> [https://perma.cc/P4CX-LB3D] (Aug. 30, 2021) ("A spinoff is the creation of an independent company through the sale or distribution of new shares of an existing business or division of a parent company.").

Figures 11 through 13 show three additional features of entity structures. The first feature is the boards of directors, which are represented by pictures of seven businesspeople. The color of the picture matches the color of the entity that elected the directors to office. The second feature is the assets, which are represented by a picture of a building or other structure. The third feature is the shares, which are represented by pictures of share certificates. The color of the share certificate matches the color of the entity which owns the shares. The movements of these symbols from slide to slide show how the structures change as the scenarios unfold.

The effect of a transfer of shares or assets within an entity structure is often unintuitive. The Parent and the Subsidiary on Figure 11 are both managed by the same group of people—the blue directors. That is because the board of a parent corporation elects the board of its subsidiary.⁸⁶ In the scenario depicted, Parent’s directors chose themselves to be the Subsidiary’s directors. However, once the Parent transferred Subsidiary’s shares to the shareholders, the shareholders in each entity had the power to elect that entity’s board. That made it possible for the two sets of shareholders to choose different directors. As the shareholders sold the shares of one or both entities, ownership of the two companies’ shares separated. The two sets of shareholders became less likely to elect the same people. Showing the boards separately is a visual cue that makes it easier to discuss the conditions that might expedite or impede changes in board membership.

PowerPoint has several advantages over chalkboards and hard copy when depicting a complicated transaction like the spinoff in Figures 11 through 13. The first is animation. By adding, removing, or changing elements of the diagram from slide to slide, phi phenomenon creates the illusion of movement.⁸⁷ In this example, shares, assets, and entities appear to move from one location in the entity structure to another, making the changes more intuitive. Neither chalkboards nor hard copy offer an effective way to depict movement in the classroom.⁸⁸ The second advantage is PowerPoint’s ability to combine text and images. Text that appears and disappears as the slide sequence progresses can explain the movement as it occurs. The third advantage

⁸⁶ *Wirth v. Sun Healthcare Grp., Inc.*, 389 P.3d 295, 304 (N.M. Ct. App. 2017) (“Stock ownership, as a matter of course, allows a parent to choose its subsidiary’s board of directors . . .”).

⁸⁷ Steinman et al., *supra* note 84.

⁸⁸ Flipping through a deck of sequenced pictures can create the illusion of movement but is not practical in this context.

arises from the presenter's control over the slides. The presenter can toggle between slides to repeat a phi-phenomenon movement, thereby making the movement easier for the viewer to understand.

Entity diagrams are one of many diagram types that can be effective in teaching business associations. Others include timelines that show events in sequence with the relevant waiting periods or deadlines, transaction diagrams that show the parties to a transaction and the relationships among them, tables, labeled pictures, balance sheets, slide sequences that show dilution as movement, and Venn diagrams that show the relationships among overlapping statuses.

B. Lien Diagrams

A lien is the relationship between collateral and debt secured by the collateral.⁸⁹ If debt secured by collateral is not paid when due, the lien creditor can force a sale of the collateral—that is, foreclose—and be paid from the proceeds of the sale.⁹⁰ The diagram in Figure 14 illustrates the lien concept using overlapping bar graphs to show the relationships between collateral values and lien amounts.

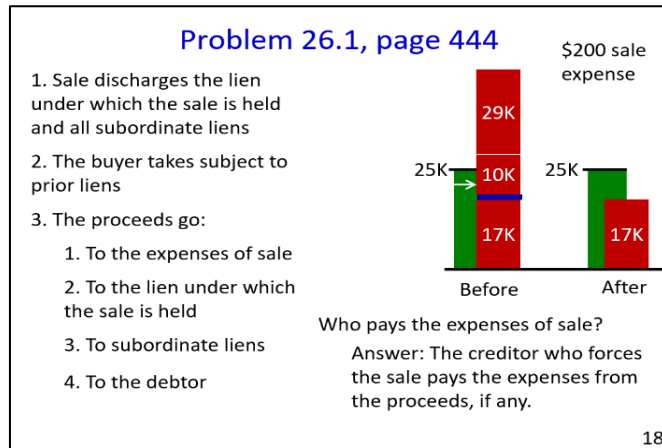
In particular, Figure 14 explains how foreclosure works in the situation where liens exist in the amounts of \$17,000, \$10,000, and \$29,000 against collateral worth \$25,000. The relationships between these lien amounts and the collateral's value is shown in the "Before" diagram, along with a white arrow identifying the second lien as the lien forcing the sale. The collateral value bar shows that value to be \$25,000 which is \$8,000 more than the \$17,000 first lien.

Figure 14 explains that the sale will discharge the lien under which the sale is held—the \$10,000 lien—and all subordinate liens—the \$29,000 lien. The "After" diagram shows that the buyer at the foreclosure sale will own the collateral, subject to the \$17,000 lien. Thus, the buyer could bid up to \$8,000 for the collateral; reserving \$17,000 to pay the first lien. If the debt secured by the \$17,000 lien is not paid when due, the holder of that lien could initiate a second foreclosure sale.

⁸⁹ See U.C.C. § 9-102(a)(12) (AM. L. INST. & UNIF. L. COMM'N 2012) (defining "collateral" as "the property subject to a security interest or agricultural lien").

⁹⁰ See U.C.C. § 9-615(a) (AM. L. INST. & UNIF. L. COMM'N 2012) (providing for application of the proceeds of sale to the expenses of sale and then to the "satisfaction of the obligations secured by the security interest or agricultural lien under which the disposition is made . . .").

Figure 14



Lien diagrams show the collateral value available to each lienholder through foreclosure, based on assumptions regarding the lien amounts and the collateral's value. On Figure 14, \$17,000 is available to the first lienholder, \$8,000 is available to the second lienholder, and nothing is available to the third lienholder. The third lienholder is “out of the money.”

The amount of a lien includes the interest accruing on the secured debt and typically includes all expenses of lien maintenance and enforcement, including attorneys' fees. As a result, lien amounts nearly always increase in the periods prior to and during enforcement. For example, in the situation diagrammed, the \$17,000 first lien increases in amount due to expenses. This increase pushes the \$10,000 second lien up on the diagram and increasingly out of the money. As interest accrues on the second lien, the amount of the second lien also increases. But that increase is itself out of the money. If the second lienholder incurs expenses of sale, those expenses—shown in black on the lien bar—have priority over the second lien. That is, they must be paid before the second lien can receive money from the sale. Thus, the expenses of foreclosure sale also push the second lien further up and out of the money.

The Uniform Commercial Code allows additional loans from a lienholder to the debtor to have the same priority as the original loan.⁹¹ The effect of that rule in this example is that the first lienholder in this scenario could increase its lien to \$25,000 by advancing an additional

⁹¹ U.C.C. § 9-322(a)(1) (AM. LAW INST. & UNIF. L. COMM'N 2012) (providing that security interests in favor of a creditor all have priority as of the creditor's filing of a financing statement, regardless of when the security interests were created).

\$8,000 to the debtor. The advance would immediately push the second lienholder entirely out of the money.

PowerPoint can show these increases dynamically. The first slide of the sequence shows the initial amounts of the debts, the second shows the increased amounts of the debts, and phi phenomenon converts the change into a pushing motion. Students can easily see the cumulative effect of such changes on the most junior liens. That gives students a better intuitive sense of the power relationship between senior and junior liens.

Although diagrams can be highly effective in communicating legal concepts through PowerPoint, that is not true of all diagrams or even all concepts. Diagrams are useful only if they convey a concept accurately and more effectively than words alone.

VI. DISCUSSION FRAMING

Although descriptions of PowerPoint often assume that it can be used only to lecture,⁹² one of PowerPoint's greatest strengths is in its capacity to frame discussion.⁹³ Every teacher has had the experience of reciting the complicated assumptions necessary to frame an issue for discussion only to have the distracted student called upon respond, "what was the question?" The teacher's choice is to frame the question again or write that student off by calling on another student. With PowerPoint, the frame and the question remain on the slide; the teacher need only refer the distracted student to it.

⁹² *E.g.*, Leslie, *supra* note 25, at 1305 ("What I found [in a survey of students] was a strong, near universal, association between Power[P]oint and the classroom lecture."). *See also*, Penland et al., *supra* note 25, at 193 (recommending teachers ask themselves whether a class idea is "an online discussion or . . . a PowerPoint with voiceover for lecture?").

⁹³ Madison, *supra* note 16, at 307 ("Because of the complexity of the parties and claims in *Owen*, PowerPoint slides are an effective tool to depict the scenario and address the rules. The professor doubtlessly saves valuable time by this means.").

Figure 15

Problem 24.7, page 451

The managers breached their fiduciary duties by taking Penser's assets.
 Can FinAm, sue the managers to recover the assets? [y/n]

Client Members
FinAm ← Debt → Penser LLC → Fiduciary duty action → Managers

ULLCA §803 A derivative action to enforce a right of [an LLC] may be maintained only by a person that is a member at the time the action is commenced and:

- (1) was a member when the [wrongful] conduct . . . occurred; or
- (2) whose status as a member devolved on the person by operation of law or pursuant to the terms of the operating agreement from a person that was a member at the time of the conduct.

Answer: Yes. FinAm cannot bring a derivative action. But FinAm can (1) encourage members to sue or (2) levy on Penser's right to sue the managers, buy it at sale, and exercise it (page 142). 17

To illustrate, Figure 15 frames the discussion of problem 24.7 from *Business Associations: A Systems Approach*. That is, the slide provides all the information students need to discuss the problem and state a solution. That includes the names of the four parties to the problem, a diagram of the relationships among them, the question asked, and the authority to be applied—ULLCA § 803. The information appears one chunk at a time, each with the teacher's explanation. The answer does not appear until the discussion is complete.⁹⁴ Because the slide is in front of them, students need not devote their attention to remembering the names of the parties, the identity of the client, or the question asked. This information remains in front of them during the entire discussion, and students can instead devote their attention to the problem's substance.

Figure 16 provides a second example of PowerPoint discussion framing. The graphic on the slide identifies the parties and shows their relationships to one another. The text above my answer provides the rest of the facts. Thus, all of the facts are visible to the discussants throughout the entire discussion. Before the answer is revealed, the discussants vote yes or no on the question, "Do you agree that the plaintiffs should not recover from Richman?"

⁹⁴ My policy is to provide my answer to each question I ask. The answer is on the PowerPoint slide to remind me to do that.

Figure 16

Problem 9.1, page 158

Richman funds Biotech, a startup.
He pays \$10 million for 95% of the stock.
Richman elects directors who are not wealthy.

The directors negligently fail to require adequate safety precautions.
A virus escapes and causes \$1 billion in damages.

Neither the company nor its directors or employees can pay.

Should the plaintiffs be able to recover from Richman?
The law's answer is no. The injured persons should bear the loss.

b. Do you agree that plaintiffs should not recover from Richman? [y/n]
My answer: No. Richman should be liable. He created the risks, controlled the risks, and received the benefits from taking them.
Liability gives Richman an incentive to prevent these losses.
No one else has the incentive and ability to prevent these losses. 14

The discussion will be about the policy of limited liability. Before taking this course, many students know corporations have limited liability. The safest position for a student to take in any policy discussion is the position taken by existing law. To encourage students to take the other side, the problem posits the weakest possible case for limited liability—a billionaire who controlled the corporation and sought to gain from the venture—seeking protection against foreseeable tort plaintiffs injured by a dangerous venture. Only thirteen of seventy-five students in my fall, 2020 business associations class (17%) took limited liability's side on these facts.

Both examples depend on the existence of a casebook that provides the students with both the problem and the information necessary to solve it at their leisure prior to class. However, it is PowerPoint that enables the discussion by keeping the frame within the discussants' fields of vision for the discussion's duration.

CONCLUSIONS

Teachers have long recognized the power of images. But until recent decades, computers had limited ability to process and store images. Lawyers and judges continued to argue cases, and teachers continued to teach law, almost solely through the written or spoken word.

The computer's capacity to process and store images is no longer the problem. Nor is PowerPoint the problem. PowerPoint is a tremendous advance over prior systems for composing images and displaying them in classrooms. As I have argued through words and

images in this paper, PowerPoint, in its present form, is more than adequate to provide a visual channel of communication from teachers to students in the classroom. The problem is the lack of high-quality content for the PowerPoint channel.

Content development is proceeding slowly. Content's power will come principally from images of legal concepts, but at present, few of those images exist.⁹⁵ Legal scholars lack even a basic theory as to how verbal law can be expressed in images.

Despite that lack of theory, law teachers have been drawing diagrams on chalkboards for decades, and many have published their diagrams.⁹⁶ But most of those diagrams are of low quality or idiosyncratic. Scholarly efforts to improve diagrams or diagramming systems are rare or nonexistent.⁹⁷

A confluence of impediments prevents a literature on law diagrams from developing. First, no fora exist for the evaluation or discussion of

⁹⁵ Tania Leiman, *Where are the Graphics? Communicating Legal Ideas Effectively Using Images and Symbols*, 26 LEGAL EDUC. REV. 47, 50 (2017). *But see Street Vendor Guide*, CANDY CHANG <http://candychang.com/work/street-vendor-guide/> [<https://perma.cc/6V9E-4MA4>] (showing and describing Vendor Power: A Guide to Street Vending in New York City, a fold-out poster in which the regulations are shown through graphics); Lynn M. LoPucki, *Bankruptcy Visuals: Graphics that Explain Bankruptcy Procedure*, <https://www.bankruptcyvisuals.com/> [<https://perma.cc/UA96-YYLM>] (graphics showing the procedures under three chapters of the U.S. bankruptcy laws).

⁹⁶ *See e.g.*, LAURA BARTELL, *VISUALIZING SECURED TRANSACTIONS 1-2* (2nd ed. 2013); LAURA BARTELL, *VISUALIZING BANKRUPTCY 4* (2011); N. E. H. Hull, *UCC § 2-207 Analysis*, in *GETTING GRAPHIC* 31, 31 (Corinne Cooper, ed. 1993) (collection of diagrams for teaching commercial law); Lynn M. LoPucki & Corinne Cooper, *What are the Rights of a Secured Party on Default*, in *GETTING GRAPHIC 2: USING VISUAL TOOLS TO TEACH LAW* 43, 43 (1994) (collection of diagrams for teaching in various fields of law); Francina Cantatore & Ian Stevens, *Making Connections: Incorporating Visual Learning In Law Subjects Through Mind Mapping and Flowcharts*, 22 CANTERBURY L. REV. 153, 153 (2016) (advocating mind mapping and flowcharts); Lisa T. McElroy & Christine N. Coughlin, *The Other Side of the Story: Using Graphic Organizers to Counter the Counter-Analysis Quandary*, 39 U. BALT. L. REV. 227, 241 (2010) (proposing use of a line to represent the continuum of a legal rule from what it is to what it is not); Kevin C. McMunigal, *Using Graphics to Teach Evidence*, 50 ST. LOUIS UNIV. L.J. 1175, 1180 (2006) (using a drawing of a fulcrum to indicate balancing and other simple line drawings); Wangerin, *supra* note 2, at 220 (advocating the use of cartoon-like drawings).

⁹⁷ *But see* Adam L. Rosman, *Visualizing the Law: Using Charts, Diagrams, and Other Images to Improve Legal Briefs*, 63 J. LEGAL EDUC. 70, 71-80 (2013) (providing examples of the use of high-quality images in legal briefs).

diagrams—particularly diagrams that depend on color. Nearly all law reviews continue to operate entirely in black and white and almost entirely in words. Second, law schools do not support PowerPoint composition. Third, although a large majority of law teachers use PowerPoint for presentations and teaching, few have devoted the time and effort necessary to master PowerPoint composition. Lastly, law teachers are selected for verbal, not visual, acuity. As a result, many lack the aptitude necessary to communicate through images.

This article is an effort to break the log jam by providing (1) a PowerPoint style to which competing PowerPoint styles can be compared, (2) a theory of how teachers should use PowerPoint, and (3) examples of the conversion of legal concepts into images. I hope this article will be the first of many in which PowerPoint users describe their own methods and the reasons they chose those methods.

As it exists today, PowerPoint can bring our thoughts, words, and images to life in the classroom. But neither PowerPoint nor the category of presentation software is a destination. PowerPoint's combination of structure and flexibility is just a stage in the technological development of the arts of presentation and teaching.

A PowerPoint channel that is on all the time is inevitable. Law teachers' PowerPoint skills will improve, and the PowerPoint channel eventually will be ubiquitous. The question that remains is what content that visual channel will carry. The task now is to design it.